

Government of Tripura  
Public Works Department



**ANALYSIS OF RATES**

for

**TRIPURA SCHEDULE OF  
RATES**

for

ROAD & BRIDGE

WORKS

(PART-I to III)

**Year:- 2023**

Published By: The Chief Engineer, PWD(R&B), Agartala, Tripura

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**ANALYSIS OF RATES**  
*for*  
**TRIPURA SCHEDULE OF RATES**  
*for*  
**ROAD & BRIDGE WORKS**  
**(PART-1)**  
*for*  
**HIGHWAYS AND MDRs.**  
**Year:- 2023**

Published By: The Chief Engineer, PWD(R&B), Agartala, Tripura

**CHAPTER-1**  
**CARRIAGE OF MATERIALS**

Sr. No.	Ref. to MoRTH H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
1.1		<b>Loading and unloading of Stone Boulder, stone aggregate, Brick Aggregate, Kankar, earth, Crushed slag, Stone for Masorny Work by Mechanical Means including a lead upto 30m.</b>					
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip					
		<b>Unit = cum</b>					
		<b>Taking output = 5.5 cum</b>					
		<b>Time required for</b>					
		i) Positioning of tipper at loading point	Min	1.000			
		ii) Loading by front end loader 1 cum bucket capacity @ 25 cum per hour		13.200			
		iii) Maneuvering, reversing, dumping and turning for return		2.000			
		iv) Waiting time, unforeseen contingencies etc		4.000			
		Total	Min	<b>20.200</b>			
		<b>a) Machinery</b>					
		Tipper 5.5 tonnes capacity	hour	0.3367	374.00	125.93	P&M-073
		Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.3367	1030.00	346.80	P&M-030
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				100.55	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				85.99	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				6.59	
		Cost for 5.5 cum = a+b+c+d				665.86	
		<b>Rate per cum = (a+b+c+d)/ 5.5</b>				121.07	
					<b>say</b>	<b><u>121.10</u></b>	
1.2		<b>Loading and unloading of Stone Boulder, stone aggregate, Brick Aggregate, Kankar, earth, Crushed slag, Stone for Masorny Work by Manual Means including a lead upto 30m.</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 5.5 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.030	391.00	11.73	L-17
		Mazdoor(unskilled)	day	0.750	391.00	293.25	L-18
		<b>b) Machinery</b>					
		Tipper 5.5 tonne capacity	hour	0.750	374.00	280.50	P&M-073
		<b>c) Add GST (multiplying factor)@ 0.2127 on (a+b)</b>				124.53	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				106.50	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				8.17	
		Cost for 5.5 cum = a+b+c+d+e				824.68	
		<b>Rate per cum = (a+b+c+d+e)/5.5</b>				149.94	
					<b>say</b>	<b><u>149.90</u></b>	
1.3		<b>Loading, Unloading of Cement or steel by Manual Means and stacking</b>					

**CHAPTER-1**  
**CARRIAGE OF MATERIALS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Unit = tonne**

**Taking output = 10 tonnes**

**a) Labour**

Mate	day	0.080	391.00	31.28	L-17
Mazdoor(unskilled)	day	2.000	391.00	782.00	L-18

**b) Machinery**

Truck	hour	2.000	418.00	836.00	P&M-080
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

350.80

**d) Contractor's profit @ 15 % on (a+b+c)**

300.01

**e) Add Cess @ 1.00 % on (a+b+c+d)**

23.00

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

2323.10

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

232.31

**say**

**232.30**

**1.4 Haulage excluding loading and unloading**

Haulage of materials by tipper/ truck 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 : 20 km/ hour.

(Considering hilly roads and the timing of movement in Maeghalaya & Tripura on the NH)

Speed while Returning empty :35 km/ hour.

**a) Machinery.**

**Tipper 10 tonne capacity**

Time taken for onward haulage with load	hour	0.500	374.00	187.00	P&M-073
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Time taken for empty return trip.	hour	0.290	374.00	108.46	P&M-073
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**b) Add GST (multiplying factor) @ 0.2127 on (a)**

62.84

**c) Contractor's profit @ 15 % on (a+b)**

53.75

**d) Add Cess @ 1.00 % on (a+b+c)**

4.12

cost for 100 t km = a+b+c+d

416.17

**Rate per t.km = (a+b+c+d)/100**

4.16

**say**

**4.20**

**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	0.670	374.00	250.58	P&M-073
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Time taken for empty return trip	hour	0.330	374.00	123.42	P&M-073
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**b) Add GST (multiplying factor) @ 0.2127 on (a)**

79.55

**c) Contractor's profit @ 15 % on (a+b)**

68.03

**CHAPTER-1**  
**CARRIAGE OF MATERIALS**

Sr. No.	Ref. to MoRTH H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				5.22	
		Cost for 100 t .km = a+b+c+d				526.80	
		Rate per t.Km = (a+b+c+d)/100				5.27	
					<b>say</b>	<b><u>5.30</u></b>	
<b>1.4</b>		<b>(iii) Katcha Track and Track in River Bed/Nallah Bed and Choe Bed.</b>					
		Speed with load :10 km / hour					
		Speed while returning empty:15 km / hour					
		<b>a) Machinery</b>					
		<b>Tipper 10 tonnes capacity</b>					
		Time taken for onward haulage	hour	1.000	374.00	374.00	P&M-073
		Time taken for empty return trip	hour	0.670	374.00	250.58	P&M-073
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				132.85	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				113.61	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				8.71	
		Cost for 100 t .km = a+b+c+d				879.75	
		Rate per t.Km = (a+b+c+d)/100				8.80	
					<b>say</b>	<b><u>8.80</u></b>	
<b>1.5</b>		<b>Hand Broken Stone Aggregates 63 mm Nominal Size</b>					
		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.					
		<b>Unit = cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.060	391.00	23.46	L-17
		Mazdoor(unskilled)	day	1.500	391.00	586.50	L-18
		<b>b) Material</b>					
		Supply of quarried stone 150 - 200 mm size	cum	1.100	2843.10	3127.41	M-152
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				794.94	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				679.85	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				52.12	
		Rate per cum = a+b+c+d+e				5264.28	
					<b>say</b>	<b><u>5264.30</u></b>	
<b>1.6</b>		<b>Crushing of Stone Aggregates 13.2 mm nominal Size.</b>					
		Supply of Stone boulders and crushing in an integrated stone crushing unit of 200 t / h capacity comprising of primary and secondary crushing units, conveyor belt and vibrating screens to obtain stone aggregates 13.2 mm nominal size.					
		<b>Unit = cum</b>					
		<b>Taking Output = 600 cum at crusher location.</b>					
		<b>a) Labour</b>					
		Mate	day	0.760	391.00	297.16	L-17

**CHAPTER-1**  
**CARRIAGE OF MATERIALS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mazdoor (Skilled)	day	2.000	475.00	950.00	L-20
		Mazdoor(unskilled)	day	17.000	391.00	6647.00	L-18
	<b>b) Material</b>	Stone Boulder of size 150 mm and below	cum	800.000	2824.50	2259600.00	M-183
	<b>c) Machinery</b>	Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	15579.00	93474.00	P&M-059
		Front end loader 1 cum bucket capacity	Hour	20.000	1030.00	20600.00	P&M-030
		Tipper 5.5 cum capacity	Hour	20.000	374.00	7480.00	P&M-073
	<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>					508150.54	
	<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>					434579.81	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>					33317.79	
	Cost for 600 cum = a+b+c+d+e+f					3365096.29	
	<b>Rate per cum = (a+b+c+d+e+f)*0.95/600</b>					<b>5328.07</b>	
						<b>say</b>	<b><u>5328.10</u></b>

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

**1.7 Crushing of Stone Aggregates 20 mm nominal Size**

Supply of Stone boulders and crushing in an integrated stone crushing unit of 200 t / h capacity comprising of primary and secondary crushing units, conveyor belt 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	391.00	297.16	L-17
Mazdoor (Skilled)	day	2.000	475.00	950.00	L-20
Mazdoor(Unskilled)	day	17.000	391.00	6647.00	L-18

**b) Material**

Stone Boulder of size 150 mm and below	cum	800.000	2824.50	2259600.00	M-183
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**c) Machinery**

Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	15579.00	93474.00	P&M-059
Front end loader 1 cum bucket capacity	Hour	20.000	1030.00	20600.00	P&M-030
Tipper 5.5 cum capacity	Hour	20.000	374.00	7480.00	P&M-073

**CHAPTER-1**  
**CARRIAGE OF MATERIALS**

Sr. No.	Ref. to MoRTH H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				508150.54	
		e) Contractor's profit @ 15 % on (a+b+c+d)				434579.81	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				33317.79	
		Cost for 670 cum = a+b+c+d+e+f				3365096.29	
		<b>Rate per cum = (a+b+c+d+e+f)*0.90/670</b>				<b>4520.28</b>	
						<b>say <u>4520.30</u></b>	

**Note:-** 1. 800 cum of stone boulders are needed to get 600 cum of stone aggregates of size 20 mm.  
2. 90 per cent of above cost will be attributed to the production of 600 cum of stone aggregates of 20mm size and balance 10 per cent will be for smaller size aggregates and stone dust which comes out as a by-product.  
3. The integrated stone crusher includes primary and secondary crushing units.

**1.8 Crushing of Stone Aggregates 40 mm nominal Size**

Supply of Stone boulders and crushing in an integrated stone crushing unit of 200 t / h capacity comprising of primary and secondary crushing units, conveyor belt 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	391.00	297.16	L-17
Mazdoor (Skilled)	day	2.000	475.00	950.00	L-20
Mazdoor(unskilled)	day	17.000	391.00	6647.00	L-18

**b) Material**

Stone Boulder of size 150 mm and below	cum	800.000	2824.50	2259600.00	M-183
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**c) Machinery**

Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	15579.00	93474.00	P&M-059
Front end loader 1 cum bucket capacity	Hour	20.000	1030.00	20600.00	P&M-030
Tipper 5.5 cum capacity	Hour	20.000	374.00	7480.00	P&M-073

d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)

508150.54

e) Contractor's profit @ 15 % on (a+b+c+d)

434579.81

f) Add Cess @ 1.00 % on (a+b+c+d+e)

33317.79

Cost for 750 cum = (a+b+c+d+e+f)

3365096.29

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

**3813.78**

**say 3813.80**

**CHAPTER-1**  
**CARRIAGE OF MATERIALS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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- Note:-** 1. 800 cum of stone boulders are needed to get 600 cum of stone aggregates of size 40 mm.
2. 85 per cent of above cost will be attributed to the production of 750 cum of stone aggregates of 40mm size and balance 15 per cent will be for smaller size aggregates and stone dust which comes out as a by-product.
3. The integrated stone crusher includes primary and secondary crushing units.



**CHAPTER-2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
2.1	201	<b>Cutting of Trees, including cutting of Trunks, Branches and Removal of stumps</b>					
		Cutting of trees, including cutting of trunks, branches and removal of stumps & roots, refilling, compaction of backfilling and stacking of serviceable material by manual means with all lifts and lead up to 1000 metres as per MoRT&H Technical Specification Clause 201.					
		<b>Unit = Each</b>					
		<b>(i) Girth from 300 mm to 600 mm</b>					
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.600	391.00	234.60	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.100	265.00	26.50	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				57.20	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				48.92	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				3.75	
		<b>Rate for each tree = a+b+c+d+e</b>				378.79	
					<b>say</b>	<b><u>378.80</u></b>	
		<b>(ii) Girth from 600 mm to 900 mm</b>					
		<b>a) Labour</b>					
		Mate	day	0.040	391.00	15.64	L-17
		Mazdoor (unskilled)	day	0.900	391.00	351.90	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.300	265.00	79.50	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				95.09	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				81.32	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				6.23	
		<b>Rate for each tree = a+b+c+d+e</b>				629.68	
					<b>say</b>	<b><u>629.70</u></b>	
		<b>(iii) Girth from 900 mm to 1800 mm</b>					
		<b>a) Labour</b>					
		Mate	day	0.080	391.00	31.28	L-17
		Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.400	265.00	106.00	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				195.53	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				167.22	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				12.82	
		<b>Rate for each tree = a+b+c+d+e</b>				1294.85	
					<b>say</b>	<b><u>1294.90</u></b>	
		<b>(iv) Girth above 1800 mm</b>					
		<b>a) Labour</b>					
		Mate	day	0.160	391.00	62.56	L-17
		Mazdoor (unskilled)	day	4.000	391.00	1564.00	L-18

**CHAPTER-2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.600	265.00	159.00	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				379.79	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				324.80	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				24.90	
		<b>Rate for each tree = a+b+c+d+e</b>				2515.05	
					<b>say</b>	<b><u>2515.10</u></b>	
<b>2.2</b>	<b>201</b>	<b>Clearing Grass and Removal of Rubbish</b>					
		Clearing grass and removal of rubbish up to a distance of 30 m outside the periphery of the area as per MoRT&H Technical Specification Clause 201.					
		<b>By Manual Means</b>					
		<b>Unit = Hectare</b>					
		<b>Taking output = 1 Hectare</b>					
		<b>a) Labour</b>					
		Mate	day	2.000	391.00	782.00	L-17
		Mazdoor (unskilled)	day	50.000	391.00	19550.00	L-18
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				4324.62	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				3698.49	
		<b>d) Add Cess @ 1.00 % on (a+b+c+d)</b>				283.55	
		<b>Rate per Hectare = a+b+c+d</b>				28638.66	
					<b>say</b>	<b><u>28638.70</u></b>	
<b>2.3</b>	<b>201</b>	<b>Clearing and Grubbing Road Land .</b>					
		Clearing and grubbing road land including uprooting wild vegetation , grass, bushes, shrubs, saplings and trees of girth upto 300 mm , removal of stumps of such trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, upto a lead of 1000 m including removal and disposal of top organic soil not exceeding 150 mm in thickness as per MoRT&H Technical Specification clause 201.					
		<b>Unit = Hectare</b>					
		<b>Taking output = 1 Hectare</b>					
		<b>(i) By Manual Means:-</b>					
		<b>A. In area of light jungle</b>					
		<b>a) Labour</b>					
		Mate	day	6.000	391.00	2346.00	L-17
		Mazdoor (unskilled)	day	150.000	391.00	58650.00	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	1.000	265.00	265.00	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				13030.21	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				11143.68	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				854.35	
		<b>Rate per Hectare = a+b+c+d+e</b>				86289.25	

**CHAPTER-2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**say 86289.20**

**B. In area of thorny jungle**

**a) Labour**

Mate	day	8.000	391.00	3128.00	L-17
Mazdoor (unskilled)	day	200.000	391.00	78200.00	L-18

**b) Machinery**

Tractor with trolley	hour	2.000	265.00	530.00	P&M-076
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

17411.20

**d) Contractor's profit @ 15 % on (a+b+c)**

14890.38

**e) Add Cess @ 1.00 % on (a+b+c+d)**

1141.60

**Rate per Hectare = a+b+c+d+e**

115301.17

**say 115301.20**

**(ii) By Mechanical Means**

**A. In area of light jungle**

**a) Labour**

Mate	day	0.160	391.00	62.56	L-17
Mazdoor (unskilled)	day	4.000	391.00	1564.00	L-18

**b) Machinery**

Dozer D 50 with attachment or suitable machinery for removal of trees & stumps	hour	10.000	2654.00	26540.00	P&M-022
Tractor with trolley	hour	1.000	265.00	265.00	P&M-076

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

6047.39

**d) Contractor's profit @ 15 % on (a+b+c)**

5171.84

**e) Add Cess @ 1.00 % on (a+b+c+d)**

396.51

**Rate per Hectare = a+b+c+d**

40047.30

**say 40047.30**

**B. In area of thorny jungle**

**a) Labour**

Mate	day	0.240	391.00	93.84	L-17
Mazdoor (unskilled)	day	6.000	391.00	2346.00	L-18

**b) Machinery**

Dozer D 50 with attachment or suitable machinery for removal of trees & stumps	hour	12.000	2654.00	31848.00	P&M-022
Tractor with trolley	hour	1.500	265.00	397.50	P&M-076

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

7377.57

**d) Contractor's profit @ 15 % on (a+b+c)**

6309.44

**e) Add Cess @ 1.00 % on (a+b+c+d)**

483.72

**Rate per Hectare = a+b+c+d+e**

48856.07

**say 48856.10**

**Note:-** The top soil removed during clearing and grubbing of site, if suitable for re-use shall be transported, conserved and stacked as directed by the Engineer and shall be incidental to the work.

**CHAPTER-2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
2.4	202	<b>Dismantling of Structures</b> 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 whenever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and upto a lead of 1000 m as per MoRT&H Technical Specification Clause 202.					
		<b>Unit = cum</b> <b>Taking output = 1.25 cum</b> <b>(i) Dismantling lime /Cement Concrete</b>					
		<b>I. By Manual Means</b>					
		<b>A. Lime Concrete, cement concrete grade M-10 and below</b>					
		<b>a) Labour</b>					
		Mate	day	0.040	391.00	15.64	L-17
		Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>					
						101.71	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>					
						86.99	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>					
						6.67	
		Cost for 1.25 cum = a+b+c+d+e					
						673.56	
		<b>Rate per cum = (a+b+c+d+e)/ 1.25</b>					
						538.84	
					<b>say</b>	<b><u>538.80</u></b>	
		<b>B. Cement Concrete Grade M-15 &amp; M-20</b>					
		<b>a) Labour</b>					
		Mate	day	0.050	391.00	19.55	L-17
		Mazdoor (unskilled)	day	1.250	391.00	488.75	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>					
						123.33	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>					
						105.48	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>					
						8.09	
		Cost for 1.25 cum = a+b+c+d+e					
						816.75	
		<b>Rate per cum = (a+b+c+d+e)/ 1.25</b>					
						653.40	
					<b>say</b>	<b><u>653.40</u></b>	
		<b>C. Prestressed / Reinforced cement concrete grade M-20 &amp; above</b>					
		<b>a) Labour</b>					
		Mate	day	0.150	391.00	58.65	L-17
		Blacksmith	day	0.250	480.00	120.00	L-03
		Mazdoor (unskilled)	day	3.500	391.00	1368.50	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076

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**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				344.30	
		d) Contractor's profit @ 15 % on (a+b+c)				294.45	
		e) Add Cess @ 1.00 % on (a+b+c+d)				22.57	
		Cost for 1.25 cum = a+b+c+d+e				2280.02	
		Rate per cum = (a+b+c+d+e)/ 1.25				1824.02	
					<b>say</b>	<b><u>1824.00</u></b>	
<b>II. By Mechanical Means</b>							
<b>A. Cement Concrete Grade M-15 &amp; M-20</b>							
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.500	391.00	195.50	L-18
		<b>b) Machinery</b>					
		Air Compressor 210 cfm with 2 leads of pneumatic breaker @ 1.5 cum per hour	hour	0.670	235.00	157.45	P&M-001
		Tractor with trolley	hour	0.670	265.00	177.55	P&M-076
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				114.50	
		d) Contractor's profit @ 15 % on (a+b+c)				97.92	
		e) Add Cess @ 1.00 % on (a+b+c+d)				7.51	
		Cost for 1.25 cum = a+b+c+d+e				758.25	
		Rate per cum = (a+b+c+d+e)/ 1.25				606.60	
					<b>say</b>	<b><u>606.60</u></b>	
<b>B. Prestressed / reinforced cement concrete grade M-20 &amp; above</b>							
		<b>a) Labour</b>					
		Mate	day	0.050	391.00	19.55	L-17
		Mazdoor (unskilled)	day	0.910	391.00	355.81	L-18
		Blacksmith	day	0.250	480.00	120.00	L-03
		<b>b) Machinery</b>					
		Air Compressor 210 cfm with 2 leads of pneumatic breaker @ 1.00 cum per hour	hour	1.000	235.00	235.00	P&M-001
		Tractor with trolley	hour	1.000	265.00	265.00	P&M-076
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				211.71	
		d) Contractor's profit @ 15 % on (a+b+c)				181.06	
		e) Add Cess @ 1.00 % on (a+b+c+d)				13.88	
		Cost for 1.25 cum = a+b+c+d+e				1402.02	
		Rate per cum = (a+b+c+d+e)/ 1.25				1121.61	
					<b>say</b>	<b><u>1121.60</u></b>	
<b>(ii). Dismantling Brick / Tile work</b>							
<b>A. In lime mortar</b>							
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.500	391.00	195.50	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				58.46	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Contractor's profit @ 15 % on (a+b+c)				50.00	
		e) Add Cess @ 1.00 % on (a+b+c+d)				3.83	
		Cost for 1.25 cum = a+b+c+d+e				387.17	
		Rate per cum = (a+b+c+d+e)/ 1.25				309.73	
					<b>say</b>	<b><u>309.70</u></b>	
		<b>B. In cement mortar</b>					
		a) Labour					
		Mate	day	0.030	391.00	11.73	L-17
		Mazdoor (unskilled)	day	0.750	391.00	293.25	L-18
		b) Machinery					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				80.09	
		d) Contractor's profit @ 15 % on (a+b+c)				68.49	
		e) Add Cess @ 1.00 % on (a+b+c+d)				5.25	
		Cost for 1.25 cum = a+b+c+d+e				530.36	
		Rate per cum = (a+b+c+d+e)/ 1.25				424.29	
					<b>say</b>	<b><u>424.30</u></b>	
		<b>C. In mud mortar</b>					
		a) Labour					
		Mate	day	0.016	391.00	6.26	L-17
		Mazdoor (unskilled)	day	0.400	391.00	156.40	L-18
		b) Machinery					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				49.82	
		d) Contractor's profit @ 15 % on (a+b+c)				42.60	
		e) Add Cess @ 1.00 % on (a+b+c+d)				3.27	
		Cost for 1.25 cum = a+b+c+d+e				329.89	
		Rate per cum = (a+b+c+d+e)/ 1.25				263.91	
					<b>say</b>	<b><u>263.90</u></b>	
		<b>D. Dry brick pitching or brick soling</b>					
		a) Labour					
		Mate	day	0.014	391.00	5.47	L-17
		Mazdoor (unskilled)	day	0.350	391.00	136.85	L-18
		b) Machinery					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				45.49	
		d) Contractor's profit @ 15 % on (a+b+c)				38.90	
		e) Add Cess @ 1.00 % on (a+b+c+d)				2.98	
		Cost for 1.25 cum = a+b+c+d+e				301.25	
		Rate per cum = (a+b+c+d+e)/ 1.25				241.00	
					<b>say</b>	<b><u>241.00</u></b>	
		(iii) Dismantling Stone Masonry					
		<b>A. Rubble stone masonry in lime mortar</b>					
		a) Labour					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mate	day	0.024	391.00	9.38	L-17
		Mazdoor (unskilled)	day	0.600	391.00	234.60	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				67.11	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				57.40	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				4.40	
		Cost for 1.25 cum = a+b+c+d+e				444.45	
		<b>Rate per cum = (a+b+c+d+e)/ 1.25</b>				355.56	
					<b>say</b>	<b><u>355.60</u></b>	
		<b>B. Rubble stone masonry in cement mortar.</b>					
		<b>a) Labour</b>					
		Mate	day	0.030	391.00	11.73	L-17
		Mazdoor (unskilled)	day	0.750	391.00	293.25	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				80.09	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				68.49	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				5.25	
		Cost for 1.25 cum = a+b+c+d+e				530.36	
		<b>Rate per cum = (a+b+c+d+e)/ 1.25</b>				424.29	
					<b>say</b>	<b><u>424.30</u></b>	
		<b>C. Rubble Stone Masonry in mud mortar.</b>					
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.500	391.00	195.50	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				58.46	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				50.00	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				3.83	
		Cost for 1.25 cum = a+b+c+d+e				387.17	
		<b>Rate per cum = (a+b+c+d+e)/ 1.25</b>				309.73	
					<b>say</b>	<b><u>309.70</u></b>	
		<b>D. Dry rubble masonry</b>					
		<b>a) Labour</b>					
		Mate	day	0.018	391.00	7.04	L-17
		Mazdoor (unskilled)	day	0.450	391.00	175.95	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				54.14	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				46.30	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				3.55	
		Cost for 1.25 cum = a+b+c+d+e				358.53	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Rate per cum = (a+b+c+d+e)/ 1.25				286.82	
					<b>say</b>	<b><u>286.80</u></b>	
		<b>E. Dismantling stone pitching/ dry stone spalls.</b>					
		<b>a) Labour</b>					
		Mate	day	0.016	391.00	6.26	L-17
		Mazdoor (unskilled)	day	0.400	391.00	156.40	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				49.82	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				42.60	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				3.27	
		Cost for 1.25 cum = a+b+c+d+e				329.89	
		Rate per cum = (a+b+c+d+e)/ 1.25				263.91	
					<b>say</b>	<b><u>263.90</u></b>	
		<b>F. Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.</b>					
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.500	391.00	195.50	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				58.46	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				50.00	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				3.83	
		Cost for 1.25 cum = a+b+c+d+e				387.17	
		Rate per cum = (a+b+c+d+e)/ 1.25				309.73	
					<b>say</b>	<b><u>309.70</u></b>	
		<b>(iv) Dismantling Wood Work Wrought and Fixed in Frames of Trusses upto a height of 5 m above Plinth Level</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 1.25 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.060	391.00	23.46	L-17
		Carpenter 1st class	day	0.500	512.00	256.00	L-06
		Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.270	265.00	71.55	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				157.83	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				134.98	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				10.35	
		Cost for 1.25 cum = a+b+c+d+e				1045.16	
		Rate per cum = (a+b+c+d+e)/ 1.25				836.13	
					<b>say</b>	<b><u>836.10</u></b>	



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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(v) Dismantling 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	0.100	391.00	39.10	L-17
Blacksmith	day	1.000	480.00	480.00	L-03
Mazdoor (unskilled)	day	2.500	391.00	977.50	L-18

Add 2.50 % of cost of labour for gas cutting, ropes, pulleys etc.

37.42

**b) Machinery**

Tractor with trolley	hour	0.170	265.00	45.05	P&M-076
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

335.87

**d) Contractor's profit @ 15 % on (a+b+c)**

287.24

**e) Add Cess @ 1.00 % on (a+b+c+d)**

22.02

**Rate per tonne = a+b+c+d+e**

2224.19

**say 2224.20**

**B. Excluding dismembering.**

**a) Labour**

Mate	day	0.080	391.00	31.28	L-17
Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
Blacksmith	day	0.500	480.00	240.00	L-03

Add 2.50 % of cost of labour for gas cutting, ropes, pulleys etc.

26.33

**b) Machinery**

Tractor with trolley	hour	0.170	265.00	45.05	P&M-076
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

239.22

**d) Contractor's profit @ 15 % on (a+b+c)**

204.58

**e) Add Cess @ 1.00 % on (a+b+c+d)**

15.68

**Rate per tonne = a+b+c+d+e**

1584.14

**say 1584.10**

**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	391.00	3.91	L-17
Blacksmith	day	0.130	480.00	62.40	L-03
Mazdoor (unskilled)	day	0.130	391.00	50.83	L-18

**b) Add GST (multiplying factor) @ 0.2127 on (a)**

24.92

**c) Contractor's profit @ 15 % on (a+b)**

21.31

**d) Add Cess @ 1.00 % on (a+b+c)**

1.63

Cost for 10 rivets = a+b+c+d

165.00

**Rate for each rivet = ( a+b+c+d)/10**

16.50

**say 16.50**

**(vi) Scraping of Bricks Dismantled from Brick Work including Stacking.**

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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*Unit = nos*

*Taking output = 1000 nos*

**A. In lime/Cement mortar**

a) Labour

Mate	day	0.140	391.00	54.74	L-17
Mazdoor (unskilled)	day	3.500	391.00	1368.50	L-18

b) Add GST (multiplying factor) @

0.2127 on (a) 302.72

c) Contractor's profit @ 15 % on (a+b)

258.89

d) Add Cess @ 1.00 % on (a+b+c)

19.85

Rate per 1000 Nos = a+b+c+d

2004.71

**say 2004.70**

**B. In mud mortar**

a) Labour

Mate	day	0.050	391.00	19.55	L-17
Mazdoor (unskilled)	day	1.250	391.00	488.75	L-18

b) Add GST (multiplying factor) @

0.2127 on (a) 108.12

c) Contractor's profit @ 15 % on (a+b)

92.46

d) Add Cess @ 1.00 % on (a+b+c)

7.09

Rate per 1000 Nos = a+b+c+d

715.97

**say 716.00**

(vii) Scraping of Stone from Dismantled Stone Masonry

*Unit = cum*

*Taking output = 1 cum*

**A. In cement and lime mortar**

a) Labour

Mate	day	0.060	391.00	23.46	L-17
Mazdoor (unskilled)	day	1.400	391.00	547.40	L-18

b) Add GST (multiplying factor) @

0.2127 on (a) 121.42

c) Contractor's profit @ 15 % on (a+b)

103.84

d) Add Cess @ 1.00 % on (a+b+c)

7.96

Rate per cum = a+b+c+d

804.09

**say 804.10**

**B. In Mud mortar**

a) Labour

Mate	day	0.010	391.00	3.91	L-17
Mazdoor (unskilled)	day	0.300	391.00	117.30	L-18

b) Add GST (multiplying factor) @

0.2127 on (a) 25.78

c) Contractor's profit @ 15 % on (a+b)

22.05

d) Add Cess @ 1.00 % on (a+b+c)

1.69

Rate per cum = a+b+c+d

170.73

**say 170.70**

(viii) Scarping Plaster in Lime or Cement Mortar from Brick/ Stone Masonry

*Unit = sqm*

*Taking output = 100 sqm*

a) Labour

Mate	day	0.160	391.00	62.56	L-17
Mazdoor (unskilled)	day	4.000	391.00	1564.00	L-18

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		b) Add GST (multiplying factor) @ 0.2127 on (a)				345.97	
		c) Contractor's profit @ 15 % on (a+b)				295.88	
		d) Add Cess @ 1.00 % on (a+b+c)				22.68	
		Cost for 100 sqm = a+b+c+d				2291.09	
		Rate per sqm = (a+b+c+d)/100				22.91	
					<b>say</b>	<b><u>22.90</u></b>	
		(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>					
		<b>A. Up to 600 mm dia</b>					
		a) Labour					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.520	391.00	203.32	L-18
		b) Add GST (multiplying factor) @ 0.2127 on (a)				44.91	
		c) Contractor's profit @ 15 % on (a+b)				38.41	
		d) Add Cess @ 1.00 % on (a+b+c)				2.94	
		Rate per metre = a+b+c+d				297.40	
					<b>say</b>	<b><u>297.40</u></b>	
		<b>B. Above 600 mm to 900 mm dia</b>					
		a) Labour					
		Mate	day	0.030	391.00	11.73	L-17
		Mazdoor (unskilled)	day	0.700	391.00	273.70	L-18
		b) Add GST (multiplying factor) @ 0.2127 on (a)				60.71	
		c) Contractor's profit @ 15 % on (a+b)				51.92	
		d) Add Cess @ 1.00 % on (a+b+c)				3.98	
		Rate per metre = a+b+c+d				402.04	
					<b>say</b>	<b><u>402.00</u></b>	
		<b>C. Above 900 mm</b>					
		a) Labour					
		Mate	day	0.050	391.00	19.55	L-17
		Mazdoor (unskilled)	day	1.200	391.00	469.20	L-18
		b) Add GST (multiplying factor) @ 0.2127 on (a)				103.96	
		c) Contractor's profit @ 15 % on (a+b)				88.91	
		d) Add Cess @ 1.00 % on (a+b+c)				6.82	
		Rate per metre = a+b+c+d				688.43	
					<b>say</b>	<b><u>688.40</u></b>	

**Note:-** 1. The excavation of earth, dismantling of stone masonry work in head walls and protection works is not included which is to be measured and paid separately.

2. Credit for retrieved stone from masonry work may be taken as per actual availability.

**2.5 202 Dismantling of Flexible Pavements**

**CHAPTER-2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Dismantling of flexible pavements and disposal of dismantled materials with all lifts and upto a lead of 100 m, stacking serviceable materials and unserviceable materials separately as per MoRT&H Technical Specification Clause 202

**Unit = cum**

**Taking output = 1 cum**

**I. By Manual Means**

**A. Bituminous courses**

**a) Labour**

Mate	day	0.060	391.00	23.46	L-17
Mazdoor (unskilled)	day	1.500	391.00	586.50	L-18

**b) Machinery**

Tractor with trolley	hour	0.380	265.00	100.70	P&M-076
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

151.16

**d) Contractor's profit @ 15 % on (a+b+c)**

129.27

**e) Add Cess @ 1.00 % on (a+b+c+d)**

9.91

**Rate per cum = a+b+c+d+e**

1001.00

**say 1001.00**

**B. Granular courses**

**a) Labour**

Mate	day	0.040	391.00	15.64	L-17
Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18

**b) Machinery**

Tractor with trolley	hour	0.330	265.00	87.45	P&M-076
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

105.09

**d) Contractor's profit @ 15 % on (a+b+c)**

89.88

**e) Add Cess @ 1.00 % on (a+b+c+d)**

6.89

**Rate per cum = a+b+c+d+e**

695.95

**say 696.00**

**II. By Mechanical Means**

**A. Bituminous course**

**a) Labour**

Mate	day	0.010	391.00	3.91	L-17
Mazdoor (unskilled)	day	0.300	391.00	117.30	L-18

**b) Machinery**

Tractor with trolley	hour	0.380	265.00	100.70	P&M-076
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Farm tractor with ripper @ 60 cum per hour	hour	0.017	250.00	4.25	P&M-075
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

48.10

**d) Contractor's profit @ 15 % on (a+b+c)**

41.14

**e) Add Cess @ 1.00 % on (a+b+c+d)**

3.15

**Rate per cum = a+b+c+d+e**

318.56

**say 318.60**

**2.6 202 Dismantling of Cement Concrete Pavements as per MoRT&H Technical Specification Clause 202**

**CHAPTER-2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Dismantling of cement concrete pavements 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 with all lifts and upto a lead of 1000 m, stacking serviceable materials and unserviceable materials separately as per MoRT&H Technical Specification Clause 202

**Unit = cum**

**Taking output = 1 cum**

**(A) Up to full depth of concrete**

**a) Labour**

Mate	day	0.030	391.00	11.73	L-17
Mazdoor (semi skilled)	day	0.500	447.00	223.50	L-19
Mazdoor (unskilled)	day	0.500	391.00	195.50	L-18

**b) Machinery**

Air compressor 210 cfm with two leads for pneumatic cutters/ hammers @ 1 cum per hour	hour	1.000	235.00	235.00	P&M-001
Tractor with trolley	hour	0.400	265.00	106.00	P&M-076
Joint Cutting Machine with 2-3 blades	hour	1.000	186.00	186.00	P&M-041

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

203.71

**d) Contractor's profit @ 15 % on (a+b+c)**

174.22

**e) Add Cess @ 1.00 % on (a+b+c+d)**

13.36

**Rate per cum = a+b+c+d+e**

1349.01

**say 1349.00**

**(B) Up to partial depth of concrete**

**a) Labour**

Mate	day	0.030	391.00	11.73	L-17
Mazdoor (semi skilled)	day	0.500	447.00	223.50	L-19
Mazdoor (unskilled)	day	0.500	391.00	195.50	L-18

**b) Machinery**

Air compressor 210 cfm with two leads for pneumatic cutters/ hammers @ 1 cum per hour	hour	1.000	235.00	235.00	P&M-001
Tractor with trolley	hour	0.400	265.00	106.00	P&M-076
Joint Cutting Machine with 2-3 blades	hour	1.000	186.00	186.00	P&M-041
Concrete saw cutter	hour	0.250	315.00	78.75	P&M-016

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

220.46

**d) Contractor's profit @ 15 % on (a+b+c)**

188.54

**e) Add Cess @ 1.00 % on (a+b+c+d)**

14.45

**Rate per cum = a+b+c+d+e**

1459.93

**say 1459.90**

**2.7 202 Dismantling of Guard Rails**

Dismantling of Guard rails by manual means and disposal of dismantled material with all lifts and upto a lead of 1000 m, stacking serviceable materials and unserviceable materials separately as per MoRT&H Technical Specification Clause 202

**Unit = running metre**

**CHAPTER-2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>Taking output = 1 metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.006	391.00	2.35	L-17
		Mazdoor (unskilled)	day	0.150	391.00	58.65	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.050	265.00	13.25	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>					
						15.79	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>					
						13.51	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>					
						1.04	
		<b>Rate per metre = a+b+c+d+e</b>					
						104.58	
					<b>say</b>	<b><u>104.60</u></b>	
2.8	202	<b>Dismantling of Kerb Stone</b>					
		Dismantling of Kerb Stones by manual means and disposal of dismantled material with all lifts and upto a lead of 1000 m as per MoRT&H Technical Specification Clause 202					
		<b>Unit = running metre</b>					
		<b>Taking output = 10 metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.006	391.00	2.35	L-17
		Mazdoor (unskilled)	day	0.150	391.00	58.65	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.200	265.00	53.00	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>					
						24.25	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>					
						20.74	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>					
						1.59	
		Cost for 10 m = a+b+c+d					
						160.57	
		<b>Rate per metre = (a+b+c+d+e)/10</b>					
						16.06	
					<b>say</b>	<b><u>16.10</u></b>	
2.9	202	<b>Dismantling of Kerb Stone Channel</b>					
		Dismantling of Kerb Stone channels by manual means and disposal of dismantled material with all lifts and upto a lead of 1000 m as per MoRT&H Technical Specification Clause 202					
		<b>Unit = running metre</b>					
		<b>Taking output = 10 metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.015	391.00	5.87	L-17
		Mazdoor (unskilled)	day	0.225	391.00	87.98	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.300	265.00	79.50	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>					
						36.87	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>					
						31.53	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>					
						2.42	
		Cost for 10 m = a+b+c+d+e					
						244.16	
		<b>Rate per metre = (a+b+c+d+e)/10</b>					
						24.42	
					<b>say</b>	<b><u>24.40</u></b>	

**CHAPTER-2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
2.10	202	<b>Dismantling of Kilometre Stone</b> Dismantling of Kilometre Stones including cutting of earth, and disposal of dismantled material with all lifts and upto a lead of 1000 m and backfilling of pit as per MoRT&H Technical Specification Clause 202					
		<i>Unit = Each</i>					
		<i>Taking output = one KM stone</i>					
	<b>A</b>	<b>A. 5th KM stone</b> Quantity of cement concrete = 0.392 cum					
		<b>a) Labour</b>					
		Mate	day	0.030	391.00	11.73	L-17
		Mazdoor (unskilled)	day	0.750	391.00	293.25	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.150	265.00	39.75	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				73.32	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				62.71	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				4.81	
		<b>Rate for one 5th KM stone = a+b+c+d+e</b>				485.57	
					<b>say</b>	<b><u>485.60</u></b>	
	<b>B</b>	<b>B. Ordinary KM Stone</b> Quantity of cement concrete = 0.269 cum					
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.500	391.00	195.50	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.100	265.00	26.50	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				48.88	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				41.81	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				3.21	
		<b>Rate for one ordinary KM stone = a+b+c+d+e</b>				323.71	
					<b>say</b>	<b><u>323.70</u></b>	
	<b>C</b>	<b>C. 200 m Stone</b>					
		<b>a) Labour</b>					
		Mate	day	0.004	391.00	1.56	L-17
		Mazdoor (unskilled)	day	0.100	391.00	39.10	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.020	265.00	5.30	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				9.78	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				8.36	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				0.64	
		<b>Rate for one Hectometre stone = a+b+c+d+e</b>				64.74	
					<b>say</b>	<b><u>64.70</u></b>	
2.11	202	<b>Dismantling of Fencing</b>					

**CHAPTER-2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Dismantling of barbed wire fencing / wire mesh fencing including posts, foundation concrete, backfilling of pit by manual means including disposal of dismantled material with all lifts and upto a lead of 1000 m and stacking the serviceable and unserviceable material separately as per MoRTH Technical Specification Clause 202

**Unit = running metre**

**Taking output = 30 metres**

**a) Labour**

Mate	day	0.150	391.00	58.65	L-17
Mazdoor (unskilled)	day	3.000	391.00	1173.00	L-18
Blacksmith	day	0.750	480.00	360.00	L-03

**b) Machinery**

Tractor with trolley	hour	0.150	265.00	39.75	P&M-076
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

347.00

**d) Contractor's profit @ 15 % on (a+b+c)**

296.76

**e) Add Cess @ 1.00 % on (a+b+c+d)**

22.75

Cost for 30 metres = a+b+c+d+e

2297.91

**Rate per metre = (a+b+c+d+e)/30**

76.60

**say 76.60**

**2.12 202 Dismantling of CI Water Pipe Line**

Dismantling of CI water pipe line upto 600 mm dia including disposal with all lifts and upto a lead of 1000 m and stacking the serviceable and unserviceable material separately under supervision of the concerned department but excluding earth excavation and dismantling of masonry works as per MoRTH Technical Specification Clause 202

**Unit = running metre**

**Taking output = 10 metres**

**a) Labour**

Mate	day	0.090	391.00	35.19	L-17
Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
Plumber	day	0.250	475.00	118.75	L-23

**b) Machinery**

Truck 10 tonne capacity	hour	0.250	418.00	104.50	P&M-080
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Light Crane 3 tonne capacity	hour	0.500	560.00	280.00	P&M-020
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

280.86

**d) Contractor's profit @ 15 % on (a+b+c)**

240.19

**e) Add Cess @ 1.00 % on (a+b+c+d)**

18.41

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

1859.91

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

185.99

**say 186.00**

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



**CHAPTER-2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
2.13	202	<b>Removal of Cement Concrete Pipe of Sewer Gutter</b> Removal of Cement Concrete Pipe of Sewer Gutter upto 1500 mm dia under the supervision of the concerned department including disposal with all lifts and upto a lead of 1000 m and stacking the serviceable and unserviceable material separately but excluding earth excavation and dismantling of masonry works as per MoRT&H Technical Specification Clause 202.					
		<b>Unit = running metre</b> <b>Taking output = 10 metres</b>					
		<b>a) Labour</b>					
		Mate	day	0.100	391.00	39.10	L-17
		Mazdoor (unskilled)	day	2.500	391.00	977.50	L-18
		<b>b) Machinery</b>					
		Crane up to 8 tonne capacity	hour	0.300	1288.00	386.40	P&M-018
		Truck flat body 10 tonne	hour	1.000	418.00	418.00	P&M-080
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				387.33	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				331.25	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				25.40	
		Cost for 10 metres = a+b+c+d+e				2564.97	
		<b>Rate per metre = (a+b+c+d+e)/10</b>				256.50	
					<b>say</b>	<b><u>256.50</u></b>	
		<b>Note:-</b> 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	<b>Removal of Telephone / Electric Poles and Lines</b> 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					
		<b>Unit = each</b> <b>Taking output = 30 Nos</b>					
		<b>a) Labour</b>					
		Mate	day	0.480	391.00	187.68	L-17
		Mazdoor (unskilled)	day	10.000	391.00	3910.00	L-18
		Electrician/Lineman	day	2.000	475.00	950.00	L-12
		<b>b) Machinery</b>					
		Tractor with trolley	hour	1.500	265.00	397.50	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1158.19	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				990.51	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				75.94	
		Cost for 30 poles = a+b+c+d+e				7669.81	
		<b>Rate per pole = (a+b+c+d+e)/30</b>				255.66	
					<b>say</b>	<b><u>255.70</u></b>	

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>3.1</b>	<b>300</b>	<b>Excavation in Soil by Manual Means .</b>					
		(i) Excavation in Roadway cutting in soil by using manual means including loading in truck and carrying of cut earth to embankment site with all lifts and lead upto 1000 metre as per MoRT&H Technical Specification clauses of section 300. <i>Unit = cum</i> <i>Taking output = 120 cum</i>					
		<b>a) Labour</b>					
		Mate	day	1.800	391.00	703.80	L-17
		Mazdoor(Unskilled)	day	45.000	391.00	17595.00	L-18
		<b>b) Machinery</b>					
		Truck 5.5 cum capacity	hour	10.000	418.00	4180.00	P&M-080
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				4781.24	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				4089.01	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				313.49	
		Cost of 120 cum = a+b+c+d+e				31662.54	
		<b>Rate per cum = (a+b+c+d+e)/120</b>				263.85	
					<b>say</b>	<b><u>263.90</u></b>	
		(ii) Excavation in Roadway cutting in soil by using manual means and carrying of cut earth to embankment site with all lifts and lead upto 50 metre as per MoRT&H Technical Specification clauses of section 300. <i>Unit = cum</i> <i>Taking output = 120 cum</i>					
		<b>a) Labour</b>					
		Mate	day	1.800	391.00	703.80	L-17
		Mazdoor(Unskilled)	day	45.000	391.00	17595.00	L-18
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				3892.15	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				3328.64	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				255.20	
		Cost of 120 cum = a+b+c+d				25774.79	
		<b>Rate per cum = (a+b+c+d)/120</b>				214.79	
					<b>say</b>	<b><u>214.80</u></b>	
<b>3.2</b>	<b>300</b>	<b>Excavation in Ordinary Rock by Manual Means</b>					
		(i) Excavation in Roadway cutting in ordinary rock by using manual means including loading in truck and carrying of cut earth to embankment site with all lifts and lead upto 1000 metre as per MoRT&H Technical Specification clauses of section 300. <i>Unit = cum</i> <i>Taking output = 120 cum</i>					
		<b>a) Labour</b>					
		Mate	day	2.800	391.00	1094.80	L-17
		Mazdoor(Unskilled)	day	70.000	391.00	27370.00	L-18
		<b>b) Machinery</b>					
		Truck 5.5 cum capacity	hour	10.000	418.00	4180.00	P&M-080
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				6943.55	

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Contractor's profit @ 15 % on (a+b+c)				5938.25	
		e) Add Cess @ 1.00 % on (a+b+c+d)				455.27	
		Cost for 120 cum = a+b+c+d+e				45981.87	
		Rate per cum = (a+b+c+d+e)/120				383.18	
					<b>say</b>	<b><u>383.20</u></b>	
		(ii) Excavation in Roadway cutting in ordinary rock by using manual means and carrying of cut earth to embankment site with all lifts and lead upto 50 metre as per MoRTH Technical Specification clauses of section 300.					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	2.800	391.00	1094.80	L-17
		Mazdoor(Unskilled)	day	70.000	391.00	27370.00	L-18
		b) Add GST (multiplying factor) @ 0.2127 on (a)				6054.46	
		c) Contractor's profit @ 15 % on (a+b)				5177.89	
		d) Add Cess @ 1.00 % on (a+b+c)				396.97	
		Cost for 120 cum = a+b+c+d				40094.12	
		Rate per cum = (a+b+c+d)/120				334.12	
					<b>say</b>	<b><u>334.10</u></b>	
<b>3.3</b>	<b>300</b>	<b>Excavation in Soil with Dozer with lead upto 100 metres</b>					
		Excavation for roadway in soil by mechanical means with Dozer including cutting and pushing the earth to site of embankment upto a distance of 100 m (average lead of 50 metres), including trimming bottom and side slopes in accordance with requirements of lines, grades and cross-sections as per MoRTH Technical Specification clauses of section 300.					
		<b>Unit = cum</b>					
		<b>Taking output = 180 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.080	391.00	31.28	L-17
		Mazdoor(Unskilled)	day	2.000	391.00	782.00	L-18
		<b>b) Machinery</b>					
		Dozer D-80 for cutting & spreading @30 cum per hour	hour	6.000	2654.00	15924.00	P&M-023
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				3560.02	
		d) Contractor's profit @ 15 % on (a+b+c)				3044.59	
		e) Add Cess @ 1.00 % on (a+b+c+d)				233.42	
		Cost for 180 cum = a+b+c+d+e				23575.31	
		Rate per cum = (a+b+c+d+e)/180				130.97	
					<b>say</b>	<b><u>131.00</u></b>	
<b>3.4</b>	<b>300</b>	<b>Excavation in Ordinary Rock with Dozer with lead upto 100 metres</b>					

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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. <b>Unit = cum</b> <b>Taking output = 108 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Mazdoor(Unskilled)	day	3.000	391.00	1173.00	L-18
		<b>b) Machinery</b>					
		Dozer D-80 for cutting & spreading @20 cum per hour	hour	6.000	2654.00	15924.00	P&M-023
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				3646.51	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				3118.56	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				239.09	
		Cost for 108 cum = a+b+c+d+e				24148.09	
		<b>Rate per cum = (a+b+c+d+e)/108</b>				223.59	
					<b>say</b>	<b><u>223.60</u></b>	

**3.5 300 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 bottom and side slopes in accordance with requirements of lines, grades and cross-sections loading and disposal of cut earth with all lifts and leads upto 1000 metres as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking Output = 180 cum**

**a) Labour**

Mate	day	0.220	391.00	86.02	L-17
Mazdoor(Unskilled)	day	3.000	391.00	1173.00	L-18
Driller	day	2.000	475.00	950.00	L-11
Blaster	day	0.250	512.00	128.00	L-04

**b) Machinery**

Dozer D-80 for cutting & spreading @30 cum per hour	hour	6.000	2654.00	15924.00	P&M-023
Air compressor, 250 cfm with 2 jack hammer	hour	6.000	235.00	1410.00	P&M-001
Front end loader 1 cum bucket capacity @30 cum per hour	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.50 cum capacity	hour	11.250	374.00	4207.50	P&M-073

**c) Materials**

Gelatin 80 per cent	kg	63.000	138.00	8694.00	M-105
Electric Detonators @ 1 detonator for 2 gelatin sticks of 285 gms each	each	252.000	21.00	5292.00	M-087
Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	1989.00	179010.00	M-241

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

47443.70

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Contractor's profit @ 15 % on (a+b+c+d)				40574.73	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				3110.73	
		Cost for 180 cum = a+b+c+d+e+f				314183.68	
		Rate per cum = (a+b+c+d+e+f)/180				1745.46	
					<b>say</b>	<b><u>1745.50</u></b>	
		<b>Note:-</b> 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. Credit for useful materials received at per site conditions shall be taken into account. This has been assumed 50 percent for the purpose of analysis.					
3.6	300	<b>Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with Disposal upto 1000 metres.</b>					
		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 with all lifts and lead upto 1000 m as per MoRT&H Technical Specification clauses of section 300.					
		<b>Unit = cum</b>					
		<b>Taking output = 360 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.080	391.00	31.28	L-17
		Mazdoor(Unskilled)	day	2.000	391.00	782.00	L-18
		<b>b) Machinery</b>					
		Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	6.000	1344.00	8064.00	P&M-034
		Tipper 5.5 cum with 10 T capacity, 4 trips per hour.	hour	16.000	374.00	5984.00	P&M-073
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				3160.99	
		d) Contractor's profit @ 15 % on (a+b+c)				2703.34	
		e) Add Cess @ 1.00 % on (a+b+c+d)				207.26	
		Cost for 360 cum = a+b+c+d+e				20932.87	
		Rate per cum = (a+b+c+d+e)/360				58.15	
					<b>say</b>	<b><u>58.10</u></b>	
3.7	300	<b>Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal upto 1000 metres.</b>					

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Excavation for roadwork in ordinary rock 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 with all lifts and lead upto 1000 m as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 240 cum**

**a) Labour**

Mate	day	0.080	391.00	31.28	L-17
Mazdoor	day	2.000	391.00	782.00	L-18

**b) Machinery**

Hydraulic Excavator 0.90 cum bucket capacity @ 36 cum per hour	hour	6.000	1344.00	8064.00	P&M-034
Tipper 5.5 cum with 10 T capacity, 4 trips per hour.	hour	11.000	374.00	4114.00	P&M-073

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

2763.25

**d) Contractor's profit @ 15 % on (a+b+c)**

2363.18

**e) Add Cess @ 1.00 % on (a+b+c+d)**

181.18

Cost for 240 cum = a+b+c+d+e

18298.88

**Rate per cum = (a+b+c+d+e)/240**

76.25

**say 76.20**

**3.8 300 Excavation in Hard Rock (blasting prohibited)**

Excavation for roadwork in hard rock (blasting prohibited) 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 with all lifts and lead upto 1000 m as per MoRT&H Technical Specification clauses of section 300.

**A. By Mechanical Means**

**Unit = cum**

**Taking output = 36 cum**

**a) Labour**

Mate	day	0.400	391.00	156.40	L-17
Mazdoor(Unskilled) for trimming slopes including manual loading in truck	day	10.000	391.00	3910.00	L-18

**b) Machinery**

Hydraulic excavator with rock breaker attachment @ 6 cum per hour	hour	6.000	1344.00	8064.00	P&M-034
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Tipper 5.5 cum capacity, 1 trip per hour.	hour	6.500	374.00	2431.00	P&M-073
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Credit for excavated rock found suitable for use @ 50 per cent of excavated quantity	cum	18.000	1989.00	35802.00	M-241
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

10712.30

**d) Contractor's profit @ 15 % on (a+b+c)**

9161.35

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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e) **Add Cess @ 1.00 % on (a+b+c+d)** 702.37

Cost for 36 cum = a+b+c+d+e 70939.42

**Rate per cum = (a+b+c+d+e)/36** 1970.54

**say** **1970.50**

**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.

4. Credit for useful materials received at per site conditions shall be taken into account. This has been assumed 50 percent for the purpose of analysis.

**B. By Manual Means**

**Unit = cum**

**Taking output = 16 cum**

**a) Labour**

Mate day 1.600 391.00 625.60 L-17

Mazdoor(Unskilled) day 16.000 391.00 6256.00 L-18

Chiseller day 24.000 391.00 9384.00 L-09

Blacksmith day 1.000 480.00 480.00 L-03

**b) Machinery**

Tipper 5.5 cum capacity, 1 trip per hour. hour 2.900 374.00 1084.60 P&M-073

Credit for excavated rock found suitable for use @ 50 per cent of excavated cum 8.000 1989.00 15912.00 M-241

c) **Add GST (multiplying factor) @ 0.2127 on (a+b)** 7176.97

d) **Contractor's profit @ 15 % on (a+b+c)** 6137.87

e) **Add Cess @ 1.00 % on (a+b+c+d)** 470.57

Cost for 16 cum = a+b+c+d+e 47527.61

**Rate per cum = (a+b+c+d+e)/16** 2970.48

**say** **2970.50**

**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.

4. Credit for useful materials received at per site conditions shall be taken into account. This has been assumed 50 percent for the purpose of analysis.

**3.9 300 Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres**

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Excavation for roadway in hard rock with controlled blasting by drilling, blasting and breaking, trimming bottom and side slopes in accordance with requirements of lines, grades and cross-sections, loading and disposal of cut earth with all lifts and leads upto 1000 m as per MoRTH Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 180 cum**

**a) Labour**

Mate	day	0.220	391.00	86.02	L-17
Mazdoor(Unskilled)	day	3.000	391.00	1173.00	L-18
Driller	day	2.000	475.00	950.00	L-11
Blaster	day	0.500	512.00	256.00	L-04

**b) Machinery**

Dozer 80 HP @ 30 cum per hour	hour	6.000	2654.00	15924.00	P&M-023
Air compressor, 250 cfm with 2 jack hammers	hour	6.000	235.00	1410.00	P&M-001
Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-031
Tipper 5.5 cum with 10 T capacity, 4 trips per hour.	hour	8.200	374.00	3066.80	P&M-073

**c) Materials**

Gelatin 80 per cent	kg	63.000	138.00	8694.00	M-105
Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	1008.00	21.00	21168.00	M-087
Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	1989.00	179010.00	M-241
Add 5 per cent of cost of a+b+c towards muffling arrangements to guard against any rock fly off during blasting				11895.89	

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

53135.38

**e) Contractor's profit @ 15 % on**

**(a+b+c+d)**

45442.36

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

3483.91

Cost for 180 cum = a+b+c+d+e+f

351875.36

**Rate per cum = (a+b+c+d+e+f)/180**

1954.86

**say 1954.90**

**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. Credit for useful materials received at per site conditions shall be taken into account. This has been assumed 50 percent for the purpose of analysis.

**3.10 300 Excavation in Marshy Soil**



**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Excavation for roadway in marshy soil with hydraulic excavator 0.9 cum bucket capacity including cutting and loading in tippers and disposal with all lifts and lead upto 1000 m trimming of bottom and side slopes in accordance with requirements of lines, grades and cross - sections as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 300 cum**

**a) Labour**

Mate	day	0.080	391.00	31.28	L-17
Mazdoor	day	2.000	391.00	782.00	L-18

**b) Machinery**

Hydraulic excavator 0.90 cum bucket capacity @ 50 cum per hour	hour	6.000	1344.00	8064.00	P&M-034
Tipper 5.5 cum with 10 T capacity, 4 trips per hour.	hour	13.640	374.00	5101.36	P&M-073

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

2973.26

**d) Contractor's profit @ 15 % on (a+b+c)**

2542.78

**e) Add Cess @ 1.00 % on (a+b+c+d)**

194.95

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

19689.63

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

65.63

**say 65.60**

**3.11 300 Removal of Unserviceable Soil with Disposal upto 1000 metres**

Removal of unsuitable soil including excavation, loading and disposal upto 1000 m lead with all lifts but excluding compaction ground supporting embankment / subgrade, replacement by suitable soil, which shall be paid separately as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 360 cum**

**a) Labour**

Mate	day	0.080	391.00	31.28	L-17
Mazdoor(Unskilled)	day	2.000	391.00	782.00	L-18

**b) Machinery**

Excavator 0.90 cum bucket capacity @ 60 cum per hour	hour	6.000	1344.00	8064.00	P&M-034
Tipper 5.5 cum with 10 T capacity, 4 trips per hour.	hour	16.360	374.00	6118.64	P&M-073

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

3189.63

**d) Contractor's profit @ 15 % on (a+b+c)**

2727.83

**e) Add Cess @ 1.00 % on (a+b+c+d)**

209.13

Cost for 360 cum = a+b+c+d+e

21122.52

**Rate per cum = (a+b+c+d+e)/360**

58.67

**say 58.70**

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Note:-** This item does not include replacement of unsuitable soil by suitable soil. Replacement, where required, is to be provided and paid separately.

**3.12 300 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 disposal of the material with all lifts and leads upto 1000 m as per MoRTH Technical Specification clauses of section 300.

**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	391.00	234.60	L-17
Mazdoor(Unskilled)	day	15.000	391.00	5865.00	L-18
Driller	day	3.000	475.00	1425.00	L-11
Blaster	day	0.500	512.00	256.00	L-04

**b) Machinery**

Dozer D-80 for cutting & spreading @30 cum per hour	hour	6.000	2654.00	15924.00	P&M-022
Air compressor 250 cfm with 2 leads @ 20 cum per hour	hour	6.000	235.00	1410.00	P&M-001
Front end loader 1 cum bucket capacity @ 20 cum per hour	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.5 cum capacity	hour	8.200	374.00	3066.80	P&M-073

**c) Materials**

Gelatin 80 per cent	kg	42.000	138.00	5796.00	M-105
Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	672.000	21.00	14112.00	M-087
Add 5.00% towards muffling arrangements to guard against any rock fly off during blasting				2713.47	

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

12120.26

**e) Contractor's profit @ 15 % on**

**(a+b+c+d)**

10365.47

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

794.69

Cost for 400 sqm = a+b+c+d+e+f

80263.28

**Rate per sqm = (a+b+c+d+e+f)/400**

200.66

**say 200.70**

**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.

**3.13 300 Excavation for Structures**

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work as per MoRT&H Technical Specification clauses of section 300.

**(i) Ordinary soil**

**Unit = cum**

**Taking output = 10 cum**

**A. By Manual Means (upto 3 m depth)**

**a) Labour**

Mate	day	0.320	391.00	125.12	L-17
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Mazdoor(Unskilled)	day	8.000	391.00	3128.00	L-18
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**b) Add GST (multiplying factor) @ 0.2127 on (a)**

691.94

**c) Contractor's profit @ 15 % on (a+b)**

591.76

**d) Add Cess @ 1.00 % on (a+b+c)**

45.37

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

4582.19

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

458.22

**say 458.20**

**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..

**B. By Mechanical Means (upto 3 m depth)**

**Unit = cum**

**Taking output = 300 cum**

**a) Labour**

Mate	day	0.320	391.00	125.12	L-17
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Mazdoor	day	8.000	391.00	3128.00	L-18
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**b) Machinery**

Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour	hour	6.000	1344.00	8064.00	P&M-034
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

2407.15

**d) Contractor's profit @ 15 % on (a+b+c)**

2058.64

**e) Add Cess @ 1.00 % on (a+b+c+d)**

157.83

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

15940.74

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

53.14

**say 53.10**

**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..

**(ii) Ordinary Rock (not requiring blasting)**

**A. By Manual Means (upto 3 m depth)**

**Unit = cum**

**Taking output = 10 cum**

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>a) Labour</b>					
		Mate	day	0.400	391.00	156.40	L-17
		Mazdoor	day	10.000	391.00	3910.00	L-18
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				864.92	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				739.70	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				56.71	
		Cost for 10 cum = a+b+c+d				5727.73	
		<b>Rate per cum = (a+b+c+d)/10</b>				572.77	
					<b>say</b>	<b><u>572.80</u></b>	

**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..

**B. By Mechanical Means (upto 3 m depth)**

**Unit = cum**

**Taking output = 216 cum**

		<b>a) Labour</b>					
		Mate	day	0.240	391.00	93.84	L-17
		Mazdoor	day	6.000	391.00	2346.00	L-18
		<b>b) Machinery</b>					
		Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour	hour	6.000	1344.00	8064.00	P&M-034
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				2234.17	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1910.70	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				146.49	
		Cost for 216 cum = a+b+c+d+e				14795.19	
		<b>Rate per cum = (a+b+c+d+e)/216</b>				68.50	
					<b>say</b>	<b><u>68.50</u></b>	

**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.

**(iii) Hard Rock (requiring blasting)**

**A. By Manual Means (up to 3 m depth)**

**Unit = cum**

**Taking output = 10 cum**

		<b>a) Labour</b>					
		Mate	day	0.480	391.00	187.68	L-17
		Mazdoor(unskilled)	day	12.000	391.00	4692.00	L-18
		Driller	day	0.840	475.00	399.00	L-11
		Blaster	day	0.400	512.00	204.80	L-04
		<b>b) Machinery</b>					
		Air Compressor 250 cfm with 2 jack hammer @ 15 cum per hour	hour	0.67	235.00	156.67	P&M-001
		<b>c) Material</b>					
		Gelatin 80 per cent	kg	3.500	138.00	483.00	M-105
		Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	14.000	21.00	294.00	M-087
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				1364.93	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				1167.31	

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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f) **Add Cess @ 1.00 % on (a+b+c+d+e)** 89.49

Cost for 10 cum = a+b+c+d+e+f 9038.88

**Rate per cum = (a+b+c+d+e+f)/10** 903.89

**say** **903.90**

**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.

**(iv) Hard Rock (blasting prohibited)**

**Unit = cum**

**Taking output = 10 cum**

**A. By Manual Means (up to 3 m depth)**

**a) Labour**

Mate day 0.200 391.00 78.20 L-17

Mazdoor(Unskilled) day 5.000 391.00 1955.00 L-18

**b) Machinery**

Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1 cum per hour hour 10.000 235.00 2350.00 P&M-001

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** 932.31

**d) Contractor's profit @ 15 % on (a+b+c)** 797.33

**e) Add Cess @ 1.00 % on (a+b+c+d)** 61.13

Cost for 10 cum = a+b+c+d+e 6173.96

**Rate per cum = (a+b+c+d+e)/10** 617.40

**say** **617.40**

**Note:-** Cost of dewatering may be added, where required upto 10 per cent of labour & machinery cost. Assessment for dewatering shall be made as per site conditions.

**(v) Marshy soil**

**Unit = cum**

**Taking output = 10 cum**

**A. By Manual means ( upto 3 m depth)**

**a) Labour**

Mate day 0.400 391.00 156.40 L-17

Mazdoor(Un skilled) day 10.000 391.00 3910.00 L-18

**b) Machinery**

Tractor with trolley hour 2.670 265.00 707.55 P&M-076

**c) Material**

Selected earth for refilling cum 5.000 90.50 452.50 M-174

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** 1111.67

**e) Contractor's profit @ 15 % on (a+b+c+d)** 950.72

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** 72.89

Cost for 10 cum = a+b+c+d+e+f 7361.72

**Rate per cum = ( a+b+c+d+e+f)/ 10** 736.17

**say** **736.20**

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**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**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 respective item as per site condition

**B. By Mechanical Means( upto 3 m depth)**

**a) Labour**

i) Mate	day	0.080	391.00	31.28	L-17
ii) Mazdoor(Unskilled)	day	2.000	391.00	782.00	L-18

**b) Machinery**

Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour @ 100 cum per hour	hour	0.170	1344.00	228.48	P&M-034
Tipper 5.5 cum capacity	hour	0.450	374.00	168.30	P&M-073

**c) Material**

Selected earth for refilling	cum	5.000	90.50	452.50	M-174
<b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				353.63	

**e) Contractor's profit @ 15 % on (a+b+c+d)**

302.43

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

23.19

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

2341.80

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

234.18

**say** **234.20**

**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

**3.14 300 Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means**

Scarifying Existing Granular Surface by manual means to a Depth of 50 mm and disposal of scarified material with all lifts and leads upto 1000 m as per MoRT&H Technical Specification clauses of section 300.

**Unit = sqm**

**Taking output = 100 sqm**

**a) Labour**

Mate	day	0.200	391.00	78.20	L-17
Mazdoor(Unskilled)	day	5.000	391.00	1955.00	L-18

**b) Machinery**

Tractor with trolley	hour	1.670	265.00	442.55	P&M-076
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

526.59

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**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Contractor's profit @ 15 % on (a+b+c)				450.35	
		e) Add Cess @ 1.00 % on (a+b+c+d)				34.53	
		Cost for 100 sqm = a+b+c+d+e				3487.22	
		Rate per sqm = (a+b+c+d+e)/100				34.87	
					<b>say</b>	<b><u>34.90</u></b>	
		<b>Note:-</b> In case material is to be reused at site, transportation cost catered above for disposal shall be deleted.					
3.15	300	<b>Scarifying Existing Bituminous Surface to a depth of 150 mm by Mechanical Means</b>					
		Scarifying Existing bituminous Road Surface by mechanical means to a Depth of 150 mm and disposal of scarified material with all lifts and leads upto 1000 m as per MoRT&H Technical Specification clauses of section 300.					
		<b>Unit = sqm</b>					
		<b>Taking output = 100 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor(Unskilled)	day	0.250	391.00	97.75	L-18
		<b>b) Machinery</b>					
		Tractor with ripper attachment @ 60 cum per hour	hour	0.080	250.00	20.00	P&M-075
		Front end loader 1 cum bucket capacity @ 25 cum per hour	hour	0.200	1030.00	206.00	P&M-030
		Tipper 5.5 cum with 10 T capacity, 4 trips per hour.	hour	0.230	374.00	86.02	P&M-073
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				87.99	
		d) Contractor's profit @ 15 % on (a+b+c)				75.25	
		e) Add Cess @ 1.00 % on (a+b+c+d)				5.77	
		Cost for 100 sqm = a+b+c+d+e				582.69	
		Rate per sqm = (a+b+c+d+e)/100				5.83	
					<b>say</b>	<b><u>5.80</u></b>	
3.16	300	<b>Construction of Embankment with Material obtained from Borrowpits</b>					
		Construction of embankment with approved material obtained from borrow pits with all lifts, transporting to site, spreading, grading to required slope and compacting to meet requirement of Tables 300.1 and 300.2 with a lead upto 1000 m as per MoRT&H Technical Specification clauses of section 300.					
		<b>Unit = cum</b>					
		<b>Taking output = 100 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.040	391.00	15.64	L-17
		Mazdoor(Unskilled)	day	1.000	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	1.670	1344.00	2244.48	P&M-034
		Tipper 5.50 cum with 10 tonne capacity	hour	4.500	374.00	1683.00	P&M-073

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**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Dozer D-50 for spreading @ 200 cum per hour	hour	0.500	2654.00	1327.00	P&M-022
		Motor grader for grading @ 100 cum per hour	hour	1.000	2940.00	2940.00	P&M-046
		Water tanker 6 KL capacity	hour	4.000	224.00	896.00	P&M-084
		Vibratory roller 8 -10 tonnes @ 100 cum per hour	hour	1.000	1562.00	1562.00	P&M-082
		<b>c) Material</b>					
		Water	KL	24.000	133.00	3192.00	M-196
		Compensation for earth taken from private land	cum	100.000	18.00	1800.00	M-061
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				3414.07	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				2919.78	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				223.85	
		Cost for 100 cum = a+b+c+d+e+f				22608.82	
		<b>Rate per cum = (a+b+c+d+e+f)/100</b>				226.09	
					<b>say</b>	<b><u>226.10</u></b>	

**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.

**3.17 300 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 and as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 100 cum**

**a) Labour**

Mate	day	0.020	391.00	7.82	L-17
Mazdoor(Unskilled)	day	0.500	391.00	195.50	L-18

**b) Machinery**

Dozer 80 HP for spreading @ 100 cum per hour	hour	0.500	2654.00	1327.00	P&M-022
Motor grader for grading @ 100 cum per hour	hour	1.000	2940.00	2940.00	P&M-046
Water tanker 6 KL capacity	hour	4.000	224.00	896.00	P&M-084
Vibratory roller 8-10 tonnes @ 100 cum per hour	hour	1.000	1562.00	1562.00	P&M-082

**c) Material**

Water	KL	24.000	133.00	3192.00	M-196
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

**e) Contractor's profit @ 15 % on (a+b+c+d)**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

Rate for 100 cum = a+b+c+d+e+f	14254.99
<b>Rate per cum = (a+b+c+d+e+f)/100</b>	<b>142.55</b>



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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say 142.50

**Note:-** In case the earth cutting is done by dozer and pushed for filling in the embankment, the input of dozer in the cost of embankment shall be deleted as the same is already provided in the cost of excavation. However, if the earth is dumped by tippers from roadway cutting, the input of dozer for spreading is required to be provided.

**3.18 300 Construction of Subgrade and Earthen Shoulders**

Construction of subgrade and earthen shoulders with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of Table 300.2 as per MoRTH Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 100 cum**

**a) Labour**

Mate	day	0.040	391.00	15.64	L-17
Mazdoor(Unskilled)	day	1.000	391.00	391.00	L-18

**b) Machinery**

Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour	hour	1.670	1344.00	2244.48	P&M-034
Tipper 5.5 cum with 10 T capacity, 4 trips per hour.	hour	4.500	374.00	1683.00	P&M-073
Dozer D-50 for spreading @ 200 cum per hour	hour	0.500	2654.00	1327.00	P&M-022
Motor grader for grading @ 200 cum per hour	hour	1.000	2940.00	2940.00	P&M-046
Water tanker with 6 km lead	hour	4.000	224.00	896.00	P&M-046
Vibratory roller 8-10 tonnes @ 80 cum per hour	hour	1.000	1562.00	1562.00	P&M-082

**c) Material**

Water	KL	24.000	133.00	3192.00	M-196
Compensation for earth taken from private land	cum	100.000	18.00	1800.00	M-061

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

3414.07

**e) Contractor's profit @ 15 % on (a+b+c+d)**

2919.78

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

223.85

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

22593.18

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

225.93

say 225.90

**3.19 300 Compacting Original Ground**

**Case-I :- Compacting original ground supporting sub-grade**

Loosening of the ground upto a level of 500 mm below the subgrade level, watered, graded and compacted in layers to meet requirement of Tables 300.2 for subgrade construction as per MoRTH Technical Specification clauses of section 300.

**Unit = cum**

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>Taking output = 600 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.120	391.00	46.92	L-17
		Mazdoor(Unskilled)	day	3.000	391.00	1173.00	L-18
<b>b) Machinery</b>							
		Tractor with ripper attachment	hour	9.000	250.00	2250.00	P&M-075
		Motor grader for grading	hour	6.000	2940.00	17640.00	P&M-046
		Water tanker 6 KL capacity	hour	4.000	224.00	896.00	P&M-084
		Vibratory roller 8-10 tonne @ 100 cum/hour	hour	7.500	1562.00	11715.00	P&M-082
<b>c) Material</b>							
		Water	KL	24.000	133.00	3192.00	M-196
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						7851.38	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						6714.64	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						514.79	
Cost for 600 cum = a+b+c+d+e+f						51993.73	
<b>Rate per cum = (a+b+c+d+e+f)/600</b>						86.66	
						<b>say</b>	<b><u>86.70</u></b>

**3.19 Case-II :- Compacting original ground supporting embankment**

Loosening, Levelling 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 Tables 300.2 for embankment construction as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 600 cum**

**a) Labour**

Mate	day	0.080	391.00	31.28	L-17
Mazdoor(Unskilled)	day	2.000	391.00	782.00	L-18

**b) Machinery**

Tractor with ripper attachment	hour	6.000	250.00	1500.00	P&M-075
Vibratory road roller 8-10 tonne capacity	hour	7.500	1562.00	11715.00	P&M-082
Water tanker 6 KL capacity	hour	4.000	224.00	896.00	P&M-084

**c) Material**

Water	KL	24.000	133.00	3192.00	M-196
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

**e) Contractor's profit @ 15 % on (a+b+c+d)**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

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

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

**say** **42.50**

**3.20 300 Stripping and Storing Top Soil**

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Stripping, storing of top soil by road side at 15 m interval and re-application on embankment slopes, cut slopes and other areas in localities where the available embankment material is not conducive to plant growth as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 10 cum**

**a) Labour**

Mate	day	0.200	391.00	78.20	L-17
Mazdoor	day	5.000	391.00	1955.00	L-18

**b) Machinery**

Dozer D-50 @ 100 cum per hour	hour	0.100	2654.00	265.40	P&M-022
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

488.91

**d) Contractor's profit @ 15 % on (a+b+c)**

418.13

**e) Add Cess @ 1.00 % on (a+b+c+d)**

32.06

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

3237.70

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

323.77

**say 323.80**

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 relaying after taking the borrow earth to maintain fertility of the agricultural field, finishing it to the required levels to the satisfaction of the farmer/land owners as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 300 cum**

**a) Labour**

Mate	day	0.080	391.00	31.28	L-17
Mazdoor(Unskilled)	day	2.000	391.00	782.00	L-18

**b) Machinery**

Dozer D-50 with 100 cum per hour output (initially stacking and relaying)	hour	6.000	2654.00	15924.00	P&M-022
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

3560.02

**d) Contractor's profit @ 15 % on (a+b+c)**

3044.59

**e) Add Cess @ 1.00 % on (a+b+c+d)**

233.42

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Cost for 300 cum = (a+b+c+d+e) 23575.31  
**Rate per cum = (a+b+c+d+e)/300** 78.58  
**say** **78.60**

**3.22 300 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 as per MoRT&H Technical Specification clauses of section 300.

**Unit = sqm**

**Taking output = 100 sqm**

**a) Labour**

Mate	day	0.120	391.00	46.92	L-17
Mazdoor(Unskilled)	day	3.000	391.00	1173.00	L-18

**b) Machinery**

Water tanker including watering for 3 months	hour	2.000	224.00	448.00	P&M-084
Tractor with trolley	hour	1.000	265.00	265.00	P&M-076

**c) Material**

Farm yard manure @ 0.18 cum per 100 sqm at site of work	cum	0.180	541.00	97.38	M-094
Water	KL	12.000	133.00	1596.00	M-196

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

771.31

**e) Contractor's profit @ 15 % on (a+b+c+d)**

659.64

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

50.57

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

5107.83

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

51.08

**say** **51.10**

**3.23 300 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 MoRT&H Technical Specification clauses of section 300.

**Unit = sqm**

**Taking output = 240 sqm**

**a) Labour**

Mate	day	0.400	391.00	156.40	L-17
Mazdoor(Unskilled)	day	10.000	391.00	3910.00	L-18

**b) Machinery**

Water tanker 6 KL capacity including watering for 3 months	hour	14.000	224.00	3136.00	P&M-084
Tractor with trolley	hour	2.400	265.00	636.00	P&M-076

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>c) Material</b>					
		Seeds	kg	3.600	338.00	1216.80	M-173
		Farm yard manure @ 0.18 cum per 100 sqm	cum	0.430	541.00	232.63	M-094
		Bitumen Emulsion(SS-1)	Tonne	0.0552	60228.00	3324.59	M-046
		Jute netting, open weave, 2.5 cm square opening	sqm	264.000	9.80	2587.20	M-120
		Water for 3 months	KL	84.000	133.00	11172.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				5609.24	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				4797.13	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				367.78	
		Cost for 240 sqm = a+b+c+d+e+f				37145.77	
		<b>Rate per sqm = (a+b+c+d+e+f)/240</b>				154.77	
					<b>say</b>	<b><u>154.80</u></b>	
<b>3.24</b>	<b>300</b>	<b>Surface Drains in Soil</b>					
		Construction of unlined surface drains of average cross-sectional area 0.4 sqm in ordinary soil to specified lines, grades, levels and dimensions as per MoRTH Technical Specification clauses of section 300. Excavated material to be used in embankment with a lift upto 3 m and lead of 50 m (average lead 25 m).					
		<b>Unit = metre</b>					
		<b>Taking output = 10 metres</b>					
		<b>A. Mechanical means</b>					
		<b>a) Labour</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor(Unskilled) for dressing of bed and side of drain	day	0.250	391.00	97.75	L-18
		<b>b) Machinery</b>					
		Hydraulic Excavator 0.90 cum bucket capacity @ 90 m per hour	hour	0.330	1344.00	443.52	P&M-034
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				115.96	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				99.17	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				7.60	
		Cost for 10 metres = a+b+c+d+e				767.91	
		<b>Rate per metre = (a+b+c+d+e)/10</b>				76.79	
					<b>say</b>	<b><u>76.80</u></b>	
		<b>B. Manual Means</b>					
		<b>a) Labour</b>					
		Mate	day	0.080	391.00	31.28	L-17
		Mazdoor	day	2.000	391.00	782.00	L-18
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				172.98	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				147.94	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				11.34	
		Cost for 10 metres = a+b+c+d				1145.55	
		<b>Rate per metre = (a+b+c+d)/10</b>				114.55	
					<b>say</b>	<b><u>114.60</u></b>	

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**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**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.

<b>3.25</b>	<b>300</b>	<b>Surface Drains in Ordinary Rock</b> 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 MoRTH Technical Specification clauses of section 300. Excavated material to be used in embankment at site. <b>Unit = metre</b> <b>Taking output = 10 metres</b>					
		<b>A. Mechanical Means</b>					
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor(Unskilled)	day	0.500	391.00	195.50	L-18
		<b>b) Machinery</b>					
		Hydraulic Excavator 0.90 cum bucket capacity @ 45 M per hour	hour	0.670	1344.00	900.48	P&M-034
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				234.78	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				200.79	
		<b>d) Add Cess @ 1.00 % on (a+b+c+d)</b>				15.39	
		Cost for 10 metres = a+b+c+d+e				1554.76	
		<b>Rate per metre = (a+b+c+d+e)/10</b>				155.48	
					<b>say</b>	<b><u>155.50</u></b>	
		<b>B. Manual Means</b>					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Mazdoor	day	3.000	391.00	1173.00	L-18
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				259.48	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				221.91	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				17.01	
		Cost for 10 metres = a+b+c+d				1718.32	
		<b>Rate per metre = (a+b+c+d)/10</b>				171.83	
					<b>say</b>	<b><u>171.80</u></b>	
<b>3.26</b>	<b>300</b>	<b>Surface Drains in Hard Rock</b> 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					
<b>3.27</b>	<b>300</b>	<b>Sub-Surface Drains with Perforated Pipe</b>					

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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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 as per MoRT&H Technical Specification clauses of section 300. Excavated material to be utilised in roadway at site.

**Unit = metre**

**Taking output = 10 metres**

**a) Labour**

Mate	day	0.080	391.00	31.28	L-17
Mazdoor(Unskilled)	day	2.000	391.00	782.00	L-18

**c) Material**

AC Pipe 100 mm dia / PVC pipe ( 6.0 Kg/cm <sup>2</sup> ) 110 mm OD	metre	10.500	198.50	2084.25	M-001
Charge for perforation @ 10.00 %				208.43	
Crushed stone as per table 300.3	cum	2.400	3707.30	8897.52	M-067

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

**e) Contractor's profit @ 15 % on (a+b+c+d)**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

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

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

**say 1690.80**

**Note:-** Type of pipe may be modified depending upon provision in design.

**3.28 300 Aggregate Sub-Surface Drains**

Construction of aggregate sub-surface drain 300 mm x 450 mm with aggregates conforming to table 300.4, as per MoRT&H Technical Specification clauses of section 300. (excavated material to be utilised in roadway.)

**Unit = metre**

**Taking output = 10 metres**

**a) Labour**

Mate	day	0.060	391.00	23.46	L-17
Mazdoor(Unskilled)	day	1.500	391.00	586.50	L-18

**b) Material**

Crushed stone as per table 300.3	cum	1.350	3707.30	5004.86	M-067
				1194.27	

**c) Add GST (multiplying factor) @**

**0.2127 on (a+b)**

**d) Contractor's profit @ 15 % on (a+b+c)**

**e) Add Cess @ 1.00 % on (a+b+c+d)**

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

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

**say 790.90**

**3.29 300 Underground Drain at Edge of Pavement**

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Construction of an underground drain 1 m x 1 m (inside dimensions) lined with RCC M-20, 100 mm thick and covered with RCC slab 100 mm in thickness on urban roads as per MoRT&H Technical Specification.					
		<b>Unit = Running metre</b>					
		<b>Taking output = 10 metres</b>					
		a) Earthwork in soil by mechanical means	cum	13.200	53.10	700.92	Item No. 3.13
		b) RCC work M-20 , <b>Rate item no. 12.6.C</b>	cum	4.400	10802.70	47531.88	Item No. 12.6.c
		c) For steel of slab @ 40.00% of (b)				19012.75	
		<b>Rate per metre = (a+b + c)</b>				6724.56	
		Rates for these items may be taken from chapters on earth work and substructures respectively.			<b>say</b>	<b><u>6724.60</u></b>	
3.30	300	<b>Preparation and Surface Treatment of Formation.</b>					
		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 MoRT&H Technical Specification clauses of section 300.					
		<b>Unit = sqm</b>					
		<b>Taking output = 3500sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.280	391.00	109.48	L-17
		Mazdoor(Unskilled)	day	6.000	391.00	2346.00	L-18
		Mazdoor(Skilled)	day	1.000	475.00	475.00	L-20
		<b>b) Machinery</b>					
		Three wheeled steel roller 80-100 KN static roller	hour	3.000	439.00	1317.00	P&M-063
		Water tanker 6 KL	hour	3.000	224.00	672.00	P&M-084
		<b>c) Material</b>					
		Water	KL	18.000	133.00	2394.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				1555.58	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				1330.36	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				101.99	
		Cost for 3500 sqm = a+b+c+d+e+f				10301.41	
		<b>Rate per sqm = (a+b+c+d+e+f)/3500</b>				2.94	
					<b>say</b>	<b><u>2.90</u></b>	
3.31	300	<b>Construction of Rock fill Embankment</b>					
		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 MoRT&H Technical Specification clauses of section 300.					
		<b>Unit = cum</b>					



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**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>Taking output = 100 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.060	391.00	23.46	L-17
		Mazdoor(Unskilled)	day	1.500	391.00	586.50	L-18
<b>b) Machinery</b>							
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	2654.00	1327.00	P&M-022
		Vibratory road roller 8-10 tonnes @ 100 cum per hour	hour	1.000	1562.00	1562.00	P&M-082
		Water tanker 6 KL	hour	2.000	224.00	448.00	P&M-084
<b>c) Material</b>							
		Water	KL	12.000	133.00	1596.00	M-196
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						1178.99	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						1008.29	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						77.30	
Cost for 100 cum = a+b+c+d+e+f						7807.54	
<b>Rate per cum = (a+b+c+d+e+f)/100</b>						78.08	
						<b>say</b>	<b><u>78.10</u></b>

**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**

**3.32 300 Excavation in Hill Area in Soil by Mechanical Means**

**(A) For disposal up to 1000 metre**

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 as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 260 cum**

**a) Labour**

Mate day 0.240 391.00 93.84 L-17

Mazdoor(Unskilled) day 6.000 391.00 2346.00 L-18

**b) Machinery**

Dozer 80 HP hour 6.000 2654.00 15924.00 P&M-022

Front end loader hour 6.000 1030.00 6180.00 P&M-031

Tipper hour 12.000 374.00 4488.00 P&M-073

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

6175.07

**d) Contractor's profit @ 15 % on (a+b+c)**

5281.04

**e) Add Cess @ 1.00 % on (a+b+c+d)**

404.88

Cost for 260 cum = a+b+c+d+e 40892.83

**Rate per cum = (a+b+c+d+e)/260** 157.28

**say** **157.30**

**(B) For disposal in the valley side.**

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**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts in the barren valley side as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 260 cum**

**a) Labour**

Mate	day	0.240	391.00	93.84	L-17
Mazdoor(Unskilled)	day	6.000	391.00	2346.00	L-18

**b) Machinery**

Dozer 80 HP	hour	6.000	2654.00	15924.00	P&M-022
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

3905.99

**d) Contractor's profit @ 15 % on (a+b+c)**

3340.47

**e) Add Cess @ 1.00 % on (a+b+c+d)**

256.10

Cost for 260 cum = a+b+c+d+e

25866.41

**Rate per cum = (a+b+c+d+e)/260**

99.49

**say 99.50**

**3.33 300 Excavation in Ordinary Rock (not Requiring Blasting) in Hilly Area by Mechanical Means.**

**(A) For disposal up to 1000 metre**

Excavation in ordinary rock (not requiring blasting) 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 as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**Taking output = 170 cum**

**a) Labour**

Mate	day	0.320	391.00	125.12	L-17
Mazdoor(Unskilled)	day	8.000	391.00	3128.00	L-18

**b) Machinery**

Dozer 80 HP	hour	6.000	2654.00	15924.00	P&M-022
Front end loader	hour	7.000	1030.00	7210.00	P&M-031
Tipper	hour	7.000	374.00	2618.00	P&M-073

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

6169.39

**d) Contractor's profit @ 15 % on (a+b+c)**

5276.18

**e) Add Cess @ 1.00 % on (a+b+c+d)**

404.51

Cost for 170 cum = a+b+c+d+e

40855.19

**Rate per cum = (a+b+c+d+e)/170**

240.32

**say 240.30**

**(B) For disposal in the valley side.**

Excavation in ordinary rock (not requiring blasting) 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 as per MoRT&H Technical Specification clauses of section 300.

**Unit = cum**

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>Taking output = 170 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.320	391.00	125.12	L-17
		Mazdoor(Unskilled)	day	8.000	391.00	3128.00	L-18
<b>b) Machinery</b>							
		Dozer 80 HP	hour	6.000	2654.00	15924.00	P&M-022
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						4078.97	
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						3488.41	
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						267.45	
Cost for 170 cum = a+b+c+d+e						27011.95	
<b>Rate per cum = (a+b+c+d+e)/170</b>						158.89	
						<b>say</b>	<b><u>158.90</u></b>
<b>3.34</b>	<b>300</b>	<b>Excavation in Hilly Area in hard rock (requiring blasting) with disposal upto 1000 m.</b>					
		Excavation for roadway in Hilly Area in hard rock (requiring blasting) by drilling, blasting and breaking, trimming bottom and side slopes in accordance with requirements of lines, grades and cross-sections loading and disposal of cut earth with all lifts and leads upto 1000 m as per MoRT&H Technical Specification clauses of section 300.					
		<b>Unit = cum</b>					
<b>Taking output = 170 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.490	391.00	191.59	L-17
		Mazdoor(Unskilled)	day	10.000	391.00	3910.00	L-18
		Driller	day	2.000	475.00	950.00	L-11
		Blaster	day	0.250	512.00	128.00	L-04
<b>b) Machinery</b>							
		Dozer D-80 for cutting & spreading @ 200 cum per hour	hour	6.000	2654.00	15924.00	P&M-023
		Air compressor 250 cfm with two jack hammer @ 20 cum per hour	hour	5.000	353.00	1765.00	P&M-002
		Front end loader	hour	7.000	1030.00	7210.00	P&M-031
		Tipper 5.5cum capacity	hour	7.000	374.00	2618.00	P&M-073
<b>c) Materials</b>							
		Gelatin 80 per cent	kg	35.000	138.00	4830.00	M-105
		Electric Detonators @ 1 detonator for 2 gelatin sticks of 285 gms each	each	140.000	21.00	2940.00	M-087
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						8607.24	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						7361.08	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						564.35	
Cost for 170 cum = a+b+c+d+e+f						56999.26	
<b>Rate per cum = (a+b+c+d+e+f)/170</b>						335.29	
						<b>say</b>	<b><u>335.30</u></b>
<b>3.35</b>		<b>Work in Urban Roads</b>					
		The cost of earth work in urban roads inhabited area will be comparatively higher due to following reasons:					

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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a) There is mixed traffic on urban roads like slow moving hand and animal driven carts, rickshaws, cycles, two/ three wheeler apart from the usual vehicular traffic resulting into traffic jams. This causes loss of working time which may be in the range of 10 -15 per cent

b) There is considerable disruption of traffic adversely affecting the efficiency of the working parties including machines due to congestion caused by pedestrian traffic, local road side vendors, parking of vehicles by the road side, encroachments by the shopkeepers and local shops who make use of the berms of the road in front of these shops and unauthorised conversion of road berms into mini local market. The output of manpower and machines is substantially reduced due to factors mentioned above.

c) Cost of living in urban areas is comparatively more resulting into higher wages.

d) At times, work is executed during night time due to heavy traffic during day time. This involves extra expenditure by way of making arrangement for lighting and special transport for working parties due to odd hour

In the light of above, the authorities engaged in preparing the cost estimates may exercise their judgment and cater for the additional cost to the extent of 2 to 3 per cent, keeping in view the severity of factors mentioned above. Supporting details for the extra cost based on the actual conditions in specific cases will have to give in justification.

**3.36 Embankment Construction with Flyash/Pond ash available from coal or lignite burning Thermal Plants as waste material.**

Construction of embankment with Flyash conforming to table 1 of IRC: SP: 58 - 2001 obtained from coal or lignite burning thermal power stations as waste material, spread and compacted in layer of 200 mm thickness each at OMC, all as specified in IRC: SP: 58-2001 and as per approved plans with all lifts and carriage upto 1000 m.

**Unit = cum**

**Taking output = 360 cum**

**a) Labour**

Mate	day	0.160	391.00	62.56	L-17
Mazdoor(Unskilled)	day	4.000	391.00	1564.00	L-18

**b) Machinery**

Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum/hour	hour	6.000	1344.00	8064.00	P&M-034
Tipper 5.50 cum with 10 T capacity	hour	18.180	374.00	6799.32	P&M-073

**CHAPTER - 3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Add 10 per cent for loading and unloading				679.93	
		Dozer D-80 for spreading @ 200 cum/hour	hour	1.800	2654.00	4777.20	P&M-023
		Motor Grader for grading @ 100 cum/hour	hour	3.600	2940.00	10584.00	P&M-046
		Water tanker 6 KL capacity	hour	12.000	224.00	2688.00	P&M-084
		Vibratory Roller 8-10 tonne @ 100 cum/hour	hour	3.600	1562.00	5623.20	P&M-082
		<b>c) Material</b>					
		Water	KL	24.000	133.00	3192.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				9366.08	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				8010.04	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				614.10	
		Cost for 360 cum = a+b+c+d+e+f				62024.44	
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				172.29	
					<b>say</b>	<b><u>172.30</u></b>	

**Note:-** 1.As flyash is available free of cost as waste material from Thermal Plants, cost of material has not been added.

2.The earth cover on sides and intermediate layers of earth sandwiching the flyash have not been included in this analysis. The same are required to be provided as per approved design and priced separately as embankment construction.

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

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
4.1	401	<b>Granular Sub-Base with Well Graded Material (Table:- 400.1)</b>					
		<b>A. By Mix in Place Method</b>					
		Construction of granular sub-base by providing well 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 MoRT&H Technical Specification Clause 401.					
		<b>(i) For Grading-I Material</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 300 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.48	391.00	187.68	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-18
		<b>b) Machinery</b>					
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller 8 -10 tonne	hour	6.00	1562.00	9372.00	P&M-083
		Tractor with Rotavator	hour	12.00	358.00	4296.00	P&M-077
		Water tanker 6 KL capacity	hour	4.50	224.00	1008.00	P&M-084
		<b>c) Material</b>					
		Well graded Granular sub-base Material as per table 400.1					
		53 mm to 9.5 mm @ 50 %	cum	192.00	3795.40	728716.80	M-199
		9.5 mm to 2.36 mm @ 20 %	cum	76.80	4413.70	338972.16	M-200
		2.36 mm below @ 30 %	cum	115.20	2281.10	262782.72	M-198
		Water	KL	18.00	133.00	2394.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				291447.78	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				249251.57	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				19109.29	
		Cost for 300 cum = a+b+c+d+e+f				1930038.00	
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				6433.46	
					<b>say</b>	<b><u>6433.50</u></b>	
		<b>(ii) For Grading-II Material</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 300 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.48	391.00	187.68	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-18
		<b>b) Machinery</b>					
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller 8 -10 tonne	hour	6.00	1562.00	9372.00	P&M-083
		Tractor with Rotavator	hour	12.00	358.00	4296.00	P&M-077
		Water tanker 6 KL capacity	hour	3.00	224.00	672.00	P&M-084
		<b>c) Material</b>					
		Well graded Granular sub-base Material as per table 400.1					
		26.5 mm to 9.5 mm @ 35 %	cum	134.40	3972.90	533957.76	M-202

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

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		9.5 mm to 2.36 mm @ 25 %	cum	96.00	4413.70	423715.20	M-203
		2.36 mm below @ 40 %	cum	153.60	2274.50	349363.20	M-201
		Water	KL	18.00	133.00	2394.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				286391.58	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				244927.41	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				18777.77	
		Cost for 300 cum = a+b+c+d+e+f				1896554.60	
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				6321.85	
					<b>say</b>	<b><u>6321.80</u></b>	
		<b>(iii) For Grading-III Material</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 300 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.48	391.00	187.68	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-18
		<b>b) Machinery</b>					
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller 8 -10 tonne	hour	6.00	1562.00	9372.00	P&M-083
		Tractor with Rotavator	hour	12.00	358.00	4296.00	P&M-077
		Water tanker 6 KL capacity	hour	3.00	224.00	672.00	P&M-084
		<b>c) Material</b>					
		Well graded Granular sub-base Material as per table 400.1					
		9.5 mm to 4.75 mm @ 35 %	cum	134.40	4413.70	593201.28	M-206
		4.75 mm to 2.36 mm @ 12.5 %	cum	48.00	4501.80	216086.40	M-205
		2.36 mm below @ 52.5 %	cum	201.60	2274.50	458539.20	M-204
		Water	KL	18.00	133.00	2394.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				278051.77	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				237795.05	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				18230.95	
		Cost for 300 cum = a+b+c+d+e+f				1841326.33	
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				6137.75	
					<b>say</b>	<b><u>6137.80</u></b>	
<b>401</b>		<b>B. Plant Mix Method</b>					
		Construction of granular sub-base by providing well graded material, mixing in a mechanical mix plant at OMC, carriage of mixed material to work site upto lead of 1000 m spreading in uniform layers with motor grader on prepared surface and compacting with smooth wheel roller to achieve the desired density , complete as per MoRT&H Technical Specification Clause 401					
		<b>(i) For Grading-I Material</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 225 cum (450 tonne)</b>					
		<b>a) Labour</b>					

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

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mate	day	0.40	391.00	156.40	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor (unskilled)	day	8.00	391.00	3128.00	L-18
		<b>b) Machinery</b>					
		Wet mix plant @ 75 tonne capacity per hour	hour	6.00	3769.00	22614.00	P&M-086
		Electric generator 125 KVA	hour	6.00	498.00	2988.00	P&M-026
		Water tanker 6 KL capacity 5 km lead with one trip per hour	hour	4.50	224.00	1008.00	P&M-084
		Front end loader 1 cum bucket capacity	hour	6.00	1030.00	6180.00	P&M-030
		Tipper 5.50 cum capacity	hour	20.45	374.00	7648.30	P&M-073
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		<b>c) Material</b>					
		Well graded Granular sub-base Material as per table 400-1					
		53 mm to 9.5 mm @ 50 %	cum	144.00	3795.40	546537.60	M-199
		9.5 mm to 2.36 mm @ 20 %	cum	57.60	4413.70	254229.12	M-200
		2.36 mm below @ 30 %	cum	86.40	2281.10	197087.04	M-198
		Water	KL	27.00	133.00	3591.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				228254.64	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				195207.61	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				14965.92	
		Cost for 225 cum = a+b+c+d+e+f				1511557.63	
		<b>Rate per cum = (a+b+c+d+e+f)/225</b>				6718.03	
					<b>say</b>	<b><u>6718.00</u></b>	
		<b>(ii) For Grading-II Material</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 225 cum (450 tonne)</b>					
		<b>a) Labour</b>					
		Mate	day	0.40	391.00	156.40	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	8.00	391.00	3128.00	L-18
		<b>b) Machinery</b>					
		Wet mix plant @ 75 tonne capacity per hour	hour	6.00	3769.00	22614.00	P&M-086
		Electric generator 125 KVA	hour	6.00	498.00	2988.00	P&M-026
		Water tanker 6 KL capacity 5 km lead with one trip per hour	hour	4.50	224.00	1008.00	P&M-084
		Front end loader 1 cum bucket capacity	hour	6.00	1030.00	6180.00	P&M-030
		Tipper 5.50 cum capacity	hour	20.45	374.00	7648.30	P&M-073
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		<b>c) Material</b>					
		Well graded Granular sub-base Material as per table 400-1					
		26.5 mm to 9.5 mm @ 35 %	cum	100.80	3972.90	400468.32	M-202
		9.5 mm to 2.36 mm @ 25 %	cum	72.00	4413.70	317786.40	M-203
		2.36 mm below @ 40 %	cum	115.20	2274.50	262022.40	M-201
		Water	KL	27.00	133.00	3591.00	M-196



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

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				224516.08	
		e) Contractor's profit @ 15 % on (a+b+c+d)				192010.34	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				14720.79	
		Cost for 225 cum = a+b+c+d+e+f				1486800.03	
		Rate per cum = (a+b+c+d+e+f)/225				6608.00	
					<b>say</b>	<b><u>6608.00</u></b>	
		<b>(iii) For Grading-III Material</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 225 cum (450 tonne)</b>					
		<b>a) Labour</b>					
		Mate	day	0.40	391.00	156.40	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	8.00	391.00	3128.00	L-18
		<b>b) Machinery</b>					
		Wet mix plant @ 75 tonne capacity per hour	hour	6.00	3769.00	22614.00	P&M-086
		Electric generator 125 KVA	hour	6.00	498.00	2988.00	P&M-026
		Water tanker 6 KL capacity 5 km lead with one trip per hour	hour	4.50	224.00	1008.00	P&M-084
		Front end loader 1 cum bucket capacity	hour	6.00	1030.00	6180.00	P&M-030
		Tipper 5.50 cum capacity	hour	20.45	374.00	7648.30	P&M-073
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		<b>c) Material</b>					
		Well graded Granular sub-base Material as per table 400-1					
		9.5 mm to 4.75 mm @ 35 %	cum	100.80	4413.70	444900.96	M-206
		4.75 mm to 2.36 mm @ 12.5 %	cum	36.00	4501.80	162064.80	M-205
		2.36 mm below @ 52.5 %	cum	151.20	2274.50	343904.40	M-204
		Water	KL	27.00	133.00	3591.00	M-196
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				218261.22	
		e) Contractor's profit @ 15 % on (a+b+c+d)				186661.06	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				14310.68	
		Cost for 225 cum = a+b+c+d+e+f				1445378.83	
		Rate per cum = (a+b+c+d+e+f)/225				6423.91	
					<b>say</b>	<b><u>6423.90</u></b>	
4.2	401	<b>Granular Sub-Base with Coarse Graded Material (Table:- 400.2)</b>					
		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 MoRT&H Technical Specification Clause 401.					
		<b>(i) For Grading-I Material</b>					
		<b>Unit = cum</b>					

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

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>Taking output = 300 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.40	391.00	156.40	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	8.00	391.00	3128.00	L-18
<b>b) Machinery</b>							
		Mortar Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	3.00	224.00	672.00	P&M-084
<b>c) Material</b>							
For coarse graded Granular sub-base							
Materials per table 400.2							
		53 mm to 26.5 mm @ 35 %	cum	134.40	3839.50	516028.80	M-055
		26.5 mm to 4.75 mm @ 45 %	cum	172.80	4281.40	739825.92	M-056
		2.36 mm below @ 20 %	cum	76.80	2202.70	169167.36	M-058
		Water	KL	18.00	133.00	2394.00	M-196
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						310400.44	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						265460.24	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						20351.95	
Cost for 300 cum = a+b+c+d+e+f						2055547.11	
<b>Rate per cum = (a+b+c+d+e+f)/300</b>						6851.82	
						<b>say</b>	<b><u>6851.80</u></b>
<b>(ii) For Grading-II Material</b>							
<b>Unit = cum</b>							
<b>Taking output = 300 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.40	391.00	156.40	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	8.00	391.00	3128.00	L-18
<b>b) Machinery</b>							
		Mortar Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	3.00	224.00	672.00	P&M-084
<b>c) Material</b>							
For coarse graded Granular sub-base							
Materials per table 400.2							
		26.5 mm to 4.75 mm @ 75 %	cum	288.00	4281.40	1233043.20	M-056
		2.36 mm below @ 25 %	cum	96.00	2202.70	211459.20	M-058
		Water	KL	18.00	133.00	2394.00	M-196
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						314543.91	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						269003.81	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						20623.63	
Cost for 300 cum = a+b+c+d+e+f						2082986.14	
<b>Rate per cum = (a+b+c+d+e+f)/300</b>						6943.29	
						<b>say</b>	<b><u>6943.30</u></b>
<b>(iii) For Grading-III Material</b>							
<b>Unit = cum</b>							
<b>Taking output = 300 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.40	391.00	156.40	L-17

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

Sr. No.	Ref. to MoRTH H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	8.00	391.00	3128.00	L-18
		<b>b) Machinery</b>					
		Mortar Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	3.00	224.00	672.00	P&M-084
		<b>c) Material</b>					
		For coarse graded Granular sub-base					
		Materials per table 400.2					
		9.5 mm to 4.75 mm @ 66 %	cum	253.44	4325.50	1096254.72	M-057
		2.36 mm below @ 34 %	cum	130.56	2202.70	287584.51	M-058
		Water	KL	18.00	133.00	2394.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				301640.85	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				257968.87	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				19777.61	
		Cost for 300 cum = a+b+c+d+e+f				1997538.97	
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				6658.46	
						<b>say 6658.50</b>	

**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 by weight, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade as per MoRT&H Technical Specification Clause 402.

**Unit = cum**

**Taking output = 300 cum (525 tonne)**

**A. By Mechanical Means**

**a) Labour**

Mate	day	0.36	391.00	140.76	L-17
Mazdoor (skilled) for alignment and geometrics	day	1.00	475.00	475.00	L-20
Mazdoor(unskilled) for spraying lime	day	8.00	391.00	3128.00	L-18

**b) Machinery**

Tractor with ripper and rotavator attachments @ 60 cum per hour for ripping and 25 cum per hour for mixing	hour	12.00	250.00	3000.00	P&M-075
Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
Vibratory roller	hour	3.90	1562.00	6091.80	P&M-083
Water tanker 6 KL capacity	hour	12.00	224.00	2688.00	P&M-084

**c) Material**

Lime 3%	Kg	15750.00	3.50	55125.00	M-125
Water	KL	72.00	133.00	9576.00	M-196

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

**e) Contractor's profit @ 15 % on (a+b+c+d)**

20815.79

17802.05

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1364.82	
		Cost for 300 cum= a+b+c+d+e+f				137847.23	
		<b>Rate per cum = ( a+b+c+d+e+f)/300</b>				459.49	
					<b>say</b>	<b><u>459.50</u></b>	
		<b>B. By Manual Means</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 150 cum (263 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	1.44	391.00	563.04	L-17
		Mazdoor (skilled) for alignment and geometrics	day	1.00	475.00	475.00	L-20
		Mazdoor( unskilled) for spraying lime	day	35.00	391.00	13685.00	L-18
		<b>b) Machinery</b>					
		Vibratory roller	hour	3.90	1562.00	6091.80	P&M-083
		Water tanker 6 KL capacity	hour	6.00	224.00	1344.00	P&M-084
		<b>c) Material</b>					
		Lime 3%	Kg	7875.00	3.50	27562.50	M-125
		Water	KL	36.00	133.00	4788.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				11594.14	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				9915.52	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				760.19	
		Cost for 150 cum= a+b+c+d+e+f				76779.19	
		<b>Rate per cum = ( a+b+c+d+e+f)/150</b>				511.86	
					<b>say</b>	<b><u>511.90</u></b>	
<b>4.4</b>	<b>402</b>	<b>Lime Treated Soil for Sub- Base</b>					
		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 by weight, 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 as per MoRT&H Technical Specification Clause 402.					
		<b>Unit = cum</b>					
		<b>Taking output = 300 cum (525 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.48	391.00	187.68	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor( unskilled) for spraying lime	day	10.00	391.00	3910.00	L-18
		<b>b) Machinery</b>					
		Excavator	hour	6.00	1344.00	8064.00	P&M-034
		Tipper i/c loading & unloading	hour	23.86	374.00	8923.64	P&M-073
		Tractor with rotavator and blade @ 25 cum per hour	hour	12.00	431.00	5172.00	P&M-074
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	12.00	224.00	2688.00	P&M-084
		<b>c) Material</b>					

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Lime 3%	Kg	15750.00	3.50	55125.00	M-125
		Water	KL	72.00	133.00	9576.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				25866.09	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				22121.16	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1695.96	
		Cost for 300 cum = a+b+c+d+e+f				171291.53	
		<b>Rate per cum= (a+b+c+d+e+f)/300</b>				570.97	
					<b>say</b>	<b><u>571.00</u></b>	
<b>4.5</b>	<b>403</b>	<b>Cement Treated Soil Sub Base/ Base</b>					
		Providing, laying and spreading soil on a prepared sub grade, pulverising, adding the designed quantity of cement to the spread soil, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base as per MoRT&H Technical Specification Clause 403.					
		<b>Unit = cum</b>					
		<b>Taking output = 300 cum (525 tonnes)</b>					
		<b>For 4 %quantity of cement by weight of soil</b>					
		<b>a) Labour</b>					
		Mate	day	0.48	391.00	187.68	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-18
		<b>b) Machinery</b>					
		Excavator	hour	6.00	1344.00	8064.00	P&M-034
		Tipper i/c loading & unloading	hour	23.86	374.00	8923.64	P&M-073
		Tractor with Rotavator and blade @ 25 cum per hour	hour	12.00	431.00	5172.00	P&M-074
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	12.00	224.00	2688.00	P&M-084
		<b>c) Material</b>					
		Cement 4 % of 525 tonne	tonne	21.00	6797.00	142737.00	M-052
		Water	KL	72.00	133.00	9576.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				44501.16	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				38058.22	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				2917.80	
		Cost for 300 cum = a+b+c+d+e+f				294697.50	
		<b>Rate per cum= (a+b+c+d+e+f)/300</b>				982.33	
					<b>say</b>	<b><u>982.30</u></b>	
<b>4.6</b>	<b>403</b>	<b>Cement Treated Crushed Rock or combination as per clause 403 and table 400.4 in Sub base/ Base</b>					

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

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Providing, laying and spreading Material on a prepared sub grade, adding the designed quantity of cement to the spread Material, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base as per MoRT&H Technical Specification Clause 403.					
		<b>A. For Sub-Base course</b>					
		<b>Quantity of cement assumed as 4 % of quantity of crushed soil by weight.</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 300 cum (600 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.36	391.00	140.76	L-17
		Mazdoor(skilled)	day	1.00	475.00	475.00	L-20
		Mazdoor(unskilled)	day	8.00	391.00	3128.00	L-18
		<b>b) Machinery</b>					
		Tractor with Rotavator and blade @ 25 cum per hour	hour	12.00	358.00	4296.00	P&M-077
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	12.00	224.00	2688.00	P&M-084
		<b>c) Material</b>					
		Cement @ 4 % by weight (of 600 tonne)	tonne	24.00	6797.00	163128.00	M-052
		<b>Grading of material for sub-base course</b>					
		37.5 mm to 9.5 mm @ 55 %	cum	211.20	4193.30	885624.96	M-059
		9.5 mm to 4.75 mm @ 20 %	cum	76.80	4325.50	332198.40	M-057
		4.75 mm to 75 micron @ 25 %	cum	96.00	3619.10	347433.60	M-060
		Water	KL	72.00	133.00	9576.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				377691.54	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				323008.84	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				24764.01	
		Cost for 300 cum = a+b+c+d+e+f				2501165.11	
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				8337.22	
					<b>say</b>	<b><u>8337.20</u></b>	
		<b>B. For Base course</b>					
		Quantity of cement assumed as 4 % of quantity of crushed soil by weight.					
		<b>Unit = cum</b>					
		<b>Taking output = 300 cum (600 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.36	391.00	140.76	L-17
		Mazdoor(skilled)	day	1.00	475.00	475.00	L-20
		Mazdoor(unskilled)	day	8.00	391.00	3128.00	L-18
		<b>b) Machinery</b>					
		Tractor with Rotavator and blade @ 25 cum per hour	hour	12.00	358.00	4296.00	P&M-077

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Vibratory	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	12.00	224.00	2688.00	P&M-084
		<b>c) Material</b>					
		Cement @ 4 % by weight (of 600 tonne)	tonne	24.00	6797.00	163128.00	M-052
		<b>Grading of material for base course</b>					
		37.5 mm to 9.5 mm @ 32.50 %	cum	124.80	4193.30	523323.84	M-059
		9.5 mm to 4.75 mm @ 5.00 %	cum	19.20	4325.50	83049.60	M-057
		4.75 mm to 75 micron @ 62.50 %	cum	240.00	3619.10	868584.00	M-060
		Water	KL	72.00	133.00	9576.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				358484.84	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				306582.91	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				23504.69	
		Cost for 300 cum = a+b+c+d+e+f				2373973.63	
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				7913.25	
					<b>say</b>	<b><u>7913.20</u></b>	

**4.7 404.3.1 Making 50 mm x 50 mm Furrows**

Making 50 mm x 50 mm furrows, 25mm / 50mm deep, 450 to the center line of the road and at one metre interval in the existing thin bituminous wearing coarse including sweeping and disposal of excavated material within 1000 metres lead as per MoRT&H Technical Specification Clause 404.3.1.

**Unit = sqm**

**Taking output = 30 m x 7 m = 210 sqm**

**(i) 25mm deep furrow cutting**

**a) Labour**

Mate	day	0.08	391.00	31.28	L-17
Mazdoor(unskilled)	day	2.00	391.00	782.00	L-18

**b) Machinery**

Tractor-trolley	hour	0.20	265.00	53.00	P&M-076
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

184.26

**d) Contractor's profit @ 15 % on (a+b+c)**

157.58

**e) Add Cess @ 1.00 % on (a+b+c+d)**

12.08

Cost for 210 sqm= a+b+c+d+e

1220.20

**Rate per sqm =(a+b+c+d+e)/210**

5.81

**say**

**5.80**

**(ii) 50mm deep furrow cutting**

**a) Labour**

Mate	day	0.16	391.00	62.56	L-17
Mazdoor	day	4.00	391.00	1564.00	L-18

**b) Machinery**

Tractor-trolley	hour	0.40	265.00	106.00	P&M-076
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

368.52

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

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Contractor's profit @ 15 % on (a+b+c)				315.16	
		e) Add Cess @ 1.00 % on (a+b+c+d)				24.16	
		Cost for 210 sqm= a+b+c+d+e				2440.40	
		Rate per sqm =(a+b+c+d+e)/210				11.62	
					<b>say</b>	<b><u>11.60</u></b>	

**4.8 404.3.2 Inverted Choke**

Construction of inverted choke by providing, laying, spreading and compacting screening B type in uniform layer on a prepared surface with motor grader and compacting with power roller etc as per MoRT&H Technical Specification Clause 404.3.2.

**Unit = cum**

**Taking output = 600 cum**

**a) Labour**

Mate	day	0.92	391.00	359.72	L-17
Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
Mazdoor (unskilled)	day	21.00	391.00	8211.00	L-18

**b) Machinery**

Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
Water tanker 6 KL capacity	hour	18.00	224.00	4032.00	P&M-084

**c) Material**

Screening type 'B' / Grading-2	cum	720.00	2274.50	1637640.00	M-201
Water	KL	108.00	133.00	14364.00	M-196

d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)

360009.37

e) Contractor's profit @ 15 % on (a+b+c+d)

307886.71

f) Add Cess @ 1.00 % on (a+b+c+d+e)

23604.65

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

2384069.45

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

3973.45

**say 3973.40**

**4.9 404 Water Bound Macadam Sub-Base / Base**

Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with three wheel 80-100 kN static roller / vibratory roller in stages to proper grade and camber, applying and brooming, stone screening and binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density as per MoRT&H Technical Specification Clause 404.

**1) WBM Grading-I**

**(A) By Manual Means**



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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>Unit = cum</b>							
<b>Taking output = 360 cum</b>							
<b>a) Labour</b>							
		Mate	day	10.08	391.00	3941.28	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor (unskilled)	day	250.00	391.00	97750.00	L-18
<b>b) Machinery</b>							
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084
<b>c) Material ( Refer table 400.7, 8 &amp; 9 )</b>							
<b>Aggregate</b>							
		Grading-I 90 mm to 45 mm@ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.60	3354.60	1461263.76	M-024
<b>Stone Screening</b>							
		Type A 13.2 mm for Grading-I @ 0.27 cum per 10 sqm	cum	97.20	4061.00	394729.20	M-188
<b>Binding material</b>							
		Binding Material @ 0.08cum per 10 sqm for Grading-I material	cum	28.80	17.10	492.48	M-038
		Water	KL	144.00	133.00	19152.00	M-196
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						423916.78	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						362541.53	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						27794.85	
Cost for 360 cum = a+b+c+d+e+f						2807279.88	
Rate per cum = (a+b+c+d+e+f)/360						7798.00	
						<b>say</b>	<b><u>7798.00</u></b>
<b>(B) By Mechanical Means</b>							
<b>Unit = cum</b>							
<b>Taking output = 360 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.68	391.00	265.88	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor (unskilled)	day	15.00	391.00	5865.00	L-18
<b>b) Machinery</b>							
		Motor Grader	hour	7.20	2940.00	21168.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084
<b>c) Material ( Refer table 400.7, 8 &amp; 9 )</b>							
<b>Aggregate</b>							
		Grading-I 90 mm to 45 mm@ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.60	3354.60	1461263.76	M-024
<b>Stone Screening</b>							
		Type A 13.2 mm for Grading-I @ 0.27 cum per 10 sqm	cum	97.20	4061.00	394729.20	M-188
<b>Binding material</b>							
		Binding Material @ 0.08cum per 10 sqm for Grading-I material	cum	28.80	17.10	492.48	M-038
		Water	KL	144.00	133.00	19152.00	M-196
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						408093.52	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						349009.18	

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				26757.37	
		Cost for 360 cum = a+b+c+d+e+f				2702494.39	
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				7506.93	
					<b>say</b>	<b><u>7506.90</u></b>	
		<b>2) WBM Grading-II</b>					
		<b>(A) By Manual Means</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 360 cum</b>					
		<b>a) Labour</b>					
		Mate	day	10.08	391.00	3941.28	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor (unskilled)	day	250.00	391.00	97750.00	L-18
		<b>b) Machinery</b>					
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084
		<b>c) Material ( Refer table 400.7, 8 &amp; 9 )</b>					
		<b>Aggregate</b>					
		<b>Grading-II 63 mm to 45 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm</b>	cum	435.60	3575.00	1557270.00	M-025
		<b>Stone Screening</b>					
		<b>Type B 11.2 mm for Grading-II @ 0.20 cum per 10 sqm</b>	cum	96.01	4389.30	421416.69	M-189
		<b>Binding material</b>					
		Binding Material @ 0.06 cum per 10 sqm for <b>Grading-II</b> material	cum	28.80	17.10	51.30	M-038
		Water	KL	144.00	133.00	19152.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				449919.90	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				384779.88	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				29499.79	
		Cost for 360 cum = a+b+c+d+e+f				2979478.84	
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				8276.33	
					<b>say</b>	<b><u>8276.30</u></b>	
		<b>(B) By Mechanical Means</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 360 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.68	391.00	265.88	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor (unskilled)	day	15.00	391.00	5865.00	L-18
		<b>b) Machinery</b>					
		Motor Grader	hour	7.20	2940.00	21168.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084
		<b>c) Material ( Refer table 400.7, 8 &amp; 9 )</b>					
		<b>Aggregate</b>					
		<b>Grading-II 63 mm to 45 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm</b>	cum	435.60	3575.00	1557270.00	M-025
		<b>Stone Screening</b>					
		<b>Type B 11.2 mm for Grading-II @ 0.20 cum per 10 sqm</b>	cum	96.01	4389.30	421416.69	M-189
		<b>Binding material</b>					

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Binding Material @ 0.06 cum per 10 sqm for <b>Grading-II</b> material	cum	28.80	17.10	492.48	M-038
		Water	KL	144.00	133.00	19152.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				434190.48	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				371327.78	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				28468.46	
		Cost for 360 cum = a+b+c+d+e+f				2875314.77	
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				7986.99	
					<b>say</b>	<b><u>7987.00</u></b>	

**Note:-** Type A Screening can be used in Grading 2

**3) WBM Grading-III**

**(A) By Manual Means**

**Unit = cum**

**Taking output = 360 cum**

**a) Labour**

Mate	day	10.08	391.00	3941.28	L-17
Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
Mazdoor (unskilled)	day	250.00	391.00	97750.00	L-18

**b) Machinery**

Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084

**c) Material ( Refer table 400.7, 8 & 9 )**

**Aggregate**

<b>Grading-III</b> 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.60	3751.30	1634066.28	M-026
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**Stone Screening**

<b>Type B</b> 11.2 mm for Grading-III @ 0.18 cum per 10 sqm	cum	86.40	4389.30	379235.52	M-190
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**Binding material**

Binding Material @ 0.06 cum per 10 sqm for <b>Grading-II</b> material	cum	28.80	17.10	349.70	M-038
Water	KL	144.00	133.00	19152.00	M-196

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

457346.00

**e) Contractor's profit @ 15 % on (a+b+c+d)**

391130.82

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

29986.70

Cost for 360 cum = a+b+c+d+e+f

3028656.29

**Rate per cum = (a+b+c+d+e+f)/360**

8412.93

**say 8412.90**

**3) WBM Grading-III**

**(B) By Mechanical Means**

**Unit = cum**

**Taking output = 360 cum**

**a) Labour**

Mate	day	0.68	391.00	265.88	L-17
Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
Mazdoor (unskilled)	day	15.00	391.00	5865.00	L-18

**b) Machinery**

Motor Grader	hour	7.20	2940.00	21168.00	P&M-047
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**SUB-BASES, BASES ( NON- BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084
		<b>c) Material ( Refer table 400.7, 8 &amp; 9 )</b>					
		<b>Aggregate</b>					
		<b>Grading-III</b> 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.60	3751.30	1634066.28	M-026
		<b>Stone Screening</b>					
		<b>Type B</b> 11.2 mm for Grading-III @ 0.18 cum per 10 sqm	cum	86.40	4389.30	379235.52	M-190
		<b>Binding material</b>					
		Binding Material @ 0.06 cum per 10 sqm for <b>Grading-II</b> material	cum	28.80	17.10	76.95	M-038
		Water	KL	144.00	133.00	19152.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				441464.73	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				377548.85	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				28945.41	
		Cost for 360 cum = a+b+c+d+e+f				2923486.62	
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				8120.80	
					<b>say</b>	<b><u>8120.80</u></b>	
<b>4.10</b>	<b>405</b>	<b>Crushed Cement Concrete Sub-base / Base</b>					
		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 1000 m, laying and compacting the same as sub base/ base course, constructed as WBM as per clause 404 except the use of screening or binding Material as per MoRT&H Technical Specification Clause 405.					
		<b>Unit = cum</b>					
		<b>Taking output =360 cum</b>					
		<b>a) Labour</b>					
		Mate	day	4.16	391.00	1626.56	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	102.00	391.00	39882.00	L-18
		<b>b) Machinery</b>					
		Motor Grader	hour	6.00	2940.00	17640.00	P&M-047
		Front end loader	hour	6.00	1030.00	6180.00	P&M-030
		Tipper	hour	32.73	374.00	12241.02	P&M-031
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	12.00	224.00	2688.00	P&M-084
		<b>c) Material</b>					
		Material available from dismantled concrete slab after crushing/ breaking and only carriage is to be provided					
		Water	KL	72.00	133.00	9576.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				21303.09	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				18218.80	

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1396.77	
		Cost for 360 cum = a+b+c+d+e+f				141074.25	
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				391.87	
					<b>say</b>	<b><u>391.90</u></b>	

**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 1000 m.

2. In case of breaking of slabs is done locally without involvement of transportation, the provision of tipper, front end loader and loading/unloading charges may be deleted.

3. As three wheeled smooth steel rollers are commonly in use, the same has been provided as an alternative.

**4.11 506.3.8 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 0.15 cum per 10 sqm by a mechanical gritter and rolling the surface as per MoRT&H Technical Specification clause 506.3.8.

**Unit = sqm**

**Taking output = 7500 sqm**

**a) Labour**

Mate	day	0.56	391.00	218.96	L-17
Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
Mazdoor (unskilled)	day	12.00	391.00	4692.00	L-18

**b) Machinery**

Mechanical broom hydraulic	hour	6.00	386.00	2316.00	P&M-033
Hydraulic self propelled chips spreader	hour	6.00	4064.00	24384.00	P&M-038
Front end loader	hour	6.00	1030.00	6180.00	P&M-030
Tipper	hour	6.00	374.00	2244.00	P&M-073
Vibratory roller	hour	3.90	1562.00	6091.80	P&M-083
Bitumen pressure distributor	hour	4.28	226.00	967.28	P&M-012

**c) Material**

Crushed stone aggregate 11.2 mm size	cum	97.50	4501.80	438925.50	M-187
Bitumen (VG-30)	tonne	18.75	61186.00	1147237.50	M-041

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

**e) Contractor's profit @ 15 % on (a+b+c+d)**

297270.43

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Sr. No.	Ref. to MoRTH H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				22790.73	
		Cost for 7500 sqm = a+b+c+d+e+f				2301864.04	
		<b>Rate per sqm = (a+b+c+d+e+f)/7500</b>				306.92	
					<b>say</b>	<b><u>306.90</u></b>	
<b>4.12</b>	<b>406</b>	<b>Wet Mix Macadam</b>					
		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 finisher in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density as per MoRT&H Technical Specification Clause 406.					
		<b>Unit = cum</b>					
		<b>Taking output = 225 cum (495 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.48	391.00	187.68	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor (Unskilled)	day	10.00	391.00	3910.00	L-18
		<b>b) Machinery</b>					
		Electric generator set, 125 KVA	hour	6.00	498.00	2988.00	P&M-026
		Front end loader 1 cum capacity	hour	6.00	1030.00	6180.00	P&M-030
		Wet mix plant of 75 tonne/ hour capacity	hour	6.60	3769.00	24875.40	P&M-085
		Tipper i/c loading unloading	hour	20.45	374.00	7648.30	P&M-073
		Paver finisher	hour	6.00	1176.00	7056.00	P&M-049
		Vibratory roller	hour	3.90	1562.00	6091.80	P&M-083
		Water tanker 6 KL capacity	hour	3.00	224.00	672.00	P&M-084
		<b>c) Material</b>					
		<b>c) Aggregate ( Table 400-11)</b>					
		Coarse aggregate 45 mm to 22.4 mm@ 30 percent	cum	89.10	4024.10	358547.31	M-027
		Aggregates 22.4 mm to 2.36 mm @ 40 percent	cum	118.80	3839.50	456132.60	M-028
		Fine aggregates/ crushed stones 2.36 mm to 75 micron@ 30 percent	cum	89.10	2252.60	200706.66	M-041
		Water	KL	18.00	133.00	2394.00	M-070
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				229362.86	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				196155.39	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				15038.58	
		Cost for 225 cum = a+b+c+d+e+f				1518896.59	
		<b>Rate per cum = (a+b+c+d+e+f)/225</b>				6750.65	
					<b>say</b>	<b><u>6750.70</u></b>	

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
4.13	408	<b>Construction of Median and Island with Soil Taken from Roadway Cutting</b>					
		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 with all leads and lifts, spread, graded and compacted with plate compactor as per MoRT&H Technical Specification Clause 408.					
		<b>Unit = cum</b>					
		<b>Taking output =21 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.24	391.00	93.84	L-17
		Mazdoor	day	6.00	391.00	2346.00	L-18
		<b>b) Machinery</b>					
		Plate compactor	hour	6.00	84.00	504.00	P&M-051
		Water tanker 6 KL capacity	hour	1.00	224.00	224.00	P&M-084
		<b>c) Material</b>					
		Water	KL	6.00	133.00	798.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				843.53	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				721.41	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				55.31	
		Cost for 21 cum = a+b+c+d+e+f				5586.09	
		<b>Rate per cum = (a+b+c+d+e+f)/21</b>				266.00	
					<b>say</b>	<b><u>266.00</u></b>	
4.14	408	<b>Construction of Median and Island with Soil Taken from Borrow Areas</b>					
		Construction of median and Island above road level with approved material brought from borrow pits with all lifts and lead upto 1000 m, spread, sloped and compacted as per MoRT&H Technical Specification Clause 408.					
		<b>Unit = cum</b>					
		<b>Taking output = 21 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.48	391.00	187.68	L-17
		Mazdoor (unskilled)	day	10.00	391.00	3910.00	L-18
		<b>b) Machinery</b>					
		Plate Compactor	hour	6.00	84.00	504.00	P&M-051
		Hydraulic Excavator	hour	0.50	1344.00	672.00	P&M-034
		Tipper i/c loading unloading	hour	2.55	374.00	953.70	P&M-073
		Water tanker 6 KL capacity	hour	1.00	224.00	224.00	P&M-084
		<b>c) Material</b>					
		Water	KL	6.00	133.00	798.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				1541.94	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				1318.70	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				101.10	

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cost for 21 cum = a+b+c+d+e+f				10211.12	
		Rate per cum = (a+b+c+d+e+f)/ 21				486.24	
					<b>say</b>	<b><u>486.20</u></b>	
<b>4.15</b>		<b>Construction of Shoulders</b>					
		<b>A. Earthen Shoulders</b>					
		The rate as applicable for sub-grade construction may be adopted.					
		<b>B. Hard Shoulders</b>					
		Rate as applicable for sub-base and or base may be adopted as per approved design.					
		<b>C. Paved shoulders</b>					
		The rate may be adopted as applicable for different layers of pavement depending upon approved design of paved shoulders.					
<b>4.16</b>	<b>410</b>	<b>Footpaths and Separators</b>					
		Construction of footpath/separator by providing a 150 mm compacted granular sub base as per clause 401 and 25 mm thick cement concrete grade M15, overlaid with pre-cast concrete tiles in cement mortar 1:3 including provision of all drainage arrangements but excluding kerb channel as per MoRT&H Technical Specification Clause 410.					
		<b>Unit = sqm</b>					
		<b>Taking output = 300 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	1.36	391.00	531.76	L-17
		Mason (1st class)	day	4.00	512.00	2048.00	L-15
		Mazdoor(unskilled)	day	30.00	391.00	11730.00	L-18
		<b>b) Machinery</b>					
		Vibratory road roller @60 cum per hour	hour	0.75	1562.00	1171.50	P&M-083
		Concrete mixer 0.4/0.28 cum capacity	hour	6.00	215.00	1290.00	P&M-014
		Water tanker 6 KL capacity	hour	2.00	224.00	448.00	P&M-084
		<b>c) Material</b>					
		<b>i) For Granular sub-base material</b>					
		53 mm to 26.5 mm @ 35 %	cum	20.79	3839.50	79823.21	M-055
		26.5 mm to 4.75 mm @ 45 %	cum	26.73	4281.40	114441.82	M-056
		2.36 mm below @ 20 %	cum	11.88	2202.70	26168.08	M-058
		<b>ii) For cement concrete grade M15, 7.5 cum</b>					
		Aggregate 12 mm crushed @ 0.9 cum of concrete	cum	6.75	4304.00	29052.00	M-021
		Sand	cum	3.38	740.00	2501.20	M-170
		Cement	tonne	1.88	6797.00	12778.36	M-052
		<b>iii) For cement plaster 1:3</b>					
		Sand	cum	3.84	740.00	2841.60	M-170
		Cement	tonne	1.83	6797.00	12438.51	M-052
		<b>iv) Pre-cast cement concrete tiles</b>					
		Tiles size 300 x 300 mm and 25 mm thick	each	3300.00	33.70	111210.00	M-149
		<b>v) RCC pipes</b>					
		Pipes 200 mm dia(NP2),2.5 m long for drainage	metre	22.50	468.00	10530.00	M-164
		Collar	no	8.00	101.00	808.00	M-247



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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		vi) Water	KL	12.00	133.00	1596.00	M-196
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				89633.49	
		e) Contractor's profit @ 15 % on (a+b+c+d)				76656.23	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				5876.98	
		Cost for 300 sqm = a+b+c+d+e+f				593574.73	
		Rate per sqm = (a+b+c+d+e+f)/300				1978.58	
					<b>say</b>	<b><u>1978.60</u></b>	

**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE**  
**( i.e. LOCALLY AVAILABLE MATERIALS )**

4.17	401	<b>Granular Sub-Base with Well Graded Material(using jhama brick aggregate)</b> <b>(Table:- 400.1)</b> <b>A. By Mix in Place Method</b> Construction of granular sub-base by providing well graded material (Jhama Brick Aggregate, as per Table:- 400.1, Grading-I), spreading in uniform layers with tractor with attachments or motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, applying and brooming sand to fill up the interstices of coarse aggregate, watering and compacting with smooth wheel roller to achieve the desired density, complete as per MoRT&H Technical Specification Clause 401.  <b>(i) For Grading- I Material (Jhama brick aggregate)</b> <b>Unit = cum</b> <b>Taking output = 300 cum</b> <b>a) Labour</b> Mate day 0.48 391.00 187.68 L-17 Mazdoor(skilled) day 2.00 475.00 950.00 L-20 Mazdoor(unskilled) day 10.00 391.00 3910.00 L-18 <b>b) Machinery</b> Motor Grader hour 6.00 2940.00 17640.00 P&M-047 Vibratory roller 8 -10 tonne hour 6.00 1562.00 9372.00 P&M-083 Tractor with Rotavator hour 12.00 358.00 4296.00 P&M-077 Water tanker 6 KL capacity hour 3.00 224.00 672.00 P&M-084 <b>c) Material</b> <b>Jhama Brick Aggregate</b> Well graded Granular sub-base Material as per table 400.1 Well Graded Material for Sub-Base - Grading I - 53 mm to 0.075 mm jhama brick aggregate @ 70 % cum 268.80 3369.30 905667.84 M-217 Sand (local quarry) @ 30 % cum 115.20 590.00 67968.00 M-171 Water KL 18.00 133.00 2394.00 M-196 <b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b> <b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						
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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				14128.15	
		Cost for 300 cum = a+b+c+d+e+f				1426943.23	
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				4756.48	
					<b>say</b>	<b><u>4756.50</u></b>	
<b>4.18</b>	<b>404</b>	<b>Water Bound Macadam Sub-Base / Base using Jhama Brick Aggregate</b>					
		<b>(1) WBM Grading- 2</b>					
		Providing, laying, spreading and compacting jhama brick aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with three wheel 80-100 kN static roller / vibratory roller in stages to proper grade and camber, applying and brooming and binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density Grading-2 as per MoRT&H Technical Specification Clause 404.					
		<b>(A) By Manual Means</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 360 cum</b>					
		<b>a) Labour</b>					
		Mate	day	10.08	391.00	3941.28	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	250.00	391.00	97750.00	L-18
		<b>b) Machinery</b>					
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084
		<b>c) Material ( Refer table 400.7, 8 &amp; 9 )</b>					
		<b>Jhama Brick Aggregate</b>					
		<b>Jhama Brick Aggregate Grading 2 - 63 mm to 22.4 mm</b>	cum	532.80	3290.30	1753071.84	M-218
		<b>Binding material</b>					
		Binding Material @ 0.06 cum per 10 sqm for Grading- 2 material	cum	28.80	17.10	492.48	M-038
		Water	KL	144.00	133.00	19152.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				402025.46	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				343819.66	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				26359.51	
		Cost for 360 cum = a+b+c+d+e+f				2662310.23	
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				7395.31	
					<b>say</b>	<b><u>7395.30</u></b>	
		<b>(B) By Mechanical Means</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 360 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.68	391.00	265.88	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
		<b>b) Machinery</b>					
		Mortar Grader	hour	7.20	2940.00	21168.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084
		<b>c) Material ( Refer table 400.7, 8 &amp; 9 )</b>					
		<b>Jhama Brick Aggregate</b>					
		Jhama Brick Aggregate Grading 2 - 63 mm to 22.4 mm	cum	532.80	3290.30	1753071.84	M-218
		<b>Binding material</b>					
		Binding Material @ 0.06cum per 10 sqm for Grading- 2 material	cum	28.80	17.10	492.48	M-038
		Water	KL	144.00	133.00	19152.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				386202.20	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				330287.31	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				25322.03	
		Cost for 360 cum = a+b+c+d+e+f				2557524.73	
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				7104.24	
					<b>say</b>	<b><u>7104.20</u></b>	

**(2) WBM Grading- 3**

Providing, laying, spreading and compacting jhama brick aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with three wheel 80-100 kN static roller / vibratory roller in stages to proper grade and camber, applying and brooming and binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density Grading-3 as per MoRT&H Technical Specification Clause 404.

**(A) By Manual Means****Unit = cum****Taking output = 360 cum****a) Labour**

Mate	day	10.08	391.00	3941.28	L-17
Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
Mazdoor(unskilled)	day	250.00	391.00	97750.00	L-18

**b) Machinery**

Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084

**c) Material ( Refer table 400.7, 8 & 9 )****Jhama Brick Aggregate**

Jhama Brick Aggregate Grading 3 - 53 mm to 11.2 mm	cum	523.20	3329.80	1742151.36	M-219
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**Binding material**

Binding Material @ 0.06 cum per 10 sqm for Grading- 3 material	cum	28.80	17.10	492.48	M-038
Water	KL	144.00	133.00	19152.00	M-196

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				399702.68	
		e) Contractor's profit @ 15 % on (a+b+c+d)				341833.17	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				26207.21	
		Cost for 360 cum = a+b+c+d+e+f				2646928.17	
		Rate per cum = (a+b+c+d+e+f)/360				7352.58	
					<b>say</b>	<b><u>7352.60</u></b>	
		<b>(B) By Mechanical Means</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 360 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.68	391.00	265.88	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
		<b>b) Machinery</b>					
		Mortar Grader	hour	7.20	2940.00	21168.00	P&M-047
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-083
		Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084
		<b>c) Material ( Refer table 400.7, 8 &amp; 9 )</b>					
		<b>Jhama Brick Aggregate</b>					
		Jhama Brick Aggregate Grading 3 - 53 mm to 11.2 mm	cum	523.20	3329.80	1742151.36	M-219
		<b>Binding material</b>					
		Binding Material @ 0.06 cum per 10 sqm for Grading- 3 material	cum	28.80	17.10	492.48	M-038
		Water	KL	144.00	133.00	19152.00	M-196
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				383879.41	
		e) Contractor's profit @ 15 % on (a+b+c+d)				328300.82	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				25169.73	
		Cost for 360 cum = a+b+c+d+e+f				2542142.68	
		Rate per cum = (a+b+c+d+e+f)/360				7061.51	
					<b>say</b>	<b><u>7061.50</u></b>	
4.19	404	<b>Water Bound Macadam Sub-Base / Base using Jhama Brick Aggregate</b>					
		<b>(1) WBM Grading- 1</b>					
		Providing, laying, spreading and compacting jhama brick aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with three wheel 80-100 kN static roller / vibratory roller in stages to proper grade and camber, applying and brooming and binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density Grading-1 as per MoRT&H Technical Specification Clause 404.					
		<b>(A) By Manual Means</b>					
		<b>Unit = cum</b>					

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>Taking output = 360 cum</b>							
<b>a) Labour</b>							
		Mate	day	10.08	391.00	3941.28	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	250.00	391.00	97750.00	L-18
<b>b) Machinery</b>							
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-082
		Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084
<b>c) Material ( Refer table 400.7, 8 &amp; 9 )</b>							
<b>Jhama Brick Aggregate</b>							
		Jhama brick aggregate for WBM Grading - 1 - 90 mm to 22.4 mm	cum	532.80	3191.60	1700484.48	M-261
<b>Binding material</b>							
		Binding Material @ 0.06 cum per 10 sqm for Grading- 1 material	cum	28.80	17.10	492.48	M-038
		Water	KL	144.00	133.00	19152.00	M-196
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						390840.13	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						334253.76	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						25626.12	
Cost for 360 cum = a+b+c+d+e+f						2588238.25	
<b>Rate per cum = (a+b+c+d+e+f)/360</b>						7189.55	
						<b>say</b>	<b><u>7189.60</u></b>
<b>(B) By Mechanical Means</b>							
<b>Unit = cum</b>							
<b>Taking output = 360 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.68	391.00	265.88	L-17
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-20
		Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
<b>b) Machinery</b>							
		Mortar Grader	hour	7.20	2940.00	21168.00	P&M-046
		Vibratory roller	hour	6.00	1562.00	9372.00	P&M-082
		Water tanker 6 KL capacity	hour	24.00	224.00	5376.00	P&M-084
<b>c) Material ( Refer table 400.7, 8 &amp; 9 )</b>							
<b>Jhama Brick Aggregate</b>							
		Jhama brick aggregate for WBM Grading - 1 - 90 mm to 22.4 mm	cum	532.80	3191.60	1700484.48	M-261
<b>Binding material</b>							
		Binding Material @ 0.06 cum per 10 sqm for Grading- 1 material	cum	28.80	17.10	492.48	M-038
		Water	KL	144.00	133.00	19152.00	M-196
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						375016.87	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						320721.41	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						24588.64	
Cost for 360 cum = a+b+c+d+e+f						2483452.75	
<b>Rate per cum = (a+b+c+d+e+f)/360</b>						6898.48	
						<b>say</b>	<b><u>6898.50</u></b>

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

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>(ADDITIONAL ITEMS USING STONE AGGREGATES)</b>							
4.20	407	<b>Crusher Run Macadam Base</b> 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 407 to form a layer of sub-base/Base					
		<b>Unit = cum</b>					
		<b>Taking output = 360 cum</b>					
		<b>A. By Mix in Place Method</b>					
		<b>a) Labour</b>					
		Mate	day	0.480	391.00	187.68	L-17
		Mazdoor(skilled)	day	2.000	475.00	950.00	L-20
		Mazdoor(unskilled)	day	10.000	391.00	3910.00	L-18
		<b>b) Machinery</b>					
		Tractor attached with rotavator @ 25 cum per hour	hour	12.000	358.00	4296.00	P&M-077
		Motor grader 110 HP	hour	6.000	2940.00	17640.00	P&M-047
		Vibratory roller 8 -10 tonnes @ 60 cum per hour	hour	6.000	1562.00	9372.00	P&M-082
		Water tanker 6 KL capacity	hour	6.000	224.00	1344.00	P&M-084
		<b>c) Material</b>					
		Aggregate at site					
		<b>For 53 mm maximum size</b>					
		63 mm to 45 mm @ 33 per cent	cum	157.460	3575.00	562919.50	M-025
		22.4 mm to 2.36 mm @ 32 per cent	cum	151.060	3839.50	579994.87	M-028
		Below 2.36 mm @ 35 per cent	cum	166.680	2281.10	380213.75	M-198
		Water	KL	36.000	133.00	4788.00	M-196
		<b>Or</b>					
		<b>For 45 mm maximum size</b>					
		45 mm to 22.4 mm @ 5 per cent	cum	24.120	4024.10	97061.29	M-027
		22.4 mm to 2.36 mm @ 50 per cent	cum	237.600	3839.50	912265.20	M-028
		Below 2.36 mm @ 45 per cent	cum	213.480	2281.10	486969.23	M-198
		Water	KL	36.000	133.00	4788.00	M-196
		<b>A (i) For 53 mm maximum size</b>					
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				333006.48	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				284793.34	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				21834.16	
		Cost for 360.0cum = a+b+c+d+e+f				2205249.78	
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				6125.69	
		<b>or</b>				<b>say 6125.70</b>	
		<b>A (ii) For 45 mm maximum size</b>					
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				327299.23	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				279912.39	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				21459.95	
		Cost for 360.0cum = a+b+c+d+e+f				2167454.97	
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				6020.71	
						<b>say 6020.70</b>	

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

Sr. No.	Ref. to MoRTH H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Note:- Any one of the aggregate grading may be adopted.					
		<b>B. By Mixing Plant :</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 225 cum (450 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.280	391.00	109.48	L-17
		Mazdoor(skilled)	day	1.000	475.00	475.00	L-20
		Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-18
		<b>b) Machinery</b>					
		Wet mix plant @ 75 tonne per hour	hour	6.000	3769.00	22614.00	P&M-067
		Electric generator 125 KVA	hour	6.000	498.00	2988.00	P&M-068
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-069
		Motor grader 110 HP	hour	6.000	2940.00	17640.00	P&M-070
		Vibratory roller 8 - 10 tonne	hour	6.000	1562.00	9372.00	P&M-071
		Water tanker 6 KL capacity	hour	3.000	224.00	672.00	P&M-072
		Tipper 5.50 cum capacity	hour	20.45	374.00	7648.30	P&M-073
		<b>c) Material</b>					
		Aggregate at site					
		<b>i) For 53 mm maximum size</b>					
		63 mm to 45 mm @ 33 per cent	cum	98.400	3575.00	351780.00	M-025
		22.4 mm to 2.36 mm @ 32 per cent	cum	94.410	3839.50	362487.20	M-028
		Below 2.36 mm @ 35 per cent	cum	104.180	2281.10	237645.00	M-198
		Water	KL	36.000	133.00	4788.00	M-196
		<b>Or</b>					
		<b>ii) For 45 mm maximum size</b>					
		45 mm to 22.4 mm @ 5 per cent	cum	15.060	4024.10	60602.95	M-027
		22.4 mm to 2.36 mm @ 50 per cent	cum	148.500	3839.50	570165.75	M-028
		Below 2.36 mm @ 45 per cent	cum	133.430	2281.10	304367.17	M-198
		Cost of water	KL	18.000	133.00	2394.00	M-196
		<b>B (i) For 53 mm maximum size</b>					
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				218388.66	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				186770.04	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				14319.04	
		Cost for 225cum = a+b+c+d+e+f				1446222.71	
		<b>Rate per cum = (a+b+c+d+e+f)/225</b>				6427.66	
						<b>say <u>6427.70</u></b>	
		<b>B (ii) For 45 mm maximum size</b>					
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				214311.13	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				183282.87	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				14051.69	
		Cost for 225cum = a+b+c+d+e+f				1419220.33	
		<b>Rate per cum = (a+b+c+d+e+f)/225</b>				6307.65	
						<b>say <u>6307.60</u></b>	
4.21	Suggestive	Lime, Flyash Stabilised Soil Sub-Base					

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

Sr. No.	Ref. to MoRTH H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Construction of Sub-base using lime - Flyash admixture with granular soil, free from organic matter/ deleterious material or clayey silts and low plasticity clays having PI between 5 and 20 and liquid limit less than 25 and commercial dry lime, slaked at site or pre-slaked with CaO content not less than 50 per cent, Flyash to conform to gradation as per clause 4.3 of IRC: 88-1984, lime + Flyash content ranging between 10 to 30 per cent, the minimum un-confined compressive strength and CBR value after 28 days curing and 4 days soaking to be 7.5kg/sq, cm and 25 per cent respectively, all as specified in IRC: 88-1984.					
		<b>Unit = cum</b>					
		<b>Taking output = 480 cum (720 tonnes, density 1.50 t/cum)</b>					
		<b>Assumptions made</b>					
		Total mass taken for analysis = 720 t					
		Lime + Flyash admixture @ 20 per cent = 0.2 x 720=144 t					
		Soil = 720 -144 = 576 t					
		576 /1.6 = 360 cum					
		Lime + Flyash = 144 t					
		Ratio Lime 4 : Flyash 16					
		Lime = 29 T.					
		Flyash = 115 T.					
		<b>a) Labour</b>					
		Mate	day	0.240	391.00	93.84	L-17
		Mazdoor(skilled)	day	6.000	475.00	2850.00	L-20
		Mazdoor(unskilled)	day	1.000	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Hydraulic Excavator 0.90 cum bucket capacity @ 60cum/hr. for 360 cum soil	hour	6.000	1344.00	8064.00	0.00
		Tipper 10T capacity for carriage of soil 576 tonnes & 115 tonnes Flyash	hour	31.400	374.00	11743.60	P&M-073
		Tipper 10T capacity for carriage of 29 tonnes of lime from store to work site	hour	3.000	374.00	1122.00	P&M-073
		Tractor with disc harrows for pulverisation	hour	6.000	431.00	2586.00	P&M-074
		Motor Grader 110 HP @ 50 cum per hour for mixing in-place and grading	hour	9.600	2940.00	28224.00	P&M-046
		Vibratory roller 8 - 10 tonne	hour	6.000	1562.00	9372.00	P&M-082
		Water tanker 6 KL capacity	hour	12.000	224.00	2688.00	P&M-084
		<b>c) Material</b>					
		Lime	tonne	29.000	354.00	10266.00	M-294
		Compensation for earth taken from private source	cum	360.000	18.00	6480.00	M-061
		Fly Ash	tonne	115.000	20.40	2346.00	M-302
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				18340.36	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				15685.02	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1202.52	



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

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cost for 480 cum = a+b+c+d+e+f				121454.34	
		<b>Rate per cum= (a+b+c+d+e+f)/480</b>				253.03	
					<b>say</b>	<b><u>253.00</u></b>	
		<p>1.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.</p> <p>2.Lime + Flyash has been taken as 20 per cent of total mass and ratio of lime and Flyash as 1:4 for estimating purposes. Total quantities will be as per approved design.</p>					

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
5.1	502	<b>Prime Coat</b> Providing and applying primer coat with bitumen emulsion (SS-1) on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.6 kg/sqm using mechanical means as per MoRT&H Technical Specification Clause 502.					
		<b>Unit = sqm</b> <b>Taking output = 3500 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.080	391.00	31.28	L-17
		Mazdoor(unskilled)	day	2.000	391.00	782.00	L-18
		<b>b) Machinery</b>					
		Hydraulic broom @ 1250 sqm per hour	hour	2.800	386.00	1080.80	P&M-033
		Air compressor 210 cfm	hour	2.800	235.00	658.00	P&M-001
		Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	226.00	452.00	P&M-012
		Water tanker 6 KL capacity 1 trip per hour	hour	1.000	224.00	224.00	P&M-084
		<b>c) Material</b>					
		Bitumen emulsion (SS-1) @ 0.60 kg per sqm	tonne	2.100	60228.00	126478.80	M-046
		Water	KL	6.000	133.00	798.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				27758.39	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				23739.49	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1820.03	
		Cost for 3500 sqm = a+b+c+d+e+f				183822.79	
		<b>Rate per sqm = (a+b+c+d+e+f)/3500</b>				52.52	
					<b>say</b>	<b><u>52.50</u></b>	
		<b>Note:-</b> 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	<b>Tack Coat</b> Providing and applying tack coat with bitumen emulsion (RS-1) using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous / granular surface cleaned with Hydraulic broom as per MoRT&H Technical Specification Clause 503.					
		<b>Unit = sqm</b> <b>Taking output = 3500 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.080	391.00	31.28	L-17
		Mazdoor(unskilled)	day	2.000	391.00	782.00	L-18
		<b>b) Machinery</b>					
		Hydraulic broom @ 1250 sqm per hour	hour	2.800	386.00	1080.80	P&M-033
		Air compressor 210 cfm	hour	2.800	235.00	658.00	P&M-001

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	133.00	266.00	M-196
c)		<b>Material</b> Bitumen emulsion(RS-1) @ 0.20 kg per sqm	tonne	0.700	57286.00	40100.20	M-045
d)		<b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				9128.72	
e)		<b>Contractor's profit @ 15 % on (a+b+c+d)</b>				7807.05	
f)		<b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				598.54	
		Cost for 3500 sqm = a+b+c+d+e+f				60452.59	
		<b>Rate per sqm = (a+b+c+d+e+f)/3500</b>				17.27	
					<b>say</b>	<b><u>17.30</u></b>	

**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 as per MoRT&H Technical Specification Clause 504.

**A. Grading I**

**i. With Viscosity Graded Bitumen of VG-30.**

**Unit = cum**

**Taking output = 205 cum (451 tonnes)**

**a) Labour**

Mate	day	0.840	391.00	328.44	L-17
Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**b) Machinery**

Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
Hydraulic broom @ 1250 sqm per hour	hour	2.200	386.00	849.20	P&M-033
Air compressor 210 cfm	hour	2.200	235.00	517.00	P&M-001
Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.50 cum, 10 T capacity	hour	18.640	374.00	6971.36	P&M-073
Three wheel 80-100 KN static roller for initial break down rolling.	hour	3.900	439.00	1712.10	P&M-068

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Vibratory roller 80-100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheeled tandem roller 6-8 tonnes for final and finishing rolling.	hour	3.900	1350.00	5265.00	P&M-058
		<b>c) Material</b>					
		<b>i) Bitumen (VG-30) @ 3.3 per cent of mix</b>	tonne	14.883	61186.00	910631.24	M-041
		weight of mix = 205 x 2.2 = 451 tonne					
		<b>ii) Aggregate</b>					
		Total weight of mix = 451 tonnes					
		Weight of bitumen = 14.883 tonnes					
		Weight of aggregate = 451 - 14.883 = 436.117 tonnes					
		<b>Taking density of aggregate = 1.5 ton/cum</b>					
		Volume of aggregate = 290.745 cum					
		<b>Grading I ( 40 mm nominal size )</b>					
		37.5 - 25 mm 15 per cent	cum	43.612	3663.20	159759.48	M-012
		25 - 10 mm 45 per cent	cum	130.835	4017.00	525564.20	M-010
		10 - 5 mm 25 per cent	cum	72.686	4355.60	316591.14	M-006
		5 mm and below 15 per cent	cum	43.612	4450.50	194095.21	M-013
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				479599.61	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				410162.52	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				31445.79	
		Cost for 205 cum = a+b+c+d+e+f				3176025.08	
		<b>Rate per cum = (a+b+c+d+e+f)/205</b>				15492.81	
					<b>say</b>	<b><u>15492.80</u></b>	
		<b>ii. With Viscosity Graded Bitumen of VG-10.</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 205 cum (451 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.840	391.00	328.44	L-17
		Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Hydraulic broom @ 1250 sqm per hour	hour	2.200	386.00	849.20	P&M-033
		Air compressor 210 cfm	hour	2.200	235.00	517.00	P&M-001
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.50 cum, 10 T capacity	hour	18.640	374.00	6971.36	P&M-073
		Three wheel 80-100 KN static roller for initial break down rolling.	hour	3.900	439.00	1712.10	P&M-068
		Vibratory roller 80-100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheeled tandem roller 6-8 tonnes for final and finishing rolling.	hour	3.900	1350.00	5265.00	P&M-058
		<b>c) Material</b>					
		<b>i) Bitumen (VG-10) @ 3.3 per cent of mix</b>	tonne	14.883	60386.00	898724.84	M-042
		weight of mix = 205 x 2.2 = 451 tonne					
		<b>ii) Aggregate</b>					
		Total weight of mix = 451 tonnes					
		Weight of bitumen = 14.883 tonnes					

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Weight of aggregate = 451 -14.883 = 436.117 tonnes					
		<b>Taking density of aggregate = 1.5 ton/cum</b>					
		Volume of aggregate = 290.745 cum					
		<b>Grading I ( 40 mm nominal size )</b>					
		37.5 - 25 mm 15 per cent	cum	43.612	3663.20	159759.48	M-012
		25 - 10 mm 45 per cent	cum	130.835	4017.00	525564.20	M-010
		10 - 5 mm 25 per cent	cum	72.686	4355.60	316591.14	M-006
		5 mm and below 15 per cent	cum	43.612	4450.50	194095.21	M-013
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				477067.12	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				407996.68	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				31279.75	
		Cost for 205 cum = a+b+c+d+e+f				3159254.30	
		<b>Rate per cum = (a+b+c+d+e+f)/205</b>				15411.00	
					<b>say</b>	<b><u>15411.00</u></b>	
		<b>B. Grading II</b>					
		<b>i. With Viscosity Graded Bitumen of VG-30.</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 205 cum (451 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.840	391.00	328.44	L-17
		Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Hydraulic broom @ 1250 sqm per hour	hour	2.200	386.00	849.20	P&M-033
		Air compressor 210 cfm	hour	2.200	235.00	517.00	P&M-001
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.50 cum, 10 T capacity	hour	18.640	374.00	6971.36	P&M-073
		Three wheel 80-100 KN static roller for initial break down rolling.	hour	3.900	439.00	1712.10	P&M-068
		Vibratory roller 80-100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheeled tandem roller 6-8 tonnes for final and finishing rolling.	hour	3.900	1350.00	5265.00	P&M-058
		<b>c) Material</b>					
		<b>i) Bitumen (VG-30) @ 3.4 per cent of mix</b>	tonne	15.334	61186.00	910631.24	M-041
		weight of mix = 205 x 2.2 = 451 tonne					
		<b>ii) Aggregate</b>					
		Total weight of mix = 451 tonnes					
		Weight of bitumen = 15.334 tonnes					
		Weight of aggregate = 451 -15.334 = 435.666tonnes					
		<b>Taking density of aggregate = 1.5 ton/cum</b>					
		Volume of aggregate = 290.444 cum					
		<b>GradingII (19 mm nominal size)</b>					
		25 - 10 mm 40 per cent	cum	116.178	4017.00	466687.03	M-010
		10 - 5 mm 40 per cent	cum	116.178	4355.60	506024.90	M-006
		5 mm and below 20 per cent	cum	58.089	4450.50	258525.09	M-013

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				487092.39	
		e) Contractor's profit @ 15 % on (a+b+c+d)				416570.48	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				30455.31	
		Cost for 205 cum = a+b+c+d+e+f				3224162.34	
		Rate per cum = (a+b+c+d+e+f)/205				15727.62	
					<b>say</b>	<b><u>15727.60</u></b>	
<b>B. Grading II</b>							
<b>ii. With Viscosity Graded Bitumen of VG-10.</b>							
<b>Unit = cum</b>							
<b>Taking output = 205 cum (451 tonnes)</b>							
<b>a) Labour</b>							
		Mate	day	0.840	391.00	328.44	L-17
		Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
<b>b) Machinery</b>							
		Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Hydraulic broom @ 1250 sqm per hour	hour	2.200	386.00	849.20	P&M-033
		Air compressor 210 cfm	hour	2.200	235.00	517.00	P&M-001
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.50 cum, 10 T capacity	hour	18.640	374.00	6971.36	P&M-073
		Three wheel 80-100 KN static roller for initial break down rolling.	hour	3.900	439.00	1712.10	P&M-068
		Vibratory roller 80-100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheeled tandem roller 6-8 tonnes for final and finishing rolling.	hour	3.900	1350.00	5265.00	P&M-058
<b>c) Material</b>							
		<b>i) Bitumen (VG-10) @ 3.4 per cent of mix</b>	tonne	15.334	60386.00	898724.84	M-042
		weight of mix = 205 x 2.2 = 451 tonne					
<b>ii) Aggregate</b>							
		Total weight of mix = 451 tonnes					
		Weight of bitumen = 15.334 tonnes					
		Weight of aggregate = 451 -15.334 = 435.666tonnes					
		<b>Taking density of aggregate = 1.5 ton/cum</b>					
		Volume of aggregate = 290.444 cum					
<b>GradingII (19 mm nominal size)</b>							
		25 - 10 mm 40 per cent	cum	116.178	4017.00	466687.03	M-010
		10 - 5 mm 40 per cent	cum	116.178	4355.60	506024.90	M-006
		5 mm and below 20 per cent	cum	58.089	4450.50	258525.09	M-013
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				484559.90	
		e) Contractor's profit @ 15 % on (a+b+c+d)				414404.65	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				31771.02	
		Cost for 205 cum = a+b+c+d+e+f				3208873.33	
		Rate per cum = (a+b+c+d+e+f)/205				15653.04	
					<b>say</b>	<b><u>15653.00</u></b>	

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	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 451 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.Analysis is based on 1000 m lead mixed material. Cost of additional cartage may be added as per site requirement.

**5.4      504      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 vibratory roller to achieve the desired degree of compaction as per MoRT&H Technical Specification Clause 504.

**A. 50 mm thick**

**i. With Viscosity Graded Bitumen of VG-30.**

**Unit = sqm**

**Taking output = 4500 sqm (225 cum compacted)**

**a) Labour**

Mate	day	0.320	391.00	125.12	L-17
Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-18
Mazdoor(skilled)	day	2.000	475.00	950.00	L-20

**b) Machinery**

Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour	hour	6.000	4064.00	24384.00	P&M-038
Bitumen pressure distributor for @ 1750 sqm per hour	hour	2.570	226.00	580.82	P&M-012
Tipper 5.5 cum, 10 T capacity	hour	10.000	374.00	3740.00	P&M-073
Vibratory roller 8 tonnes	hour	6.000	1562.00	9372.00	P&M-083
Front end loader	hour	6.000	1030.00	6180.00	P&M-030

**c) Material**

<b>Bitumen (VG-30) @ 5 kg per sqm</b>	tonne	22.500	61186.00	1376685.00	M-041
Crushed stone coarse aggregate passing 45 mm and retained on 2.8 mm sieve @ 0.06 cum per sqm	cum	270.000	3751.30	1012851.00	M-080

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.015 cum per sqm	cum	67.500	3981.00	268717.50	M-123
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				575551.62	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				492222.46	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				37737.06	
		Cost for 4500 sqm = a+b+c+d+e+f				3811442.57	
		<b>Rate per sqm = (a+b+c+d+e+f)/4500</b>				846.99	
					<b>say</b>	<b><u>847.00</u></b>	
		<b>ii. With Viscosity Graded Bitumen of VG-10.</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 4500 sqm (225 cum compacted)</b>					
		<b>a) Labour</b>					
		Mate	day	0.320	391.00	125.12	L-17
		Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-18
		Mazdoor(skilled)	day	2.000	475.00	950.00	L-20
		<b>b) Machinery</b>					
		Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour	hour	6.000	4064.00	24384.00	P&M-038
		Bitumen pressure distributor for @ 1750 sqm per hour	hour	2.570	226.00	580.82	P&M-012
		Tipper 5.5 cum, 10 T capacity	hour	10.000	374.00	3740.00	P&M-073
		Vibratory roller 8 tonnes	hour	6.000	1562.00	9372.00	P&M-083
		Front end loader	hour	6.000	1030.00	6180.00	P&M-030
		<b>c) Material</b>					
		Bitumen (VG-10) @ 5 kg per sqm	tonne	22.500	60386.00	1358685.00	M-042
		Crushed stone coarse aggregate passing 45 mm and retained on 2.8 mm sieve @ 0.06 cum per sqm	cum	270.000	3751.30	1012851.00	M-080
		Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.015 cum per sqm	cum	67.500	3981.00	268717.50	M-123
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				571723.02	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				488948.17	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				37486.03	
		Cost for 4500 sqm = a+b+c+d+e+f				3786088.65	
		<b>Rate per sqm = (a+b+c+d+e+f)/4500</b>				841.35	
					<b>say</b>	<b><u>841.40</u></b>	
		<b>B. 75 mm thick</b>					
		<b>i. With Viscosity Graded Bitumen of VG-30.</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 4500 sqm (337.5 cum compacted).</b>					
		<b>a) Labour</b>					
		Mate	day	0.400	391.00	156.40	L-17
		Mazdoor(unskilled)	day	8.000	391.00	3128.00	L-18
		Mazdoor(skilled)	day	2.000	475.00	950.00	L-20
		<b>b) Machinery</b>					



**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour	hour	6.000	4064.00	24384.00	P&M-038
		Bitumen pressure distributor for@ 1750 sqm per hour	hour	2.570	226.00	580.82	P&M-012
		Tipper 5.5 cum, 10 T capacity	hour	10.000	374.00	3740.00	P&M-073
		Vibratory roller 8 tonnes	hour	6.000	1562.00	9372.00	P&M-083
		Front end loader	hour	6.000	1030.00	6180.00	P&M-030
		<b>c) Material</b>					
		<b>Bitumen (VG-30) @ 6.8 kg per sqm</b>	tonne	30.600	61186.00	1872291.60	M-041
		Crushed stone coarse aggregate, loose passing 63 mm and retained on 2.8 mm sieve @ 0.09 cum per sqm	cum	405.000	3619.10	1465735.50	M-078
		Key aggregates passing 26.5 mm and retained on 2.8 mm sieve @ 0.018 cum per sqm	cum	81.000	4278.00	346518.00	M-122
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				794016.83	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				679057.97	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				52061.11	
		Cost for 4500 sqm = a+b+c+d+e+f				5258172.23	
		<b>Rate per sqm = (a+b+c+d+e+f)/4500</b>				1168.48	
					<b>say</b>	<b><u>1168.50</u></b>	
		<b>ii. With Viscosity Graded Bitumen of VG-10.</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 4500 sqm (337.5 cum compacted).</b>					
		<b>a) Labour</b>					
		Mate	day	0.400	391.00	156.40	L-17
		Mazdoor(unskilled)	day	8.000	391.00	3128.00	L-18
		Mazdoor(skilled)	day	2.000	475.00	950.00	L-20
		<b>b) Machinery</b>					
		Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour	hour	6.000	4064.00	24384.00	P&M-038
		Bitumen pressure distributor for@ 1750 sqm per hour	hour	2.570	226.00	580.82	P&M-012
		Tipper 5.5 cum, 10 T capacity	hour	10.000	374.00	3740.00	P&M-073
		Vibratory roller 8 tonnes	hour	6.000	1562.00	9372.00	P&M-083
		Front end loader	hour	6.000	1030.00	6180.00	P&M-030
		<b>c) Material</b>					
		<b>Bitumen (VG-10) @ 6.8 kg per sqm</b>	tonne	30.600	60386.00	1847811.60	M-042
		Crushed stone coarse aggregate, loose passing 63 mm and retained on 2.8 mm sieve @ 0.09 cum per sqm	cum	405.000	3619.10	1465735.50	M-078
		Key aggregates passing 26.5 mm and retained on 2.8 mm sieve @ 0.018 cum per sqm	cum	81.000	4278.00	346518.00	M-122
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				788809.93	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				674604.94	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				51719.71	
		Cost for 4500 sqm = a+b+c+d+e+f				5223690.90	
		<b>Rate per sqm = (a+b+c+d+e+f)/4500</b>				1160.82	

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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say 1160.80

**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 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 line, grades and cross section-specified, the compacted layer thickness being 75 mm as per MoRT&H Technical Specification Clause 506.

**i. With Viscosity Graded Bitumen of VG-30.**

**Unit = sqm**

**Taking output = 3000 sqm (225 cum)**

**a) Labour**

Mate	day	0.400	391.00	156.40	L-17
Mazdoor(unskilled)	day	8.000	391.00	3128.00	L-18
Mazdoor(skilled)	day	2.000	475.00	950.00	L-20

**b) Machinery**

Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour	hour	6.000	4064.00	24384.00	P&M-038
Bitumen pressure distributor for 3000 x 2 sqm @ 1750 sqm per hour	hour	3.430	226.00	775.18	P&M-012
Tipper 5.5 cum, 10 T capacity	hour	10.000	374.00	3740.00	P&M-073
Vibratory roller	hour	22.500	1562.00	35145.00	P&M-083
Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030

**c) Material**

**i) Bitumen(VG-30)**

@30 kg per 10 sqm , @ 15 kg per 10 sqm for each layer	tonne	9.000	61186.00	550674.00	M-041
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**ii) Aggregate**

Crushed stone coarse aggregate passing 53 mm and retained on 2.8 mm sieve @ 1.00 cum per 10 sqm for each layer	cum	300.000	3707.30	1112190.00	M-079
Key aggregates passing 22.4 mm sieve and retained on 2.8 mm sieve @ 0.13 cum per 10 sqm	cum	39.000	3981.00	155259.00	M-123

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

402552.10

**e) Contractor's profit @ 15 % on (a+b+c+d)**

344270.05

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

26394.04

Cost for 3000 sqm = a+b+c+d+e+f

2665797.77

**Rate per sqm = (a+b+c+d+e+f)/3000**

888.60

say 888.60

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>ii. With Viscosity Graded Bitumen of VG-10.</b>							
<b>Unit = sqm</b>							
<b>Taking output = 3000 sqm (225 cum)</b>							
<b>a) Labour</b>							
		Mate	day	0.400	391.00	156.40	L-17
		Mazdoor(unskilled)	day	8.000	391.00	3128.00	L-18
		Mazdoor(skilled)	day	2.000	475.00	950.00	L-20
<b>b) Machinery</b>							
		Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour	hour	6.000	4064.00	24384.00	P&M-038
		Bitumen pressure distributor for 3000 x 2 sqm @ 1750 sqm per hour	hour	3.430	226.00	775.18	P&M-012
		Tipper 5.5 cum, 10 T capacity	hour	10.000	374.00	3740.00	P&M-073
		Vibratory roller	hour	22.500	1562.00	35145.00	P&M-083
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
<b>c) Material</b>							
<b>i) Bitumen (VG-10)</b>							
		@30 kg per 10 sqm , @ 15 kg per 10 sqm for each layer	tonne	9.000	60386.00	543474.00	M-042
<b>ii) Aggregate</b>							
		Crushed stone coarse aggregate passing 53 mm and retained on 2.8 mm sieve @ 1.00 cum per 10 sqm for each layer	cum	300.000	3707.30	1112190.00	M-079
		Key aggregates passing 22.4 mm sieve and retained on 2.8 mm sieve @ 0.13 cum per 10 sqm	cum	39.000	3981.00	155259.00	M-123
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						401020.66	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						342960.34	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						26293.63	
Cost for 3000 sqm = a+b+c+d+e+f						2655656.20	
<b>Rate per sqm = (a+b+c+d+e+f)/3000</b>						885.22	
						<b>say</b>	<b><u>885.20</u></b>

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

**5.6 505 Dense Graded Bituminous Macadam**

Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRT&H specification clause No. 505 complete in all respects.

**A. Grading I**

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**i. With Viscosity Graded Bitumen of VG-30.**

**Unit = cum**

**Taking output = 195 cum (450 tonnes)**

**a) Labour**

Mate	day	0.760	391.00	297.16	L-17
Mazdoor(unskilled)	day	14.000	391.00	5474.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**b) Machinery**

Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.5 cum, 10 T capacity	hour	17.730	374.00	6631.02	P&M-073
Three wheel 80 - 100 KN static roller for initial break down rolling	hour	3.900	439.00	1712.10	P&M-068
Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058

**c) Materials**

**i) Bitumen(VG-30)**

@ 4.25 per cent of weight of mix	tonne	19.125	61186.00	1170182.25	M-041
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**ii) Aggregate**

Total weight of mix = 450 tonnes

Weight of bitumen = 19.125 tonnes

Weight of aggregate = 450 - 19.125 = 430.875 tonnes

**Taking density of aggregate = 1.5 ton/cum**

Volume of aggregate = 287.250 cum

**40 mm (Nominal Size)/ Grading - I**

37.5 - 25 mm 22 per cent	cum	63.195	3663.20	231495.92	M-012
25 - 10 mm 13 per cent	cum	37.343	4017.00	150006.83	M-010
10 - 4.75 mm 19 per cent	cum	54.578	4282.60	233735.74	M-009
4.75 mm and below 44 per cent	cum	126.390	4282.60	541277.81	M-009
Filler @ 2 % of weight of aggregates (cement).	tonne	8.618	6797.00	58576.55	M-052

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

538329.06

**e) Contractor's profit @ 15 % on**

**(a+b+c+d)**

460389.04

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

35296.49

Cost for 195 cum = a+b+c+d+e+f

3564945.78

**Rate per cum = (a+b+c+d+e+f)/195**

18281.77

**say 18281.80**

**ii. With Viscosity Graded Bitumen of VG-10.**

**10.**

**Unit = cum**

**Taking output = 195 cum (450 tonnes)**

**a) Labour**

Mate	day	0.760	391.00	297.16	L-17
Mazdoor(unskilled)	day	14.000	391.00	5474.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**b) Machinery**

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.5 cum, 10 T capacity	hour	17.730	374.00	6631.02	P&M-073
		Three wheel 80 - 100 KN static roller for initial break down rolling	hour	3.900	439.00	1712.10	P&M-068
		Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058
		<b>c) Materials</b>					
		<b>i) Bitumen (VG-10)</b>					
		@ 4.25 per cent of weight of mix	tonne	19.125	60386.00	1154882.25	M-042
		<b>ii) Aggregate</b>					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 19.125 tonnes					
		Weight of aggregate = 450 - 19.125 = 430.875 tonnes					
		<b>Taking density of aggregate = 1.5 ton/cum</b>					
		Volume of aggregate = 287.250 cum					
		<b>40 mm (Nominal Size)/ Grading - I</b>					
		37.5 - 25 mm 22 per cent	cum	63.195	3663.20	231495.92	M-012
		25 - 10 mm 13 per cent	cum	37.343	4017.00	150006.83	M-010
		10 - 4.75 mm 19 per cent	cum	54.578	4282.60	233735.74	M-009
		4.75 mm and below 44 per cent	cum	126.390	4282.60	541277.81	M-009
		Filler @ 2 % of weight of aggregates (cement).	tonne	8.618	6797.00	58576.55	M-052
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				535074.75	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				457605.89	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				35083.12	
		Cost for 195 cum = a+b+c+d+e+f				3543394.95	
		<b>Rate per cum = (a+b+c+d+e+f)/195</b>				18171.26	
					<b>say</b>	<b><u>18171.30</u></b>	
		<b>B. Grading II</b>					
		<b>i. With Viscosity Graded Bitumen of VG-30.</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 195 cum (450 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.760	391.00	297.16	L-17
		Mazdoor(unskilled)	day	14.000	391.00	5474.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.5 cum, 10 T capacity	hour	17.730	374.00	6631.02	P&M-073
		Three wheel 80 - 100 KN static roller for initial break down rolling	hour	3.900	439.00	1712.10	P&M-068

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058
		<b>c) Materials</b>					
		<b>i) Bitumen(VG-30)</b>					
		@ 4.25 per cent of weight of mix	tonne	19.125	61186.00	1170182.25	M-041
		<b>ii) Aggregate</b>					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 19.125 tonnes					
		Weight of aggregate = 450 -19.125 = 430.875 tonnes					
		<b>Taking density of aggregate = 1.5 ton/cum</b>					
		Volume of aggregate = 287.250 cum					
		<b>19 mm (Nominal Size)/ Grading - II</b>					
		25 - 10 mm @ 30 per cent	cum	86.175	4017.00	346164.98	M-010
		10 - 5 mm @ 28 per cent	cum	80.430	4355.60	350320.91	M-006
		5 mm and below @ 40 per cent	cum	114.900	4450.50	511362.45	M-013
		Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.618	6797.00	58576.55	M-052
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				549247.38	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				469726.59	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				36012.37	
		Cost for 195 cum = a+b+c+d+e+f				3637249.55	
		<b>Rate per cum = (a+b+c+d+e+f)/195</b>				18652.56	
						<b>say 18652.60</b>	
		<b>ii. With Viscosity Graded Bitumen of VG-10.</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 195 cum (450 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.760	391.00	297.16	L-17
		Mazdoor(unskilled)	day	14.000	391.00	5474.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.5 cum, 10 T capacity	hour	17.730	374.00	6631.02	P&M-073
		Three wheel 80 - 100 KN static roller for initial break down rolling	hour	3.900	439.00	1712.10	P&M-068
		Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058
		<b>c) Materials</b>					
		<b>i) Bitumen (VG-10)</b>					
		@ 4.25 per cent of weight of mix	tonne	19.125	60386.00	1154882.25	M-042
		<b>ii) Aggregate</b>					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 19.125 tonnes					
		Weight of aggregate = 450 -19.125 = 430.875 tonnes					

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>Taking density of aggregate = 1.5 ton/cum</b>							
Volume of aggregate = 287.250 cum							
<b>19 mm (Nominal Size)/ Grading - II</b>							
		25 - 10 mm @ 30 per cent	cum	86.175	4017.00	346164.98	M-010
		10 - 5 mm @ 28 per cent	cum	80.430	4355.60	350320.91	M-006
		5 mm and below @ 40 per cent	cum	114.900	4450.50	511362.45	M-013
		Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.618	6797.00	58576.55	M-052
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				545993.07	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				466943.44	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				35799.00	
		Cost for 195 cum = a+b+c+d+e+f				3615698.72	
		<b>Rate per cum = (a+b+c+d+e+f)/195</b>				18542.04	
					<b>say</b>	<b><u>18542.00</u></b>	

**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.

7. Analysis is based on 1000 m lead mixed material. Cost of additional cartage may be added as per site requirements.

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.																																																																																																
5.7	507	<p><b>Semi-Dense Bituminous Concrete</b> 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 5.0 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 MoRT&amp;H specification clause No. 507 complete in all respects.</p> <p><b>A. Grading I</b> <b>i. With Viscosity Graded Bitumen of VG-30.</b> <b>Unit = cum</b> <b>Taking output = 195 cum (450 tonnes)</b></p> <p><b>a) Labour</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Mate</td> <td style="width: 10%;">day</td> <td style="width: 10%;">0.760</td> <td style="width: 10%;">391.00</td> <td style="width: 10%;">297.16</td> <td style="width: 10%;">L-17</td> </tr> <tr> <td>Mazdoor(unskilled)</td> <td>day</td> <td>14.000</td> <td>391.00</td> <td>5474.00</td> <td>L-18</td> </tr> <tr> <td>Mazdoor(skilled)</td> <td>day</td> <td>5.000</td> <td>475.00</td> <td>2375.00</td> <td>L-20</td> </tr> </table> <p><b>b) Machinery</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output</td> <td style="width: 10%;">hour</td> <td style="width: 10%;">6.000</td> <td style="width: 10%;">15400.00</td> <td style="width: 10%;">92400.00</td> <td style="width: 10%;">P&amp;M-005</td> </tr> <tr> <td>Paver finisher hydrostatic with sensor</td> <td>hour</td> <td>6.000</td> <td>2505.00</td> <td>15030.00</td> <td>P&amp;M-050</td> </tr> <tr> <td>Generator 250 KVA</td> <td>hour</td> <td>6.000</td> <td>700.00</td> <td>4200.00</td> <td>P&amp;M-025</td> </tr> <tr> <td>Front end loader 1 cum bucket capacity</td> <td>hour</td> <td>6.000</td> <td>1030.00</td> <td>6180.00</td> <td>P&amp;M-030</td> </tr> <tr> <td>Tipper 5.5 cum, 10 T capacity</td> <td>hour</td> <td>17.730</td> <td>374.00</td> <td>6631.02</td> <td>P&amp;M-073</td> </tr> <tr> <td>Three wheel 80 - 100 KN static roller for initial break down rolling</td> <td>hour</td> <td>3.900</td> <td>439.00</td> <td>1712.10</td> <td>P&amp;M-068</td> </tr> <tr> <td>Vibratory roller 80 - 100 KN for intermediate rolling.</td> <td>hour</td> <td>3.900</td> <td>1562.00</td> <td>6091.80</td> <td>P&amp;M-083</td> </tr> <tr> <td>Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.</td> <td>hour</td> <td>3.900</td> <td>1350.00</td> <td>5265.00</td> <td>P&amp;M-058</td> </tr> </table> <p><b>c) Material</b></p> <p><b>i) Bitumen (VG-30)</b> <b>@ 4.5 per cent of weight of mix</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">tonne</td> <td style="width: 10%;">20.250</td> <td style="width: 10%;">61186.00</td> <td style="width: 10%;">1239016.50</td> <td style="width: 10%;">M-041</td> </tr> </table> <p><b>ii) Aggregate</b> 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</p> <p>Volume of aggregate = 286.50 cum</p> <p><b>Grading I/ 13 mm (Nominal Size)</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">13.2 - 10 mm20 per cent</td> <td style="width: 10%;">cum</td> <td style="width: 10%;">57.300</td> <td style="width: 10%;">4281.40</td> <td style="width: 10%;">245324.22</td> <td style="width: 10%;">M-005</td> </tr> <tr> <td>10 - 5 mm 38 per cent</td> <td>cum</td> <td>108.870</td> <td>4355.60</td> <td>474194.17</td> <td>M-006</td> </tr> <tr> <td>5 mm and below 40 per cent</td> <td>cum</td> <td>114.600</td> <td>4450.50</td> <td>510027.30</td> <td>M-013</td> </tr> <tr> <td>Filler @ 2 per cent of weight of aggregates(cement).</td> <td>tonne</td> <td>8.595</td> <td>6797.00</td> <td>58420.22</td> <td>M-052</td> </tr> </table> <p><b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b> 568470.21</p> <p><b>e) Contractor's profit @ 15 % on (a+b+c+d)</b> 486166.30</p> <p><b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b> 37272.75</p>	Mate	day	0.760	391.00	297.16	L-17	Mazdoor(unskilled)	day	14.000	391.00	5474.00	L-18	Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20	Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005	Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050	Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025	Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030	Tipper 5.5 cum, 10 T capacity	hour	17.730	374.00	6631.02	P&M-073	Three wheel 80 - 100 KN static roller for initial break down rolling	hour	3.900	439.00	1712.10	P&M-068	Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083	Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058	tonne	20.250	61186.00	1239016.50	M-041	13.2 - 10 mm20 per cent	cum	57.300	4281.40	245324.22	M-005	10 - 5 mm 38 per cent	cum	108.870	4355.60	474194.17	M-006	5 mm and below 40 per cent	cum	114.600	4450.50	510027.30	M-013	Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.595	6797.00	58420.22	M-052						
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**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Cost for 195 cum = a+b+c+d+e+f 3764547.75  
**Rate per cum = (a+b+c+d+e+f)/195** 19305.37  
**say** 19305.40

**ii. With Viscosity Graded Bitumen of VG-10.**

**Unit = cum**

**Taking output = 195 cum (450 tonnes)**

**a) Labour**

Mate	day	0.760	391.00	297.16	L-17
Mazdoor(unskilled)	day	14.000	391.00	5474.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**b) Machinery**

Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.5 cum, 10 T capacity	hour	17.730	374.00	6631.02	P&M-073
Three wheel 80 - 100 KN static roller for initial break down rolling	hour	3.900	439.00	1712.10	P&M-068
Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058

**c) Material**

**i) Bitumen (VG-10)**

@ 4.5 per cent of weight of mix	tonne	20.250	60386.00	1222816.50	M-042
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**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 = 286.50 cum

**Grading I/ 13 mm (Nominal Size)**

13.2 - 10 mm 20 per cent	cum	57.300	4281.40	245324.22	M-005
10 - 5 mm 38 per cent	cum	108.870	4355.60	474194.17	M-006
5 mm and below 40 per cent	cum	114.600	4450.50	510027.30	M-013
Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.595	6797.00	58420.22	M-052

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

565024.47

**e) Contractor's profit @ 15 % on**

**(a+b+c+d)**

483219.44

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

37046.82

Cost for 195 cum = a+b+c+d+e+f 3741729.22

**Rate per cum = (a+b+c+d+e+f)/195** 19188.35

**say** 19188.40

**B. Grading II**

**i. With Viscosity Graded Bitumen of VG-30.**

**Unit = cum**

**Taking output = 195 cum (450 tonnes)**

**a) Labour**

Mate	day	0.760	391.00	297.16	L-17
Mazdoor(unskilled)	day	14.000	391.00	5474.00	L-18
Mazdoor(skilled)	day		475.00	2375.00	L-20

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>b) Machinery</b>							
		Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.5 cum, 10 T capacity	hour	17.730	374.00	6631.02	P&M-073
		Three wheel 80 - 100 KN static roller for initial break down rolling	hour	3.900	439.00	1712.10	P&M-068
		Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058
<b>c) Material</b>							
<b>i) Bitumen (VG-30)</b>							
		<b>@ 5.00 per cent of weight of mix</b>	tonne	22.500	61186.00	1239016.50	M-041
<b>ii) Aggregate</b>							
Total weight of mix = 450 tonnes							
Weight of bitumen = 22.50 tonnes							
Weight of aggregate = 450-22.50 = 427.50 tonnes							
Taking density of aggregate = 1.5 ton/cum							
Volume of aggregate = 285.00 cum							
<b>Grading II/ 10 mm (Nominal Size)</b>							
		9.5 - 4.75 mm@ 57 per cent	cum	162.450	4326.30	702807.44	M-008
		4.75 and below@ 41 per cent	cum	116.850	4282.60	500421.81	M-009
		Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.550	6797.00	58114.35	M-052
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						562807.64	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						481323.57	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						36901.47	
Cost for 195 cum = a+b+c+d+e+f						3727048.86	
<b>Rate per cum = (a+b+c+d+e+f)/195</b>						19113.07	
						<b>say</b>	<b><u>19113.10</u></b>
<b>ii. With Viscosity Graded Bitumen of VG-10.</b>							
<b>Unit = cum</b>							
<b>Taking output = 195 cum (450 tonnes)</b>							
<b>a) Labour</b>							
		Mate	day	0.760	391.00	297.16	L-17
		Mazdoor(unskilled)	day	14.000	391.00	5474.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
<b>b) Machinery</b>							
		Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.5 cum, 10 T capacity	hour	17.730	374.00	6631.02	P&M-073
		Three wheel 80 - 100 KN static roller for initial break down rolling	hour	3.900	439.00	1712.10	P&M-068
		Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>c) Material</b>					
		<b>i) Bitumen (VG-10)</b>					
		<b>@ 5.00 per cent of weight of mix</b>	tonne	22.500	60386.00	1222816.50	M-042
		<b>ii) Aggregate</b>					
		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 = 286.50 cum					
		<b>Grading II/ 10 mm (Nominal Size)</b>					
		9.5 - 4.75 mm @ 57 per cent	cum	162.450	4326.30	702807.44	M-008
		4.75 and below @ 41 per cent	cum	116.850	4282.60	500421.81	M-009
		Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.550	6797.00	58114.35	M-052
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				559361.90	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				478376.71	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				36675.55	
		Cost for 195 cum = a+b+c+d+e+f				3704230.33	
		<b>Rate per cum = (a+b+c+d+e+f)/195</b>				18996.05	
					<b>say</b>	<b><u>18996.10</u></b>	

**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. Analysis is based on 1000 m lead of mixed material. Cost of additional cartage may be added as per site requirements.

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
5.8	507	<b>Bituminous Concrete</b>					
	A.	Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ 5.2 Percent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 complete in all respects.					
		<b>Grading I</b>					
		<b>i. With Viscosity Graded Bitumen of VG-30.</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 191 cum (450 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.760	391.00	297.16	L-17
		Mazdoor(unskilled)	day	14.000	391.00	5474.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.5 cum, 10 T capacity	hour	17.360	374.00	6492.64	P&M-073
		Three wheel 80 - 100 KN static roller for initial break down rolling	hour	3.900	439.00	1712.10	P&M-068
		Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058
		<b>c) Material</b>					
		<b>i) Bitumen (VG-30)</b>					
		<b>@ 5.20 per cent of weight of mix</b>	tonne	23.400	61186.00	1431752.40	M-041
		<b>ii) Aggregate</b>					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 23.40 tonnes					
		Weight of aggregate = 450 - 23.40 = 426.60 tonnes					
		<b>Taking density of aggregate = 1.5 ton/cum</b>					
		Volume of aggregate = 284.40 cum					
		<b>Grading - I/ 19 mm (Nominal Size)</b>					
		20 - 10 mm 38 per cent	cum	108.072	4149.20	448412.34	M-011
		10 - 5 mm 17 per cent	cum	48.348	4355.60	210584.55	M-006
		5 mm and below 43 per cent	cum	122.292	4450.50	544260.55	M-013
		Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.532	6797.00	57992.00	M-052
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				603753.11	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				516340.90	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				39586.14	

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cost for 191 cum = a+b+c+d+e+f				3998199.68	
		<b>Rate per cum = (a+b+c+d+e+f)/191</b>				20932.98	
					<b>say</b>	<b><u>20933.00</u></b>	
<b>ii. With Viscosity Graded Bitumen of VG-10.</b>							
<b>Unit = cum</b>							
<b>Taking output = 191 cum (450 tonnes)</b>							
<b>a) Labour</b>							
		Mate	day	0.760	391.00	297.16	L-17
		Mazdoor(unskilled)	day	14.000	391.00	5474.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
<b>b) Machinery</b>							
		Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.5 cum, 10 T capacity	hour	17.360	374.00	6492.64	P&M-073
		Three wheel 80 - 100 KN static roller for initial break down rolling	hour	3.900	439.00	1712.10	P&M-068
		Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058
<b>c) Material</b>							
<b>i) Bitumen (VG-10)</b>							
		<b>@ 5.20 per cent of weight of mix</b>	tonne	23.400	60386.00	1413032.40	M-042
<b>ii) Aggregate</b>							
Total weight of mix = 450 tonnes							
Weight of bitumen = 23.40 tonnes							
Weight of aggregate = 450 -23.40 = 426.60 tonnes							
<b>Taking density of aggregate = 1.5 ton/cum</b>							
Volume of aggregate = 284.40 cum							
<b>Grading - I/ 19 mm (Nominal Size)</b>							
		20 - 10 mm 38 per cent	cum	108.072	4149.20	448412.34	M-011
		10 - 5 mm 17 per cent	cum	48.348	4355.60	210584.55	M-006
		5 mm and below 43 per cent	cum	122.292	4450.50	544260.55	M-013
		Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.532	6797.00	57992.00	M-052
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>							
						599771.36	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>							
						512935.64	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>							
						39325.07	
		Cost for 191 cum = a+b+c+d+e+f				3971831.60	
		<b>Rate per cum = (a+b+c+d+e+f)/191</b>				20794.93	
					<b>say</b>	<b><u>20794.90</u></b>	

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
B.		Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 Percent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 complete in all respects					
		<b>Grading II</b>					
		<b>i. With Viscosity Graded Bitumen of VG-30.</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 191 cum (450 tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.840	391.00	328.44	L-17
		Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.5 cum, 10 T capacity	hour	17.360	374.00	6492.64	P&M-073
		Three wheel 80 - 100 KN static roller for initial break down rolling	hour	7.800	439.00	3424.20	P&M-068
		Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058
		<b>c) Material</b>					
		<b>i) Bitumen (VG-30)</b>					
		<b>@ 5.40 per cent of weight of mix</b>	tonne	24.300	61186.00	1486819.80	M-041
		<b>ii) Aggregate</b>					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 24.30 tonnes					
		Weight of aggregate = 450 -24.30 = 426.60 tonnes					
		<b>Taking density of aggregate = 1.5 ton/cum</b>					
		Volume of aggregate = 284.40 cum					
		<b>Grading - II/ 13 mm (Nominal Size)</b>					
		13.2 - 10 mm 21 per cent	cum	59.724	4281.40	255702.33	M-005
		10 - 5 mm 17 per cent	cum	48.348	4355.60	210584.55	M-006
		5 mm and below 60 per cent	cum	170.640	4450.50	759433.32	M-013
		Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.532	6797.00	57992.00	M-052
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				620780.92	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				530903.40	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				40702.59	
		Cost for 191 cum = a+b+c+d+e+f				4110962.00	
		<b>Rate per cum = (a+b+c+d+e+f)/191</b>				21523.36	

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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say 21523.40

**ii. With Viscosity Graded Bitumen of VG-10.**

**Unit = cum**

**Taking output = 191 cum (450 tonnes)**

**a) Labour**

Mate	day	0.840	391.00	328.44	L-17
Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**b) Machinery**

Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
Generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.5 cum, 10 T capacity	hour	17.360	374.00	6492.64	P&M-073
Three wheel 80 - 100 KN static roller for initial break down rolling	hour	7.800	439.00	3424.20	P&M-068
Vibratory roller 80 - 100 KN for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
Smooth wheel tandem roller 6-8 tonnes for final and finish rolling.	hour	3.900	1350.00	5265.00	P&M-058

**c) Material**

**i) Bitumen (VG-10)**

<b>@ 5.40 per cent of weight of mix</b>	tonne	24.300	60386.00	1467379.80	M-042
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**ii) Aggregate**

Total weight of mix = 450 tonnes

Weight of bitumen = 24.30 tonnes

Weight of aggregate = 450 - 24.30 = 426.60 tonnes

**Taking density of aggregate = 1.5 ton/cum**

Volume of aggregate = 284.40 cum

**Grading - II/ 13 mm (Nominal Size)**

13.2 - 10 mm 21 per cent	cum	59.724	4281.40	255702.33	M-005
10 - 5 mm 17 per cent	cum	48.348	4355.60	210584.55	M-006
5 mm and below 60 per cent	cum	170.640	4450.50	759433.32	M-013
Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.532	6797.00	57992.00	M-052

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

616646.03

**e) Contractor's profit @ 15 % on (a+b+c+d)**

527367.17

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

40431.48

Cost for 191 cum = a+b+c+d+e+f

4083579.77

**Rate per cum = (a+b+c+d+e+f)/191**

21380.00

say 21380.00

**Note:-** 1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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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. If 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. Analysis is based on 1000 m lead of mixed material. Cost of additional cartage may be added as per site requirements.

6. 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 anlysis.

7. 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      509      Surface Dressing**

Providing and laying surface dressing as wearing course in single coat using crushed stone aggregates of specified size on a layer of bituminous binder laid on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller as per MoRT&H Technical Specification Clause 509.

**Unit = sqm**

**Taking output = 9000 sqm**

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

**(I) Bitumen of VG-30**

**a) Labour**

Mate	day	0.440	391.00	172.04	L-17
Mazdoor(unskilled)	day	9.000	391.00	3519.00	L-18
Mazdoor(skilled)	day	2.000	475.00	950.00	L-20

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	7.200	386.00	2779.20	P&M-033
Air compressor 210 cfm	hour	7.200	235.00	1692.00	P&M-001
Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	4064.00	24384.00	P&M-038
Tipper 5.50 cum / 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	374.00	2244.00	P&M-073



**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Bitumen pressure distributor	hour	6.000	226.00	1356.00	P&M-012
		Three wheel 80-100 KN static roller	hour	6.000	439.00	2634.00	P&M-071
		<b>c) Material</b>					
		<b>i) Bitumen (VG-30)</b>					
		@ 1.20 kg per sqm	tonne	10.800	61186.00	660808.80	M-041
		<b>ii) Aggregate</b>					
		Crushed stone chipping, 19 mm nominal size @ 0.015 cum per sqm	cum	135.000	4061.00	548235.00	M-073
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				266928.72	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				228282.41	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				17501.65	
		Cost for 9000 sqm = a+b+c+d+e+f				1767666.83	
		<b>Rate per sqm = (a+b+c+d+e+f)/9000</b>				196.41	
					<b>say</b>	<b><u>196.40</u></b>	
		<b>(II) Bitumen of VG-10</b>					
		<b>a) Labour</b>					
		Mate	day	0.440	391.00	172.04	L-17
		Mazdoor(unskilled)	day	9.000	391.00	3519.00	L-18
		Mazdoor(skilled)	day	2.000	475.00	950.00	L-20
		<b>b) Machinery</b>					
		Hydraulic broom @ 1250 sqm per hour	hour	7.200	386.00	2779.20	P&M-033
		Air compressor 210 cfm	hour	7.200	235.00	1692.00	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	4064.00	24384.00	P&M-038
		Tipper 5.50 cum / 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	374.00	2244.00	P&M-073
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Bitumen pressure distributor	hour	6.000	226.00	1356.00	P&M-012
		Three wheel 80-100 KN static roller	hour	6.000	439.00	2634.00	P&M-071
		<b>c) Material</b>					
		<b>i) Bitumen (VG-10)</b>					
		@ 1.20 kg per sqm	tonne	10.800	60386.00	652168.80	M-042
		<b>ii) Aggregate</b>					
		Crushed stone chipping, 19 mm nominal size @ 0.015 cum per sqm	cum	135.000	4061.00	548235.00	M-073
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				265091.00	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				226710.76	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				17381.16	
		Cost for 9000 sqm = a+b+c+d+e+f				1755496.95	
		<b>Rate per sqm = (a+b+c+d+e+f)/9000</b>				195.06	
					<b>say</b>	<b><u>195.10</u></b>	
		<b>Case -II:-13 mm nominal chipping size</b>					
		<b>(I) Bitumen of VG-30</b>					
		<b>a) Labour</b>					
		Mate	day	0.440	391.00	172.04	L-17
		Mazdoor(unskilled)	day	9.000	391.00	3519.00	L-18
		Mazdoor(skilled)	day	2.000	475.00	950.00	L-20
		<b>b) Machinery</b>					

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Hydraulic broom @ 1250 sqm per hour	hour	7.200	386.00	2779.20	P&M-033
		Air compressor 210 cfm	hour	7.200	235.00	1692.00	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	4064.00	24384.00	P&M-038
		Tipper 5.50 cum / 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	374.00	2244.00	P&M-073
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Bitumen pressure distributor	hour	6.000	226.00	1356.00	P&M-012
		Three wheel 80-100 KN static roller	hour	6.000	439.00	2634.00	P&M-071
		<b>c) Material</b>					
		<b>i) Bitumen (VG-30)</b>					
		@ 1.00 kg per sqm	tonne	9.000	61186.00	550674.00	M-041
		<b>ii) Aggregate</b>					
		Crushed stone chipping, 13 mm nominal size @ 0.01 cum per sqm	cum	90.000	4325.50	389295.00	M-074
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				209696.51	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				179336.36	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				13749.12	
		Cost for 9000 sqm = a+b+c+d+e+f				1388661.24	
		<b>Rate per sqm = (a+b+c+d+e+f)/9000</b>				154.30	
					<b>say</b>	<b><u>154.30</u></b>	
		<b>(II) Bitumen of VG-10</b>					
		<b>a) Labour</b>					
		Mate	day	0.440	391.00	172.04	L-17
		Mazdoor(unskilled)	day	9.000	391.00	3519.00	L-18
		Mazdoor(skilled)	day	2.000	475.00	950.00	L-20
		<b>b) Machinery</b>					
		Hydraulic broom @ 1250 sqm per hour	hour	7.200	386.00	2779.20	P&M-033
		Air compressor 210 cfm	hour	7.200	235.00	1692.00	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	4064.00	24384.00	P&M-038
		Tipper 5.50 cum / 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	374.00	2244.00	P&M-073
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Bitumen pressure distributor	hour	6.000	226.00	1356.00	P&M-012
		Three wheel 80-100 KN static roller	hour	6.000	439.00	2634.00	P&M-071
		<b>c) Material</b>					
		<b>i) Bitumen (VG-10)</b>					
		@ 1.00 kg per sqm	tonne	9.000	60386.00	543474.00	M-042
		<b>ii) Aggregate</b>					
		Crushed stone chipping, 13 mm nominal size @ 0.01 cum per sqm	cum	90.000	4325.50	389295.00	M-074
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				208165.07	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				178026.65	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				13648.71	
		Cost for 9000 sqm = a+b+c+d+e+f				1378519.67	
		<b>Rate per sqm = (a+b+c+d+e+f)/9000</b>				153.17	
					<b>say</b>	<b><u>153.20</u></b>	

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**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. with the approval of the Engineer and the cost of adhesion agent shall be born by the contractor and not be paid separately. Alternatively, chips may be pre-coated as per clause 510.2.5 without any extra payment to contractors.

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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2.Input for the second coat, where required, will be the same as per the 1st coat mentioned above

5.10	510	<p><b>Open - Graded Premix Surfacing</b> 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 viscosity 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.as per MoRT&amp;H Technical Specification Clause 510.</p>					
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**Case - I: Mechanical method using viscosity grade Bitumen and HMP of appropriate capacity not less than 75 tonnes/hour .**

**i) Bitumen of VG-30**

**Unit = sqm**

**Taking output = 10250 sqm (205 cum)**

**a) Labour**

Mate	day	0.840	391.00	328.44	L-17
Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**b) Machinery**

Batch type HMP 100 - 120 TPH @75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
Electric Generator Set 250 KVA	hour	6.000	700.00	4200.00	P&M-025
Tipper 5.50 cum/ 10 tonne capacity	hour	18.640	374.00	6971.36	P&M-073
Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
Smooth wheeled/tandom roller 8-10 tonnes weight	hour	6.000	439.00	2634.00	P&M-069

**c) Material**

**i) Bitumen (VG-30)**

@ 1.46 kg per sqm	tonne	14.970	61186.00	915954.42	M-041
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**ii) Aggregate**

Crushed stone chipping,13.2 mm to 5.6 mm @ 0.027 cum per sqm	cum	276.750	4389.30	1214738.78	M-186
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**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

482205.36

**e) Contractor's profit @ 15 % on**

**(a+b+c+d)**

412391.00

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

31616.64

Cost for 10250 sqm = a+b+c+d+e+f

3193281.00

**Rate per sqm = (a+b+c+d+e+f)/10250**

311.54

**say 311.50**

**ii) Bitumen of VG-10**

**Unit = sqm**

**Taking output = 10250 sqm (205 cum)**

**a) Labour**

Mate	day	0.840	391.00	328.44	L-17
Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Batch type HMP 100 - 120 TPH @75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Electric Generator Set 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Tipper 5.50 cum/ 10 tonne capacity	hour	18.640	374.00	6971.36	P&M-073
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Smooth wheeled/tandem roller 8-10 tonnes weight	hour	6.000	439.00	2634.00	P&M-069
		<b>c) Material</b>					
		<b>i) Bitumen (VG-10)</b>					
		@ 1.46 kg per sqm	tonne	14.970	60386.00	903978.42	M-042
		<b>ii) Aggregate</b>					
		Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.027 cum per sqm	cum	276.750	4389.30	1214738.78	M-186
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				479658.07	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				410212.51	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				31449.63	
		Cost for 10250 sqm = a+b+c+d+e+f				3176412.20	
		<b>Rate per sqm = (a+b+c+d+e+f)/10250</b>				309.89	
						<b>say</b>	<b><u>309.90</u></b>

**Note:-** 1. 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 for which necessary deduction may be made.

2. Analysis is based on 1000 m lead mixed material. Cost of additional cartage may be added as per site requirements.

**5.10 Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion**  
**Unit = sqm**  
**Taking output = 900 sqm (18 cum)**

<b>a) Labour</b>							
Mate	day	0.800	391.00	312.80	L-17		
Mazdoor(ungskilled)	day	18.000	391.00	7038.00	L-18		
Mazdoor(skilled)	day	2.000	475.00	950.00	L-20		
<b>b) Machinery</b>							
Concrete mixer 0.4/0.28 cum capacity	hour	6.000	215.00	1290.00	P&M-014		

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Smooth wheeled steel roller 8-10 tonnes weight	hour	6.000	439.00	2634.00	P&M-069
		<b>c) Material</b>					
		Cationic <b>Bitumen Emulsion(RS-1) @ 2.15 kg sqm</b>	tonne	1.940	57286.00	111134.84	M-045
		Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.027 cum per sqm	cum	24.300	4061.00	98682.30	M-185
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				47228.32	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				40390.54	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				3096.61	
		Cost for 900 sqm = a+b+c+d+e+f				312757.41	
		<b>Rate per sqm = (a+b+c+d+e+f)/900</b>				347.51	
					<b>say</b>	<b><u>347.50</u></b>	

**5.11 508 Close Graded Premix Surfacing/Mixed Seal Surfacing**

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 viscosity 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 as per MoRTH Technical Specification Clause 508.

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

**A. Type - A**

**i) Bitumen of VG-30**

**Unit = sqm**

**Taking output = 10250 sqm (205 cum)**

**a) Labour**

Mate day 0.840 391.00 328.44 L-17

Mazdoor(unskilled) day 16.000 391.00 6256.00 L-18

Mazdoor(skilled) day 5.000 475.00 2375.00 L-20

**b) Machinery**

Batch type HMP 100 - 120 TPH @75 tonne per hour actual output hour 6.000 15400.00 92400.00 P&M-005

Electric Generator Set 250 KVA hour 6.000 700.00 4200.00 P&M-025

Tipper 5.50 cum/ 10 tonne capacity hour 18.640 374.00 6971.36 P&M-073

Front end loader 1 cum bucket capacity hour 6.000 1030.00 6180.00 P&M-030

Paver finisher hydrostatic with sensor hour 6.000 2505.00 15030.00 P&M-050

Smooth wheeled/tandem roller 8-10 tonnes weight hour 6.000 439.00 2634.00 P&M-069

**c) Material**

**i) Bitumen (VG-30)**

@ 2.20 kg per sqm tonne 22.550 61186.00 1379744.30 M-041

**ii) Aggregate**

Crushed Stone chipping, 11.2 mm to 0.09 @ 0.027 cum per sqm cum 276.750 4501.80 1245873.15 M-187

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** 587475.75

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Contractor's profit @ 15 % on (a+b+c+d)				502420.20	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				38518.88	
		Cost for 10250 sqm = a+b+c+d+e+f				3890407.08	
		Rate per sqm = (a+b+c+d+e+f)/10250				379.55	
					<b>say</b>	<b><u>379.60</u></b>	
		<b>ii) Bitumen of VG-10</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 10250 sqm (205 cum)</b>					
		<b>a) Labour</b>					
		Mate	day	0.840	391.00	328.44	L-17
		Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Batch type HMP 100 - 120 TPH @75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Electric Generator Set 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Tipper 5.50 cum/ 10 tonne capacity	hour	18.640	374.00	6971.36	P&M-073
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Smooth wheeled/tandem roller 8-10 tonnes weight	hour	6.000	439.00	2634.00	P&M-069
		<b>c) Material</b>					
		<b>i) Bitumen (VG-10)</b>					
		@ 2.20 kg per sqm	tonne	22.550	60386.00	1361704.30	M-042
		<b>ii) Aggregate</b>					
		Crushed Stone chipping, 11.2 mm to 0.09 @ 0.027 cum per sqm	cum	276.750	4501.80	1245873.15	M-187
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				583638.64	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				499138.63	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				38267.30	
		Cost for 10250 sqm = a+b+c+d+e+f				3864996.82	
		Rate per sqm = (a+b+c+d+e+f)/10250				377.07	
					<b>say</b>	<b><u>377.10</u></b>	
		<b>B. Type - B</b>					
		<b>i) Bitumen of VG-30</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 10250 sqm (205 cum)</b>					
		<b>a) Labour</b>					
		Mate	day	0.840	391.00	328.44	L-17
		Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Batch type HMP 100 - 120 TPH @75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Electric Generator Set 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Tipper 5.50 cum/ 10 tonne capacity	hour	18.640	374.00	6971.36	P&M-073
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Smooth wheeled/tandem roller 8-10 tonnes weight	hour	6.000	439.00	2634.00	P&M-069

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>c) Material</b>					
		<b>i) Bitumen (VG-30)</b>					
		@ 1.90 kg per sqm	tonne	19.475	61186.00	1191597.35	M-041
		<b>ii) Aggregate</b>					
		Crushed Stone chipping, 13.2 mm to 0.09 @ 0.027 cum per sqm	cum	276.750	4389.30	1214738.78	M-186
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				540834.61	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				462531.83	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				35460.77	
		Cost for 10250 sqm = a+b+c+d+e+f				3581538.14	
		<b>Rate per sqm = (a+b+c+d+e+f)/10250</b>				349.42	
					<b>say</b>	<b><u>349.40</u></b>	
		<b>ii) Bitumen of VG-10</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 10250 sqm (205 cum)</b>					
		<b>a) Labour</b>					
		Mate	day	0.840	391.00	328.44	L-17
		Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Batch type HMP 100 - 120 TPH @75 tonne per hour actual output	hour	6.000	15400.00	92400.00	P&M-005
		Electric Generator Set 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Tipper 5.50 cum/ 10 tonne capacity	hour	18.640	374.00	6971.36	P&M-073
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Paver finisher hydrostatic with sensor	hour	6.000	2505.00	15030.00	P&M-050
		Smooth wheeled/tandom roller 8-10 tonnes weight	hour	6.000	439.00	2634.00	P&M-069
		<b>c) Material</b>					
		<b>i) Bitumen (VG-10)</b>					
		@ 1.90 kg per sqm	tonne	19.475	60386.00	1176017.35	M-042
		<b>ii) Aggregate</b>					
		Crushed Stone chipping, 13.2 mm to 0.09 @ 0.027 cum per sqm	cum	276.750	4389.30	1214738.78	M-186
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				537520.75	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				459697.75	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				35243.49	
		Cost for 10250 sqm = a+b+c+d+e+f				3559592.92	
		<b>Rate per sqm = (a+b+c+d+e+f)/10250</b>				347.28	
					<b>say</b>	<b><u>347.30</u></b>	

5.12 511

**Seal Coat****Case - I : Type A**

Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A seal coats as per MoRT&H Technical Specification Clause 511.

**i) Bitumen of VG-30****Unit = sqm**



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>Taking output = 10250 sqm (92.25 cum)</b>							
<b>a) Labour</b>							
		Mate	day	0.240	391.00	93.84	L-17
		Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-18
<b>b) Machinery</b>							
		Hydraulic self propelled chip spreader	hour	6.000	4064.00	24384.00	P&M-038
		Tipper 5.5 cum/ 10 T capacity	hour	6.000	374.00	2244.00	P&M-073
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Bitumen pressure distributor	hour	6.000	226.00	1356.00	P&M-012
		Smooth wheeled/ tandem roller 8 -10 tonne weight	hour	6.000	439.00	2634.00	P&M-070
<b>c) Material</b>							
<b>i) Bitumen (VG-30)</b>							
		@ 0.98 kg per sqm	tonne	10.045	61186.00	614613.37	M-041
<b>ii) Aggregate</b>							
		Crushed stone chipping, 6.7 mm size (100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve) applied @ 0.009 cum per sqm	cum	92.250	3972.90	366500.03	M-075
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						217028.71	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Contractor's profit @ 15 % on (a+b+c+d)				185606.99	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				14229.87	
		Cost for 10250 sqm = a+b+c+d+e+f				1437216.80	
		Rate per sqm = (a+b+c+d+e+f)/10250				140.22	
					<b>say</b>	<b><u>140.20</u></b>	
		<b>ii) Bitumen of VG-10</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 10250 sqm (92.25 cum)</b>					
		<b>a) Labour</b>					
		Mate	day	0.240	391.00	93.84	L-17
		Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-18
		<b>b) Machinery</b>					
		Hydraulic self propelled chip spreader	hour	6.000	4064.00	24384.00	P&M-038
		Tipper 5.5 cum/ 10 T capacity	hour	6.000	374.00	2244.00	P&M-073
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Bitumen pressure distributor	hour	6.000	226.00	1356.00	P&M-012
		Smooth wheeled/ tandem roller 8 -10 tonne weight	hour	6.000	439.00	2634.00	P&M-070
		<b>c) Material</b>					
		<b>i) Bitumen (VG-10)</b>					
		@ 0.98 kg per sqm	tonne	10.045	60386.00	606577.37	M-042
		<b>ii) Aggregate</b>					
		Crushed stone chipping, 6.7 mm size (100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve) applied @ 0.009 cum per sqm	cum	92.250	3972.90	366500.03	M-075
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				215319.45	
		e) Contractor's profit @ 15 % on (a+b+c+d)				184145.20	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				14117.80	
		Cost for 10250 sqm = a+b+c+d+e+f				1425897.69	
		Rate per sqm = (a+b+c+d+e+f)/10250				139.11	
					<b>say</b>	<b><u>139.10</u></b>	

**Case - II : Type B**

Providing and laying of premix seal coat Type - B with HMP of appropriate capacity not less than 75 tonnes/ hours using crushed stone chipping 6.7 mm size and Viscosity grade bitumen of suitable grade as per MoRT&H Technical Specification Clause 511.

**i) Bitumen of VG-30****Unit = sqm****Taking output = 7858 sqm (47.16 cum)****a) Labour**

Mate	day	0.160	391.00	62.56	L-17
Mazdoor(unskilled)	day	4.000	391.00	1564.00	L-18

**b) Machinery**

Batch type HMP 100 - 120 TPH @75 tonne per hour actual output	hour	2.000	15400.00	30800.00	P&M-005
Electric Generator Set 250 KVA	hour	2.000	700.00	1400.00	P&M-025

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Tipper 5.50 cum/ 10 tonne capacity	hour	4.290	374.00	1604.46	P&M-073
		Front end loader 1 cum bucket capacity	hour	2.000	1030.00	2060.00	P&M-030
		Paver finisher hydrostatic with sensor	hour	2.000	2505.00	5010.00	P&M-050
		Smooth wheeled/tandom roller 8-10 tonnes weight	hour	2.000	439.00	878.00	P&M-070

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>c) Material</b>							
<b>i) Bitumen (VG-30)</b>							
		@ 0.68 kg per sqm	tonne	5.343	61186.00	326916.80	M-041
<b>ii) Aggregate</b>							
		Crushed stone chipping, 6.7 mm size (100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve) applied @ 0.006 cum per sqm	cum	47.148	3972.90	187314.29	M-075
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						118603.67	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						101432.07	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						7776.46	
Cost for 7858 sqm = a+b+c+d+e+f						785422.30	
<b>Rate per sqm = (a+b+c+d+e+f)/7858</b>						99.95	
						<b>say</b>	<b><u>100.00</u></b>
<b>ii) Bitumen of VG-10</b>							
<i>Unit = sqm</i>							
<i>Taking output = 7858 sqm (47.16 cum)</i>							
<b>a) Labour</b>							
		Mate	day	0.160	391.00	62.56	L-17
		Mazdoor(unskilled)	day	4.000	391.00	1564.00	L-18
<b>b) Machinery</b>							
		Batch type HMP 100 - 120 TPH @75 tonne per hour actual output	hour	2.000	15400.00	30800.00	P&M-005
		Electric Generator Set 250 KVA	hour	2.000	700.00	1400.00	P&M-025
		Tipper 5.50 cum/ 10 tonne capacity	hour	4.290	374.00	1604.46	P&M-073
		Front end loader 1 cum bucket capacity	hour	2.000	1030.00	2060.00	P&M-030
		Paver finisher hydrostatic with sensor	hour	2.000	2505.00	5010.00	P&M-050
		Smooth wheeled/tandem roller 8-10 tonnes weight	hour	2.000	439.00	878.00	P&M-070
<b>c) Material</b>							
<b>i) Bitumen (VG-10)</b>							
		@ 0.68 kg per sqm	tonne	5.343	60386.00	322642.40	M-042
<b>ii) Aggregate</b>							
		Crushed stone chipping, 6.7 mm size (100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve) applied @ 0.006 cum per sqm	cum	47.148	3972.90	187314.29	M-075
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						117694.50	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						100654.53	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						7716.85	
Cost for 7858 sqm = a+b+c+d+e+f						779401.59	
<b>Rate per sqm = (a+b+c+d+e+f)/7858</b>						99.19	
						<b>say</b>	<b><u>99.20</u></b>

**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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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
5.13	516	<b>Mastic Asphalt</b>					
		Providing and laying 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 13.2 mm nominal size at the rate of 0.005 cum per sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of the surfaces is not less than 100° C, protruding 1 mm to 4 mm over mastic surface, all complete as per MoRT&H Technical Specification Clause 516.					
		<b>i. 25 mm thick</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 35.00 sqm (0.875 cum )</b>					
		<b>assuming a density of 2.3 tonnes/cum.=</b>					
		<b>2.0125 tonnes</b>					
		<b>a) Labour</b>					
		Mate	day	0.440	391.00	172.04	L-17
		Mazdoor(unskilled)	day	10.000	391.00	3910.00	L-18
		Mazdoor(skilled)	day	1.000	475.00	475.00	L-20
		<b>b) Machinery</b>					
		Hydraulic broom @ 1250 sqm per hour	hour	0.060	386.00	23.16	P&M-033
		Air compressor 210 cfm	hour	0.060	235.00	14.10	P&M-001
		Mastic cooker	hour	6.000	138.00	828.00	P&M-043
		Bitumen boiler 1500 litres capacity	hour	6.000	222.00	1332.00	P&M-011
		Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.000	265.00	265.00	P&M-076
		<b>c) Material</b>					
		Base mastic (without coarse aggregates) = 60 %					
		Coarse aggregate (13.2 mm to 6.3 mm) = 40 %					
		<b>i) Bitumen (VG-30)</b>					
		@ 12% by weight of mix 2.0125 x 12.00/100 = 0.242	tonne	0.242	61186.00	14807.01	M-041
		<b>ii) Coarse Aggregate</b>					
		iv) Crushed stone chipping 6.7 mm size 100% passing 11.2mm and retained on 2.36 mm @ 40 per cent by weight of mix = 2.0125 x 40/100 = 0.805 MT = 0.805/1.456 = 0.553	cum	0.553	3972.90	2197.01	M-075
		<b>iii) Fine Aggregate</b>					
		Crushed stone dust or grit passing 2.36mm and retained on 75 micron @ 30 per cent by weight of mix = 2.0125 x 30/100 = 0.604 tonnes = 0.604/1.625 = 0.372	cum	0.372	2252.60	837.97	M-070
		<b>iv) Filler</b>					
		Lime stone dust filler with calcium content not less than 80 per cent by weight @ 18 per cent by weight of mix = 2.0125 x 18/100 = 0.361	tonne	0.362	3540.00	1281.48	M-126
		<b>v) Stone chips for skid resistance</b>					
		Stone chips of 13.2 mm nominal @0.005cum per 10 sqm = 35 x 0.005/10 = 0.018	cum	0.018	4325.50	77.86	M-184

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>vi) Bitumen (VG-30) for precoating</b> @ 2 per cent by weight = $0.018 \times 1.456 \times 2.0125/100 = 0.0005$ MT = 0.5kg	tonne	0.0005	61186.00	30.59	M-041
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				5583.64	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				4775.23	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				366.10	
		Cost for 35.00 sqm = a+b+c+d+e+f				36976.19	
		<b>Rate per sqm = (a+b+c+d+e+f)/35</b>				1056.46	
					<b>say</b>	<b><u>1056.50</u></b>	
		<b>ii. 40 mm thick</b> <b>Unit = sqm</b> <b>Taking output = 24.00 sqm (0.960 cum )</b> <b>assuming a density of 2.3 tonnes/cum.= 2.208 tonnes</b>					
		<b>a) Labour</b>					
		Mate	day	0.440	391.00	172.04	L-17
		Mazdoor(unskilled)	day	10.000	391.00	3910.00	L-18
		Mazdoor(skilled)	day	1.000	475.00	475.00	L-20
		<b>b) Machinery</b>					
		Hydraulic broom @ 1250 sqm per hour	hour	0.060	386.00	23.16	P&M-033
		Air compressor 210 cfm	hour	0.060	235.00	14.10	P&M-001
		Mastic cooker	hour	6.000	138.00	828.00	P&M-043
		Bitumen boiler 1500 litres capacity	hour	6.000	222.00	1332.00	P&M-011
		Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.100	265.00	291.50	P&M-076
		<b>c) Material</b>					
		Base mastic (without coarse aggregates) = 60 %					
		Coarse aggregate (13.2 mm to 6.3 mm) = 40 %					
		<b>i) Bitumen (VG-30)</b> @ 12% by weight of mix $2.208 \times 12.00/100 = 0.265$	tonne	0.2650	61186.00	16214.29	M-041
		<b>ii) Coarse Aggregate</b>					
		iv) Crushed stone chipping 6.7 mm size 100% passing 11.2mm and retained on 2.36 mm @ 40 per cent by weight of mix = $2.208 \times 40/100 = 0.883$ MT = $0.883/1.456 = 0.606$	cum	0.606	3972.90	2407.58	M-075
		<b>iii) Fine Aggregate</b>					
		Crushed stone dust or grit passing 2.36mm and retained on 75 micron @ 30 per cent by weight of mix = $2.208 \times 30/100 = 0.662$ tonnes = $0.662/1.625 = 0.407$	cum	0.407	2252.60	916.81	M-070
		<b>iv) Filler</b>					
		Lime stone dust filler with calcium content not less than 80 per cent by weight @ 18 per cent by weight of mix = $2.208 \times 18/100 = 0.397$	tonne	0.397	3540.00	1405.38	M-126
		<b>v) Stone chips for skid resistance</b>					
		Stone chips of 13.2 mm nominal @0.005cum per 10 sqm = $24 \times 0.005/10 = 0.012$	cum	0.012	4325.50	51.91	M-184
		<b>vi) Bitumen (VG-30) for precoating</b> @ 2 per cent by weight = $0.019 \times 1.456 \times 2.208/100 = 0.0005$ MT = 0.6 kg	tonne	0.0006	61186.00	36.71	M-041

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				5972.29	
		e) Contractor's profit @ 15 % on (a+b+c+d)				5107.61	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				391.58	
		Cost for 24.00 sqm = a+b+c+d+e+f				39549.96	
		Rate per sqm = (a+b+c+d+e+f)/24				1647.92	
					<b>say</b>	<b><u>1647.90</u></b>	
		<b>iii. 50 mm thick</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 20.00 sqm (1.000 cum )</b>					
		<b>assuming a density of 2.3 tonnes/cum.=</b>					
		<b>2.300 tonnes</b>					
		<b>a) Labour</b>					
		Mate	day	0.440	391.00	172.04	L-17
		Mazdoor(unskilled)	day	10.000	391.00	3910.00	L-18
		Mazdoor(skilled)	day	1.000	475.00	475.00	L-20
		<b>b) Machinery</b>					
		Hydraulic broom @ 1250 sqm per hour	hour	0.060	386.00	23.16	P&M-033
		Air compressor 210 cfm	hour	0.060	235.00	14.10	P&M-001
		Mastic cooker	hour	6.000	138.00	828.00	P&M-043
		Bitumen boiler 1500 litres capacity	hour	6.000	222.00	1332.00	P&M-011
		Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.150	265.00	304.75	P&M-076
		<b>c) Material</b>					
		Base mastic (without coarse aggregates) = 60 %					
		Coarse aggregate (13.2 mm to 6.3 mm) = 40 %					
		<b>i) Bitumen (VG-30)</b>					
		@ 12% by weight of mix 2.30 x 12.00/100 = 0.276	tonne	0.276	61186.00	16887.34	M-041
		<b>ii) Coarse Aggregate</b>					
		iv) Crushed stone chipping 6.7 mm size 100% passing 11.2mm and retained on 2.36 mm @ 40 per cent by weight of mix = 2.300 x 40/100 = 0.92 MT = 0.92/1.456 = 0.632	cum	0.632	3972.90	2510.87	M-075
		<b>iii) Fine Aggregate</b>					
		Crushed stone dust or grit passing 2.36mm and retained on 75 micron @ 30 per cent by weight of mix = 2.30 x 30/100 = 0.690 tonnes = 0.69/1.625 = 0.425	cum	0.425	2252.60	957.36	M-070
		<b>iv) Filler</b>					
		Lime stone dust filler with calcium content not less than 80 per cent by weight @ 18 per cent by weight of mix = 2.30 x 18/100 = 0.414	tonne	0.414	3540.00	1465.56	M-126
		<b>v) Stone chips for skid resistance</b>					
		Stone chips of 13.2 mm nominal @0.005cum per 10 sqm = 20 x 0.005/10 = 0.010	cum	0.010	4325.50	43.26	M-184
		<b>vi) Bitumen (VG-30) for precoating</b>					
		@ 2 per cent by weight = 0.20 x 1.456 x 2.30/100 = 0.0005 MT = 0.7 kg	tonne	0.0007	61186.00	42.83	M-041
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				6161.12	
		e) Contractor's profit @ 15 % on (a+b+c+d)				5269.11	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				403.96	
		Cost for 20.00 sqm = a+b+c+d+e+f				40800.45	
		<b>Rate per sqm = (a+b+c+d+e+f)/20</b>				2040.02	
					<b>say</b>	<b><u>2040.00</u></b>	

**Note:-** 1.Where tack coat is required to be provided before laying mastic asphalt, the same is required to be measured and paid separately.

2.The quantities of binder, filler and aggregates are for estimating purpose. Exact quantities shall be as per mix design.

3.This rate analysis is based on for a specific case and is meant for estimating purposes only. Actual design is required to be done for each case.

**5.14 512 Slurry Seal**

Providing and laying slurry seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface as per MoRT&H Technical Specification Clause 512.

**Case- 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	391.00	93.84	L-17
Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-18

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	6.000	386.00	2316.00	P&M-033
Air compressor 210 cfm	hour	6.000	235.00	1410.00	P&M-001
Mobile slurry seal equipment	hour	6.000	1137.00	6822.00	P&M-045
Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.5 cum capacity	hour	6.000	374.00	2244.00	P&M-073
Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1180.00	7080.00	P&M-053
Water tanker	hour	2.000	224.00	448.00	P&M-084

**c) Material**

<b>Bitumen Emulsion (RS-1) @ 11 per cent of mix 80 x 2.2 x 0.11</b>	tonne	19.360	57286.00	1109056.96	M-045
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	4282.60	437167.81	M-009

Filler (Ordinary portland cement) @ 2 per cent of total mix = 80 x 2.2 x 0.02	tonne	3.520	6797.00	23925.44	M-052
Water	KL	12.000	133.00	1596.00	M-196

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

340465.92



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Contractor's profit @ 15 % on (a+b+c+d)				291172.80	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				22323.25	
		Cost for 16000 sqm = a+b+c+d+e+f				2254648.01	
		Rate per sqm = (a+b+c+d+e+f)/16000				140.92	
						<b>say</b>	
						<b><u>140.90</u></b>	

**Case- II: 3 mm thickness***Unit = sqm**Taking output = 20000 sqm (60 cum)**Taking density of 2.2 tonnes per cum*

weight of mix = 132 tonnes

**a) Labour**

Mate	day	0.240	391.00	93.84	L-17
Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-18

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	6.000	386.00	2316.00	P&M-033
Air compressor 210 cfm	hour	6.000	235.00	1410.00	P&M-001
Mobile slurry seal equipment	hour	6.000	1137.00	6822.00	P&M-045
Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.5 cum capacity	hour	6.000	374.00	2244.00	P&M-073
Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1180.00	7080.00	P&M-053
Water tanker	hour	2.000	224.00	448.00	P&M-084

**c) Material**

Bitumen Emulsion (RS-1) @ 13 per cent of mix = 60 x 2.2 x 0.13	tonne	17.160	57286.00	983027.76	M-045
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, = 112.2/1.5 = 74.80 cum	cum	74.800	4282.60	320338.48	M-009
Filler (Ordinary portland cement) @ 2 per cent of total mix = 60x 2.2 x 0.02	tonne	2.640	6797.00	17944.08	M-052
Water	KL	12.000	133.00	1596.00	M-196

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

287537.68

**e) Contractor's profit @ 15 % on (a+b+c+d)**

245907.58

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

18852.91

Cost for 30000 sqm = a+b+c+d+e+f

1904144.33

Rate per sqm = (a+b+c+d+e+f)/20000

95.21

**say** **95.20**

**Case- III: 1.5 mm thickness***Unit = sqm**Taking output = 24000 sqm (36 cum)**Taking density of 2.2 tonnes per cum*

weight of mix = 79.20 tonnes

**a) Labour**

Mate	day	0.240	391.00	93.84	L-17
Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-18

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	6.000	386.00	2316.00	P&M-033
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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Air compressor 210 cfm	hour	6.000	235.00	1410.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1137.00	6822.00	P&M-045
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.5 cum capacity	hour	6.000	374.00	2244.00	P&M-073
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1180.00	7080.00	P&M-053
		Water tanker	hour	2.000	224.00	448.00	P&M-084
c)		<b>Material</b>					
		<b>Bitumen Emulsion (RS-1) @ 16 per cent of mix, 36 x 2.2 x 0.16</b>	tonne	12.672	57286.00	725928.19	M-045

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Fine aggregate 2.36 mm and below, 82 per cent of total mix, $36 \times 2.2 \times 0.82 = 64.94$ tonnes. Taking density $1.5 = 64.94/1.5 = 43.30$ cum	cum	43.300	4282.60	185436.58	M-009
		Filler (Ordinary portland cement) @ 2 per cent of total mix = $36 \times 2.2 \times 0.02$	tonne	1.584	6797.00	10766.45	M-052
		Water	KL	12.000	133.00	1596.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				202632.28	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				173294.90	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				13285.94	
		Cost for 24000 sqm = a+b+c+d+e+f				1341880.19	
		<b>Rate per sqm = (a+b+c+d+e+f)/24000</b>				55.91	
						<b>say</b>	<b><u>55.90</u></b>

**5.15 519 Recycling of Bituminous Pavement with Central Recycling Plant**

Recycling pavement by cold milling of existing bituminous layers, planning the surface after cold milling, reclaiming excavated material to the extent of 30 per cent of the required quantity, hauling and stock piling the reclaimed material near the central recycling plant after carrying out necessary checks and evaluation, adding fresh material including rejuvenators as required, mixing in a hot mix plant, transporting and laying at site and compacting to the required grade, level and thickness, all as specified in MoRT&H Technical Specification Clause 519.

**Unit = cum**

**Taking output = 120 cum (276 tonnes)**

**a) Labour**

Mate	day	0.480	391.00	187.68	L-17
Mazdoor(unskilled)	day	10.000	391.00	3910.00	L-18
Mazdoor(skilled)	day	2.000	475.00	950.00	L-20

**b) Machinery**

Cold milling machine @ 20 cum per hour	hour	6.000	1850.00	11100.00	P&M-021
Hydraulic broom @ 1250 sqm per hour	hour	1.280	386.00	494.08	P&M-033
Air compressor 210 cfm	hour	1.280	235.00	300.80	P&M-001
Bitumen emulsion pressure distributor	hour	0.910	226.00	205.66	P&M-012
Hot mix plant 100-120 TPH producing an average of 75 tonnes per hour	hour	3.000	15400.00	46200.00	P&M-005
Electric generator set 250 KVA	hour	3.000	700.00	2100.00	P&M-025
Front end loader 1.00 cum bucket capacity	hour	3.000	1030.00	3090.00	P&M-030
Tipper 5.5 cum capacity	hour	18.000	374.00	6732.00	P&M-073
Smooth wheeled roller 8-10 tonnes	hour	1.950	439.00	856.05	P&M-068
Vibratory roller 8 tonnes	hour	1.950	1562.00	3045.90	P&M-083
Smooth wheeled tandem roller 6-8 tonnes	hour	1.950	1350.00	2632.50	P&M-058

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**c) Material****i) Bitumen**

A bitumen content is 4.5 per cent bitumen weight of mix. For reclaimed material, fresh bitumen will be required to the extent of 60 per cent of normal requirement.

In a mix of 276 tonnes, 82.8 tonne is reclaimed and balance 193.2 tonne is fresh mix.

<b>Bitumen (VG-30)</b> required for reclaimed mix of 82.8 tonne @ 60 per cent of 4.50% of bitumen by weight of mix = $82.8 \times 0.60 \times 0.045 = 2.236$	tonne	2.236	61186.00	136811.90	M-041
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<b>Bitumen (VG-30)</b> required for fresh mix of 193.2 tonnes @ of 4.50% of bitumen by weight = $193.2 \times 0.045 = 8.694$	tonne	8.694	61186.00	531951.08	M-041
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**ii) Aggregates**

Percentage of mix requiring fresh aggregates - 70 per cent

Weight of fresh mix =  $276 \times 0.70 = 193.2$  tonne

Weight of fresh aggregate in the mix =  $193.2 \times 0.955 = 184.51$  tonne

**Taking average density of 1.5 tonnes/cum, total volume of aggregate = 123.01cum.**

Size wise requirement of fresh aggregates

37.5 - 25 mm @ 23 per cent	cum	28.290	3663.20	103631.93	M-012
25 - 10 mm @ 15 per cent	cum	18.450	4017.00	74113.65	M-010
10- 5 mm @ 20 per cent	cum	24.600	4355.60	107147.76	M-006
Below 5 mm @40 per cent	cum	49.200	4450.50	218964.60	M-013
Filler (ordinary portland cement) @ 2 per cent = 5.52 tonnes of 276 tonne	tonne	5.520	6797.00	37519.44	M-052

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

274796.71

**e) Contractor's profit @ 15 % on (a+b+c+d)**

235011.26

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

18017.53

Cost for 120 cum of DBM = a+b+c+d+e+f

1819770.53

**Rate per cum = (a+b+c+d+e+f)/120**

15164.75

**say 15164.80**

**Note:-** Although the total rolling time is only 4 hours as per norms, all the three rollers have to be available at site for 3 hours each to match with the output of re-cycling plant. To cater for their idling time, these have been multiplied with a factor of 0.65.

**5.16 513 Fog Seal**

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 as per MoRT&H Technical Specification Clause 513.

**i) Without Blinding**

**Unit = sqm**

**Taking output = 10500 sqm**

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>a) Labour</b>					
		Mate	day	0.400	391.00	156.40	L-17
		Mazdoor(unskilled)	day	10.000	391.00	3910.00	L-18
		<b>b) Machinery</b>					
		Hydraulic broom @ 1250 sqm per hour	hour	6.000	386.00	2316.00	P&M-033
		Air compressor 210 cfm	hour	6.000	235.00	1410.00	P&M-001
		Bitumen emulsion pressure distributor	hour	6.000	226.00	1356.00	P&M-012
		<b>c) Material</b>					
		Bitumen emulsion (SS-1) @ 0.75 kg per sqm	tonne	7.875	60228.00	474295.50	M-046
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				102828.52	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				87940.86	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				6742.13	
		Cost for 10500 sqm = a+b+c+d+e+f				680955.41	
		Rate per sqm = (a+b+c+d+e+f)/10500				64.85	
						<b>say</b>	<b><u>64.90</u></b>
		<b>ii) With Blinding</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 10500 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.560	391.00	156.40	L-17
		Mazdoor(unskilled)	day	10.000	391.00	3910.00	0.00
		Mazdoor(unskilled) for precoating grit	day	4.000	391.00	0.00	L-18
		<b>b) Machinery</b>					
		Hydraulic broom @ 1250 sqm per hour	hour	6.000	386.00	2316.00	P&M-033
		Air compressor 210 cfm	hour	6.000	235.00	1410.00	P&M-001
		Bitumen emulsion pressure distributor	hour	6.000	226.00	1356.00	P&M-012
		<b>c) Material</b>					
		Bitumen emulsion (SS-1) @ 0.75 kg per sqm	tonne	7.875	60228.00	0.00	M-046
		Bitumen emulsion (SS-1) for precoating grit @ 2 per cent of grit, 39.38 x 0.02	tonne	0.7875	60228.00	474295.50	M-046
		Aggregate:- Crushed stone grit 3 mm size @ 3.75 kg per sqm	cum	26.250	2274.50	59705.63	M-068
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				115527.90	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				98801.61	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				7574.79	
		Cost for 10500 sqm = a+b+c+d+e+f				765053.83	
		Rate per sqm = (a+b+c+d+e+f)/10500				72.86	
						<b>say</b>	<b><u>72.90</u></b>
5.17	518	<b>Bituminous Cold Mix (Including Gravel Emulsion)</b>					

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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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 as per MoRT&H Technical Specification Clause 518.

**Case-I:- Using bitumen emulsion and 9.5 mm or 13.2 mm size aggregate**

**Unit = cum**

**Taking output = 205 cum (451 tonne)**

**a) Labour**

Mate	day	0.840	391.00	328.44	L-17
Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**b) Machinery**

Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	2298.00	13788.00	P&M-024
Electric generator 125 KVA	hour	6.000	700.00	4200.00	P&M-025
Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.50 cum capacity	hour	18.640	374.00	6971.36	P&M-073
Paver finisher	hour	6.000	1176.00	7056.00	P&M-049
Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	3.900	1180.00	4602.00	P&M-053
Smooth wheeled steel tandem roller 8 tonnes	hour	3.900	1350.00	5265.00	P&M-058

**c) Material**

<b>Bitumen emulsion (SS-1) @ 8 per cent of weight of total mix</b>	tonne	36.080	60228.00	2173026.24	M-046
Filler (cement)@ 2 per cent of weight of total mix	tonne	9.020	3540.00	31930.80	M-126

Total aggregates 90.00 % of weight mix

Aggregates size 19 to 9.5 mm - 25.00 %	cum	67.650	4281.40	289636.71	M-014
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Aggregates size 9.5 to 6 mm - 29.00 %	cum	78.470	4286.50	336361.66	M-015
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Aggregates size 6 to 0.075 mm - 36.00 %	cum	97.420	3636.50	354267.83	M-016
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

689625.52

**e) Contractor's profit @ 15 % on (a+b+c+d)**

589780.58

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

45216.51

Cost for 205 cum = a+b+c+d+e+f

4566867.65

**Rate per cum = (a+b+c+d+e+f)/205**

22277.40

**say 22277.40**

**Case-II:- Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate**

**Unit = cum**

**Taking output = 205 cum (451 tonne)**

**a) Labour**

Mate	day	0.840	391.00	328.44	L-17
Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>b) Machinery</b>							
		Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	2298.00	13788.00	P&M-024
		Electric generator 125 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.50 cum capacity	hour	18.640	374.00	6971.36	P&M-073
		Paver finisher	hour	6.000	1176.00	7056.00	P&M-049
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	3.900	1180.00	4602.00	P&M-053
		Smooth wheeled steel tandem roller 8 tonnes	hour	3.900	1350.00	5265.00	P&M-058
<b>c) Material</b>							
		<b>Bitumen emulsion (SS-1) @ 8 per cent of weight of total mix</b>	tonne	36.080	60228.00	2173026.24	M-046
		Filler (cement)@ 2 per cent of weight of total mix	tonne	9.020	3540.00	31930.80	M-126
		Total aggregates 90.00 % of weight mix					
		Aggregates size 37.5 to 19 mm - 25.00 %	cum	67.650	3751.30	253775.45	M-017
		Aggregates size 19 to 6 mm - 30.00 %	cum	81.180	4193.30	340412.09	M-018
		Aggregates size 6 to 0.075 mm - 35.00 %	cum	94.710	3636.50	344412.92	M-016
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				680763.22	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				582201.38	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				44635.44	
		Cost for 205 cum = a+b+c+d+e+f				4508179.33	
		<b>Rate per cum = (a+b+c+d+e+f)/205</b>				21991.12	
					<b>say</b>	<b><u>21991.10</u></b>	

**Case-III:- Using cutback bitumen and 9.5 mm or 13.2 mm nominal size aggregate**

**Unit = cum**

**Taking output = 205 cum (451 tonne)**

<b>a) Labour</b>							
		Mate	day	0.840	391.00	328.44	L-17
		Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
<b>b) Machinery</b>							
		Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	2298.00	13788.00	P&M-024
		Electric generator 125 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.50 cum capacity	hour	18.640	374.00	6971.36	P&M-073
		Paver finisher	hour	6.000	1176.00	7056.00	P&M-049
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	3.900	1180.00	4602.00	P&M-053
		Smooth wheeled steel tandem roller 8 tonnes	hour	3.900	1350.00	5265.00	P&M-058
<b>c) Material</b>							
		<b>Bitumen (VG-30) @ 5.00% of weight of total mix</b>	tonne	22.550	61186.00	1379744.30	M-041
		Filler (cement)@ 2 per cent of weight of total mix	tonne	9.020	3540.00	31930.80	M-126
		Total aggregates 93.00 % of weight mix					
		19 mm to 9.5 mm 26.00 %	cum	72.700	4281.40	311257.78	M-014

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		9.5 mm to 6 mm      31.00 %	cum	86.680	4286.50	371553.82	M-015
		6 mm to 0.075 mm      36.00 %	cum	100.660	3636.50	366050.09	M-016
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				535484.71	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				457956.50	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				35110.00	
		Cost for 205 cum = a+b+c+d+e+f				3546109.80	
		<b>Rate per cum = (a+b+c+d+e+f)/205</b>				17298.10	
					<b>say</b>	<b><u>17298.10</u></b>	

**Case-IV:- Using cutback bitumen and 19 mm or 26.5 mm nominal size aggregate**

**Unit = cum**

**Taking output = 205 cum (451 tonne)**

**a) Labour**

Mate	day	0.840	391.00	328.44	L-17
Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**b) Machinery**



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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	2298.00	13788.00	P&M-024
		Electric generator 125 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.50 cum capacity	hour	18.640	374.00	6971.36	P&M-073
		Paver finisher	hour	6.000	1176.00	7056.00	P&M-049
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	3.900	1180.00	4602.00	P&M-053
		Smooth wheeled steel tandem roller 8 tonnes	hour	3.900	1350.00	5265.00	P&M-058
		<b>c) Material</b>					
		<b>Bitumen (VG-30) @ 5.00% of weight of total mix</b>	tonne	22.550	61186.00	1379744.30	M-041
		<b>Filler (cement)@ 2 per cent of weight of total mix</b>	tonne	9.020	3540.00	31930.80	M-126
		<b>Total aggregates 93.00 % of weight mix</b>					
		37.5 mm to 19 mm 25.00 %	cum	69.910	3751.30	262253.38	M-017
		19 mm to 6 mm 30.00 %	cum	83.890	4193.30	351775.94	M-018
		6 mm to 0.075 mm 38.00 %	cum	106.260	3636.50	386414.49	M-016
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				525186.23	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				449149.04	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				34434.76	
		<b>Cost for 205 cum = a+b+c+d+e+f</b>				3477910.74	
		<b>Rate per cum = (a+b+c+d+e+f)/205</b>				16965.42	
					<b>say</b>	<b><u>16965.40</u></b>	

**(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

4. Analysis is based on 1000 m lead mixed material. Cost of additional cartage may be added as per site requirements.

**5.18 506 Sand Asphalt Base Course**

Providing, laying and rolling sand-asphalt base course composed of sand, mineral filler and bituminous binder on a prepared sub-grade or sub-base to the lines, levels, grades and cross sections as per the drawings including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing. as per MoRT&H Technical Specification Clause 506.

**Unit = cum**

**Taking output = 205 cum (451 tonne)**

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>a) Labour</b>							
		Mate	day	0.840	391.00	328.44	L-17
		Mazdoor(unskilled)	day	16.000	391.00	6256.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
<b>b) Machinery</b>							
		Hot mix plant 100-120 TPH producing an average of 75 tonnes per hour	hour	6.000	15400.00	92400.00	P&M-005
		Electric generator set 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1.00 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.5 cum capacity	hour	18.640	374.00	6971.36	P&M-073
		Paver finisher	hour	6.000	2505.00	15030.00	P&M-050
		smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	3.900	439.00	1712.10	P&M-068
		Vibratory roller 8 tonnes for intermediate rolling.	hour	3.900	1562.00	6091.80	P&M-083
		Finish rolling with 8 tonnes smooth wheeled tandem rollers.	hour	3.900	1350.00	5265.00	P&M-058
<b>c) Material</b>							
<b>Composition of mix (451 tonne) is assumed to be as under:-</b>							
Density 2.20 tonne per cum							
Weight 451 tonne							
Bitumen 5.00 %							
Filler 2.00 %							
Sand/agg. of size 4.75 to 0.075 mm 93 per cent							
		Bitumen (VG-30) @ 5 per cent	tonne	22.550	61186.00	1379744.30	M-041
		Filler (lime)@ 2 per cent	tonne	9.020	3540.00	31930.80	M-126
		Sand/ Aggregate of size 4.75 to 0.075 mm - 451 x 0.93 x 1/1.5	cum	279.620	3636.50	1016838.13	M-016
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						547771.19	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						468464.12	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						35915.58	
Cost for 205 cum = a+b+c+d+e+f						3627473.82	
<b>Rate per cum = (a+b+c+d+e+f)/205</b>						17694.99	
						<b>say</b>	<b><u>17695.00</u></b>

**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

3. Analysis is based on 1000 m lead mixed material. Cost of additional cartage may be added as per site requirements.

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**5.19 519 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 MoRT&H specification clause 519.

**Case-I:- 75 mm thickness****Unit = cum****Taking output = 205 cum (451 tonnes)****a) Labour**

Mate	day	0.680	391.00	265.88	L-17
Mazdoor(unskilled)	day	12.000	391.00	4692.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**b) Machinery**

Cold mixing plant @ 100-120 TPH capacity @ 75 tonne per hour	hour	6.000	9812.00	58872.00	P&M-009
Electric generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
Front end loader 1 cum capacity	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.50 cum capacity	hour	18.640	374.00	6971.36	P&M-073
Paver finisher hydrostatic with electronic sensor	hour	6.000	2505.00	15030.00	P&M-050
Pneumatic tyred roller 12-15 tonnes.	hour	3.900	1180.00	4602.00	P&M-053
Vibratory roller 8 tonnes.	hour	3.900	1562.00	6091.80	P&M-083
Water tanker	hour	1.000	224.00	224.00	P&M-084

**c) Material**

Bitumen emulsion (SS-1) @ 45 litres per tonne	tonne	20.300	60228.00	1222628.40	M-046
Crushed stone aggregates 40 mm nominal size	cum	297.000	3663.20	1087970.40	M-012
Water	KL	6.000	133.00	798.00	M-196

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

514925.61

**e) Contractor's profit @ 15 % on (a+b+c+d)**

440373.97

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

33762.00

Cost for 2733 sqm = a+b+c+d+e+f

3409962.42

**Rate per sqm = (a+b+c+d+e+f)/2733**

1247.70

**say 1247.70****Case-II:- 40 mm thickness****Unit = cum****Taking output = 205 cum (451 tonnes)****a) Labour**

Mate	day	0.680	391.00	265.88	L-17
Mazdoor(unskilled)	day	12.000	391.00	4692.00	L-18
Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20

**b) Machinery**

Cold mixing plant @ 100-120 TPH capacity @ 75 tonne per hour	hour	6.000	9812.00	58872.00	P&M-009
Electric generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
Front end loader 1 cum capacity	hour	6.000	1030.00	6180.00	P&M-030
Tipper 5.50 cum capacity	hour	18.640	374.00	6971.36	P&M-073
Paver finisher hydrostatic with electronic sensor	hour	6.000	2505.00	15030.00	P&M-050
Pneumatic tyred roller 12-15 tonnes.	hour	3.900	1180.00	4602.00	P&M-053
Vibratory roller 8 tonnes.	hour	3.900	1562.00	6091.80	P&M-083
Water tanker	hour	1.000	224.00	224.00	P&M-084

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>c) Material</b>					
		Bitumen emulsion (SS-1) @ 70 litres per tonne	tonne	31.570	60228.00	1901397.96	M-046
		Crushed stone aggregates 14 mm nominal size	cum	287.000	3663.20	1051338.40	M-012
		Water	KL	6.000	133.00	798.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				651508.27	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				557182.00	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				42717.29	
		Cost for 5125 sqm = a+b+c+d+e+f				4314445.95	
		<b>Rate per sqm = (a+b+c+d+e+f)/5125</b>				841.84	
					<b>say</b>	<b><u>841.80</u></b>	
		<b>Case-III:- 25 mm thickness</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 205 cum (451tonnes)</b>					
		<b>a) Labour</b>					
		Mate	day	0.680	391.00	265.88	L-17
		Mazdoor(unskilled)	day	12.000	391.00	4692.00	L-18
		Mazdoor(skilled)	day	5.000	475.00	2375.00	L-20
		<b>b) Machinery</b>					
		Cold mixing plant @ 100-120 TPH capacity @ 75 tonne per hour	hour	6.000	9812.00	58872.00	P&M-009
		Electric generator 250 KVA	hour	6.000	700.00	4200.00	P&M-025
		Front end loader 1 cum capacity	hour	6.000	1030.00	6180.00	P&M-030
		Tipper 5.50 cum capacity	hour	18.640	374.00	6971.36	P&M-073
		Paver finisher hydrostatic with electronic sensor	hour	6.000	2505.00	15030.00	P&M-050
		Pneumatic tyred roller 12-15 tonnes.	hour	3.900	1180.00	4602.00	P&M-053
		Vibratory roller 8 tonnes.	hour	3.900	1562.00	6091.80	P&M-083
		Water tanker	hour	1.000	224.00	224.00	P&M-084
		<b>c) Material</b>					
		Bitumen emulsion (SS-1) @ 85 litres per tonne	tonne	38.340	60228.00	2309141.52	M-046
		Crushed stone aggregates 14 mm nominal size	cum	270.000	3663.20	989064.00	M-012
		Water	KL	6.000	133.00	798.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				724989.56	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				620024.57	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				47535.22	
		Cost for 8200 sqm = a+b+c+d+e+f				4801056.90	
		<b>Rate per sqm = (a+b+c+d+e+f)/8200</b>				585.49	
					<b>say</b>	<b><u>585.50</u></b>	
5.20	517	<b>Crack Prevention Courses</b>					
		<b>(i) Stress absorbing membrane (SAM) crack width less than 6 mm</b>					

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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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	391.00	93.84	L-17
Mazdoor (unskilled)	day	6.000	391.00	2346.00	L-18

**b) Machinery**

Mechanical broom @ 1250 sqm per hour	hour	6.000	386.00	2316.00	P&M-033
Air compressor 250 cfm	hour	6.000	235.00	1410.00	P&M-001
Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	226.00	1356.00	P&M-012
Hydraulic Chip spreader	hour	6.000	4064.00	24384.00	P&M-038
Smooth wheeled road roller 8-10 tonne	hour	6.000	1350.00	8100.00	P&M-058

**c) Material**

Modified binder	tonne	9.450	63879.00	603656.55	M-258
Crushed stone aggregates 5.6 mm size	cum	105.000	3972.90	417154.50	M-076

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

225635.75

**e) Contractor's profit @ 15 % on (a+b+c+d)**

192967.90

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

14794.21

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

1494214.74

**Rate per sqm = (a+b+c+d+e+f)/10500**

142.31

**say 142.30**

**(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	391.00	93.84	L-17
Mazdoor (unskilled)	day	6.000	391.00	2346.00	L-18

**b) Machinery**

Mechanical broom @ 1250 sqm per hour	hour	6.000	386.00	2316.00	P&M-033
Air compressor 250 cfm capacity	hour	6.000	235.00	1410.00	P&M-001

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	226.00	1356.00	P&M-012
		Hydraulic Chip spreader	hour	6.000	4064.00	24384.00	P&M-038
		Smooth wheeled road roller 8-10 tonne	hour	6.000	1350.00	8100.00	P&M-058
		<b>c) Material</b>					
		Modified binder	tonne	11.550	63879.00	737802.45	M-258
		Crushed stone chipping 11.2 mm size	cum	105.000	4269.00	448245.00	M-020
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				260781.53	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				223025.22	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				17098.60	
		Cost for 10500 sqm = a+b+c+d+e+f				1726958.65	
		<b>Rate per sqm = (a+b+c+d+e+f)/10500</b>				164.47	
						<b>say</b>	<b><u>164.50</u></b>
		<b>(iii) Stress absorbing membrane (SAM) crack width above 9 mm and cracked area above 50 per cent</b>					
		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.					
		<b>Unit = sqm</b>					
		<b>Taking output = 10500 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.240	391.00	93.84	L-17
		Mazdoor (unskilled)	day	6.000	391.00	2346.00	L-18
		Mazdoor (skilled)	day	2.000	475.00	950.00	L-20
		<b>b) Machinery</b>					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	386.00	2316.00	P&M-033
		Air compressor 250 cfm capacity	hour	6.000	235.00	1410.00	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	226.00	1356.00	P&M-012
		Hydraulic Chip spreader	hour	6.000	4064.00	24384.00	P&M-038
		Smooth wheeled road roller 8-10 tonne	hour	6.000	1350.00	8100.00	P&M-058
		<b>c) Material</b>					
		Modified binder	tonne	15.750	63879.00	1006094.25	M-258
		Crushed stone aggregates 11.2 mm size	cum	126.000	4269.00	537894.00	M-020
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				337117.61	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				288309.25	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				22103.71	
		Cost for 10500 sqm = a+b+c+d+e+f				2232474.66	
		<b>Rate per sqm = (a+b+c+d+e+f)/10500</b>				212.62	
						<b>say</b>	<b><u>212.60</u></b>

**CHAPTER - 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		In case 2nd coat is also required to be provided, material provided for the 2nd coat shall be as per table 500-47.					
		<b>(iv) Case - IV : Bitumen impregnated geotextile</b>					
		Providing and laying a bitumen impregnated geotextile layer after cleaning the road surface, geotextile conforming to requirements of clause 703.3, laid over a tack coat with 1.05 kg per sqm of paving grade bitumen and constructed to the requirement of clause 703.4.5					
		<b>Unit = sqm</b>					
		<b>Taking output = 3500 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.240	391.00	93.84	L-17
		Mazdoor (unskilled)	day	6.000	391.00	2346.00	L-18
		Mazdoor (skilled)	day	2.000	475.00	950.00	L-20
		<b>b) Machinery</b>					
		Mechanical broom @ 1250 sqm per hour	hour	2.800	386.00	1080.80	P&M-033
		Air compressor 250 cfm capacity	hour	2.800	235.00	658.00	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	tonne	2.000	226.00	452.00	P&M-012
		Pneumatic roller	hour	2.000	1180.00	2360.00	P&M-053
		<b>c) Material</b>					
		VG-30 bitumen @ 1.05 kg per sqm	tonne	3.680	61186.00	225164.48	M-041
		Geotextile including 10 per cent for overlaps	sqm	3850.00	58.50	225225.00	M-106
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				97486.82	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				83372.54	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				6391.89	
		Cost for 3500 sqm = a+b+c+d+e+f				645581.37	
		<b>Rate per sqm = (a+b+c+d+e+f)/3500</b>				184.45	
					<b>say</b>	<b><u>184.50</u></b>	

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 bitumenious course in a day

**CHAPTER- 6**  
**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
6.1	601	<b>Dry Lean Cement Concrete Sub- base</b> Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing as per MoRT&H specification clause 601.					
		<b>Unit = cum</b>					
		<b>Taking output = 450 cum (990 tonne)</b>					
		<b>a) Labour</b>					
		Mate	day	1.360	391.00	531.76	L-17
		Masion (1st Class)	day	1.000	512.00	512.00	L-15
		Mason (2nd Class)	day	1.000	475.00	475.00	L-16
		Mazdoor(unskilled)	day	22.000	391.00	8602.00	L-18
		Mazdoor(skilled)	day	6.000	475.00	2850.00	L-20
		Surveyor	day	1.000	640.00	640.00	L-26
		Bhisti	day	6.000	391.00	2346.00	L-01
		<b>b) Machinery</b>					
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	7088.00	42528.00	P&M-013
		Electric generator 100 KVA	hour	6.000	498.00	2988.00	P&M-026
		Paver with electronic sensor	hour	6.000	2505.00	15030.00	P&M-050
		Vibratory roller 8-10 t capacity	hour	8.000	1562.00	12496.00	P&M-083
		Water tanker6 KL capacity	hour	8.000	224.00	1792.00	P&M-084
		Tipper	hour	20.450	374.00	7648.30	P&M-073
		<b>c) Material</b>					
		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	4413.70	1787548.50	M-071
		Sand as per IS: 383 and conforming to clause 602.2.4 @ 0.45 cum/cum of concrete	cum	202.500	740.00	149850.00	M-170
		Cement @ 150 kg/cum of concrete	tonne	67.500	6797.00	458797.50	M-052
		Cost of water	KL	48.000	133.00	6384.00	M-196
		<b>d) Formwork @ 3.00 % on cost of material, labour and machinery i.e. on (a+b+c)</b>				75215.97	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				549279.68	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				469754.21	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				36014.49	
		Cost for 450 cum = a+b+c+d+e+f+g				3637463.40	
		<b>Rate per cum = (a+b+c+d+e+f+g)/450</b>				8083.25	
						<b>say <u>8083.30</u></b>	



**CHAPTER- 6**  
**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
6.2	602	<b>Cement Concrete Pavement</b> Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum (minimum), coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing and as per MoRT&H specification clause 602.					
		<b>Unit = cum</b> <b>Taking output = 1050 cum (2415 tonne)</b>					
		<b>a) Labour</b>					
		Mate	day	7.000	391.00	2737.00	L-17
		Masion (1st Class)	day	5.000	512.00	2560.00	L-15
		Mason (2nd Class)	day	5.000	475.00	2375.00	L-16
		Mazdoor(unskilled)	day	129.000	391.00	50439.00	L-18
		Mazdoor(skilled)	day	6.000	475.00	2850.00	L-20
		Surveyor	day	2.000	640.00	1280.00	L-26
		Bhisti	day	14.000	391.00	5474.00	L-01
		Blacksmith for cutting of dowel bars i/c removal of burrs, fabrications & fixing of dowel bars	day	1.000	480.00	480.00	L-03
		<b>b) Machinery</b>					
		Road Sweeper @ 1250 sqm per hour	hour	2.800	385.00	1078.00	P&M-055
		Front end loader 1 cum bucket capacity	hour	18.000	1030.00	18540.00	P&M-030
		Cement concrete batch mix plant @ 175 cum per hour	hour	6.000	7088.00	42528.00	P&M-013
		Electric generator 100 KVA	hour	6.000	498.00	2988.00	P&M-026
		Paver with electronic sensor	hour	6.000	2505.00	15030.00	P&M-050
		Water tanker 6 KL capacity	hour	8.000	224.00	1792.00	P&M-084
		Tipper	hour	47.730	374.00	17851.02	P&M-073
		Needle vibrator	hour	9.000	74.00	666.00	P&M-048
		Screed vibrator	hour	9.000	106.00	954.00	P&M-056

**CHAPTER- 6**  
**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Plate vibrator	hour	9.000	84.00	756.00	P&M-052
		Concrete joint cutting machine for initial & final cuts	hour	12.000	186.00	2232.00	P&M-041
		Texturing machine .	hour	12.000	218.00	2616.00	P&M-061
	<b>c)</b>	<b>Material</b>					
		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	945.000	4413.70	4170946.50	M-071
		Sand as per IS: 383 and conforming to clause 602.2.4 @ 0.45 cum/cum of concrete	cum	472.500	740.00	349650.00	M-170
		Cement 43 grade @ 400 kg/cum of concrete	tonne	414.000	6797.00	2813958.00	M-052
		32 mm mild steel dowel bars of grade S 240	tonne	9.450	57000.00	538650.00	M-180
		16 mm deformed steel tie bars of grade S 415	tonne	1.170	58000.00	67860.00	M-181
		Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3675.000	14.40	52920.00	M-145
		Pre moulded Joint filler, 25 mm thick for expansion joint as per IS:1838.	sqm	16.330	1029.00	16803.57	M-117
		Joint sealant	kg	875.000	351.00	307125.00	M-119
		Sealant primer	kg	116.670	140.00	16333.80	M-172
		Polythene plastic sheathing,1.25 mm thick for dowel bars	sqm	46.670	14.40	672.05	M-145
		Curing compound	liter	1850.000	62.80	116180.00	M-081
		Plastisizer as per IS marked 9103-1999 @ 0.5 per cent by weight of cement	kg	2070.000	42.00	86940.00	M-144
		Cost of water for curing	KL	216.000	133.00	28728.00	M-196
		Add 1 % 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.				85667.67	
		<b>d) Formwork @ 1.00 % on cost of material, labour and machinery i.e. on (a+b+c)</b>				88276.61	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				1896419.85	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				1621853.56	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				124342.11	
		Cost for 1050cum = a+b+c+d+e+f+g				12558552.72	
		<b>Rate per cum = (a+b+c+d+e+f+g)/1050</b>				11960.53	
					<b>say</b>	<b><u>11960.50</u></b>	

**Note:-** The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.

**CHAPTER- 6**  
**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
6.3	600	<b>Rolled Cement Concrete Base</b> 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 ratio 15:1 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 as per MoRT&H specification clause 600.					
		<b>Unit = cum</b>					
		<b>Taking output = 450 cum (990 tonne)</b>					
		<b>a) Labour</b>					
		Mate	day	7.000	391.00	2737.00	L-17
		Mason (1st Class)	day	5.000	512.00	2560.00	L-15
		Mason (2nd Class)	day	5.000	475.00	2375.00	L-16
		Mazdoor(unskilled)	day	129.000	391.00	50439.00	L-18
		Mazdoor(skilled)	day	6.000	475.00	2850.00	L-20
		Surveyor	day	2.000	640.00	1280.00	L-26
		Bhisti	day	14.000	391.00	5474.00	L-01
		<b>b) Machinery</b>					
		Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030
		Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	7088.00	42528.00	P&M-013
		Electric generator 100 KVA	hour	6.000	498.00	2988.00	P&M-026
		Paver with electronic sensor @ 75 cum/hr.	hour	6.000	2505.00	15030.00	P&M-050
		Vibratory roller 8-10 t capacity	hour	8.000	1562.00	12496.00	P&M-083
		Water tanker with 5 km lead 6 KL capacity	hour	8.000	224.00	1792.00	P&M-084
		Tipper	hour	20.450	374.00	7648.30	P&M-073
		<b>c) Material</b>					
		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	4413.70	1787548.50	M-071
		Sand as per IS: 383 and conforming to clause 602.2.4 @ 0.45 cum/cum of concrete	cum	202.500	740.00	149850.00	M-170
		Cement @ 200 kg/cum of concrete	tonne	90.000	6797.00	611730.00	M-052
		Cost of water	KL	48.000	133.00	6384.00	M-196
		<b>d) Formwork @ 1.00 % on cost of material, labour and machinery i.e. on (a+b+c)</b>				27118.90	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				582587.15	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				498239.38	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				38198.35	
		Cost for 450cum = a+b+c+d+e+f+g				3858033.58	
		<b>Rate per cum = (a+b+c+d+e+f+g)/450</b>				8573.41	
					<b>say</b>	<b><u>8573.40</u></b>	

**CHAPTER- 6**  
**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
6.4		<p><b>Transition Section between Rigid and Flexible Pavement</b></p> <p><b>Note:-</b> 1.Due to change in the properties of materials and type of construction, a gradual change over from rigid pavement to flexible pavement is desirable to avoid any damage at the butting joint. After provision of an expansion joint in the cement concrete slab, the thickness of slab should be tapered to 15 cm over a length of 3 m towards the flexible pavement. The deficiency of thickness caused due to tapering of the slab should be made up by the asphaltic layers.</p> <p>2.The quantities of items should be worked out based on the approved design and drawings and priced as per rates given under respective clauses for cement concrete and asphaltic work.</p>					
6.5	Suggestive	<p><b>Cement - Flyash Concrete Pavement.</b></p> <p>Construction reinforced-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, replacing cement by fly ash to the extent of 15 per cent and sand by 10 per cent, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing</p> <p><b>Unit = cum</b> <b>Taking output = 1050 cum (2415 tonne)</b></p>					
		<p><b>a) Labour</b></p> <p>Mate day 2.000 391.00 782.00 L-17</p> <p>Mazdoor(skilled) day 15.000 475.00 7125.00 L-20</p> <p>Mazdoor(unskilled) day 35.000 391.00 13685.00 L-18</p>					
		<p><b>b) Machinery</b></p> <p>Road Sweeper @ 1250 sqm per hour hour 2.800 385.00 1078.00 P&amp;M-031</p> <p>Front end loader 1 cum bucket capacity hour 18.000 1030.00 18540.00 P&amp;M-017</p> <p>Cement concrete batch mix plant @ 175 cum per hour (effective output) hour 6.000 7088.00 42528.00 P&amp;M-067</p> <p>Electric generator 250 KVA hour 6.000 700.00 4200.00 P&amp;M-025</p> <p>Slip form paver with electronic sensor hour 6.000 2505.00 15030.00 P&amp;M-050</p> <p>Water tanker 6 KL capacity hour 36.000 224.00 8064.00 P&amp;M-084</p> <p>Tipper hour 47.730 374.00 17851.02 P&amp;M-073</p> <p>Concrete joint cutting machine . hour 12.000 186.00 2232.00 P&amp;M-041</p> <p>Texturing machine . hour 12.000 218.00 2616.00 P&amp;M-061</p>					
		<p><b>c) Material</b></p>					

**CHAPTER- 6**  
**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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	4413.70	4170946.50	M-071
		Sand as per IS: 383 and conforming to clause 602.2.4	cum	425.000	740.00	314500.00	M-170
		Cement 43 grade	tonne	357.000	6797.00	2426529.00	M-052
		Fly ash conforming to IS: 3812-1966 (Part-I)	tonne	109.000	20.40	2223.60	M-302
		32 mm mild steel dowel bars	tonne	9.450	57000.00	538650.00	M-180
		16 mm deformed steel tie bars	tonne	1.170	58000.00	67860.00	M-181
		Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3675.000	14.40	52920.00	M-145
		Pre moulded Joint filler, 25 mm thick for expansion joint.	sqm	16.330	1029.00	16803.57	M-117
		Joint sealant	kg	875.000	351.00	307125.00	M-119
		Sealant primer	kg	116.670	140.00	16333.80	M-172
		Plastic sheath, 1.25 mm thick for dowel bars	sqm	46.670	37.00	1726.79	M-147
		Curing compound	liter	1850.000	62.80	116180.00	M-081
		Super plastisizer admixture IS marked as per 9103-1999 @ 0.5 per cent by weight of cement	kg	2070.000	42.00	86940.00	M-004
		Water	KL	216.000	133.00	28728.00	M-196
		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.				81474.66	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				1778740.32	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				1521211.84	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				116626.24	
		Cost for 1050cum = a+b+c+d+e+f				11779250.35	
		<b>Rate per cum = (a+b+c+d+e+f)/1050</b>				11218.33	
					<b>say</b>	<b><u>11218.30</u></b>	

1.The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.

2.IRC: 68-1976 may be referred for guidelines on the design of cement-fly ash concrete for rigid pavement construction.

\*Calculation of cement, sand and fly ash.

Cement @ 400 kg/cum = 1050 x 400 = 420 tonnes. 15 per cent of cement to be replaced by fly ash = 63 tonnes. Balance cement = 357 tonnes. Quantity of fly ash = 63 x specific gravity of fly ash /specific gravity of cement = 63 x 2.25/3.15 = 45 tonnes.

**CHAPTER- 6**  
**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.																																																																																				
		<p>Sand @ 0.45 cum / cum of concrete = 1050 x 0.45 = 472.50 x 1.6 = 756 tonnes. 10 per cent to be replaced by flyash. Balance sand = 756 x 0.9 = 680.4 tonnes = 680.4 / 1.6 = 425 cum. Quantity of flyash = (756-680.4) x specific gravity of fly ash/specific gravity of sand = 76.4 x 2.25 / 2.687 = 63.97 tonnes (say 64 tonnes)</p> <p>Fly ash Total fly ash = 45 + 64 = 109 tonnes.</p>																																																																																									
6.6	Suggestive	<p>Construction of Base/Sub-Base of Pavement with Lean Concrete - Flyash.</p> <p>Construction of Base/sub-base using cement, sand, fly ash and coarse aggregates proportioned as per table 4 of IRC: 74/1979 and with water content ratio, slump and compressive strength as defined in the said table, mix prepared in a batching and mixing plant and compacted with a vibratory roller 8-10 tonnes capacity within the time limit laid down vide clause 7.6.3 of IRC: 74-1979, construction joints properly formed at the end of day's work, cured for 14 days, all as specified in IRC: 74-1979 and as per approved plans.</p> <p><b>Unit = cum</b> <b>Taking output = 450 cum (990 tonne)</b></p> <p><b>a) Labour</b></p> <table border="0" style="width: 100%;"> <tr> <td style="padding-left: 20px;">Mate</td> <td style="padding-left: 20px;">day</td> <td style="padding-left: 20px;">1.120</td> <td style="padding-left: 20px;">391.00</td> <td style="padding-left: 20px;">437.92</td> <td style="padding-left: 20px;">0.00</td> </tr> <tr> <td style="padding-left: 20px;">Mazdoor(skilled)</td> <td style="padding-left: 20px;">day</td> <td style="padding-left: 20px;">6.000</td> <td style="padding-left: 20px;">391.00</td> <td style="padding-left: 20px;">2346.00</td> <td style="padding-left: 20px;">0.00</td> </tr> <tr> <td style="padding-left: 20px;">Mazdoor(unskilled)</td> <td style="padding-left: 20px;">day</td> <td style="padding-left: 20px;">22.000</td> <td style="padding-left: 20px;">475.00</td> <td style="padding-left: 20px;">10450.00</td> <td style="padding-left: 20px;">0.00</td> </tr> </table> <p><b>b) Machinery</b></p> <table border="0" style="width: 100%;"> <tr> <td style="padding-left: 20px;">Front end loader 1 cum bucket capacity</td> <td style="padding-left: 20px;">hour</td> <td style="padding-left: 20px;">6.000</td> <td style="padding-left: 20px;">1030.00</td> <td style="padding-left: 20px;">6180.00</td> <td style="padding-left: 20px;">P&amp;M-030</td> </tr> <tr> <td style="padding-left: 20px;">Cement concrete batch mix plant @ 75 cum per hour</td> <td style="padding-left: 20px;">hour</td> <td style="padding-left: 20px;">6.000</td> <td style="padding-left: 20px;">7088.00</td> <td style="padding-left: 20px;">42528.00</td> <td style="padding-left: 20px;">P&amp;M-013</td> </tr> <tr> <td style="padding-left: 20px;">Electric generator 125 KVA</td> <td style="padding-left: 20px;">hour</td> <td style="padding-left: 20px;">6.000</td> <td style="padding-left: 20px;">498.00</td> <td style="padding-left: 20px;">2988.00</td> <td style="padding-left: 20px;">P&amp;M-026</td> </tr> <tr> <td style="padding-left: 20px;">Paver finisher with electronic sensor</td> <td style="padding-left: 20px;">hour</td> <td style="padding-left: 20px;">6.000</td> <td style="padding-left: 20px;">2505.00</td> <td style="padding-left: 20px;">15030.00</td> <td style="padding-left: 20px;">P&amp;M-050</td> </tr> <tr> <td style="padding-left: 20px;">Vibratory roller 8-10 t capacity</td> <td style="padding-left: 20px;">hour</td> <td style="padding-left: 20px;">8.000</td> <td style="padding-left: 20px;">1562.00</td> <td style="padding-left: 20px;">12496.00</td> <td style="padding-left: 20px;">P&amp;M-083</td> </tr> <tr> <td style="padding-left: 20px;">Water tanker 6 KL capacity</td> <td style="padding-left: 20px;">hour</td> <td style="padding-left: 20px;">8.000</td> <td style="padding-left: 20px;">224.00</td> <td style="padding-left: 20px;">1792.00</td> <td style="padding-left: 20px;">P&amp;M-084</td> </tr> <tr> <td style="padding-left: 20px;">Tipper 10 T Capacity</td> <td style="padding-left: 20px;">hour</td> <td style="padding-left: 20px;">20.450</td> <td style="padding-left: 20px;">374.00</td> <td style="padding-left: 20px;">7648.30</td> <td style="padding-left: 20px;">P&amp;M-073</td> </tr> </table> <p><b>c) Material</b></p> <table border="0" style="width: 100%;"> <tr> <td style="padding-left: 20px;">Crushed stone coarse aggregate of 40 mm nominal size @ 0.90 cum/cum of concrete conforming to table 2 of IRC: 74-1979.</td> <td style="padding-left: 20px;">cum</td> <td style="padding-left: 20px;">405.000</td> <td style="padding-left: 20px;">3663.20</td> <td style="padding-left: 20px;">1483596.00</td> <td style="padding-left: 20px;">M-012</td> </tr> <tr> <td style="padding-left: 20px;">Sand as per IS: 383 - 1970</td> <td style="padding-left: 20px;">cum</td> <td style="padding-left: 20px;">110.960</td> <td style="padding-left: 20px;">740.00</td> <td style="padding-left: 20px;">82110.40</td> <td style="padding-left: 20px;">M-170</td> </tr> <tr> <td style="padding-left: 20px;">Cement @ 150 kg/cum of concrete</td> <td style="padding-left: 20px;">tonne</td> <td style="padding-left: 20px;">67.500</td> <td style="padding-left: 20px;">6797.00</td> <td style="padding-left: 20px;">458797.50</td> <td style="padding-left: 20px;">M-052</td> </tr> <tr> <td style="padding-left: 20px;">Fly ash conforming to IS: 3812 ( Part II )</td> <td style="padding-left: 20px;">cum</td> <td style="padding-left: 20px;">91.540</td> <td style="padding-left: 20px;">20.40</td> <td style="padding-left: 20px;">1867.42</td> <td style="padding-left: 20px;">M-302</td> </tr> </table> <p>( Total fine aggregates = 450 x 0.45 = 202.50 cum To be divided in ratio of 2 sand : 1.65 flyash. Refer table 4 of IRC: 74-1979).</p> <p><b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b> <span style="float: right;">452682.50</span></p> <p><b>e) Contractor's profit @ 15 % on (a+b+c+d)</b> <span style="float: right;">387142.51</span></p> <p><b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b> <span style="float: right;">29680.93</span></p> <p>Cost for 450 cum = a+b+c+d+e+f <span style="float: right;">2997773.47</span></p>						Mate	day	1.120	391.00	437.92	0.00	Mazdoor(skilled)	day	6.000	391.00	2346.00	0.00	Mazdoor(unskilled)	day	22.000	475.00	10450.00	0.00	Front end loader 1 cum bucket capacity	hour	6.000	1030.00	6180.00	P&M-030	Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	7088.00	42528.00	P&M-013	Electric generator 125 KVA	hour	6.000	498.00	2988.00	P&M-026	Paver finisher with electronic sensor	hour	6.000	2505.00	15030.00	P&M-050	Vibratory roller 8-10 t capacity	hour	8.000	1562.00	12496.00	P&M-083	Water tanker 6 KL capacity	hour	8.000	224.00	1792.00	P&M-084	Tipper 10 T Capacity	hour	20.450	374.00	7648.30	P&M-073	Crushed stone coarse aggregate of 40 mm nominal size @ 0.90 cum/cum of concrete conforming to table 2 of IRC: 74-1979.	cum	405.000	3663.20	1483596.00	M-012	Sand as per IS: 383 - 1970	cum	110.960	740.00	82110.40	M-170	Cement @ 150 kg/cum of concrete	tonne	67.500	6797.00	458797.50	M-052	Fly ash conforming to IS: 3812 ( Part II )	cum	91.540	20.40	1867.42	M-302
Mate	day	1.120	391.00	437.92	0.00																																																																																						
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Sand as per IS: 383 - 1970	cum	110.960	740.00	82110.40	M-170																																																																																						
Cement @ 150 kg/cum of concrete	tonne	67.500	6797.00	458797.50	M-052																																																																																						
Fly ash conforming to IS: 3812 ( Part II )	cum	91.540	20.40	1867.42	M-302																																																																																						

**CHAPTER- 6**  
**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>Rate per cum = (a+b+c+d+e+f)/450</b>				6661.72	
					<b>say</b>	<b><u>6661.70</u></b>	
		1. Depending upon approved designs, crushed stone aggregates of nominal size 20mm can also be used as per gradation given in table 2 of IRC: 74-1979.					
		2. The ratio of specific gravities of fly ash and sand has been assumed to be 0.827.					
		3. The quantities of materials given in the analyses are for estimating purposes. Actual quantities shall be as per job mix formula.					
		4. Construction procedure as laid down in clause, of IRC: 74-1979 shall be followed.					

**CHAPTER-7**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
7.1	700	Laying of a geotextile 120 gsm non woven membrane, 100% polyester of thickness 1 to 1.25 mm between pitching and embankment slopes on which pitching is laid to prevent escape of the embankment material through the voids of the pitching with cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching as per drawing and MoRT&H Technical specifications clause 700, 2504 bonded to the membrane with intermittent touch by heating the membrane by Butane Torch as per manufactures recommendation.					
		<b>Unit = sqm</b>					
		<b>Taking output = 30 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.040	391.00	15.64	L-17
		Butane Torch operator (skilled)	day	0.500	475.00	237.50	L-05
		Helper (skilled)	day	0.100	447.00	44.70	L-14
		mazdoor(semiskilled)	day	0.500	447.00	223.50	L-19
		<b>b) Material</b>					
		Geotextile 120 gsm non woven membrane, 100% polyester of thickness 1 to 1.25 mm	sqm	31.500	58.50	1842.75	M-106
		Fuel - LPG	Kg	5.000	82.80	414.00	M-100
		Add for cleaning of surface, cutting grooves etc. @2.00%				55.56	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				602.72	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				515.46	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				39.52	
		Cost for 30 sqm = a+b+c+d+e				3991.34	
		<b>Rate per Sqm = (a+b+c+d+e)/ 30</b>				133.04	
						<b>say</b>	<b><u>133.00</u></b>
7.2	3100	<b>Reinforced Earth Structures</b> Reinforced earth Structures have four main components as under: a) Excavation for foundation, foundation concrete and cement concrete grooved seating in the foundation for facing elements (facia material). b) Facia material and its placement. c) Assembling, joining with facing elements and laying of the reinforcing elements.  d) Earth fill with granular material which is to be retained by the wall. <b>Each component is analysed separately as under:</b> considering Average height of wall = 8 m.					
7.2	3102	<b>Assembling, joining and laying of reinforcing elements.</b>					
	<b>A</b>	<b>With reinforcing element of steel / Aluminium strips / polymeric strips.</b>					
		<b>Unit = Running Metre</b>					
		<b>Taking Output = 450 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.360	391.00	140.76	L-17



	Mazdoor (Unskilled)	day	6.000	391.00	2346.00	L-18
	Mazdoor (Skilled)	day	3.000	475.00	1425.00	L-20
	<b>b) Material</b>					
	@ Reinforcement strips 60 mm wide 5 mm thick as per clause 3102.					
	1. Galvanised carbon steel strips	metre	450*1.1	164.00	81180.00	M-250
	or					
	2. Aluminium Strips	metre	450*1.1	178.20	88209.00	M-251
	or					
	3. Stainless steel strips	metre	450*1.1	268.10	132709.50	M-252
	@ Any one of the above alternative may be adopted as per approved design.					
	Add 10 per cent of the cost of reinforcing strip towards accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the fascia pannels, overlaps, heat bonding or extension.					
Type 1	<b>1. Galvanised carbon steel strips</b>					
	c) Add GST (multiplying factor) @ 0.2127 on (a+b)				18099.02	
	d) Contractor's profit @ 15 % on (a+b+c)				15478.62	
	e) Add Cess @ 1.00 % on (a+b+c+d)				1186.69	
	Cost of 450 m = a+b+c+d+e				119856.09	
	Rate per metre =(a+b+c+d+e)/450				266.35	
					<b>say</b>	<b><u>266.30</u></b>
Type 2	<b>2. Aluminium Strips</b>					
	c) Add GST (multiplying factor) @ 0.2127 on (a+b)				19594.09	
	d) Contractor's profit @ 15 % on (a+b+c)				16757.23	
	e) Add Cess @ 1.00 % on (a+b+c+d)				1284.72	
	Cost of 450 m = a+b+c+d+e				129756.79	
	Rate per metre =(a+b+c+d+e)/450				288.35	
					<b>say</b>	<b><u>288.30</u></b>
Type 3	<b>3. Stainless steel strips</b>					
	c) Add GST (multiplying factor) @ 0.2127 on (a+b)				29059.34	
	d) Contractor's profit @ 15 % on (a+b+c)				24852.09	
	e) Add Cess @ 1.00 % on (a+b+c+d)				1905.33	
	Cost of 450 m = a+b+c+d+e				192438.02	
	Rate per metre =(a+b+c+d+e)/450				427.64	
					<b>say</b>	<b><u>427.60</u></b>
7.2(i)	<b>B With reinforcing elements of synthetic geogrids</b>					
	<b>Unit = sqm</b>					
	<b>Taking output = 300 sqm</b>					
	<b>a) Labour</b>					
	Mate	day	0.360	391.00	140.76	L-17
	Mazdoor (Unskilled)	day	6.000	391.00	2346.00	L-18
	Mazdoor (Skilled)	day	3.000	475.00	1425.00	L-20
	<b>b) Material</b>					
	Synthetic Geogrids as per clause 3102.8 and approved design and specifications.	sqm	300.000	92.00	27600.00	M-253
	Add 10 per cent of the cost of reinforcing elements (synthetic geogrids) for accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the fascia pannels, overlaps and other protective elements for synthetic geogrids.				2760.00	
	c) Add GST (multiplying factor) @ 0.2127 on (a+b)				7289.60	
	d) Contractor's profit @ 15 % on (a+b+c)				6234.20	

e) Add Cess @ 1.00 % on (a+b+c+d)	477.96
Cost of 300 sqm of Synthetic geogrids = a+b+c+d+e	48273.52
Rate per sqm = (a+b+c+d+e)/ 300	160.91
	<b>say <u>160.90</u></b>

## 7.2 3104 Facing elements of RCC

Unit = sqm

Taking output = 75 sqm

## a) Labour

Mate	day	0.180	391.00	70.38	L-17
Mazdoor (Unskilled)	day	3.000	391.00	1173.00	L-18
Mazdoor (Skilled)	day	1.500	475.00	712.50	L-20

## b) Machinery

Light crane with lifting capacity upto 3 tonne	hour	6.000	560.00	3360.00	P&M-020
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## c) Material

Pre-cast RCC M-35 facing elements of size as per design and 18 cm thick for 75 sqm. (Refer Item 12.6 (H) using batching plant)	cum	13.500	11226.20	151553.70	
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HYSD steel @ 5 kg / sqm (Assume rate of Item 13.5)	tonnes	0.380	91483.20	34763.62	
--	--------	-------	----------	----------	--

Add @ 2 % of cost of facia pannels, for all necessary temporary form work, scaffolding and provision of loops/lugs for lifting of pannels and joining the reinforcing elements.

## d) Add GST (multiplying factor) @ 0.2127 on (a+b)

1923.28

## e) Contractor's profit @ 15 % on (a+b+d)

1644.83

## f) Add Cess @ 1.00 % on (a+b+c+d+e)

126.10

Cost for 75 sqm = a+b+c+d+e+f

199053.75

Rate per sqm = (a+b+c+d+e+f)/ 75

2654.05

**say 2654.10**

- Note**
- 1.The specification and construction details to be adopted shall be as per section 3100 of MoRT&H Specification.
  - 2.Drainage arrangement shall be made as per approved design and drawings.
  - 3.The quantity of filler media shall be calculated as per approved design and specifications and shall be priced separately.The rate for same to be adopted from chapter 15.
  - 4.Excavation for foundation including foundation concrete and groove in the foundation for seating of bottom most facia panel and capping beam to be calculated as per design and priced separately. The rates for excavation and foundation concrete shall be taken from the chapter 12 & 13 in bridge section.
  - 5.The earth fill to be retained is not included in this analysis. The same is to be worked out and provided separately complete as per clause 305.
  - 6.For compaction of Earthwork, attention is invited to clause 3105.5 of MoRT&H Specification.
  - 7.Length of reinforcing strips will vary with the height of wall and will be as per approved design and drawings.
  - 8.The type of reinforcing elements to be adopted shall be as per approved design and specifications.

9.The market rate for supply of reinforcing elements and their accessories are to be ascertained from reputed firms in the field of earth reinforcement.

10.The earth fill material shall be clean, free draining, granular with high friction and low cohesion, non-corrosive, coarse grained with not 10 per cent of particles passing 75 micron sieve, free of any deleterious matter, chlorides, salts, acids, alkalies, mineral oil, fungus and microbes and shall be of specified PH value.

11.Capping beam is to be priced separately as per approved design. The rate for cement concrete shall be taken from the chapter of sub-structure in bridge section.

12.The cost of reinforced earth retaining wall shall include following:

(I) Excavation for foundation including backfilling.

(ii) Foundation concrete as per approved design.

(iii) Cost of facial pannels and their erection .

(iv) Cost of reinforcing elements including their fixing and joining with the facial pannels.

(v) Drainage arrangement including filter media as per approved design and drawings.

13. The compacted earth filling to be retained shall form part of embankment.

### 7.3 702 Sub-Surface Drain with Geotextiles

Construction of sub surface drain 200 mm dia using geotextiles treated with carbon black with physical properties as given in clause 702.2.3 formed in to a stable network and a planar geocomposite structure, joints wrapped with geotextile to prevent ingress of soil, all as per clause 702 and approved drawings including excavation and backfilling.

**Unit = Running metre**

**Taking output = one metre**

#### a) Labour

Mate	day	0.040	391.00	15.64	L-17
Mazdoor (skilled)	day	0.250	475.00	118.75	L-20
Mazdoor (Unskilled)	day	0.500	391.00	195.50	L-18

#### b) Material

Geonets, geomembrane and geotextile to make planar geocomposite stable network for sub surface drain including wrapping of joints with 160 mm over lapping with geotextile .

Geonets	sqm	1.000	69.00	69.00	M-279
Geomembrane	sqm	1.000	69.00	69.00	M-280
Geotextile	sqm	2.000	58.50	117.00	M-281

Add 2 % cost of material for miscellaneous items like synthetic cord 5.10

c) Add GST (multiplying factor) @ 125.49

0.2127 on (a+b)

d) Contractor's profit @ 15 % on (a+b+c) 107.32

e) Add Cess @ 1.00 % on (a+b+c+d) 8.23

Rate per metre = a+b+c+d+e 831.03

**say 831.00**

Surplus excavated material to be used at site.  
Hence separate cost for disposal not added.

#### 7.4 702.4 Narrow Filter Sub-Surface Drain

Construction of a narrow filter sub- surface drain consisting of porous or perforated pipe laid in narrow trench surrounded by a geotextile filter fabric, with a minimum of 450 mm overlap of fabric and installed as per clause 702.3 and 309.3.5 including excavation and backfilling.

**Unit = Running metre length**

**Taking output = one metre**

<b>a) Labour</b>					
Mate	day	0.040	391.00	15.64	L-17
Mazdoor (skilled)	day	0.250	475.00	118.75	L-20
Mazdoor (Unskilled)	day	0.500	391.00	195.50	L-18
<b>b) Material</b>					
Perforated geosynthetic pipe 150 mm dia	metre	1.000	53.65	53.65	M-282
Geotextile filter fabric	sqm	1.250	58.50	73.13	M-283
Add 2 % cost of material for miscellaneous item like synthetic cord				2.54	
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				97.67	
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				83.53	
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				10.96	
<b>Rate per metre = a+b+c+d+e</b>				651.36	
				<b>say</b>	<b><u>651.00</u></b>

Surplus excavated material to be used at site.  
Hence Separate cost for disposal not added.

#### 7.5 703 Laying Paving Fabric Beneath a Pavement Overlay

Providing and laying paving fabric with physical requirements as per table 704-2 over a tack coat of paving grade Bitumen, laid at the rate of 1 kg per sqm over thoroughly cleaned and repaired surface to provide a water resistant membrane and crack retarding layer. Paving fabric to be free of wrinkling and folding and to be laid before cooling of tack coat, brooming and rolling of surface with pneumatic roller to maximise paving fabric contact with pavement surface.

**Unit = sqm**

**Taking output = 2800 sqm**

<b>a) Labour</b>					
Mate	day	0.800	391.00	312.80	L-17
Mazdoor (Unskilled)	day	20.000	391.00	7820.00	L-18
<b>b) Machinery</b>					
Road sweeper 1250 sqm per hour	hour	2.240	385.00	862.40	P&M-055
Pneumatic roller 14 tonnes 2000 sqm per hour	hour	1.400	1180.00	1652.00	P&M-053
Bitumen pressure distributor 1750 sqm per hour	hour	1.680	226.00	379.68	P&M-012
<b>c) Material</b>					
Paving Fabric	sqm	2940.00	52.00	152880.00	M-284
Bitumen VG-30	tonne	2.800	61186.00	171320.80	M-041
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				71302.93	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				60979.59	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				4678.51	

Cost for 2800 sqm = a+b+c+d+e+f  
**Rate per sqm = (a+b+c+d+e+f)/2800**

472188.71

168.64

say **168.60**

**7.6 704 Laying Boulder Apron in Crates of Synthetic Geogrids**

Providing, preparing and laying of geogrid crated apron 1 m x 5 m, 600 mm thick including excavation and backfilling with baffles at 1 metre interval, made with geogrids having characteristics as per clause 704.2, joining sides with connectors/ring staples, top corners to be tie tensioned, placing of suitable cross interval ties in layers of 300 mm connecting opposite side with lateral braces and tied with polymer braids to avoid bulging, constructed as per clause 704.3. filled with stone with minimum size of 200 mm and specific gravity not less than 2.65, packed with stone spalls, keyed to the foundation recess in case of sloping ground and laid over a layer of geotextile to prevent migration of fines, all as per clause 704 and laid as per clause 2503.3 and approved design.

**Unit = cum**

**Taking output = 3.00 cum**

**a) Labour**

Mate	day	0.060	391.00	23.46	L-17
Mazdoor(skilled)	day	0.500	391.00	195.50	L-18
Mazdoor(uns skilled)	day	1.500	475.00	712.50	L-20

**b) Material**

Geo grids	sqm	21.000	92.00	1932.00	M-253
Connectors/ Staples	each	50.000	6.95	347.50	M-301
Polymer braids	metre	20.000	13.20	264.00	M-304
Stones with minimum size of 200 mm	cum	3.450	3000.90	10353.11	M-182
Stones spall for filling voids	cum	0.450	3044.90	1370.21	M-191

**c) Add GST (multiplying factor) @**

**0.2127 on (a+b)**

3232.67

**d) Contractor's profit @ 15 % on (a+b+c)**

2764.64

**e) Add Cess @ 1.00 % on (a+b+c+d)**

283.88

Cost for 3 cum = a+b+c+d+e

21479.47

**Rate per cum = (a+b+c+d+e)/ 3**

1652.27

say **1652.30**

**CHAPTER-8**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
8.1	409	<b>Cast in Situ Cement Concrete M20 Kerb</b>					
		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 drawings & MoRT&H technical specifications Clauses 409.					
		<b>Unit = Running metre</b>					
		<b>Taking output = 360 metre</b>					
		<b>A. Using Concrete Mixer</b>					
		<b>a) Labour</b>					
		Mate	day	0.720	391.00	281.52	L-17
		Mason (1st Class)	day	2.000	512.00	1024.00	L-15
		Mazdoor (unskilled)	day	16.000	391.00	6256.00	L-18
		<b>b) Machinery</b>					
		Mechanical Concrete mixer 0.48/0.28 cum capacity	hour	16.000	215.00	3440.00	P&M-014
		Kerb casting machine @ 60 metres/hour	hour	6.000	487.00	2922.00	P&M-042
		Water tanker 6 KL capacity	hour	6.000	224.00	1344.00	P&M-084
		<b>c) Material</b>					
		Cement	tonne	7.047	6797.00	47898.46	M-052
		Sand	cum	21.790	740.00	16124.60	M-170
		Stone aggregate 20 mm nominal size	cum	10.900	4374.00	47676.60	M-022
		Cost of water	KL	30.000	133.00	3990.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				27854.59	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				23821.77	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1826.34	
		Cost for 360 meter = a+b+c+d+e+f				184459.87	
		<b>Rate per metre = (a+b+c+d+e+f)/360</b>				512.39	
					<b>say</b>	<b><u>512.40</u></b>	
		<b>B. Using Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>Cement Concrete</b>					
		Cement concrete of grade M20 = 12.60 cum					
		Cement concrete of grade M10 for base = 11.61 cum					
		Total Concrete = <b>24.21 cu.m</b>					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Mason (1st Class)	day	1.000	512.00	512.00	L-15
		Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
		<b>b) Machinery</b>					
		Concrete batching and mixing plant @ 15 cum/hr.	hour	2.000	7088.00	14176.00	P&M-013
		Kerb casting machine @ 60 metres/hour	hour	6.000	487.00	2922.00	P&M-042
		Water tanker 6 KL capacity	hour	15.000	224.00	3360.00	P&M-084
		Tipper 5.5 cum capacity	hour	6.000	374.00	2244.00	P&M-073
		<b>c) Material</b>					
		Cement	tonne	7.047	6797.00	47898.46	M-052

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**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Sand	cum	21.790	740.00	16124.60	M-170
		Stone aggregate 20 mm nominal size	cum	10.900	4374.00	47676.60	M-022
		Cost of water	KL	30.000	133.00	3990.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				29721.12	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				25418.05	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1948.72	
		Cost for 360 meter = a+b+c+d+e+f				196820.47	
		<b>Rate per metre = (a+b+c+d+e+f)/360</b>				546.72	
					<b>say</b>	<b><u>546.70</u></b>	
<b>8.2</b>	<b>408</b>	<b>Cast in Situ Cement Concrete M 20 Kerb with Channel</b>					
		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 drawings & MoRT&H technical specifications Clauses 308.					
		<b>A. Using Concrete Mixer</b>					
		<b>Unit = Running metre</b>					
		<b>Taking output = 300 metre length</b>					
		<b>a) Labour</b>					
		Mate	day	0.720	391.00	281.52	L-17
		Mason (1st Class)	day	2.000	512.00	1024.00	L-15
		Mazdoor (unskilled)	day	16.000	391.00	6256.00	L-18
		<b>b) Machinery</b>					
		Mechanical Concrete mixer 0.48/0.28 cum capacity	hour	16.000	215.00	3440.00	P&M-014
		Kerb casting machine @ 60 metres/hour	hour	6.000	487.00	2922.00	P&M-042
		Water tanker 6 KL capacity	hour	6.000	224.00	1344.00	P&M-084
		<b>c) Material</b>					
		Cement	tonne	9.010	6797.00	61240.97	M-052
		Sand	cum	36.590	740.00	27076.60	M-170
		Stone aggregate 20 mm nominal size	cum	18.300	4374.00	80044.20	M-022
		Cost of water	KL	36.000	133.00	4788.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				40076.36	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				34274.05	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				2627.68	
		Cost for 360 meter = a+b+c+d+e+f				265395.37	
		<b>Rate per metre = (a+b+c+d+e+f)/300</b>				884.65	
					<b>say</b>	<b><u>884.70</u></b>	
		<b>B. Using Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>Unit = Running metre</b>					
		<b>Taking output = 300 metre length</b>					
		<b>Cement Concrete</b>					

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**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cement concrete of grade M20= 17.48 cum					
		Cement concrete of grade M10 for base = 23.18 cum					
		<b>Total Concrete = 40.66 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Mason (1st Class)	day	1.000	512.00	512.00	L-15
		Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
		<b>b) Machinery</b>					
		Concrete batching and mixing plant @ 15 cum/hr.	hour	2.000	7088.00	14176.00	P&M-013
		Kerb casting machine @ 60 metres/hour	hour	6.000	487.00	2922.00	P&M-042
		Water tanker 6 KL capacity	hour	15.000	224.00	3360.00	P&M-084
		Tipper 5.5 cum capacity	hour	6.000	374.00	2244.00	P&M-073
		<b>c) Material</b>					
		Cement	tonne	9.010	6797.00	61240.97	M-052
		Sand	cum	36.590	740.00	27076.60	M-170
		Stone aggregate 20 mm nominal size	cum	18.300	4374.00	80044.20	M-022
		Cost of water	KL	36.000	133.00	4788.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				41942.89	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				35870.34	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				2750.06	
		Cost for 300 meter = a+b+c+d+e+f				277755.97	
		<b>Rate per metre = (a+b+c+d+e+f)/300</b>				925.85	
					<b>say</b>	<b><u>925.90</u></b>	
8.3	801	<b>Printing New Letter and Figures of any Shade</b>					
		Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade as per drawings and MoRT&H Technical Specification Clause 801.					
		<b>i. Hindi (Matras, commas and the like not to be measured and paid for Half letter shall be counted as half only )</b>					
		<b>Details for 100 letters of 16 cm height i.e. 1600 cm</b>					
		<b>Unit = per cm height per letter</b>					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Painter (1st Class)	day	2.000	475.00	950.00	L-22
		Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18
		<b>b) Material</b>					
		Paint	Litre	0.700	201.00	140.70	M-142
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				325.14	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				278.06	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				21.32	
		Cost for 1600 cm = a+b+c+d+e				2153.14	
		<b>Rate per cm height per letter = (a+b+c+d+e)/1600</b>				1.35	
					<b>say</b>	<b><u>1.30</u></b>	



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**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>ii. English and Roman</b>					
		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					
		<b>a) Labour</b>					
		Mate	day	0.070	391.00	27.37	L-17
		Painter (1st Class)	day	1.250	475.00	593.75	L-22
		Mazdoor (unskilled)	day	0.500	391.00	195.50	L-18
		<b>b) Material</b>					
		Paint	Litre	0.500	201.00	100.50	M-142
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				195.07	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				166.83	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				12.79	
		Cost for 1600 cm = a+b+c+d+e				1291.81	
		<b>Rate per cm height per letter = (a+b+c+d+e)/1600</b>				0.81	
					<b>say</b>	<b><u>0.80</u></b>	

**8.4 801 Retro-Reflectorised Traffic Signs**

Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC:67 made of high intensity grade sheeting vide MoRT&H technical specification Clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per drawings and MoRT&H Technical Specification Clause 801.

**i) 900 mm equilateral triangle**

**Unit = Each**

**Taking output = one traffic sign**

i)	<b>Excavation for foundation</b>	cum	0.243	458.20	111.34	Item no. 12.1.1.A
	<b>As per item no. 12.1.1.A of Chapter 12</b>					
ii)	<b>Cement concrete M15 grade</b>	cum	0.122	10018.10	1222.21	Item no. 12.6.A
	<b>As per item no. 12.6.A of Chapter 12</b>					
iii)	<b>Painting angle iron post two coats</b>	sqm	0.430	81.70	35.13	Item no. 8.9
	<b>As per item no. 8.9 of this Chapter</b>					
a)	<b>Labour (For fixing at site)</b>					
	Mate	day	0.010	391.00	3.91	L-17
	Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
b)	<b>Material</b>					
	Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	59.50	1130.50	M-132

Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint

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**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		900 mm equilateral triangle Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.	sqm	0.350	891.00	311.85 28.85	M-030
		<b>c) Machinery</b> Tractor with trolley	hour	0.010	265.00	2.65	P&M-076
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				335.11	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				286.59	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				21.97	
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				3587.86	
					<b>say</b>	<b><u>3587.90</u></b>	
		<b>ii) 600 mm equilateral triangle</b> <b>Unit = Each</b> <b>Taking output = one traffic sign</b>					
		<b>i) Excavation for foundation</b> As per item no. 12.1.I.A of Chapter 12	cum	0.243	458.20	111.34	Item no. 12.1.I.A
		<b>ii) Cement concrete M15 grade</b> As per item no. 12.6.A of Chapter 12	cum	0.122	10018.10	1222.21	Item no. 12.6.A
		<b>iii) Painting angle iron post two coats</b> As per item no. 8.9 of this Chapter	sqm	0.430	81.70	35.13	Item no. 8.9
		<b>a) Labour (For fixing at site)</b> Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		<b>b) Material</b> Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	59.50	1130.50	M-132
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint					
		900 mm equilateral triangle Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.	sqm	0.156	891.00	139.00 25.39	M-030
		<b>c) Machinery</b> Tractor with trolley	hour	0.010	265.00	2.65	P&M-076
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				297.61	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				254.52	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				19.51	
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				3339.52	
					<b>say</b>	<b><u>3339.50</u></b>	
		<b>iii) 600 mm circular</b> <b>Unit = Each</b> <b>Taking output = one traffic sign</b>					
		<b>i) Excavation for foundation</b>	cum	0.243	458.20	111.34	Item no. 12.1.I.A

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**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>As per item no. 12.1.1.A of Chapter 12</b>					
		ii) <b>Cement concrete M15 grade</b>	cum	0.122	10018.10	1222.21	Item no. 12.6.A
		<b>As per item no. 12.6.A of Chapter 12</b>					
		iii) <b>Painting angle iron post two coats</b>	sqm	0.430	81.70	35.13	Item no. 8.9
		<b>As per item no. 8.9 of this Chapter</b>					
		a) <b>Labour (For fixing at site)</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		b) <b>Material</b>					
		Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	59.50	1130.50	M-132
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint					
		900 mm equilateral triangle	sqm	0.283	891.00	252.15	M-030
		Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.				27.65	
		c) <b>Machinery</b>					
		Tractor with trolley	hour	0.010	265.00	2.65	P&M-076
		d) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				322.16	
		e) <b>Contractor's profit @ 15 % on (a+b+c+d)</b>				275.52	
		f) <b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				21.12	
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				3502.10	
					<b>say</b>	<b><u>3502.10</u></b>	
		<b>iv) 800 mm x 600 mm rectangular</b>					
		<b>Unit = Each</b>					
		<b>Taking output = one traffic sign</b>					
		i) <b>Excavation for foundation</b>	cum	0.243	458.20	111.34	Item no. 12.1.1.A
		<b>As per item no. 12.1.1.A of Chapter 12</b>					
		ii) <b>Cement concrete M15 grade</b>	cum	0.122	10018.10	1222.21	Item no. 12.6.A
		<b>As per item no. 12.6.A of Chapter 12</b>					
		iii) <b>Painting angle iron post two coats</b>	sqm	0.430	81.70	35.13	Item no. 8.9
		<b>As per item no. 8.9 of this Chapter</b>					
		a) <b>Labour (For fixing at site)</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		b) <b>Material</b>					
		Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	59.50	1130.50	M-132
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint					
		900 mm equilateral triangle	sqm	0.480	891.00	427.68	M-030

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**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.				31.16	
		<b>c) Machinery</b>					
		Tractor with trolley	hour	0.010	265.00	2.65	P&M-076
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				564.43	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				338.71	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				25.97	
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				3991.45	
					<b>say</b>	<b><u>3991.40</u></b>	
		<b>v) 600 x 450 mm rectangular</b>					
		<b>Unit = Each</b>					
		<b>Taking output = one traffic sign</b>					
		<b>i) Excavation for foundation</b>	cum	0.243	458.20	111.34	Item no. 12.1.1.A
		<b>As per item no. 12.1.1.A of Chapter 12</b>					
		<b>ii) Cement concrete M15 grade</b>	cum	0.122	10018.10	1222.21	Item no. 12.6.A
		<b>As per item no. 12.6.A of Chapter 12</b>					
		<b>iii) Painting angle iron post two coats</b>	sqm	0.430	81.70	35.13	Item no. 8.9
		<b>As per item no. 8.9 of this Chapter</b>					
		<b>a) Labour (For fixing at site)</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		<b>b) Material</b>					
		Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	59.50	1130.50	M-132
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint					
		900 mm equilateral triangle	sqm	0.270	891.00	240.57	M-030
		Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.				27.42	
		<b>c) Machinery</b>					
		Tractor with trolley	hour	0.010	265.00	2.65	P&M-076
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				319.88	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				273.40	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				20.96	
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				3485.73	
					<b>say</b>	<b><u>3485.70</u></b>	
		<b>vi) 600 mm x 600 mm square</b>					
		<b>Unit = Each</b>					
		<b>Taking output = one traffic sign</b>					
		<b>i) Excavation for foundation</b>	cum	0.243	458.20	111.34	Item no. 12.1.1.A
		<b>As per item no. 12.1.1.A of Chapter 12</b>					
		<b>ii) Cement concrete M15 grade</b>	cum	0.122	10018.10	1222.21	Item no. 12.6.A

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**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>As per item no. 12.6.A of Chapter 12</b>					
		iii) <b>Painting angle iron post two coats</b>	sqm	0.430	81.70	35.13	Item no. 8.9
		<b>As per item no. 8.9 of this Chapter</b>					
		a) <b>Labour (For fixing at site)</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		b) <b>Material</b>					
		Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	59.50	1130.50	M-132
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint					
		900 mm equilateral triangle	sqm	0.360	891.00	320.76	M-030
		Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.				29.03	
		c) <b>Machinery</b>					
		Tractor with trolley	hour	0.010	265.00	2.65	P&M-076
		d) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				357.63	
		e) <b>Contractor's profit @ 15 % on (a+b+c+d)</b>				291.33	
		f) <b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				22.34	
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				3624.58	
					<b>say</b>	<b><u>3624.60</u></b>	
		<b>vii) 900 mm octagon</b>					
		<b>Unit = Each</b>					
		<b>Taking output = one traffic sign</b>					
		i) <b>Excavation for foundation</b>	cum	0.243	458.20	111.34	Item no. 12.1.1.A
		<b>As per item no. 12.1.1.A of Chapter 12</b>					
		ii) <b>Cement concrete M15 grade</b>	cum	0.122	10018.10	1222.21	Item no. 12.6.A
		<b>As per item no. 12.6.A of Chapter 12</b>					
		iii) <b>Painting angle iron post two coats</b>	sqm	0.430	81.70	35.13	Item no. 8.9
		<b>As per item no. 8.9 of this Chapter</b>					
		a) <b>Labour (For fixing at site)</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		b) <b>Material</b>					
		Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	59.50	1130.50	M-132
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint					
		900 mm equilateral triangle	sqm	0.672	891.00	598.75	M-030
		Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.				34.59	
		c) <b>Machinery</b>					
		Tractor with trolley	hour	0.010	265.00	2.65	P&M-076
		d) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				399.85	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Contractor's profit @ 15 % on (a+b+c+d)				340.20	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				26.08	
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				4002.96	
					<b>say</b>	<b><u>4003.00</u></b>	
		<b>Note:-</b> 1.Any one area of aluminium sheeting given at (i) to (vii) may be adopted as per site requirement and in accordance with IRC : 67. 2.Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters. 3. The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.					
8.5	801	<b>Direction and Place Identification Signs upto 0.9 sqm Size Board.</b> 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 450 x 450 x 600 mm, 600 mm below ground level as per approved drawing and MoRT&H Technical Specification Clause 801.					
		<b>Unit = sqm</b> <b>Taking output = 1.00 No (0.9 sqm)</b>					
		i) Excavation for foundation As per item no. 12.1.I.A of Chapter 12	cum	0.243	458.20	111.34	Item no. 12.1.I.A
		ii) Cement concrete M15 grade As per item no. 12.6.A of Chapter 12	cum	0.122	10018.10	1222.21	Item no. 12.6.A
		iii) Painting angle iron post two coats As per item no. 8.9 of this Chapter	sqm	0.430	81.70	35.13	Item no. 8.9
		a) Labour (For fixing at site)					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.200	391.00	78.20	L-18
		b) Material					
		Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	59.50	1130.50	M-132
		Aluminium sheeting 2.00 mm thick fixed with encapsulated lens type reflective sheeting of size 0.90 sqm	sqm	0.900	1188.00	1069.20	M-031

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.				43.99	
		<b>c) Machinery</b>					
		Tractor with trolley	hour	0.020	265.00	5.30	P&M-076
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				495.83	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				424.04	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				32.51	
		<b>Rate per Traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				4652.16	
					<b>say</b>	<b><u>4652.20</u></b>	
		<b>Note:-</b> 1) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately					
		2) Rate for excavation, cement concrete M-15 and painting has been taken from respective chapters					
8.6	801	<b>Direction and Place Identification Signs with size more than 0.9 sqm size Board.</b>					
		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 450 x 450 x 600 mm, 600 mm below ground level as per approved drawing and MoRT&H Technical Specification Clause 801.					
		<b>Unit = sqm</b>					
		<b>Taking output = 1.00 No (1.50 sqm)</b>					
		<b>i) Excavation for foundation</b>	cum	0.486	458.20	222.69	Item no. 12.1.I.A
		<b>As per item no. 12.1.I.A of Chapter 12</b>					
		<b>ii) Cement concrete M15 grade</b>	cum	0.244	10018.10	2444.42	Item no. 12.6.A
		<b>As per item no. 12.6.A of Chapter 12</b>					
		<b>iii) Painting angle iron post two coats</b>	sqm	0.860	81.70	70.26	Item no. 8.9
		<b>As per item no. 8.9 of this Chapter</b>					
		<b>a) Labour (For fixing at site)</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.300	391.00	117.30	L-18
		<b>b) Material</b>					
		Mild steel angle iron 75 x 75 x 6 mm	kg	38.000	59.50	2261.00	M-132
		Aluminium sheeting 2.00 mm thick fixed with encapsulated lens type reflective sheeting					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		of size 0.90 sqm	sqm	1.500	1188.00	1782.00	M-031
		Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.				80.86	
		<b>c) Machinery</b>					
		Tractor with trolley	hour	0.020	265.00	5.30	P&M-076
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				904.05	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				773.16	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				59.28	
		<b>Rate per Traffic Sign = (i+ii+iii+a+b+c+d+e+f)</b>				8724.23	
					<b>say</b>	<b><u>8724.20</u></b>	

**Note:-** 1) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately

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

**8.7 802 Overhead Signs**

Providing and erecting overhead signs with a corrosion resistant 2 mm thick aluminium alloy sheet reflectorised with high intensity retro-reflective sheeting of encapsulated lense type with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans and MoRTH Technical Specification Clause 802.

**A. Truss and Vertical Support**

**Unit = tonne**

**Taking output = 1 tonne**

**a) Labour**

Mate	day	0.240	391.00	93.84	L-17
Blacksmith	day	2.000	480.00	960.00	L-03
Mazdoor (unskilled)	day	4.000	391.00	1564.00	L-18

**b) Material**

Aluminium alloy/galvanised steel including 5 per cent wastage	tonne	1.050	63000.00	66150.00	M-101
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Add 1 per cent on cost of material for nuts, bolts and drilling and welding consumables

661.50

Add 15 per cent on cost of material for fabrication of trusses as per approved design

10021.73

**c) Machinery**

Crane 3 tonne capacity	hour	3.000	560.00	1680.00	P&M-020
Truck	hour	0.500	418.00	209.00	P&M-080

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

17301.03

**e) Contractor's profit @ 15 % on (a+b+c+d)**

14796.16



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				1134.37	
		Rate per tonne = (a+b+c+d+e+f)				114571.63	
					<b>say</b>	<b><u>114571.60</u></b>	
		<b>B. Aluminium Alloy Plate for Over Head Sign</b>					
		<b>Unit = sqm</b>					
		Taking output = 1 sqm					
		<b>a) Labour</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Blacksmith	day	0.100	480.00	48.00	L-03
		Mazdoor (unskilled)	day	0.150	391.00	58.65	L-18
		<b>b) Material</b>					
		Aluminium alloy plate, 2 mm thick, fixed with high intensity grade sheeting vide clause 801.3	sqm	1.050	1188.00	1247.40	M-029
		Add 1 per cent of cost of labour for lifting arrangement, like ladders, pulleys, ropes etc				1.11	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				289.07	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				247.22	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				18.95	
		Rate per sqm = (a+b+c+d+e)				1914.31	
					<b>say</b>	<b><u>1914.30</u></b>	
		<b>Note:-</b> 1. The cost of excavation and foundation concrete for fixing of vertical support system to be worked out separately as per the approved drawing/design and to be included in the estimate.					
		2. Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been included separately in this chapter.					
8.8	803	<b>Painting Two Coats on New Concrete Surfaces</b>					
		Providing and painting two coats with synthetic enamel paint in all shades on new plastered concrete surfaces as per MoRT&H Technical Specification Clause 803.					
		<b>Unit = sqm</b>					
		<b>Taking output = 40 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Painter (1st Class)	day	2.000	475.00	950.00	L-22
		Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18
		<b>b) Material</b>					
		Road marking paint/ sythetic enamel paint	Litre	6.000	201.00	1206.00	M-142
		Add for scaffolding @ 1 per cent of labour & material cost where required				25.94	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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.				129.70	
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				584.83	
		d) Contractor's profit @ 15 % on (a+b+c)				500.16	
		e) Add Cess @ 1.00 % on (a+b+c+d)				38.35	
		Cost for 40 sqm = a+b+c+d+e				3872.89	
		Rate per sqm = (a+b+c+d+e)/40				96.82	
					<b>say</b>	<b><u>96.80</u></b>	
8.9	803	<b>Painting on Steel Surfaces</b> 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 as per MoRT&H Technical Specification Clause 803.					
		<b>Unit = sqm</b> <b>Taking output = 10 sqm</b>					
		a) <b>Labour</b>					
		Mate	day	0.030	391.00	11.73	L-17
		Painter (1st Class)	day	0.450	475.00	213.75	L-22
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		b) <b>Material</b>					
		Sythetic enamel paint	Litre	1.250	201.00	251.25	M-142
		Add for scaffolding @ 1 per cent of labour & material cost where required				5.74	
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				123.41	
		d) Contractor's profit @ 15 % on (a+b+c)				105.55	
		e) Add Cess @ 1.00 % on (a+b+c+d)				8.09	
		Cost for 10 sqm = a+b+c+d+e				817.28	
		Rate per sqm = (a+b+c+d+e)/10				81.73	
					<b>say</b>	<b><u>81.70</u></b>	
8.10	803	<b>Painting on Wood Surfaces</b> 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 as per MoRT&H Technical Specification Clause 803.					
		<b>Unit = sqm</b> <b>Taking output = 10 sqm</b>					
		a) <b>Labour</b>					
		Mate	day	0.030	391.00	11.73	L-17
		Painter (1st Class)	day	0.500	475.00	237.50	L-22
		Mazdoor (unskilled)	day	0.200	391.00	78.20	L-18
		b) <b>Material</b>					
		Sythetic enamel paint	Litre	1.500	201.00	301.50	M-142
		Add for scaffolding @ 1 per cent of labour & material cost where required				6.29	
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				135.11	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Contractor's profit @ 15 % on (a+b+c)				115.55	
		e) Add Cess @ 1.00 % on (a+b+c+d)				8.86	
		Cost for 10 sqm = a+b+c+d+e				894.74	
		Rate per sqm = (a+b+c+d+e)/10				89.47	
					<b>say</b>	<b><u>89.50</u></b>	
8.11	803	<b>Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work</b>					
		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 as per MoRT&H Technical Specification Clause 803.					
		<b>(i) Over 10 cm in width</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 10 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.080	391.00	31.28	L-17
		Painter (1st Class)	day	0.550	475.00	261.25	L-22
		Mazdoor (unskilled)	day	1.550	391.00	606.05	L-18
		<b>b) Material</b>					
		Road marking paint	Litre	1.480	149.00	220.52	M-168
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				238.03	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				203.57	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				15.61	
		Cost for 10 sqm = a+b+c+d+e				1576.31	
		Rate per sqm = (a+b+c+d+e)/10				157.63	
					<b>say</b>	<b><u>157.60</u></b>	
		<b>(ii) Up to 10 cm in width</b>					
		<b>Unit = sqm</b>					
		Taking output = 10 sqm					
		<b>a) Labour</b>					
		Mate	day	0.070	391.00	27.37	L-17
		Painter (1st Class)	day	0.350	475.00	166.25	L-22
		Mazdoor (unskilled)	day	1.350	391.00	527.85	L-18
		<b>b) Material</b>					
		Road marking paint	Litre	1.480	149.00	220.52	M-168
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				200.36	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				171.35	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				13.14	
		Cost for 10 sqm = a+b+c+d+e				1326.84	
		Rate per sqm = (a+b+c+d+e)/10				132.68	
					<b>say</b>	<b><u>132.70</u></b>	
8.12	803	<b>Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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 as per MoRT&H Technical Specification Clause 803.					
		<b>(i) Over 10 cm in width</b>					
		<b>Unit = sqm</b>					
		<b>Taking output = 10 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.070	391.00	27.37	L-17
		Painter (1st Class)	day	0.350	475.00	166.25	L-22
		Mazdoor (unskilled)	day	1.350	391.00	527.85	L-18
		<b>b) Material</b>					
		Road marking paint	Litre	0.900	149.00	134.10	M-168
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				181.98	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				155.63	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				11.93	
		Cost for 10 sqm = a+b+c+d+e				1205.11	
		<b>Rate per sqm= (a+b+c+d+e)/10</b>				120.51	
					<b>say</b>	<b><u>120.50</u></b>	
		<b>(ii) Up to 10 cm in width</b>					
		<b>Unit = sqm</b>					
		Taking output = 10 sqm					
		<b>a) Labour</b>					
		Mate	day	0.060	391.00	23.46	L-17
		Painter (1st Class)	day	0.300	475.00	142.50	L-22
		Mazdoor (unskilled)	day	1.250	391.00	488.75	L-18
		<b>b) Material</b>					
		Road marking Paint	Litre	0.900	149.00	134.10	M-168
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				167.78	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				143.49	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				11.00	
		Cost for 10 sqm = a+b+c+d+e				1111.08	
		<b>Rate per sqm= (a+b+c+d+e)/10</b>				111.11	
					<b>say</b>	<b><u>111.10</u></b>	
8.13	803	Road marking strips (retro-reflective) of specified shade/ colour using Hot Applied Thermoplastic material with Reflectorisng Glass Beads on Bituminous Surface					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Providing and applying 2.5 mm thick road marking strips (retro-reflective) of specified shade/ colour using hot thermoplastic material including reflectorising glass beads @ 250 gms per sqm area by fully/ semi automatic thermoplastic paint applicator machine fitted with profile shoe, glass beads dispenser, propane tank heater and profile shoe heater including cost of cleaning the road surface of all dirt, seals, oil, grease and foreign material etc, 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 as per MoRT&H Technical Specification Clause 803.					
		<b>Unit = sqm</b>					
		<b>Taking output = 200 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	4.000	391.00	1564.00	L-17
		Mazdoor (unskilled)	day	5.000	391.00	1955.00	L-18
		( for erecting barricades, traffic diversions, stretching ropes etc.)					
		<b>b) Machinery</b>					
		Paint applicator	hour	8.000	158.00	1264.00	P&M-054
		Tractor - trolley or equivalent for local shifting LPG cylinder for heating	hour	8.000	265.00	2120.00	P&M-076
		<b>c) Material</b>					
		<b>Hot applied thermoplastic compound @ 5 kg/ sqm = 1000 kg, Wastage @ 5% = 50 Kg</b>					
		Thermoplastic paint,( 200 sqm @ 5kg/sqm = 1000 kg + wastage @5% = 50 kg, i.e. Total - 1050 kg	kg	1050.000	75.900	79695.000	M-114
		Commercial LPG in cylinder (Commercial cylinder of 19.00 kg capacity)	kg	142.000	82.80	11757.60	M-100
		Reflectorising glass beads (B-Class) to be sparayed over paint stripe @ 250 gms per sqm = 200 x 0.25 = 50 kg	kg	50.000	82.80	4140.00	M-166
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				21800.81	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				18644.46	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1429.41	
		Cost for 200 sqm = a+b+c+d+e+f				144370.29	
		<b>Rate per sqm = (a+b+c+d+e+f)/200</b>				721.85	
					<b>say</b>	<b><u>721.90</u></b>	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>Note:-</b> 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 & machine operator is already included in hire charges of paint applicator machine.					
8.14	805	<b>Kilometre Stone</b>					
		Reinforced cement concrete M 15 grade kilometre stone of standard design as per IRC:8, fixing in position including painting and printing, etc. as per drawing and MoRT&H Technical Specification Clause 805.					
		<b>(i) 5th kilometre stone (precast)</b>					
		<b>Unit = Nos.</b>					
		<b>Taking output = 6 Nos.</b>					
		a) M-15 grade of concrete	cum	2.350	10018.10	23542.54	Item no. 12.6.A
		<b>As per item no. 12.6.A of Chapter 12</b>					
		b) Steel reinforcement @ 5 kg per sqm	tonne	0.0221	91240.90	2016.42	Item no. 12.25
		<b>As per item no. 12.25 of Chapter 12</b>					
		c) Excavation in soil for foundation	cum	1.680	458.20	769.78	Item no. 12.1
		<b>As per item no. 12.1 of Chapter 12</b>					
		d) Painting two coats on concrete surface	sqm	9.850	96.80	953.48	Item no. 8.8
		<b>As per item no. 8.8 of this Chapter</b>					
		e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	1800.000	0.80	1440.00	Item no. 8.3.ii
		<b>As per item no. 8.3.ii of this Chapter</b>					
		<b>Transportation and fixing</b>					
		f) Labour					
		Mate	day	0.260	391.00	101.66	L-17
		Mason (1st Class)	day	0.600	512.00	307.20	L-15
		Mazdoor (unskilled)	day	6.000	391.00	2346.00	L-18
		g) Machinery					
		Tractor with trolley	hour	6.000	265.00	1590.00	P&M-076
		<b>h) Add GST (multiplying factor) @ 0.2127 on (f+g)</b>					
		924.15					
		<b>i) Contractor's profit @ 15 % on (f+g+h)</b>					
		790.35					
		<b>j) Add Cess @ 1.00 % on (f+g+h+i)</b>					
		60.59					
		Cost for 6 Nos. 5th km stone = a+b+c+d+e+f+g+h+i+j					
		34842.17					
		Rate for each 5th km stone = (a+b+c+d+e+f+g+h+i+j) /6					
		5807.03					
		<b>say 5807.00</b>					
		<b>(ii) Ordinary kilometer stone (precast)</b>					
		<b>Unit = Nos.</b>					
		<b>Taking output = 14 Nos.</b>					
		a) M-15 grade of concrete	cum	3.770	10018.10	37768.24	Item no. 12.6.A

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>As per item no. 12.6.A of Chapter 12</b>					
		b) Steel reinforcement @ 5 kg per sqm	tonne	0.0263	91240.90	2399.64	Item no. 12.25
		<b>As per item no. 12.43 of Chapter 12</b>					
		c) Excavation in soil for foundation	cum	2.770	458.20	1269.21	Item no. 12.1
		<b>As per item no. 12.1 of Chapter 12</b>					
		d) Painting two coats on concrete surface	sqm	11.410	96.80	1104.49	Item no. 8.8
		<b>As per item no. 8.8 of this Chapter</b>					
		e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	1680.000	0.80	1344.00	Item no. 8.3.ii
		<b>As per item no. 8.3.ii of this Chapter</b>					
		<b>Transportation and fixing</b>					
		<b>f) Labour</b>					
		Mate	day	0.320	391.00	125.12	L-17
		Mason (1st Class)	day	1.000	512.00	512.00	L-15
		Mazdoor (unskilled)	day	7.000	391.00	2737.00	L-18
		<b>g) Machinery</b>					
		Tractor with trolley	hour	6.000	265.00	1590.00	P&M-076
		<b>h) Add GST (multiplying factor) @ 0.2127 on (f+g)</b>					
						1055.87	
		<b>i) Contractor's profit @ 15 % on (f+g+h)</b>					
						903.00	
		<b>j) Add Cess @ 1.00 % on (f+g+h+i)</b>					
						69.23	
		Cost for 14 Nos. ordinary km stone = (a+b+c +d+e+f+g+h+i+j)					
						50877.79	
		<b>Rate for each ordinary km stone = (a+b+c+d+e+f+g+h+i+j)/14</b>					
						3634.13	
					<b>say</b>	<b><u>3634.10</u></b>	
		<b>(iii) Hectometer stone (precast)</b>					
		<b>Unit = Nos.</b>					
		<b>Taking output = 33 Nos.</b>					
		a) M-15 grade of concrete	cum	1.580	10018.10	15828.60	Item no. 12.6.A
		<b>As per item no. 12.6.A of Chapter 12</b>					
		b) Steel reinforcement @ 5 kg per sqm	tonne	0.0660	91240.90	6021.90	Item no. 12.25
		<b>As per item no. 12.25 of Chapter 12</b>					
		c) Excavation in soil for foundation	cum	1.390	458.20	636.90	Item no. 12.1
		<b>As per item no. 12.1 of Chapter 12</b>					
		d) Painting two coats on concrete surface	sqm	6.270	96.80	606.94	Item no. 8.8
		<b>As per item no. 8.8 of this Chapter</b>					
		e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	330.000	0.80	264.00	Item no. 8.3.ii
		<b>As per item no. 8.3.ii of this Chapter</b>					
		<b>Transportation and fixing</b>					
		<b>f) Labour</b>					
		Mate	day	0.340	391.00	132.94	L-17
		Mason (1st Class)	day	1.500	512.00	768.00	L-15
		Mazdoor (unskilled)	day	7.000	391.00	2737.00	L-18

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>g) Machinery</b>					
		Tractor with trolley	hour	6.000	265.00	1590.00	P&M-076
		<b>h) Add GST (multiplying factor) @ 0.2127 on (f+g)</b>				1111.98	
		<b>i) Contractor's profit @ 15 % on (f+g+h)</b>				950.99	
		<b>j) Add Cess @ 1.00 % on (f+g+h+i)</b>				72.91	
		Cost for 33 Nos. Hectometer stone = (a+b+c+d+e+f+g+h+i+j)				30722.15	
		<b>Rate for each Hectometer stone = (a+b+c+d+e+f+g+h+i+j)/33</b>				930.97	
					<b>say</b>	<b><u>931.00</u></b>	

**Note:-** The rate for excavation, cement concrete, steel reinforcement, painting and lettering may be taken from respective chapters.

**8.15 806 Road Delineators**

Providing and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79 and the drawings and as per MoRT&H Technical Specification Clause 806.

**Unit = Each**

Taking output= 30 Nos.

<b>a) Labour</b>							
Mate	day	0.040	391.00	15.64	L-17		
Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18		
<b>b) Material</b>							
Cost of approved type of delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	30.000	380.00	11400.00	M-167		
<b>c) Installation</b>							
Add 10 % Cost of materail				1140.00			
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				2753.75			
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				2355.06			
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				180.55			
Cost for 30 Nos. delineators = (a+b+c+d+e+f)				18236.00			
<b>Rate per delineators = (a+b+c+d+e+f)/30</b>				607.87			
					<b>say</b>	<b><u>607.90</u></b>	

**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.

**8.16 807 Boundary pillar**



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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.					
		<b>Unit = Each</b>					
		Taking output = 57 Nos.					
		a) <b>M-15 grade of the boundary stone</b>	cum	1.250	10018.10	12522.63	Item no. 12.6.A
		<b>As per item no. 12.6.A of Chapter 12</b>					
		b) <b>Steel reinforcement</b>	tonne	0.0798	91240.90	7281.02	Item no. 12.25
		<b>As per item no. 12.25 of Chapter 12</b>					
		c) <b>Excavation in soil</b>	cum	10.720	458.20	4911.90	Item no. 12.1.I.A
		<b>As per item no. 12.1 of Chapter 12</b>					
		d) <b>Lettering, each 10 cm high</b>	per cm height per letter	2280.00	0.80	1824.00	Item no. 8.3.ii
		<b>As per item no. 8.3.ii of this Chapter</b>					
		<b>Transportation and fixing</b>					
		e) <b>Labour</b>					
		Mate	day	0.570	391.00	222.87	L-17
		Mazdoor (unskilled)	day	14.250	391.00	5571.75	L-18
		f) <b>Machinery</b>					
		Tractor with trolley	hour	6.000	265.00	1590.00	P&M-076
		g) <b>Material</b>					
		Stone spall	cum	11.970	3044.90	36447.45	M-191
		h) <b>Add GST (multiplying factor) @ 0.2127 on (e+f+g)</b>				9323.08	
		i) <b>Contractor's profit @ 15 % on (e+f+g+h)</b>				7973.27	
		j) <b>Add Cess @ 1.00 % on (e+f+g+h+i)</b>				611.28	
		Cost for 57 Nos. boundary pillar = (a+b+c+d+e+f+g+h+i+j)				88279.27	
		<b>Rate for each boundary pillar = (a+b+c+d+e+f+g+h+i+j)/57</b>				1548.76	
					<b>say</b>	<b><u>1548.80</u></b>	
		<b>Note:-</b> 1.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.					
		2.In case of local stone is to be used in place of precast RCC stones, then rate of cement concrete and steel reinforcement may be deleted.					
8.17	811	<b>Reinforced Cement Concrete Crash Barrier</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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 TMT 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 as per MoRT&H Technical Specification Clause 811.					
		<b>Unit = metre</b>					
		Taking output = 10 m					
		<b>a) M 20 grade concrete</b>					
		<b>M 20 grade concrete</b>	cum	3.000	12395.700	37187.10	Item 14.1A
		<b>(Rate of 14.1.A.Case-I)</b>					
		<b>b) Labour</b>					
		Mate	day	0.040	391.00	15.64	L-17
		Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18
		<b>c) Material</b>					
		Steel bars including dowel bars	tonne	0.280	58000.00	16240.00	M-181
		Pre-moulded asphalt filler board	sqm	0.320	816.20	261.18	M-150
		<b>d) Add GST (multiplying factor) @ 0.2127 on (b+c)</b>				3596.29	
		<b>e) Contractor's profit @ 15 % on (b+c+d)</b>				3075.62	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				235.80	
		Cost for 10 metre = a+b+c+d+e+f				61002.63	
		<b>Rate per metre = (a+b+c+d+e+f)/10</b>				6100.26	
					<b>say</b>	<b><u>6100.30</u></b>	

**Note:-** i) Excavation and backfilling are incidental to work and not to be measured separately.

ii) Rate for RCC M 20 has been taken from chapter on super structure.

8.18	811	<b>Metal Beam Crash Barrier</b>
		<b>A. Type - A, "W" : Metal Beam Crash Barrier</b>

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**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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 MoRT&H Technical Specification Clause 811.					
		<b>Unit = metre</b>					
		<b>Taking output = 4.5 metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.060	391.00	23.46	L-17
		Blacksmith	day	0.500	480.00	240.00	L-03
		Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.100	265.00	26.50	P&M-076
		<b>c) Material</b>					
		Corrugated sheet,3 mm thick, "W" beam section railing,4.5 m in length	kg	41.210	69.50	2864.10	M-065
		Channel post 150 x 75 x 5 mm,1.8 m long,3 Nos @ 16.4 kg per metre	kg	88.560	59.50	5269.32	M-177
		Spacer 150 x 75 x 5 mm channel 0.33 m long,3 Nos @ 16.4 kg per metre	kg	16.240	59.50	966.28	M-177
		Nuts and bolts	kg	20.000	64.50	1290.00	M-141
		Add 25 per cent of the cost of material for fabrication, nuts, bolts and washers etc.				2597.42	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				2907.20	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				2486.29	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				190.62	
		Cost for 4.5 metre = a+b+c+d+e+f				19252.19	
		<b>Rate per metre = (a+b+c+d+e+f)/4.5</b>				4278.26	
					<b>say</b>	<b><u>4278.30</u></b>	
		<b>B. Type - B, "THRIE" : Metal Beam Crash Barrier</b>					

**CHAPTER-8**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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 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 space of channel section 150 x 75 x 5 mm, 546 mm long complete as per MoRT&H Technical Specification Clause 811.					
		<b>Unit = Running metre</b>					
		<b>Taking output = 4.5 metre length</b>					
		<b>a) Labour</b>					
		Mate	day	0.060	391.00	23.46	L-17
		Blacksmith	day	0.500	480.00	240.00	L-03
		Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Tractor with trolley	hour	0.100	265.00	26.50	P&M-076
		<b>c) Material</b>					
		Corrugated sheet,3 mm thick, "Thrie" beam section railing,4.5 m in length	kg	72.940	69.50	5069.33	M-065
		Channel post 150 x 75 x 5 mm, 1.8 m long,3 Nos @ 16.4 kg per metre	kg	98.400	59.50	5854.80	M-177
		Spacer 150 x 75 x 5 mm channel 0.33 m long,3 Nos @ 16.4 kg per metre	kg	26.860	59.50	1598.17	M-177
		Bolts & nuts	kg	30.000	64.50	1935.00	M-141
		Add 15 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				2168.60	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				3681.17	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				3148.20	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				241.36	
		Cost for 4.5 metre = a+b+c+d+e+f				24377.59	
		<b>Rate per metre= (a+b+c+d+e+f)/4.5</b>				5417.24	
					<b>say</b>	<b><u>5417.20</u></b>	
		<b>Note:-</b> 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.					
8.19	804	<b>Road Markers/Road Stud with Lense Reflector</b>					

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**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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.					
		<b>Unit = Nos</b>					
		<b>Taking output = 50 Nos</b>					
		<b>a) Labour</b>					
		Mate	day	0.040	391.00	15.64	L-17
		Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18
		<b>b) Material</b>					
		Aluminium studs 100 x 100 mm fitted with lense reflectors	each	50.000	118.50	5925.00	M-032
		Add 10 % of cost of material for fixing and installation				592.50	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1472.76	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1259.54	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				96.56	
		Cost for 50 studs = a+b+c+d+e				9753.00	
		<b>Rate per studs = (a+b+c+d+e)/50</b>				195.06	
					<b>say</b>	<b><u>195.10</u></b>	
<b>8.20</b>		<b>Traffic Cone</b>					
		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					
		<b>Unit = Running metre</b>					
		<b>Taking output = 68 Nos.</b>					
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.500	391.00	195.50	L-18
		<b>b) Material</b>					
		Traffic cones with 150 mm reflective sleeve	each	68.000	410.00	27880.00	M-194
		<b>c) Machinery</b>					
		Tractor with trolley	hour	0.100	265.00	26.50	P&M-076
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				5978.96	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				5113.32	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				392.02	
		Cost for 68 Nos. = a+b+c+d+e+f				39594.12	
		<b>Rate per metre = (a+b+c+d+e+f)/68</b>				582.27	
					<b>say</b>	<b><u>582.30</u></b>	
<b>8.21</b>		<b>Drum Delineator in Construction Zone</b>					

**CHAPTER-8**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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					
		<b>Unit = each</b>					
		<b>Taking output = one drum delineator</b>					
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		Painter (1st Class)	day	0.250	475.00	118.75	L-22
		<b>b) Material</b>					
		Paint	litre	0.500	201.00	100.50	M-142
		Steel drum 300 mm dia 1.2 m high/empty bitumen drum	each	1.000	315.00	315.00	M-043
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				136.09	
		<b>d) Contractor's profit and overheads @ 15 % on (a+b+c)</b>				116.39	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				8.92	
		<b>Rate per drum delineator = a+b+c+d+e</b>				901.22	
					<b>say</b>	<b><u>901.20</u></b>	
<b>8.22</b>	<b>808</b>	<b>G.I Barbed Wire Fencing 1.2 Metre High</b>					
		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 MoRT&H Technical Specification clause 808					
		<b>Unit = per running metre</b>					
		<b>Taking output = 30 metres</b>					
		<b>a) Labour</b>					
		Mate	day	0.090	391.00	35.19	L-17
		Blacksmith	day	0.250	480.00	120.00	L-03
		Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
		<b>b) Material</b>					
		Barbed wire 335 metres length @ 9.38 kg per 100 metres	kg	31.420	82.40	2589.01	M-037
		MS angle iron 40 mm x 40mm x 6 mm, 23 metres in length @ 3.5 kg per metre	kg	80.500	59.53	4792.17	M-192 /1000
		Add for GI staple binding wire, drilling holes etc. @ 2 % of the cost of material				147.62	
		<b>c) Painting</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Applying two coats of painting on exposed surface of angle iron posts (Rate as per item no. 8.9)	sqm	2.110	81.70	172.39	Item 8.9
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1800.72	
		<b>e) Contractor's profit @ 15 % on (a+b+d)</b>				1540.01	
		<b>f) Add Cess @ 1.00 % on (a+b+d+e)</b>				118.07	
		Cost for 30 metres fencing = a+b+c+d+e+f				12097.16	
		<b>Rate per metre = (a+b+c+d+e+f)/30</b>				403.24	
					<b>say</b>	<b><u>403.20</u></b>	
		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.					
<b>8.23</b>	<b>808</b>	<b>G.I Barbed Wire Fencing 1.8 Metre High</b>					
		Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 808					
		<b>Unit = per running metre</b>					
		Taking output = 30 metres					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Blacksmith	day	0.400	480.00	192.00	L-03
		Mazdoor (unskilled)	day	2.500	391.00	977.50	L-18
		<b>b) Material</b>					
		Barbed wire 428 metres length @ 9.38 kg per 100 metres	kg	40.150	82.40	3308.36	M-055
		MS angle iron 50 mm x 50 mm x 6 mm, 33.8 metres in length @ 4.5 kg per metre	kg	152.000	59.53	9048.56	M-192 /1000
		Add for GI staple, binding wire, drilling holes etc. @ 2 % of the cost of material				247.14	
		<b>c) Painting</b>					
		Applying two coats of painting on exposed surface of angle iron posts	sqm	3.960	81.70	323.53	Item 8.9
		<b>d) Add GST (multiplying factor) @ on (a+b)</b>				2939.62	
		<b>e) Contractor's profit @ on (a+b+d)</b>				2514.01	
		<b>f) Add Cess @ 1.00 % on (a+b+d+e)</b>				192.74	
		Cost for 30 metres fencing = a+b+c+d+e+f				17970.38	
		<b>Rate per metre = (a+b+c+d+e+f)/30</b>				659.68	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
					<b>say</b>	<b><u>659.70</u></b>	
		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.					
8.24		<b>Fencing With Welded Steel Wire Fabric 75 mm x 50 mm</b>					
		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.					
		<b>Unit = Running metre</b>					
		<b>Taking output = 30 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Welder	day	1.000	480.00	480.00	L-03
		Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
		<b>b) Material</b>					
		i) Angle iron for posts 50 x 50 x 6 mm	kg	106.000	59.53	6310.18	M-192 /1000
		ii) Runner flat 50 x 5 mm	kg	26.000	59.53	1547.78	M-192 /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	69.90	10554.90	M-262
		<b>OR</b>					
		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			
		Add 2.5 % of cost of material for drilling holes in angles, flats, splitting angle at bottom, nuts and bolts and welded consumables					
						368.26	
		<b>c) Machinery</b>					
		Tractor-trolley	hour	0.100	265.00	26.50	P&M-076
		<b>d) Painting</b>					
		Painting two coats including priming	sqm	8.000	81.70	653.60	Item 8.9
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>					
						4278.79	
		<b>f) Contractor's profit @ 15 % on (a+b+c+e)</b>					
						3659.30	
		<b>f) Add Cess @ 1.00 % on (a+b+c+e+f)</b>					
						280.55	
		Cost for 30 metre = a+b+c+d+e+f					
						28988.77	
		<b>Rate per metre = (a+b+c+d+e+f)/30</b>					
						966.29	
					<b>say</b>	<b><u>966.30</u></b>	
		i) Adopt any one type of welded steel wire fabric 75 x 50 mm or 75 x 25 mm as per approved design.					



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		ii) The item of excavation and cement concrete in foundation shall be measured and paid separately					
8.25	809	<b>Tubular Steel Railing on Medium Weight Steel Channel ( ISMC series) 100 mm x 50 mm</b>					
		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					
		<b>Unit = Running metre</b>					
		<b>Taking output = 10 metres</b>					
		i) Excavation for foundation (6 Nos) 6 x 0.6 x 0.6 x 0.6	cum	1.296	458.20	593.83	Item No. 3.13
		ii) Foundation concrete M-15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.648	10018.10	6491.73	Item 12.6 (A)
		iii) Painting of pipe	sqm	4.710	81.70	384.81	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	81.70	176.47	Item 8.9
		<b>a) Labour (For fixing at site)</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		Plumber	day	0.010	475.00	4.75	L-23
		<b>b) Material</b>					
		Steel pipe 50 mm external dia as per IS:1239 for 30 m length	tonne	0.108	66500.00	7182.00	M-176
		Medium weight steel channel (ISMC series) 100 mm x 50 mm, 10.8 metres length @ 9.2 kg per metre	kg	99.360	59.53	5914.90	M-192 /1000
		Add for drilling holes @ 2% of cost of channels				118.30	
		<b>c) Machinery</b>					
		Tractor-trolley	hour	0.040	265.00	10.60	P&M-076
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				2835.76	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				2425.20	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				185.93	
		Cost for 10 metre = i+ii+iii+iv+ a+b+c+d+e+f				26425.93	
		<b>Rate per metre = (i+ii+iii+iv+a+b+c+d+e+f)/10</b>				2642.59	
						<b>say 2642.60</b>	
8.26	809	<b>Tubular Steel Railing on Precast RCC Posts, 1.2 m High Above Ground Level</b>					
		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					
		<b>Unit = Running metre</b>					
		<b>Taking output = 10 metres</b>					
		i) Excavation for foundation (6 Nos) 6 x 0.6 x 0.6 x 0.6	cum	1.296	458.20	593.83	Item No. 3.13

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		ii) Foundation concrete M - 15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.648	10018.10	6491.73	Item 12.6 (A)
		iii) RCC M - 20 for pre cast posts 6 nos of 1.8 metres each	cum	0.320	12395.70	3966.62	Item 14.1
		iv) Painting of pipe	sqm	4.710	81.70	384.81	Item 8.9
	a)	<b>Labour</b>					
		Mate	day	0.014	391.00	5.47	L-17
		Mazdoor (unskilled)	day	0.350	391.00	136.85	L-18
		Plumber	day	0.010	475.00	4.75	L-23
	b)	<b>Material</b>					
		Steel pipe 50 mm dia as per IS:1239 for 30 m length	tonne	0.108	66500.00	7182.00	M-176
	c)	<b>Machinery</b>					
		Tractor-trolley	hour	0.250	265.00	66.25	P&M-076
	d)	<b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				1572.99	
	e)	<b>Contractor's profit @ 15 % on (a+b+c+d)</b>				1345.25	
	f)	<b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				129.56	
		Cost for 10 metre =i+ii+iii+iv+ a+b+c+d+e+f				21880.10	
		<b>Rate per metre = (i+ii+iii+iv+a+b+c+d+e+f)/10</b>				2188.01	
						<b>say</b>	<b><u>2188.00</u></b>
8.27	Suggestive	<b>Flexible Crash Barrier, Wire Rope Safety Barrier</b>					
		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.					
		<b>Unit = Running metre</b>					
		<b>Taking output = 15 metre</b>					
	a)	<b>Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
		Blacksmith	day	1.000	480.00	480.00	L-03
	b)	<b>Material</b>					
		i) RS Joist 100 x 75 mm - 16.5 m @ 11.5 kg per metre	kg	190.000	59.53	11310.70	M-178 /1000
		ii) Struts - 2 Nos. for terminal posts, 2 m long each 2 x 2 x 11.50	kg	46.000	59.53	2738.38	M-192 /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	59.53	11215.45	M-192 /1000

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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	83.40	5421.00	M-263
		Add 5 % of cost of material for drilling, gripping, fixing, fabrication and welding consumables				1534.28	
		<b>c) Painting</b> Applying 2 coats of painting on exposed surface	sqm	16.500	81.70	1348.05	Item 8.9
		<b>d) Machinery</b> Tractor-trolley	hour	0.250	265.00	66.25	P&M-076
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+d)</b>				7145.65	
		<b>f) Contractor's profit @ 15 % on (a+b+d+e)</b>				6111.09	
		<b>g) Add Cess @ 1.00 % on (a+b+d+e+f)</b>				468.52	
		Cost for 15 m = a+b+c+d+e+f+g				48668.29	
		<b>Rate per m = (a+b+c+d+e+f+g)/15</b>				3244.55	
					<b>say</b>	<b><u>3244.60</u></b>	
		The items of excavations and cement concrete works will be measured and included separately as per the approved designs and drawings.					
8.28	Suggestive	<b>Anti-Glare Devices in Median</b>					
	A.	<b>Plantation</b>  Plantation of shrubs and plants of approved species in the median. apart from cutting off glare from vehicle coming from opposite direction, these plants provide a pleasant environment and are eco-friendly. The rate for this item is available in the chapter 11 on horticulture.					
	B.	<b>Anti-glare screen with 25 mm steel pipe framework fixed with circular and rectangular vans</b>  Providing and erecting an anti - glare screen with 25 mm dia vertical pipes fabricated and framed in the form of panels of one metre length and 1.75 metre height fixed with circular vane 250 mm dia at top and rectangular vane 600 x 300 mm at the middle, made out of steel sheet of 3 mm thickness, end vertical pipes of the panel made larger for embedding in foundation concrete, applying 2 coats of paint on all exposed surfaces, all as per approved design and drawings.  <b>Unit = Running metre</b> <b>Taking output = one metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.004	391.00	1.56	L-17
		Mazdoor (unskilled)	day	0.100	391.00	39.10	L-18
		<b>b) Material</b>					
		i) 25 mm steel pipe	tonne	0.025	66500.00	1670.48	M-176
		ii) MS sheet for 600 x 300 x 3 mm rectangular vane, one number @ 24kg/sqm	kg	4.320	59.53	257.17	M-192/1000

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		iii) MS sheet for 250 mm dia circular vane 3 mm thick,4 numbers @ 24 kg/sqm	kg	4.800	59.53	285.74	M-192 /1000
		Add 5 % cost of material for fabrication, welding, bending, nuts, bolts etc				112.70	
		<b>c) Painting</b>					
		Applying 2 coats of painting on exposed surface	sqm	1.830	81.70	149.51	Item 8.9
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				503.41	
		<b>e) Contractor's profit @ 15 % on (a+b+d)</b>				430.53	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				33.01	
		<b>Rate per metre = a+b+c+d+e+f</b>				3483.21	
					<b>say</b>	<b><u>3483.20</u></b>	
		The items of excavation and cement concrete as per approved design to be measured and paid separately					
<b>C.</b>		<b>Anti-glare screen with rectangular vane of MS sheet</b>					
		Providing and erecting anti - glare screen with rectangular vanes of size 750 x 500 mm made from MS sheet, 3 mm thick and fixed on MS angle 50 x 50 x 6 mm at an angle of 450 to the direction of flow of traffic, 1.5 m center to center, top edge of the screen 1.75 m above ground level, vertical post firmly embedded in M-15 cement concrete foundation 0.60 m below ground level, applying 2 coats of paint on exposed faces, all complete as per approved design and drawings					
		<b>Unit = Running metre</b>					
		<b>Taking output = 1.50 metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.004	391.00	1.56	L-17
		Mazdoor (unskilled)	day	0.100	391.00	39.10	L-18
		<b>b) Material</b>					
		i) Angle iron post,50 x 50 x 6 mm, length 2.35 m	kg	10.580	59.53	629.83	M-192/1000
		ii) MS sheet 3 mm thick @ 24 kg/sqm	kg	9.000	59.53	535.77	M-192/1000
		Add 5 % of cost of material for fabrication, nuts, bolts etc				58.28	
		<b>c) Machinery</b>					
		Tractor-trolley	hour	0.100	265.00	26.50	P&M-076
		<b>d) Painting</b>					
		Applying 2 coats of painting	sqm	0.850	81.70	69.45	Item 8.9
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				274.60	
		<b>f) Contractor's profit @ 15 % on (a+b+c+e)</b>				234.85	
		<b>g) Add Cess @ 1.00 % on (a+b+c+e+f)</b>				18.00	
		Cost for 1.5 m = a+b+c+d+e+f+g				1887.94	
		<b>Rate per metre = (a+b+c+d+e+f)/1.50</b>				1258.63	
					<b>say</b>	<b><u>1258.60</u></b>	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		The items of excavation and cement concrete as per approved design to be measured and paid separately. Rate of painting has been analysed separately in this chapter.					
8.29	Suggestive	<b>Street Lighting</b>					
		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.					
		<b>Unit = Each</b>					
		<b>Taking output = one light</b>					
		<b>a) Labour</b>					
		Mate	day	0.030	391.00	11.73	L-17
		Mazdoor (unskilled)	day	0.500	391.00	195.50	L-18
		Electrician	day	0.250	475.00	118.75	L-12
		<b>b) Material</b>					
		i) Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level	each	1.000	10854.00	10854.00	M-265
		ii) Sodium vapour lamp	each	1.000	540.00	540.00	M-266
		Add 5 % of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				569.70	
		<b>c) Painting</b>					
		<b>For Fixing in Median</b>					
		Providing two coats of aluminium paint over steel circular hollow pipe with overhang on both sides	sqm	5.750	81.70	469.78	Item 8.9
		<b>For fixing in Footpath</b>					
		Providing two coats of aluminium paint over steel circular hollow pipe with overhang on one side	sqm	4.630	81.70	378.27	Item 8.9
		<b>(i) For Fixing in Median</b>					
		d) Add GST (multiplying factor) @ 0.2127 on (a+b)				2614.01	
		e) Contractor's profit @ 15 % on (a+b+d)				2235.55	
		f) Add Cess @ 1.00 % on (a+b+d+e)				171.39	
		<b>Rate per light for fixing in Median= a+b+c+d+e+f</b>				17780.42	
					<b>say</b>	<b><u>17780.40</u></b>	
		<b>(ii) For fixing in Footpath</b>					
		<b>Rate per light for Fixing in Footpath = a+b+c+d+e+f</b>				17688.91	
					<b>say</b>	<b><u>17688.90</u></b>	
		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.					
8.30	Suggestive	<b>Lighting on Bridges</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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					
		<b>Unit = Each</b>					
		<b>Taking output = one light</b>					
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.400	391.00	156.40	L-18
		Electrician	day	0.200	475.00	95.00	L-12
		<b>b) Material</b>					
		i) Steel circular hollow pole of standard specification for street lighting to mount light at 5 m above deck level	each	1.000	7510.00	7510.00	M-267
		ii) Sodium vapour lamp 70 watt	each	1.000	540.00	540.00	M-266
		Add 5 % of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				402.50	
		<b>c) Painting</b>					
		Providing two coats of alluminium paint over steel circular hollow pipe	sqm	2.760	81.70	225.49	Item 8.9
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1852.98	
		<b>e) Contractor's profit @ 15 % on (a+b+d)</b>				1584.71	
		<b>f) Add Cess @ 1.00 % on (a+b+d+e)</b>				121.49	
		<b>Rate per light = a+b+c+d+e+f</b>				12496.39	
					<b>say</b>	<b><u>12496.40</u></b>	

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.

**8.31 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 = 20 metres**

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>a) Random Brick masonry in cement mortar 1:6 for head wall both side</b>	cum	2.360	9157.60	21611.94	Item 12.5 (IV)
		<b>b) Labour</b>					
		Mate	day	0.050	391.00	19.55	L-17
		Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18
		Mazdoor (skilled)	day	0.250	475.00	118.75	L-20
		<b>c) Material</b>					
		Reinforced Cement Concrete pipe 300 mm dia	metre	20.000	746.00	14920.00	M-163
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 20 m)	cum	7.200	2274.50	16376.40	M-111
		Collar for joints 300 mm dia	each	9.000	153.00	1377.00	M-246
		Cement mortar 1:2 for joints	cum	0.020	5654.60	113.09	Item 12.5(I)
		<b>d) Machinery</b>					
		Tractor-trolley	hour	0.500	265.00	132.50	P&M-076
		<b>e) Add GST (multiplying factor) @ 0.2127 on (b+c+d)</b>				7114.45	
		<b>f) Contractor's profit @ 15 % on (b+c+d+e)</b>				6084.41	
		<b>g) Add Cess @ 1.00 % on (b+c+d+e+f)</b>				466.47	
		Cost for 20 metre = a+b+c+d+e+f+g				68725.56	
		<b>Rate per metre = (a+b+c+d+e+f+g)/20</b>				3436.28	
					<b>say</b>	<b><u>3436.30</u></b>	
(ii)		<b>Double row for two utility services</b>					
		<b>Unit = Running metre</b>					
		<b>Taking output = 20metres</b>					
		<b>a) Random Brick masonry in cement mortar 1:6 for head wall both sides.</b>	cum	3.370	9157.60	30861.11	Item 12.5 (IV)
		<b>b) Labour</b>					
		Mate	day	0.050	391.00	19.55	L-17
		Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
		Mazdoor (skilled)	day	0.250	475.00	118.75	L-20
		<b>c) Material</b>					
		Reinforced Cement Concrete pipe 300 mm dia	metre	40.000	746.00	29840.00	M-163
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 40 m)	cum	14.400	2274.50	32752.80	M-111
		Collar for joints 300 mm dia	each	18.000	153.00	2754.00	M-246
		Cement mortar 1:2 for joints	cum	0.040	5654.60	226.18	Item 12.5(I)
		<b>d) Machinery</b>					
		Tractor-trolley	hour	1.000	265.00	265.00	P&M-076
		<b>e) Add GST (multiplying factor) @ 0.2127 on (b+c+d)</b>				14199.49	
		<b>f) Contractor's profit @ 15 % on (b+c+d+e)</b>				12143.67	
		<b>g) Add Cess @ 1.00 % on (b+c+d+e+f)</b>				931.01	
		Cost for 20 metre = a+b+c+d+e+f+g				124893.56	
		<b>Rate per metre = (a+b+c+d+e+f+g)/20</b>				6244.68	
					<b>say</b>	<b><u>6244.70</u></b>	
(iii)		<b>Triple Row for three utility services</b>					
		<b>Unit = Running metre</b>					
		<b>Taking output = 20 metres</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>a) Random Brick masonry in cement mortar 1:6 for head wall both sides.</b>	cum	4.380	9157.60	40110.29	Item 12.5 (IV)
		<b>b) Labour</b>					
		Mate	day	0.160	391.00	62.56	L-17
		Mazdoor (unskilled)	day	3.000	391.00	1173.00	L-18
		Mazdoor (skilled)	day	1.000	475.00	475.00	L-20
		<b>c) Material</b>					
		Reinforced Cement Concrete pipe 300 mm dia	metre	60.000	746.00	44760.00	M-163
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 60 m)	cum	21.600	2274.50	49129.20	M-111
		Collar for joints 300 mm dia	each	27.000	153.00	4131.00	M-246
		Cement mortar 1:2 for joints	cum	0.060	5654.60	339.28	Item 12.5(I)
		<b>d) Machinery</b>					
		Tractor-trolley	hour	1.500	265.00	397.50	P&M-076
		<b>e) Add GST (multiplying factor) @ on (b+c+d)</b>				21369.44	
		<b>f) Contractor's profit @ on (b+c+d+e)</b>				18275.55	
		<b>g) Add Cess @ 1.00 % on (b+c+d+e+f)</b>				1401.13	
		Cost for 20 metre = a+b+c+d+e+f+g				181623.94	
		<b>Rate per metre = (a+b+c+d+e+f+g)/20</b>				9081.20	
					<b>say</b>	<b><u>9081.20</u></b>	
		1.Inspection chamber at both ends is the responsibility of the agency who is laying the duct. Hence not included.					
		2.The rates for stone masonry / brick masonry and cement mortar to be adopted from respective clauses.					
8.32	Suggestive	<b>Gantry Mounted Variable Message Sign Board</b>					
		Providing and erecting gantry mounted variable message sign board electronically operated capable of flashing the desired message over a designed support system of aluminium alloy or galvanised steel, erected as per approved design and drawings and with lateral clearance as per clause 802.3					
		<b>(i) Gantry Support System</b>					
		<b>Unit = tonne</b>					
		<b>Taking output=1 tonne</b>					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
		Blacksmith	day	1.000	480.00	480.00	L-03
		<b>b) Material</b>					
		Alluminium alloy/galvanised steel including 5 per cent wastage	tonne	1.050	63000.00	66150.00	M-268
		Add 15 % of cost of material for fabrication and erection.				9922.50	
		Add 1 % of cost of material for nuts, bolts and welding				661.50	
		<b>c) Machinery</b>					
		Truck 10 tonne	hour	1.000	418.00	418.00	P&M-080
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				16688.64	



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Contractor's profit @ 15 % on (a+b+c+d)				14272.43	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				1185.03	
		<b>Rate per tonne = a+b+c+d+e+f</b>				110607.02	
					<b>say</b>	<b><u>110607.00</u></b>	
	(ii)	<b>Message Display</b> Message display board 6 sqm electronically operated with complete electronic fittings for flashing the pre-determined messages. This is a specialised commercial product and the lumpsum rate including erection at site is required to be ascertained from the market and including in the rate analysis. The size of the board will vary depending upon specific location.  The rate for the gantry mounted variable sign would be the addition of cost of gantry support system as per approved design determined at (i) above and the cost of message display board ascertained from the market at (ii) above					
8.33	<b>Suggestive</b>	<b>Traffic Impact Attenuators at Abutments and Piers</b>					
	<b>A.</b>	<b>With Scrap Tyres</b> Provision and installation of traffic attenuators at abutment/pier of flyovers bridges using scrap tyres of size 100 x 20 retrieved from trucks laid in 2 rows and 4 tiers, one above the other and tied with 20 mm wire rope as per approved design and drawings. <b>Unit = sqm</b> <b>Taking output = 20 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.080	391.00	31.28	L-17
		Mazdoor (unskilled)	day	1.500	391.00	586.50	L-18
		Blacksmith	day	0.250	480.00	120.00	L-03
		<b>b) Material</b>					
		Scrap tyres of size 900 x 20	each	80.000	310.00	24800.00	M-269
		20 mm steel wire rope	kg	150.000	83.40	12510.00	M-264
		Add 1 % of cost of wire rope for clamps etc.				125.10	
		<b>c) Machinery</b>					
		Tractor-trolley	hour	3.000	265.00	795.00	P&M-076
		<b>d) Add GST (multiplying factor) @ on (a+b+c)</b>				8288.47	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				7088.45	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				543.45	
		Cost for 20 sqm = a+b+c+d+e+f				54888.25	
		<b>Rate per sqm = (a+b+c+d+e+f)/20</b>				2744.41	
					<b>say</b>	<b><u>2744.40</u></b>	
	<b>B.</b>	<b>Using Plastic/Steel Barrel, Filled with Sand</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Provision and installation of traffic impact attenuator at abutment/pier of flyovers bridges using plastic/steel barrels 0.60 m dia and 1.0 m in height, filled with sand in three rows and tied with 20 mm steel wire rope as per approved design and drawings					
		<b>Unit = sqm</b>					
		<b>Taking output = 20 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.130	391.00	50.83	L-17
		Mazdoor (unskilled)	day	3.000	391.00	1173.00	L-18
		Blacksmith	day	0.250	480.00	120.00	L-03
		<b>b) Material</b>					
		Plastic barrels	each	50.000			
		<b>or</b>					
		Steel barrels	each	50.000	315.00	15750.00	M-043
		Sand	cum	8.000	590.00	4720.00	M-171
		20 mm steel wire rope	kg	15.000	83.40	1251.00	M-264
		Add 1 % of cost of wire rope for clamps etc.				12.51	
		<b>c) Machinery</b>					
		Tractor-trolley	hour	2.000	265.00	530.00	P&M-076
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				5021.28	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				4294.29	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				329.23	
		Cost for 20 sqm = a+b+c+d+e+f				33252.14	
		<b>Rate per sqm = (a+b+c+d+e+f)/20</b>				1662.61	
					<b>say</b>	<b><u>1662.60</u></b>	
8.34	Suggestive	<b>Roadside Amenities</b>					
		<b>A. Rest areas</b>					
		Providing plainly furnished accommodation for rest rooms, dormitories, restaurants, stalls, shops, petrol pump, telephone booth, first aid room, traffic aid post, police assistance booth, including electricity, toilet and sewerage system					
		Pricing may be done based on current plinth area rates approved by PWD/CPWD/MES for a particular zone. Area is required to be assessed for specific location as per actual site conditions					
		<b>B. Parking areas and bus laybys for trucks, buses and light vehicles</b>					
		Pricing of parking areas may be done for the quantities of various items based on the approved dimensions and pavement design for a particular terrain and soil. Rates for items may be from respective chapters.					
		<b>C. Lawn</b>					
		Providing a lawn planted with grass and its maintenance					
		Pricing of lawn may be done as per rates given in the chapter on horticulture for the quantities as per approved dimensions in the drawings					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
8.35	Suggestive	<p><b>Rumble Strips</b></p> <p>Provision of 15 nos rumble strips covered with premix bituminous carpet, 15-20 mm high at center, 250 mm wide placed at 1 m center to center at approved locations to control speed, marked with white strips of road marking paint.</p> <p><b>Unit = sqm</b> <b>Taking output = 100 sqm (including gaps)</b></p> <p>The rate per sqm of premix carpet and road marking may be adopted from chapter 5 &amp; 8 respectively for the quantities calculated from approved drawings</p>					
8.36		<p><b>Safety Devices and Signs in Construction Zones</b></p> <p>Provision and fixing of traffic signs for limited period at suitable locations in construction zone comprising of warning zone, approach transition zone, working zone and terminal transition zone with a minimum distance of 60 cm from the edge of the kerb in case of kerbed roads and 2 to 3 m from the edge of the carriageway in case of un-kerbed roads, the bottom edge of the lowest sign plate to be not less than 2 m above the road level, fixed on 60 mm x 60 mm x 6 mm angle iron post, founded and installed as per approved design and drawings, removed and disposed of after completion of construction work, all as per IRC:SP:55-2001</p> <p><b>Unit = each</b> <b>Taking output = one sign post</b></p> <p>Following types of signs are required to be fixed in construction zones for safety of traffic</p> <ol style="list-style-type: none"> <li>a) Diversion one km ahead</li> <li>b) Traffic sign ahead</li> <li>c) Road ahead closed</li> <li>d) Men at work</li> <li>e) Road narrow</li> <li>f) Single file traffic</li> <li>g) Right lane diverted</li> <li>h) Left lane diverted</li> <li>i) Right lane closed</li> <li>j) Left lane closed</li> <li>k) Median closed</li> <li>l) Diversion to other carriageway</li> <li>m) Traffic signal ahead</li> <li>n) Two way traffic</li> <li>o) Un - even road</li> <li>p) Slippery road</li> <li>q) Loose chippings</li> <li>r) Dual carriageway ends</li> <li>s) Diversion</li> <li>t) Do not enter</li> <li>u) Road closed</li> </ol>					

**CHAPTER-8**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		v) Stop					
		w) Slow					
		x) One way					
		y) Give way					
		z) Overtaking prohibited					
		aa) Speed limit					
		bb) Weight limit					
		cc) Height and length limit					
		dd) No stopping or standing					
		ee) Any other warning or regulatory safety sign as per site requirement and consistent with IRC:SP:55-2001 and IRC:67					
		The rate for traffic signs are already worked out and given elsewhere in this chapter. The same may be adopted.					
8.37	suggestive	<b>Portable Barricade in Construction Zone</b>					
		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					
		<b>Unit = each</b>					
		<b>Taking output = one steel portable barricade</b>					
		<b>a) Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		Painter	day	0.500	475.00	237.50	L-22
		Welder	day	0.250	512.00	128.00	L-27
		<b>b) Material</b>					
		Angle iron 45 x 45 x 5 mm	kg	25.000	59.53	1488.25	M-192/1000
		MS sheet 300 mm wide, 2.5 m long and 2.6 mm thick	kg	15.000	59.53	892.95	M-192/1000
		Paint	litre	0.500	201.00	100.50	M-142
		Add 2 % of cost of steel for welding consumables, nuts & bolts and drilling holes				19.87	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				632.28	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				540.74	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				41.46	
		<b>Rate per barricade = a+b+c+d+e</b>				4187.11	
						<b>say 4187.10</b>	
8.38	suggestive	<b>Permanent Type Barricade in Construction Zone</b>					
	(i)	<b>With steel components</b>					

**CHAPTER-8**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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					
		<b>Unit = each</b>					
		<b>Taking output = one barricade</b>					
		<b>a) Labour</b>					
		Mate	day	0.050	391.00	19.55	L-17
		Mazdoor (unskilled)	day	0.300	391.00	117.30	L-18
		Painter	day	0.600	475.00	285.00	L-22
		Welder	day	0.300	512.00	153.60	L-27
		<b>b) Material</b>					
		Angle iron 50 x 50 x 5 mm, 2 m long, 2 Nos.	kg	15.000	59.53	892.95	M-192/1000
		MS sheet of 12 SWG, 3 Nos of 200 mm width and 4 m length	kg	50.000	59.53	2976.50	M-192/1000
		Paint	litre	1.000	201.00	201.00	M-142
		Add 1 % of cost of steel for welding consumables, nuts & bolts and drilling holes				38.69	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				996.41	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				852.15	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				65.33	
		<b>Rate per barricade = a+b+c+d</b>				6598.49	
					<b>say</b>	<b><u>6598.50</u></b>	
(ii)		<b>With bricks</b>					
		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					
		<b>Unit = each</b>					
		<b>Taking output = one barricade</b>					
		<b>a) Labour</b>					
		Mate	day	0.240	391.00	93.84	L-17
		Mazdoor (unskilled)	day	3.000	391.00	1173.00	L-18
		Painter	day	1.000	475.00	475.00	L-22
		Mason	day	2.000	512.00	1024.00	L-27
		<b>b) Material</b>					
		Brick	each	1641.00	12.20	20020.20	M-049
		Cement	kg	22.000	6.80	149.53	M-052/1000
		Sand	cum	0.090	590.00	53.10	M-171
		Paint	litre	1.250	201.00	251.25	M-142
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				4943.13	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				4227.46	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				324.11	
		<b>Rate per barricade = a+b+c+d+e</b>				32734.62	
					<b>say</b>	<b><u>32734.60</u></b>	
8.39	811	Road Traffic Signals electrically operated					

**CHAPTER-8**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<p>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.</p>					
8.40	<b>Suggestive</b>	<b>Items Related to Underpass/ Subway/ Overhead Bridge/ Overhead Foot Bridge</b>					
		<p>The items involved for underpass/ subway/ overhead bridge/ overhead foot bridge are earthwork, plain cement concrete, plastering, painting, information sign etc. The rates for these items are available in respective chapters which can be adopted for the quantities derived from the approved designs and drawings</p>					
8.41	<b>Suggestive</b>	<b>Traffic Control System and Communication System</b>					
		<p>Providing a traffic control centre and communication system including telecommunication facilities and related accessories, CCTV, radar, vehicle detection camera, central computer system</p> <p>These are specialised item of telecommunication system and are the commercial products. The designer is required to contact the manufacturers to ascertain market prices. In case of civil works required to be executed for these installations, pricing may be done as per rates in relevant chapters for quantities derived as per approved design and drawing.</p> <p>As regards the locations where such devices are required to be installed, the traffic control authority should be consulted to finalise the location</p>					
8.42	<b>801</b>	<b>Object Hazard Marking Traffic Signs</b>					
		<p>Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC:67 made of high intensity grade sheeting vide MoRT&amp;H technical specification Clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per IRC guideline/ MoRT&amp;H Technical Specification Clause 801.</p> <p><b>(i) 900 mm x 300 mm rectangular object hazard marking traffic signs</b> <b>Unit = Each</b> <b>Taking output = one traffic sign</b></p>					

**CHAPTER-8**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		i) Excavation for foundation As per item no. 12.1.I.A of Chapter 12	cum	0.243	458.20	111.34	Item no. 12.1.I.A
		ii) Cement concrete M15 grade As per item no. 12.6.A of Chapter 12	cum	0.122	10018.10	1222.21	Item no. 12.6.A
		iii) Painting angle iron post two coats As per item no. 8.9 of this Chapter	sqm	0.430	81.70	35.13	Item no. 8.9
		a) Labour (For fixing at site)					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		b) Material					
		Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	59.50	1130.50	M-132
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint					
		900 mm x 300 mm rectangular Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.	sqm	0.270	891.00	240.57 27.42	M-030
		c) Machinery Tractor with trolley	hour	0.010	265.00	2.65	P&M-076
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				319.65	
		e) Contractor's profit @ 15 % on (a+b+c+d)				273.37	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				20.96	
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)				3485.45	
						<b>say</b>	<b><u>3485.50</u></b>
8.43	801	<b>Road Safety Convex Mirror</b> Providing and fixing pole mounting (50 mm dia steel pole of standard height) 800 mm dia strong unbreakable highly reflective road safety convex mirror body made up of poly carbonate having large viewing angle from standard distance (minimum 6 m) firmly fixed to the ground by means of properly designed foundation with M-15 grade cement concrete 450mm x 45mm x 600 mm as per IRC guideline/ MoRT&H Technical Specification Clause 801.					
		<b>Unit = Each</b>					
		<b>Taking output = one traffic sign (Convex Mirror 32 inches - 800 MM Dia)</b>					
		i) Excavation for foundation As per item no. 12.1.I.A of Chapter 12	cum	0.243	458.20	111.34	Item no. 12.1.I.A
		ii) Cement concrete M15 grade As per item no. 12.6.A of Chapter 12	cum	0.122	10018.10	1222.21	Item no. 12.6.A

**CHAPTER-8**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		iii) <b>Painting angle iron post two coats</b>	sqm	0.430	81.70	35.13	Item no. 8.9
		<b>As per item no. 8.9 of this Chapter</b>					
		a) <b>Labour (For fixing at site)</b>					
		Mate	day	0.010	391.00	3.91	L-17
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		b) <b>Material</b>					
		Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	59.50	1130.50	M-132
		Convex Mirror 32 inchs - 800 MM Dia of body made up of poly carbonate, colour orange, pole mounting fittings & wall mounting fittings.	each	1.000	2422.000	2422.000	M-297
		c) <b>Machinery</b>					
		Tractor with trolley	hour	0.010	265.00	2.65	P&M-076
		d) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				777.80	
		e) <b>Contractor's profit @ 15 % on (a+b+c+d)</b>				665.19	
		f) <b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				51.00	
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				6519.49	
					<b>say</b>	<b><u>6519.50</u></b>	
8.44	suggestive	<b>Permanent Type Barricade in Construction Zone</b>					
		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					
		<b>B. With wooden components</b>					
		<b>Unit = each</b>					
		Taking output = one barricade					
		a) <b>Labour</b>					
		Mate	day	0.050	391.00	19.55	L-17
		Mazdoor (unskilled)	day	0.300	391.00	117.30	L-18
		Painter	day	0.600	475.00	285.00	L-22
		Carpenter	day	0.600	475.00	285.00	L-07
		b) <b>Material</b>					
		Timber	cum	0.180	20450.00	3681.00	M-233
		Add 1 per cent of cost of timber for nuts & bolts, nails, etc.				36.81	
		c) <b>Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				941.13	
		d) <b>Contractor's profit @ 15 % on (a+b+c)</b>				804.87	
		e) <b>Add Cess @ 1.00 % on (a+b+c+d)</b>				61.71	
		<b>Rate per barricade = a+b+c+d+e</b>				6232.36	
					<b>say</b>	<b><u>6232.40</u></b>	



**CHAPTER-9  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
9.1	2100	<b>PCC 1:3:6 in Foundation</b> 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 as per drawings & MoRTH technical specifications Clauses 2100.					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.640	391.00	250.24	L-17
		Mason (1st Class)	day	1.000	512.00	512.00	L-15
		Mazdoor (unskilled)	day	15.000	391.00	5865.00	L-18
		<b>b) Machinery</b>					
		Concrete mixer 0.4/ 0.28 cum	hour	6.000	215.00	1290.00	P&M-014
		Generator set 33 KVA	hour	6.000	252.00	1512.00	P&M-027
		Water tanker 6 KL capacity	hour	2.000	224.00	448.00	P&M-084
		<b>c) Material</b>					
		Cement	tonne	3.450	6797.00	23449.65	M-052
		Sand	cum	6.750	740.00	4995.00	M-170
		40mm aggregate	cum	13.500	4236.00	57186.00	M-023
		Cost of water	KL	18.000	133.00	2394.00	M-196
		<b>d) Formwork @ 4.00 % on cost of materials, labour &amp; machinery (a+b+c)</b>				3916.08	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				21656.68	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				18521.20	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1419.96	
		Cost for 15 cum = a+b+c+d+e+f+g				143415.80	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				9561.05	
					<b>say</b>	<b><u>9561.10</u></b>	
		Note:- Vibrator is a part of minor T & P which is already included in Add GST (multiplying factor) of the contractor.					
9.2	2900	<b>Providing and laying Reinforced Cement Concrete Pipe NP3 / prestressed concrete pipe on first class bedding in single Row.</b> Providing and Laying reinforced cement concrete pipe NP3 / prestressed concrete pipe with collar 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 as per MoRTH Technical specification Clause 2900.					
		<b>Unit = metre</b>					
		<b>Taking output = 12.5 metres (5 pipes of 2.5 m length each )</b>					
		<b>A. 1200 mm dia</b>					
		<b>a) Labour</b>					

**CHAPTER-9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mate	day	0.180	391.00	70.38	L-17
		Mason (1st Class)	day	0.500	512.00	256.00	L-15
		Mazdoor (unskilled)	day	4.000	391.00	1564.00	L-18
		<b>b) Material</b>					
		Sand	cum	0.070	740.00	51.80	M-170
		Cement	tonne	0.070	6797.00	475.79	M-052
		RCC pipe NP-3 including collar, 1200 mm dia	metre	12.500	12200.00	152500.00	M-155
		Granular material passing 5-6 mm sieve for class bedding	cum	5.000	4450.50	22252.50	M-013
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				37684.16	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				32228.19	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				2470.83	
		Cost for 12.5 metres = a+b+c+d+e				249553.65	
		<b>Rate per metre = (a+b+c+d+e)/12.5</b>				19964.29	
						<b>say</b>	<b><u>19964.30</u></b>
		<b>B. 1000 mm dia</b>					
		<b>a) Labour</b>					
		Mate	day	0.140	391.00	54.74	L-17
		Mason (1st Class)	day	0.380	512.00	194.56	L-15
		Mazdoor (unskilled)	day	3.000	391.00	1173.00	L-18
		<b>b) Material</b>					
		Sand	cum	0.040	740.00	29.60	M-170
		Cement	tonne	0.040	6797.00	271.88	M-052
		RCC pipe NP-3 including collar, 1000 mm dia	metre	12.500	9380.00	117250.00	M-156
		Granular material passing 5-6 mm sieve for class bedding	cum	4.500	4450.50	20027.25	M-013
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				29565.52	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				25284.98	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				1938.52	
		Cost for 12.5 metres = a+b+c+d+e				195790.05	
		<b>Rate per metre = (a+b+c+d+e)/12.5</b>				15663.20	
						<b>say</b>	<b><u>15663.20</u></b>

**Note:-** 1. In case of cement concrete 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 Providing and laying Reinforced Cement Concrete Pipe NP3 / prestressed concrete pipe on first class bedding in double row.**

**CHAPTER-9  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Providing and Laying reinforced cement concrete pipe NP3 / prestressed concrete pipe with collar 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 as per MoRTH Technical specification Clause 2900.

**Unit = metre**

**Taking output = 12.5 metres (5 pipes of 2.5 m length each in two rows)**

**A. 1200 mm dia**

**a) Labour**

Mate	day	0.460	391.00	179.86	L-17
Mason (1st Class)	day	1.500	512.00	768.00	L-15
Mazdoor (unskilled)	day	10.000	391.00	3910.00	L-18

**b) Material**

Sand	cum	0.180	740.00	133.20	M-170
Cement	tonne	0.140	6797.00	951.58	M-052
RCC pipe NP-3 including collar, 1200 mm dia	metre	25.000	12200.00	305000.00	M-155
Granular material passing 5-6 mm sieve for bedding	cum	13.750	4450.50	61194.38	M-013

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

79153.54

**d) Contractor's profit @ 15 % on (a+b+c)**

67693.58

**e) Add Cess @ 1.00 % on (a+b+c+d)**

5189.84

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

524173.98

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

41933.92

**say 41933.90**

**A. 1000 mm dia**

**a) Labour**

Mate	day	0.270	391.00	105.57	L-17
Mason (1st Class)	day	0.750	512.00	384.00	L-15
Mazdoor (unskilled)	day	6.000	391.00	2346.00	L-18

**b) Material**

Sand	cum	0.140	740.00	103.60	M-170
Cement	tonne	0.100	6797.00	679.70	M-052
RCC pipe NP-3 including collar, 1000 mm dia	metre	25.000	9380.00	234500.00	M-156
Granular material passing 5.6 mm sieve for bedding	cum	12.500	4450.50	55631.25	M-013

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

62480.65

**d) Contractor's profit @ 15 % on (a+b+c)**

53434.62

**e) Add Cess @ 1.00 % on (a+b+c+d)**

4096.65

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

413762.04

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

33100.96

**say 33101.00**

**Note:-** 1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added. .

**CHAPTER-9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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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**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**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 compaction with plate compactor or power rammer to restore the original alignment, level and slopes as per drawings and MoRT&H technical specification Clause 3002.

**Unit = cum**

**Taking output = 10 cum**

**a) Labour**

Mate	day	0.080	391.00	31.28	L-17
Mazdoor(unskilled)	day	2.000	391.00	782.00	L-18

**b) Machinery**

Excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.130	1344.00	174.72	P&M-034
Tipper 5.50 cum, 10 T capacity	hour	2.270	374.00	848.98	P&M-073

Add 10 per cent of cost of carriage towards loading and unloading charges.

Plate compactor	hour	0.500	84.00	42.00	P&M-051
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**c) Material**

Compensation for earth taken from private land	cum	7.500	18.00	135.00	M-061
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**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

450.15

**e) Contractor's profit @ 15 % on (a+b+c+d)**

384.97

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

29.51

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

2980.99

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

298.10

**say 298.10**

**Note:-** Only 75 % of fresh material has been provided as 25 % can be retrieved at site from earth that is flown down the slope in the form of slurry and deposited at the foot of rain cuts

**10.2 3003 Maintenance of Earthen shoulder (filling with fresh selected soil)**

Making up loss of material / irregularities on shoulders to the design level by adding fresh approved selected soil and compacting it with appropriate equipment at OMC upto a lead of 1000 m as per MoRT&H technical specification Clause 3003.

**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	391.00	70.38	L-17
Mazdoor(unskilled)	day	4.500	391.00	1759.50	L-18

**b) Machinery**

Excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.250	1344.00	336.00	P&M-034
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**CHAPTER- 10**  
**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Tipper 5.50 cum, 10 T capacity	hour	3.000	374.00	1122.00	P&M-073
		Add 10 per cent of cost of carriage towards loading and unloading charges.				145.80	
		Plate compactor	hour	12.000	84.00	1008.00	P&M-051
		<b>c) Material</b>					
		Compensation for earth taken from private land	cum	15.000	18.00	270.00	M-003
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				1002.17	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				857.08	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				65.71	
		Cost for 100 sqm = a+b+c+d+e+f				6636.64	
		<b>Rate per sqm = (a+b+c+d+e+f)100</b>				66.37	
					<b>say</b>	<b><u>66.40</u></b>	

**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 at OMC as per drawing and MoRT&H technical specification Clause 3003.

**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 0.100 391.00 39.10 L-17

Mazdoor(unskilled) day 2.500 391.00 977.50 L-18

**b) Machinery**

Plate compactor hour 4.000 84.00 336.00 P&M-051

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

287.70

**d) Contractor's profit @ 15 % on (a+b+c)**

246.04

**e) Add Cess @ 1.00 % on (a+b+c+d)**

18.86

Cost for 100 sqm = a+b+c+d+e 1905.21

**Rate per sqm on = (a+b+c+d+e)100** 19.05

**say 19.10**

**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.**

**CHAPTER- 10**  
**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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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 MoRT&H technical specification Clause 3004.2

**Unit = Sqm**

**Taking out put = 10250 sqm (205 cum)(405 tonne)**

**a) Labour**

Mate	Day	3.760	391.00	1470.16	L-17
Mazdoor (unskilled)	Day	90.000	391.00	35190.00	L-18
Mazdoor (skilled)	Day	4.000	475.00	1900.00	L-20

**b) Machinery**

HMP 100-110 TPH Capacity	hour	6.000	15400.00	92400.00	P&M-005
Air compressor 250 cfm	hour	6.000	235.00	1410.00	P&M-001
Tipper 5.50 cum, 10 tonnes capacity	hour	45.000	374.00	16830.00	P&M-073
Three wheeled 80-100 kN static Roller	hour	12.000	439.00	5268.00	P&M-065

**c) Material**

Bitumen emulsion(SS-1) for tack coat including vertical sides of pot hole.      tonne      2.460      60228.00      148160.88      M-046

Bitumen (VG-30)      tonne      14.970      61186.00      915954.42      M-041

Crushed stone aggregates nominal size 13.2mm @ 0.18 cum/10 sqm      cum      184.500      4325.50      798054.75      M-184

Crushed stone aggregates nominal size 11.2mm @.09 cum/ 10 sqm      cum      92.250      4501.80      415291.05      M-187

Add for wastage @ 5.00 %      113873.06

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

541492.15

**e) Contractor's profit @ 15 % on (a+b+c+d)**

463094.17

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

35503.89

Cost for 10250 sqm = a+b+c+d+e+f

3585892.52

**Rate per sqm = (a+b+c+d+e+f)/10250**

349.84

**say      349.80**

**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 511, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per MoRT&H technical specification Clause 3004.2

**A. Grading - I (19 mm nominal size)**

**Unit = Sqm**

**CHAPTER- 10**  
**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Taking out put = 4900 sqm (196 cum)**  
**(450 Tonnes)**

**a) Labour**

Mate	Day	2.920	391.00	1141.72	L-17
Mazdoor (unskilled)	Day	70.000	391.00	27370.00	L-18
Mazdoor (skilled)	Day	3.000	475.00	1425.00	L-20

**b) Machinery**

HMP 100-110 TPH Capacity	hour	6.000	15400.00	92400.00	P&M-005
Air compressor 250 cfm	hour	6.000	235.00	1410.00	P&M-001
Tipper 5.50 cum, 10 tonnes capacity	hour	45.000	374.00	16830.00	P&M-073
Three wheeled 80-100 KN static Roller	hour	12.000	439.00	5268.00	P&M-065

**c) Material**

i) Bitumen emulsion(SS-1) for tack coat including vertical sides of pot hole.	tonne	1.180	60228.00	71069.04	M-046
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ii) Bitumen for BM (VG-30)	tonne	22.500	61186.00	1376685.00	M-041
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iii) Aggregates

**Grading I - 19 mm (Nominal size)**

20-10mm 35 per cent	cum	99.75	4149.20	413882.70	M-011
10-5 mm 23 per cent	cum	65.55	4355.60	285509.58	M-006
5mm and below 40 per cent	cum	114.00	4450.50	507357.00	M-013
Filler (cement) 2 per cent	tonne	8.550	6797.00	58114.35	M-052

Add 5 per cent for wastage

135630.88

**d) Add GST (multiplying factor) @**

636843.64

**0.2127 on (a+b+c)****e) Contractor's profit @ 15 % on**

544640.54

**(a+b+c+d)****f) Add Cess @ 1.00 % on (a+b+c+d+e)**

41755.77

Cost for 4900 cum = a+b+c+d+e+f

4217333.22

**Rate per cum = (a+b+c+d+e+f)/4900**

860.68

**say 860.70****B. Grading - II (13mm nominal size)****Unit = Sqm****Taking out put = 4900 sqm (196 cum)****(450 Tonnes)****a) Labour**

Mate	Day	2.920	391.00	1141.72	L-17
Mazdoor (unskilled)	Day	70.000	391.00	27370.00	L-18
Mazdoor (skilled)	Day	3.000	475.00	1425.00	L-20

**b) Machinery**

HMP 100-110 TPH Capacity	hour	6.000	15400.00	92400.00	P&M-005
Air compressor 250 cfm	hour	6.000	235.00	1410.00	P&M-001
Tipper 5.50 cum, 10 tonnes capacity	hour	45.000	374.00	16830.00	P&M-073
Three wheeled 80-100 KN static Roller	hour	12.000	439.00	5268.00	P&M-065

**c) Material**

i) Bitumen emulsion(SS-1) for tack coat including vertical sides of pot hole.	tonne	1.180	60228.00	71069.04	M-046
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ii) Bitumen for BM (VG-30)	tonne	22.500	61186.00	1376685.00	M-041
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iii) Aggregates

**Grading II - 13 mm (Nominal size)**

13.2-10 mm 30 per cent	cum	85.500	4281.40	366059.70	M-005
10-5 mm 25 per cent	cum	71.250	4355.60	310336.50	M-006
5 mm and Below 43 per cent	cum	122.550	4450.50	545408.78	M-013
Filler (cement) 2 per cent	tonne	8.550	6797.00	58114.35	M-052



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**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Add 5 per cent for wastage				136383.67	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				640206.10	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				547516.18	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				41976.24	
		Cost for 4900 cum = a+b+c+d+e+f				4239600.27	
		<b>Rate per cum = (a+b+c+d+e+f)/4900</b>				865.22	
					<b>say</b>	<b><u>865.20</u></b>	

**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 3 mm as per MoRT&H technical specification Clause 3004.3.3.

**Unit = Running Meter**

**Taking out put = 500m**

**a) Labour**

Mate	day	0.040	391.00	15.64	L-17
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Mazdoor (unskilled)	day	1.000	391.00	391.00	L-18
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**b) Material**

Bitumen emulsion(SS-1)	Kg	33.000	60.23	1987.52	M-046
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Stone crusher dust	cum	0.020	2252.60	45.05	M-070
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** 518.82

**d) Contractor's profit @ 15 % on (a+b+c)** 443.71

**e) Add Cess @ 1.00 % on (a+b+c+d)** 34.02

Cost for 500sqm = a+b+c+d+e 3435.76

**Rate per meter = (a+b+c+d+e)/500** 6.87

**say** **6.90**

**10.7 3004.4 Dusting**

Applying crusher dust to areas of road where bleeding of excess bitumen has occurred as per MoRT&H technical specification Clause 3004.4.

**Unit = Sqm**

**Taking output = 3500 sqm**

**a) Labour**

Mate	day	0.080	391.00	31.28	L-17
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Mazdoor (unskilled)	day	2.000	391.00	782.00	L-18
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**b) Material**

Stone crusher dust finer than 3mm with not more than 10 per cent passing 0.075 sieve.	cum	6.250	2252.60	14078.75	M-070
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Add 5.00 % for wastage 744.60

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** 3325.91

**d) Contractor's profit @ 15 % on (a+b+c)** 2844.38

**e) Add Cess @ 1.00 % on (a+b+c+d)** 218.07

Cost for 3500sqm = a+b+c+d+e 22024.99

**Rate per meter = (a+b+c+d+e)/3500** 6.29

**say** **6.30**

**10.8 3004.3.2 Fog Seal**

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**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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3004.3.4 Crack Prevention courses.

10.8 3004.5 Slurry Seal

10.8 3004.6 Surface Dressing for maintenance works.

*These 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 as per MoRT&H technical specification Clause 3005.1.

**Unit = running metre**

**Taking output = 10 metres**

**a) Labour**

Mate day 0.040 391.00 15.64 L-17

Mazdoor(unskilled) day 0.500 391.00 195.50 L-18

Chiseller day 0.500 391.00 195.50 L-09

**b) Material**

Epoxy compound with accessories for kg 10.000 361.00 3610.00 M-093

preparing epoxy mortar kg 2.500 175.00 437.50 M-092

Epoxy primer 202.38

Add 5 per cent for wastage

**c) Machinery**

Air compressor 250 cfm for cleaning hour 0.050 235.00 11.75 P&M-001

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

992.94

**e) Contractor's profit @ 15 % on**

849.18

**(a+b+c+d)**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

65.10

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

6575.49

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

657.55

**say 657.50**

**Note:-** The constituents of epoxy mortar / epoxy concrete will be as per the instruction and manual of the manufacturer.

10.10 3005.2 **Repair of old Joints Sealant**

Removal of existing sealant and resealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material as per MoRT&H technical specification Clause 3005.2.

**Unit = running metre**

**Taking output = 10 metres**

**a) Labour**

Mate day 0.020 391.00 7.82 L-17

Mazdoor(unskilled) day 0.500 391.00 195.50 L-18

**b) Material**

Bitumen Primer kg 0.250 0.06 0.02 M-047

Bituminous Sealant kg 1.000 79.50 79.50 M-048

**c) Machinery**

Air compressor 250 cfm for cleaning hour 0.050 235.00 11.75 P&M-001

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				62.66	
		e) Contractor's profit @ 15 % on (a+b+c+d)				53.59	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				4.11	
		Cost for 10 metres = a+b+c+d+e+f				414.94	
		Rate per metre = (a+b+c+d+e+f)/10				41.49	
					<b>say</b>	<b><u>41.50</u></b>	
<b>10.11</b>	<b>3000</b>	<b>Hill Side Drain Clearance</b> Removal of earth from the choked hill side drain and disposing it on the valley side manually as per MoRTH technical specification Clause 3000.					
		<b>Unit = metre</b> <b>Taking output = 10 metres</b>					
		a) Labour					
		Mate	day	0.040	391.00	15.64	L-17
		Mazdoor(unskilled)	day	1.000	391.00	391.00	L-18
		b) Add GST (multiplying factor) @ 0.2127 on (a)				86.49	
		c) Contractor's profit @ 15 % on (a+b)				73.97	
		d) Add Cess @ 1.00 % on (a+b+c+d)				5.67	
		Cost for 10 metres = a+b+c+d				572.77	
		Rate per metre = (a+b+c+d)/10				57.28	
					<b>say</b>	<b><u>57.30</u></b>	
<b>10.12</b>	<b>3000</b>	<b>Land Slide Clearance in soil</b> 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 as per MoRTH technical specification Clause 3000.					
		<b>Unit = cum</b> <b>Taking output = 100 cum</b>					
		a) Labour					
		Mate	day	0.040	391.00	15.64	L-17
		Mazdoor(unskilled)	day	1.000	391.00	391.00	L-18
		b) Machinery					
		Dozer @ 60 cum per hour	hour	1.670	2654.00	4432.18	P&M-023
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				1029.22	
		d) Contractor's profit @ 15 % on (a+b+c)				880.21	
		e) Add Cess @ 1.00 % on (a+b+c+d)				67.48	
		Cost for 100 cum = a+b+c+d+e				6815.72	
		Rate per cum = (a+b+c+d+e)/100				68.16	
					<b>say</b>	<b><u>68.20</u></b>	

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**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Note:-** Land Slide clearance involves pushing of loose earth slid 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.

**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 as per MoRT&H technical specification Clause 3005.2.

**Unit = cum**

**Taking output = 100 cum**

**a) Labour**

Mate	day	0.090	391.00	35.19	L-17
Mazdoor(unskilled)	day	1.500	391.00	586.50	L-18
Driller	day	0.750	475.00	356.25	L-11
Blaster	day	0.070	512.00	35.84	L-04

**b) Machinery**

Air compressor 250 cfm for cleaning	hour	2.500	235.00	587.50	P&M-001
Dozer @ 60 cum per hour	hour	1.670	2654.00	4432.18	P&M-023

**c) Materials**

Gelatine	kg	17.500	138.00	2415.00	M-105
Electric Detonators	each	70.000	21.00	1470.00	M-087

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

**e) Contractor's profit @ 15 % on (a+b+c+d)**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

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

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

**say 139.70**

**Note:-** Credit for the rock if found acceptable as construction material shall be afforded

**CHAPTER-11  
HORTICULTURE**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
11.1	307	<b>Spreading of Sludge Farm Yard Manure or/and good Earth</b> Spreading of sludge / farm yard manure / good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) MoRT&H technical specifications Clauses 307.					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.200	391.00	78.20	L-18
		Mazdoor(unskilled)	day	2.000	391.00	782.00	L-17
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				182.96	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				156.47	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				12.00	
		Cost for 15 cum= a+b+c+d				1211.64	
		<b>Rate per cum = (a+b+c+d)/15</b>				80.78	
					<b>say</b>	<b><u>80.80</u></b>	
11.2	307	<b>Grassing with 'Doobs' Grass</b> 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 as per MoRT&H technical specifications Clauses 307.					
		<b>Unit = sqm</b>					
		<b>Taking output = 100 sqm</b>					
		<b>(i) In rows 150 mm apart in either direction</b>					
		<b>a) Labour</b>					
		Mate	day	0.170	391.00	66.47	L-17
		Mazdoor (unskilled)	day	0.750	391.00	293.25	L-18
		Mazdoor (unskilled)	day	0.900	391.00	351.90	L-18
		<b>b) Machinery</b>					
		Water tanker 6 KL capacity	hour	0.500	224.00	112.00	P&M-084
		<b>c) Material</b>					
		Doob grass	kg	100.000	2.55	255.00	M-083
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				229.42	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				196.21	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				15.04	
		Cost for 100 sqm = a+b+c+d+e+f				1519.29	
		<b>Rate per sqm= (a+b+c+d+e+f)/100</b>				15.19	
					<b>say</b>	<b><u>15.20</u></b>	
		<b>(ii) In rows 75 mm apart in either direction</b>					
		<b>a) Labour</b>					
		Mate	day	0.190	391.00	74.29	L-17
		Mazdoor(unskilled) for grassing.	day	1.000	391.00	391.00	L-18
		Mazdoor(unskilled) for mtc. for 30 days	day	0.900	391.00	351.90	L-18
		<b>b) Machinery</b>					
		Water tanker 6 KL capacity	hour	0.750	224.00	168.00	P&M-084

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Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>c) Material</b>					
		Doob grass	kg	150.000	2.55	382.50	M-083
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				290.91	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				248.79	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				19.07	
		Cost for 100 sqm = a+b+c+d+e+f				1926.46	
		<b>Rate per sqm = (a+b+c+d+e+f)/100</b>				19.26	
					<b>say</b>	<b><u>19.30</u></b>	
11.2		<b>(iii) In rows 50 mm apart in either direction</b>					
		<b>a) Labour</b>					
		Mate	day	0.220	391.00	86.02	L-17
		Mazdoor(unskilled) for grassing.	day	1.250	391.00	488.75	L-18
		Mazdoor(unskilled) for mtc. for 30 days	day	0.900	391.00	351.90	L-18
		<b>b) Machinery</b>					
		Water tanker 6 KL capacity	hour	1.000	224.00	224.00	P&M-084
		<b>c) Material</b>					
		Doob grass	kg	200.000	2.55	510.00	M-083
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				353.22	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				302.08	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				23.16	
		Cost for 100 sqm = a+b+c+d+e+f				2339.14	
		<b>Rate per sqm = (a+b+c+d+e+f)/100</b>				23.39	
					<b>say</b>	<b><u>23.40</u></b>	
11.3	307	<b>Planting and Maintaining of Flowering Plants and Shrubs</b>					
		(a) Planting flowering plants and shrubs in central verge (200 plants and 800 shrubs in two rows in one km length of road where width of verge is 3 m and above) as per MoRT&H technical specifications Clauses 307.					
		<b>Unit = KM</b>					
		<b>Taking output = 1.00 Km</b>					
		<b>a) Labour</b>					
		Mate	day	1.200	391.00	469.20	L-17
		Mazdoor(unskilled)	day	12.000	391.00	4692.00	L-18
		<b>b) Machinery</b>					
		Water tanker 6 KL capacity	hour	0.500	224.00	112.00	P&M-084
		<b>c) Material</b>					
		Plants	each	200.000	13.80	2760.00	M-098
		Shrubs	each	800.000	9.70	7760.00	M-099
		Pesticide	kg	0.500	162.00	81.00	M-143
		Manure sludge/Farm yard manure	cum	63.640	541.00	34429.24	M-094
		Cost of water	KL	36.000	133.00	4788.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				11717.95	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				10021.41	

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		f) Add Cess @ 1.00 % on (a+b+c+d+e)				768.31	
		Rate per Km = (a+b+c+d+e+f)				77599.11	
					<b>say</b>	<b><u>77599.10</u></b>	
		<b>(b) Maintenance of flowering plants and shrubs in central verge for one year</b>					
		<b>Unit = km</b>					
		<b>Taking output = one km</b>					
		<b>a) Labour</b>					
		Mate	day	36.500	391.00	14271.50	L-17
		Mazdoor	day	365.000	391.00	142715.00	L-18
		<b>b) Machinery</b>					
		Water tanker6 KL capacity	hour	90.000	224.00	20160.00	P&M-084
		<b>c) Material</b>					
		Replacement of casualties @ 10 per cent					
		Plants	each	20.000	13.80	276.00	M-098
		Shrubs	each	80.000	9.70	776.00	M-099
		Pesticide	kg	1.500	162.00	243.00	0.00
		Manure sludge/Farm yard manure	cum	10.000	541.00	5410.00	M-094
		Cost of water	KL	180.000	133.00	23940.00	M-196
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				44197.25	
		e) Contractor's profit @ 15 % on (a+b+c+d)				37798.31	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				2897.87	
		Rate per Km for one year = (a+b+c+d+e+f)				292684.94	
					<b>say</b>	<b><u>292684.90</u></b>	
11.4		<b>Wrought Iron and Mild Steel Welded Work</b>					
		Wrought iron and mild steel welded work (using angles, square bars, tees and channel in 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 as per MoRT&H technical specifications Clauses and as directed.					
		<b>Unit = quintal</b>					
		<b>Taking output = 100.00 Kg</b>					
		<b>a) Labour</b>					
		Mate	day	0.450	391.00	175.95	L-17
		Blacksmith	day	2.000	480.00	960.00	L-03
		Mazdoor(unskilled)	day	2.500	391.00	977.50	L-18
		<b>b) Material</b>					
		Angle, tees, channels etc	kg	105.000	59.50	6247.50	M-129
		Add for welding etc. @ 5.00 %				105.67	
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				1800.85	
		d) Contractor's profit @ 15 % on (a+b+c)				1540.12	

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		e) Add Cess @ 1.00 % on (a+b+c+d)				118.08	
		Rate per KG = a+b+c+d+e				119.26	
					<b>say</b>	<b><u>119.30</u></b>	
11.5	307	<b>Planting and Maintaining of Permanent Hedges</b>					
	A.	<b>Planting permanent hedges including digging of trenches</b>					
		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					
		<b>Unit = Running metre</b>					
		<b>Taking output = 100metre</b>					
	a)	<b>Labour</b>					
		Mate	day	1.400	391.00	547.40	L-17
		Mazdoor for digging of trench 60 cm wide and 45 cm deep	day	10.000	391.00	3910.00	L-18
		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	391.00	1564.00	L-18
	b)	<b>Machinery</b>					
		Water tanker 6 KL capacity	hour	0.500	224.00	112.00	P&M-084
	c)	<b>Material</b>					
		Cost of hedge plants 2 rows at 30 cm apart	each	680.000	25.00	17000.00	M-270
		Supply of farm yard manure at site of work	cum	4.670	541.00	2526.47	M-094
		Pesticide	kg	0.250	162.00	40.50	M-143
		Cost of water	KL	3.000	133.00	399.00	M-196
	d)	<b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				5551.34	
	e)	<b>Contractor's profit @ 15 % on (a+b+c+d)</b>				4747.61	
	f)	<b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				363.98	
		Cost for 100 metres = a+b+c+d+e+f				36762.30	
		<b>Rate per metre = a+b+c+d+e+f)/100</b>				367.62	
					<b>say</b>	<b><u>367.60</u></b>	
	B.	<b>Maintenance of hedge for one year</b>					
		<b>Unit = Running metre</b>					
		<b>Taking output = 100 m</b>					
	a)	<b>Labour</b>					
		Mate	day	3.000	391.00	1173.00	L-17
		Mazdoor (unskilled)	day	30.000	391.00	11730.00	L-18
	b)	<b>Machinery</b>					
		Water tanker 6 KL capacity	hour	5.000	224.00	1120.00	P&M-084
	c)	<b>Material</b>					
		Manure sludge/Farm yard manure	cum	2.000	541.00	1082.00	M-094
		Pesticide	kg	0.500	162.00	81.00	M-143
		Cost of water	KL	30.000	133.00	3990.00	M-196
		Cost of hedge plants @ 10 per cent casualty	each	68.000	25.00	1700.00	M-270
	d)	<b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				4440.33	



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		e) Contractor's profit @ 15 % on (a+b+c+d)				3797.45	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				291.14	
		Cost for 100 metres = a+b+c+d+e+f				29404.91	
		Rate per metre = a+b+c+d+e+f/100				294.05	
					<b>say</b>	<b><u>294.00</u></b>	
11.6	307	<b>Planting of Trees and their Maintenance for one Year</b> 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.					
		<b>Unit = Each</b> <b>Taking output = 10 trees</b>					
		a) <b>Labour</b>					
		Mate	day	1.700	391.00	664.70	L-17
		Mazdoor for planting	day	2.000	391.00	782.00	L-18
		Mazdoor for maintenance for one year	day	15.000	391.00	5865.00	L-18
		b) <b>Machinery</b>					
		Water tanker 6 KL capacity	hour	2.000	224.00	448.00	P&M-084
		c) <b>Material</b>					
		Sapling 2 m high 25 mm dia	each	10.000	26.00	260.00	M-271
		Farm yard manure	cum	0.940	541.00	508.54	M-094
		Pesticide	kg	0.500	162.00	81.00	M-143
		Cost of water	KL	12.000	133.00	1596.00	M-196
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				2170.65	
		e) Contractor's profit @ 15 % on (a+b+c+d)				1856.38	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				142.32	
		Cost for 10 trees = a+b+c+d+e+f				14374.60	
		Rate per trees = (a+b+c+d+e+f)/10				1437.46	
					<b>say</b>	<b><u>1437.50</u></b>	
11.7		<b>Making Tree Guard 53 cm dia and 1.3 m High as per Design from Empty Bitumen Drums</b> 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 including providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets, complete in all respect.					
		<b>Unit = Each</b> <b>Taking output = one tree guard</b>					
		a) <b>Labour</b>					
		Mate	day	0.020	391.00	7.82	L-17
		Blacksmith	day	0.150	480.00	72.00	L-03
		Mazdoor (unskilled)	day	0.070	391.00	27.37	L-18
		b) <b>Material</b>					
		Empty bitumen drum	each	1.000	315.00	315.00	M-043
		MS sheet 50 x 0.5 mm	kg	0.650	59.53	38.69	M-192
						/1000	
		Rivets 6 mm dia and 10 mm in length	each	0.176	64.50	11.35	M-045

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		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				100.44	
		e) Contractor's profit @ 15 % on (a+b+c+d)				85.90	
		f) Add Cess @ 1.00 % on (a+b+c+d+e+f)				6.59	
		Rate for each tree guard = a+b+c+d+f				665.17	
					<b>say</b>	<b><u>665.20</u></b>	
11.8		<b>Making Tree Guard 53 cm dia and 2 Metre High as per Design from Empty Bitumen Drums</b>					
		Making tree guard 53 cm dia and 2 metres high as per design from empty bitumen drums, slit suitably to permit sun and air 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					
		<b>Unit = Each</b>					
		<b>Taking output = one tree guard</b>					
		<b>a) Labour</b>					
		Mate	day	0.040	391.00	15.64	L-17
		Blacksmith	day	0.200	480.00	96.00	L-03
		Mazdoor (unskilled)	day	0.200	391.00	78.20	L-18
		<b>b) Material</b>					
		Empty bitumen drum	each	1.500	315.00	472.50	M-043
		MS sheet 50 x 0.5 mm	kg	0.650	59.53	38.69	M-192 /1000
		Rivets 6 mm dia and 10 mm in length	each	0.350	64.50	22.58	M-141
		MS plate 30 x 3 mm	kg	1.300	59.53	77.39	M-192 /1000
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				170.37	
		d) Contractor's profit @ 15 % on (a+b+c)				145.71	
		e) Add Cess @ 1.00 % on (a+b+c+d)				11.17	
		Rate for each tree guard = a+b+c+d+e				1128.25	
					<b>say</b>	<b><u>1128.20</u></b>	
11.9		<b>Tree Guard with MS Iron</b>					
		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.					
		<b>Unit = Each</b>					
		<b>Taking output = one tree guard</b>					
		<b>a) Labour</b>					
		Mate	day	0.050	391.00	19.55	L-17
		Blacksmith	day	0.250	480.00	120.00	L-03
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		<b>b) Material</b>					

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Sr. No.	Ref. to MoRTH H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		MS iron 25 x 6 mm	kg	19.200	59.53	1142.98	M-192 /1000
		MS iron 25 x 3 mm	kg	9.600	59.53	571.49	M-192 /1000
		Add 5 % of cost of material for riveting, bolting and welding accessories				85.72	
		<b>c) Machinery</b>					
		Tractor-trolley	hour	0.040	265.00	10.60	P&M-076
		<b>d) Painting</b>					
		Painting two coats including priming	sqm	1.770	81.70	144.61	Item 8.9
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				435.63	
		<b>f) Contractor's profit @ 15 % on (a+b+c+e)</b>				372.56	
		<b>g) Add Cess @ 1.00 % on (a+b+c+e+f)</b>				28.56	
		<b>Rate per tree guard =a+b+c+d+e+f+g</b>				3029.44	
					<b>say</b>	<b><u>3029.40</u></b>	
		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.					
11.10		<b>Tree Guard with MS Angle Iron and Steel Wire</b>					
		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.					
		<b>Unit = Each</b>					
		<b>Taking output = one</b>					
		<b>a) Labour</b>					
		Mate	day	0.050	391.00	19.55	L-17
		Blacksmith	day	0.250	480.00	120.00	L-03
		Welder	day	0.250	512.00	128.00	L-27
		Mazdoor (unskilled)	day	0.250	391.00	97.75	L-18
		<b>b) Material</b>					
		MS angle 30 x 30 x 3 mm	kg	13.500	59.53	803.66	M-192 /1000
		MS iron 25 x 3 mm	kg	18.000	59.53	1071.54	M-192 /1000
		Steel wire 3 mm dia	kg	6.000	69.90	419.40	M-207
		Add 5 % of cost of material for riveting, bolting and welding accessories				114.73	
		<b>c) Machinery</b>					
		Tractor-trolley	hour	0.040	265.00	10.60	P&M-076
		<b>d) Painting</b>					
		Painting two coats including priming	sqm	1.500	81.70	122.55	Item 8.9
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				592.42	
		<b>f) Contractor's profit @ 15 % on (a+b+c+e)</b>				506.65	
		<b>g) Add Cess @ 1.00 % on (a+b+c+e+f)</b>				38.84	

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		<b>Rate per tree guard = a+b+c+d+e+f+g</b>				4045.68	
					<b>say</b>	<b><u>4045.70</u></b>	
11.11		<b>Compensatory Afforestation</b> 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.					
		<b>Unit = Hectare</b> <b>Taking output = one hectare</b>					
		<b>a) Labour</b>					
		<b>i) Planting</b>					
		Mate	day	2.500	391.00	977.50	L-17
		Mazdoor (unskilled)	day	25.000	391.00	9775.00	L-18
		<b>ii) For Maintenance for one year</b>					
		Mate	day	5.000	391.00	1955.00	L-17
		Mazdoor (unskilled)	day	50.000	391.00	19550.00	L-18
		<b>b) Machinery</b>					
		Dozer 80 HP @ 1000 sqm/hour	hour	10.000	2654.00	26540.00	P&M-022
		Water tanker 6 KL capacity (for planting)	hour	3.000	224.00	672.00	P&M-084
		Water tanker 6 KL capacity (for maintenance)	hour	25.000	224.00	5600.00	P&M-084
		<b>c) Material</b>					
		Sapling 1 to 1.5 m high 2 cm dia stem	each	290.000	20.80	6032.00	M-270 x 0.8
		Add 10 % of sapling	each	29.000	20.80	603.20	M-270 x 0.8
		Decayed farm yard/sludge manure (planting)	cum	60.900	541.00	32946.90	M-094
		Decayed farm yard/sludge manure (maintenance)	cum	4.000	541.00	2164.00	M-094
		Pesticides for planting	kg	0.500	162.00	81.00	M-143
		Pesticides for maintenance	kg	1.500	162.00	243.00	M-143
		Cost of water	KL	18.000	133.00	2394.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				23297.80	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				19924.71	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1527.56	
		<b>Rate per hectare = a+b+c+d+e+f</b>				154283.67	
					<b>say</b>	<b><u>154283.70</u></b>	
		Cost of fencing to be provided as per size of plot and approved design, measured and paid separately					
11.12	307	<b>Making Lawns including Ploughing and Dragging with 'Swagha' Breaking of Clod</b>  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					

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		<b>Unit = sqm</b>					
		<b>Taking output = 100 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.150	391.00	58.65	L-17
		Mazdoor (unskilled) for preparation of ground	day	0.500	391.00	195.50	L-18
		Mazdoor (unskilled) for fetching doobs grass roots and grassing at 15 cm apart	day	1.000	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Water tanker6 KL capacity	hour	0.500	224.00	112.00	P&M-084
		Tractor with tiller	hour	0.010	358.00	3.58	P&M-077
		<b>c) Material</b>					
		Supply of farm yard manure at site of work	cum	0.180	541.00	97.38	M-094
		Fine grass	kg	100.000	2.55	255.00	M-083
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				236.76	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				202.48	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				15.52	
		Cost for 100 sqm = a+b+c+d+e+f				1567.87	
		<b>Rate per sqm = (a+b+c+d+e+f)/100</b>				15.68	
					<b>say</b>	<b><u>15.70</u></b>	
11.13	307	<b>Maintenance of Lawns or Turfing of Slopes</b>					
		Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc.					
		<b>Unit = sqm</b>					
		<b>Taking output = 100 sqm</b>					
		<b>a) Labour</b>					
		Mazdoor(unskilled)	day	10.000	391.00	3910.00	L-17
		<b>b) Machinery</b>					
		Water tanker6 KL capacity	hour	15.000	224.00	3360.00	P&M-084
		<b>c) Material</b>					
		Water	KL	90.000	133.00	11970.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				4092.35	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				3499.85	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				268.32	
		Cost for 100 sqm = a+b+c+d+e+f				27100.52	
		<b>Rate per sqm = (a+b+c+d+e+f)/100</b>				271.01	
					<b>say</b>	<b><u>271.00</u></b>	
11.14	307	<b>Turfing Lawns with Fine Grassing including Ploughing, Dressing</b>					
		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					
		<b>Unit = sqm</b>					
		<b>Taking output = 100 sqm</b>					

**CHAPTER-11  
HORTICULTURE**

Sr. No.	Ref. to MoRTH H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>a) Labour</b>					
		Mate	day	0.250	391.00	97.75	L-17
		Mazdoor(unskilled) for preparation of ground	day	1.000	391.00	391.00	L-18
		Mazdoor(unskilled) for fetching doobs grass roots hedges and grassing at 10 cm apart	day	1.500	391.00	586.50	L-18
		<b>b) Machinery</b>					
		Water tanker6 KL capacity	hour	0.500	224.00	112.00	P&M-084
		Tractor with tiller	hour	0.010	358.00	3.58	P&M-077
		<b>c) Material</b>					
		Supply of farm yard manure at site of work @ 0.6 cum per 100 sqm	cum	0.600	541.00	324.60	M-094
		Fine grass	kg	100.000	2.55	255.00	M-083
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				376.57	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				322.05	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				24.69	
		Cost for 100 sqm = a+b+c+d+e+f				2493.74	
		<b>Rate per sqm = (a+b+c+d+e+f)/100</b>				24.94	
						<b>say</b>	<b><u>24.90</u></b>
11.15	307	<b>Maintenance of Lawns with Fine Grassing for the First Year</b> Maintenance of lawns with fine grassing for the first year including watering etc					
		<b>Unit = sqm</b> <b>Taking output = 100 sqm</b>					
		<b>a) Labour</b>					
		Mazdoor(unskilled)	day	10.000	391.00	3910.00	L-18
		<b>b) Machinery</b>					
		Water tanker6 KL capacity	hour	20.000	224.00	4480.00	P&M-084
		<b>c) Material</b>					
		Water	KL	60.000	133.00	7980.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				3481.90	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>				2977.78	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				228.30	
		Cost for 100 sqm = a+b+c+d+e+f				23057.98	
		<b>Rate per sqm = (a+b+c+d+e+f)/100</b>				230.58	
						<b>say</b>	<b><u>230.60</u></b>
11.16	308	<b>Renovation Lawns including, Weeding, Forking the Ground, Top Dressing with Forked Soil</b> 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					

**CHAPTER-11  
HORTICULTURE**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>Unit = sqm</b>					
		<b>Taking output = 100 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-17
		Mazdoor(unskilled)	day	3.000	391.00	1173.00	L-18
		<b>b) Machinery</b>					
		Water tanker6 KL capacity	hour	0.500	224.00	112.00	P&M-084
		<b>c) Material</b>					
		Water	KL	3.000	133.00	399.00	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				368.17	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				314.86	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				24.14	
		Cost for 100 sqm = a+b+c+d+e+f				2438.09	
		<b>Rate per sqm = (a+b+c+d+e+f)</b>				24.38	
						<b>say</b>	<b><u>24.40</u></b>
11.17	308.2	<b>Supply at Site Well Decayed Farm Yard Manure</b>					
		Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking					
		<b>Unit = cum</b>					
		<b>Taking output = one cum</b>					
		<b>a) Material</b>					
		a) Cost of well decayed farm yard manure duly screened, loading, carriage, unloading and stacking at site	cum	1.000	541.00	541.00	M-094
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				115.07	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				98.41	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				7.54	
		<b>Rate per cum = (a+b+c+d)</b>				762.03	
						<b><u>762.00</u></b>	
11.18		<b>Half Brick Circular Tree Guard, in 2nd Class Brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground</b>					
		Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete					
		<b>Unit = Each</b>					
		<b>Taking output = one tree guard</b>					
		<b>a) Labour</b>					
		Mate	day	0.050	391.00	19.55	L-17
		Mason (2nd class)	day	0.250	475.00	118.75	L-16
		Mazdoor(unskilled)	day	0.250	391.00	97.75	L-18

**CHAPTER-11  
HORTICULTURE**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>b) Material</b>					
		Brick 2nd class including carriage	each	230.000	10.20	2346.00	M-303
		Cement mortar 1:6	cum	0.025	3361.60	84.04	Item 12.5
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				567.08	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				484.98	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				37.18	
		<b>Rate per tree guard = a+b+c+d+e</b>				3755.32	
						<b>say</b>	<b><u>3755.30</u></b>
11.19		<b>Edging with 2nd Class Bricks, Laid Dry Lengthwise</b>					
		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					
		<b>Unit = Metre</b>					
		<b>Taking output= 10 metres</b>					
		<b>a) Labour</b>					
		Mate	day	0.002	391.00	0.78	L-17
		Mason (2nd class)	day	0.050	475.00	23.75	L-16
		Mazdoor(unskilled)	day	0.050	391.00	19.55	L-18
		<b>b) Material</b>					
		Brick 2nd class including carriage	each	50.000	10.20	510.00	M-303
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				117.85	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				100.79	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				7.73	
		Cost for 10 metre = a+b+c+d				780.45	
		<b>Rate per metre = (a+b+c+d)/10</b>				78.05	
						<b>say</b>	<b><u>78.00</u></b>



**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**12.1 304 Excavation for Structures**

Earthwork in excavation for structures as per drawing and MoRTH technical specifications Clause 304 including setting out, construction of shoring & bracing, removal of stumps & other deleterious material and disposal upto a lead of 50 m, dressing of sides & bottom and backfilling in trenches with excavated suitable material.

**I. Ordinary soil**

**A. Manual Means**

**(i) Upto 3 m depth**

**Unit = cum**

**Taking output = 10 cum**

**a) Labour**

Mate	day	0.32	391.00	125.12	L-17
Mazdoor(Unskilled)	day	8.00	391.00	3128.00	L-18

**b) Add GST (multiplying factor) @**

**0.2127 on (a)**

691.94

**c) Contractor's profit @ 15 % on (a+b)**

591.76

**d) Add Cess @ 1.00 % on (a+b+c)**

45.37

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

4582.19

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

458.22

**say 458.20**

**Note:-** 1. 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.

2.The cost of shoring & shuttering, where needed, may be added @ 3 per cent on cost of excavation for open foundation.

3.The excavated earth if found suitable can be used partly for backfilling in trenches and partly for road work. Hence cost of disposal has not been added except for marshy soil. This note is common to all cases of item 12.1 excluding marshy soil

**(ii) 3 m to 6 m depth**

**a) Labour**

Mate	day	0.38	391.00	148.58	L-17
Mazdoor(Unskilled)	day	9.50	391.00	3714.50	L-18

**b) Add GST (multiplying factor) @**

**0.2127 on (a)**

821.68

**c) Contractor's profit @ 15 % on (a+b)**

702.71

**d) Add Cess @ 1.00 % on (a+b+c)**

53.87

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

5441.35

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

544.13

**say 544.10**

**Note:-** 1. Cost of dewatering may be added, when required, up to 15 per cent labour cost.

2. The cost of shoring & shuttering, where needed, may be added @ 10 per cent on cost of excavation for open foundation.

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**(iii) Above 6 m depth****a) Labour**

Mate	day	0.48	391.00	187.68	L-17
Mazdoor(Unskilled)	day	12.00	391.00	4692.00	L-18

**b) Add GST (multiplying factor) @ 0.2127 on (a)**

1037.91

**c) Contractor's profit @ 15 % on (a+b)**

887.64

**d) Add Cess @ 1.00 % on (a+b+c)**

68.05

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

6873.28

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

687.33

**say****687.30**

**Note:-** 1. Cost of dewatering may be added, when required, up to 20 per cent labour cost.

2. The cost of shoring & shuttering, where needed, may be added @ 15 per cent on cost of excavation for open foundation.

**B. Mechanical Means****(i) Upto 3 m depth****Unit = cum****Taking output = 240 cum****a) Labour**

Mate	day	0.32	391.00	125.12	L-17
Mazdoor(Unskilled)	day	8.00	391.00	3128.00	L-18

**b) Machinery**

Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1344.00	8064.00	P&M-034
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

2407.15

**d) Contractor's profit @ 15 % on (a+b+c)**

2058.64

**e) Add Cess @ 1.00 % on (a+b+c+d)**

157.83

Cost for 240 cum = a+b+c+d+e

15940.74

**Rate per cum = (a+b+c+d+e)/240**

66.42

**say****66.40**

**Note:-** 1. Cost of dewatering may be added, when required, up to 5 per cent labour cost. Assessment for dewatering shall be made as per site conditions.

2. The cost of shoring & shuttering, where needed, may be added @ 3 per cent on cost of excavation for open foundation.

3. The excavated earth if found suitable can be used partly for backfilling in trenches and partly for road work. Hence cost of disposal has not been added except for marshy soil. This note is common to all cases of item 12.1 excluding marshy soil

**(ii) 3 m to 6 m depth****Unit = cum****Taking output = 210 cum****a) Labour**

Mate	day	0.32	391.00	125.12	L-17
Mazdoor(Unskilled)	day	8.00	391.00	3128.00	L-18

**b) Machinery**

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1344.00	8064.00	P&M-034
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				2407.15	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				2058.64	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				157.83	
		Cost for 210 cum = a+b+c+d+e				15940.74	
		<b>Rate per cum = (a+b+c+d+e)/210</b>				75.91	
					<b>say</b>	<b><u>75.90</u></b>	

Note:- 1. Cost of dewatering may be added, when required, up to 7.5 per cent labour cost.

2. The cost of shoring & shuttering, where needed, may be added @ 10 per cent on cost of excavation for open foundation.

**(iii) Above 6 m depth**

**Unit = cum**

**Taking output = 180 cum**

**a) Labour**

Mate	day	0.32	391.00	125.12	L-17
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Mazdoor(Unskilled)	day	8.00	391.00	3128.00	L-18
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**b) Machinery**

Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1344.00	8064.00	P&M-034
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** 2407.15

**d) Contractor's profit @ 15 % on (a+b+c)** 2058.64

**e) Add Cess @ 1.00 % on (a+b+c+d)** 157.83

Cost for 180 cum = a+b+c+d+e 15940.74

**Rate per cum = (a+b+c+d+e)/180** 88.56

**say 88.60**

Note:- 1. Cost of dewatering may be added, when required, up to 10 per cent of labour cost.

2. The cost of shoring & shuttering, where needed, may be added @ 15 per cent on cost of excavation for open foundation.

3. Labour provided for excavation by mechanical means includes that required for trimming of bottom and side slopes.

**II. Ordinary Rock (not requiring blasting)**

**A. Manual Means**

**(i) Upto 3 m depth**

**Unit = cum**

**Taking output = 10 cum**

**a) Labour**

Mate	day	0.40	391.00	156.40	L-17
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Mazdoor(Unskilled)	day	10.00	391.00	3910.00	L-18
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**b) Add GST (multiplying factor) @ 0.2127 on (a)** 864.92

**c) Contractor's profit @ 15 % on (a+b)** 739.70

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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d) Add Cess @ 1.00 % on (a+b+c)	56.71
Cost for 10 cum = a+b+c+d	5727.73
Rate per cum = (a+b+c+d)/10	572.77
<b>say</b>	<b><u>572.80</u></b>

**Note:-** 1. 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..

2. The cost of shoring & shuttering, where needed, may be added @ 3 per cent on cost of excavation for open foundation.

**B. Mechanical Means**

(i) Upto 3 m depth

Unit = cum

Taking output = 180 cum

a) Labour

Mate	day	0.24	391.00	93.84	L-17
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Mazdoor(Unskilled)	day	6.00	391.00	2346.00	L-18
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b) Machinery

Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1344.00	8064.00	P&M-034
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c) Add GST (multiplying factor) @ 0.2127 on (a+b)

2234.17

d) Contractor's profit @ 15 % on (a+b+c)

1910.70

e) Add Cess @ 1.00 % on (a+b+c+d)

146.49

Cost for 180 cum = a+b+c+d+e

14795.19

Rate per cum = (a+b+c+d+e)/180

82.20

**say 82.20**

**Note:-** 1. Cost of dewatering may be added, when required, up to 10 per cent labour cost. Assessment for dewatering shall be made as per site conditions.

2. The cost of shoring & shuttering, where needed, may be added @ 3 per cent on cost of excavation for open foundation.

3. In case of rock, foundation beyond 3 m is not dug and hence not included.

**III. Hard Rock ( requiring blasting )**

**A. Manual Means**

Upto 3 m depth

Unit = cum

Taking output = 10 cum

a) Labour

Mate	day	0.53	391.00	207.23	L-17
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Driller	day	0.84	475.00	399.00	L-11
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Blaster	day	0.40	512.00	204.80	L-04
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Mazdoor(Unskilled)	day	12.00	391.00	4692.00	L-18
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b) Machinery

Air Compressor 250 cfm with 2 jack hammer for drilling.	hour	1.00	235.00	235.00	P&M-001
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c) Material

Gelatin 80%	kg	3.50	138.00	483.00	M-105
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Detonator electric	each	14.00	21.00	294.00	M-087
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d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)

1385.75

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.	
		e) Contractor's profit @ 15 % on (a+b+c+d)				1185.12		
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				90.86		
		Cost for 10 cum = a+b+c+d+e+f				9176.75		
		Rate per cum = (a+b+c+d+e+f)/10				917.68		
					<b>say</b>	<b><u>917.70</u></b>		
		<b>Note:-</b> 1. Cost of dewatering upto 10 per cent of (a+b), may be added, where required Assessment for dewatering shall be made as per site conditions.						
		2. In case of rock, foundation beyond 3 m is not dug and hence not included.						
		<b>IV. Hard Rock (blasting prohibited)</b>						
		<b>Upto 3 m depth including 1.5 m depth in hard rock</b>						
		<b>A. Mechanical Means</b>						
		<b>Unit = cum</b>						
		<b>Taking output = 10 cum</b>						
		<b>a) Labour</b>						
		Mate	day	0.20	391.00	78.20	L-17	
		Mazdoor(unskilled)	day	5.00	391.00	1955.00	L-18	
		<b>b) Machinery</b>						
		Air Compressor 250 cfm with 2 jack hammer of pneumatic breaker	hour	10.00	235.00	2350.00	P&M-001	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						
		Cost for 10 cum = a+b+c+d+e				6173.96		
		Rate per cum = (a+b+c+d+e)/10				617.40		
					<b>say</b>	<b><u>617.40</u></b>		
		<b>Note:-</b> 1. Cost of dewatering upto 10 per cent of (a+b), may be added, where required Assessment for dewatering shall be made as per site conditions.						
		2. In case of rock, foundation beyond 3 m is not dug and hence not included.						
		<b>V. Marshy Soil</b>						
		<b>A. Manual means</b>						
		<b>Unit = cum</b>						
		<b>Taking output = 10 cum</b>						
		<b>a) Labour</b>						
		Mate	day	0.40	391.00	156.40	L-17	
		Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-18	
		<b>b) Machinery</b>						
		Tractor-trolley for removal.	hour	2.67	265.00	707.55	P&M-076	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						
		Cost for 10 cum = a+b+c+d+e				6724.35		
		Rate per cum = (a+b+c+d+e)/ 10				672.44		
					<b>say</b>	<b><u>672.40</u></b>		

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**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 15 per cent of (a), where required may be added

3. Since marshy soil cannot be used in filling in trenches, it shall be removed & replaced by approved quality of soil. The labour cost includes labour input for disposal of marshy soil excavated pit with a lead upto 50 m.

4. 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 12.1 (i) to (iv) for ordinary soil

**B. Mechanical Means**

**a) Labour**

Mate	day	0.16	391.00	62.56	L-17
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Mazdoor (unskilled)	day	4.00	391.00	1564.00	L-18
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**b) Machinery**

Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.17	1344.00	228.48	P&M-034
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Tipper 5.5 cum capacity	hour	0.45	374.00	168.30	P&M-073
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**c) Add GST (multiplying factor) @**

**0.2127 on (a+b)**

**d) Contractor's profit @ 15 % on**

**(a+b+c)**

**e) Add Cess @ 1.00 % on (a+b+c+d)**

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

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

				2849.98	
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				285.00	
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**say 285.00**

1. Cost of dewatering @ 30 per cent of (a) may be added.

2. Shoring & shutting @ 15 per cent of (a) may be added where required.

3. Since marshy soil cannot be used in filling in trenches, it shall be removed & replaced by approved quality of soil. The labour cost includes labour input for disposal of marshy soil excavated pit with a lead upto 50 m.

4. Marshy soil is generally available upto 3 m depth. The rate has, therefore, been done upto 3 m depth of excavation. For deeper excavation refer analysis in item 12.1.

**VI. Back Filling in Marshy Foundation Pits**

**Unit : Cum**

**Taking Output : 6 cum**

**a) Labour**

Mate	day	0.40	391.00	156.40	L-17
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Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-18
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**b) Machinery**

Tractor-trolley for transportation	hour	2.67	265.00	707.55	P&M-076
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**c) Add GST (multiplying factor) @**

**0.2127 on (a+b)**

				1015.42	
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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Contractor's profit @ 15 % on (a+b+c)				868.41	
		e) Add Cess @ 1.00 % on (a+b+c+d)				66.58	
		Cost for 6 cum = a+b+c+d+e				6724.35	
		Rate per cum = (a+b+c+d+e)/6				1120.73	
					<b>say</b>	<b><u>1120.70</u></b>	
12.2	304	<b>Filling Annular Space Around Footing in Rock</b> <i>Unit = cum</i> <i>Taking out put = 1 cum</i> 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 & MoRT&H technical specification clause 304. <i>Unit = cum</i> <i>Taking output = 1 cum</i>					
		a) <b>Labour</b>					
		Mate	day	0.01	391.00	3.91	L-17
		Mazdoor(unskilled)	day	0.30	391.00	117.30	L-18
		b) <b>Material</b>					
		Local Sand (assuming 20 per cent bulkage)	cum	1.20	590.00	708.00	M-171
		c) <b>Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				176.37	
		d) <b>Contractor's profit @ 15 % on (a+b+c)</b>				150.84	
		e) <b>Add Cess @ 1.00 % on (a+b+c+d)</b>				11.56	
		Rate per cum = a+b+c+d+e				1167.98	
					<b>say</b>	<b><u>1168.00</u></b>	
12.4	2100	<b>PCC 1:3:6 in Foundation</b> 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 as per drawings & MoRT&H technical specifications Clauses 2100. (including centering, shuttering, staging etc. but excluding reinforcement).  <i>Unit = cum</i> <i>Taking output = 15 cum</i>					
		a) <b>Labour</b>					
		Mate	day	0.64	391.00	250.24	L-17
		Mason (1st calss)	day	1.00	512.00	512.00	L-15
		Mazdoor(unskilled)	day	12.00	391.00	4692.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		b) <b>Machinery</b>					
		Mechanical concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		Water tanker 6 KL capacity	hour	2.00	224.00	448.00	P&M-084
		c) <b>Material</b>					
		cement	tonne	3.45	6797.00	23449.65	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	13.50	4236.00	57186.00	M-023
		Cost of water	KL	18.00	133.00	2394.00	M-196

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Formawork @ 4.00 % on cost of material, labour & machinery (on a+b+c)				3916.08	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				21656.68	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				18521.20	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				1419.96	
		Cost for 15 cum = a+b+c+d+e+f+g				143415.80	
		Rate per cum = (a+b+c+d+e+f+g)/15				9561.05	
					<b>say</b>	<b><u>9561.10</u></b>	

Note:- Vibrator is a part of minor T & P which is already included in Add GST (multiplying factor) of the contractor.

- 12.5 1300** Brick masonry work in cement mortar in foundation completed excluding pointing & plastering as per drawing & MoRTH technical specifications Clauses 1300.

**I. Brick Masonry in 1:2 Cement Mortar**

**Unit = cum**

**Taking output = 5 cum**

**a) Labour**

Mate	day	0.48	391.00	187.68	L-17
Mason (1st class)	day	4.00	512.00	2048.00	L-15
Mazdoor(unskilled)	day	5.00	391.00	1955.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Material**

Bricks 1st class	each	1900.0	12.20	23180.00	M-049
Cement mortar 1:2(Rate as in sub-analysis below)	cum	1.20	5654.60	6785.52	Sub Analysis

**c) Add GST (multiplying factor) @**

**0.2127 on (a+b)**

7514.52

**d) Contractor's profit @ 15 % on**

**(a+b+c)**

6426.56

**e) Add Cess @ 1.00 % on (a+b+c+d)**

492.70

Cost for 5 cum = a+b+c+d+e

49762.98

Rate per cum (a+b+c+d+e)/5

9952.60

**say**

**9952.60**

**Sub-analysis (Addl.)** **Cement Mortar 1:2 (1cement :2 sand)**

**Unit = 1 cum**

**Taking output = 1 cum**

**a) Materials**

Cement	tonne	0.67	6797.00	4567.58	M-052
Sand	cum	0.93	740.00	688.20	M-170

**b) Labour**

Mate	day	0.04	391.00	15.64	L-17
Mazdoor	day	0.90	391.00	351.90	L-18
Bhisti	day	0.08	391.00	31.28	L-01

Total Material and Labour = (a+b)

**say**

**5654.60**

**II. Brick Masonry in 1:3 Cement Mortar**

**Unit = cum**

**Taking output = 5 cum**



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>a) Labour</b>					
		Mate	day	0.48	391.00	187.68	L-17
		Mason (1st class)	day	4.00	512.00	2048.00	L-15
		Mazdoor(unskilled)	day	5.00	391.00	1955.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Material</b>					
		Bricks 1st class	each	1900.0	12.20	23180.00	M-049
		Cement mortar 1:3 (Rate as in sub-analysis below)	cum	1.20	4642.30	5570.76	Sub Analysis
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				7256.14	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				6205.59	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				475.76	
		Cost for 5 cum = a+b+c+d+e				48051.93	
		<b>Rate per cum (a+b+c+d+e)/5</b>				9610.39	
					<b>say</b>	<b><u>9610.40</u></b>	
	<i>Sub-analysis (Addl.)</i>	<b>Cement Mortar 1:3 (1 cement : 3 sand)</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>a) Materials</b>					
		Cement	tonne	0.51	6797.00	3466.47	M-052
		Sand	cum	1.05	740.00	777.00	M-170
		<b>b) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mazdoor	day	0.90	391.00	351.90	L-18
		Bhisti	day	0.08	391.00	31.28	L-01
		<b>Total Material and Labour = (a+b)</b>			<b>say</b>	<b>4642.30</b>	
		<b>III. Brick Masonry in 1:4 Cement Mortar</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>a) Material</b>					
		Bricks 1st class	each	380.00	12.20	4636.00	M-049
		Cement mortar 1:4 (Rate as in sub-analysis below)	cum	0.24	3946.40	947.14	Sub Analysis
		<b>b) Material</b>					
		Mate	day	0.10	391.00	39.10	L-17
		Mason (1st class)	day	0.80	512.00	409.60	L-15
		Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18
		Bhisti	day	0.60	391.00	234.60	L-01
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1416.04	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1211.02	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				92.84	
		<b>Rate per cum (a+b+c+d+e)</b>				9377.34	
					<b>say</b>	<b><u>9377.30</u></b>	
	<i>Sub-analysis (Addl.)</i>	<b>Cement Mortar 1:4 (1 cement : 4 sand)</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>a) Materials</b>					
		Cement	tonne	0.40	6797.00	2718.80	M-052
		Sand	cum	1.12	740.00	828.80	M-170
		<b>b) Labour</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mate	day	0.04	391.00	15.64	L-17
		Mazdoor	day	0.90	391.00	351.90	L-18
		Bhisti	day	0.08	391.00	31.28	L-01
		<b>Total Material and Labour = (a+b)</b>			<b>say</b>	<b>3946.40</b>	
<b>IV. Brick Masonry in 1:6 Cement Mortar</b>							
<b>Unit = cum</b>							
<b>Taking output = 1 cum</b>							
<b>a) Material</b>							
		Bricks 1st class	each	380.00	12.20	4636.00	M-049
		Cement mortar 1:6 (Rate as in sub-analysis below)	cum	0.24	3361.60	806.78	Sub Analysis
<b>b) Labour</b>							
		Mate	day	0.06	391.00	23.46	L-17
		Mason (1st calss)	day	0.80	512.00	409.60	L-15
		Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18
		Bhisti	day	0.60	391.00	234.60	L-01
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						1382.86	
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						1182.65	
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						90.67	
<b>Rate per cum (a+b+c+d+e)</b>						9157.62	
						<b>say</b>	<b><u>9157.60</u></b>
<b>Sub-analysis (Addl.) Cement Mortar 1:6 (1cement :6 sand)</b>							
<b>Unit = 1 cum</b>							
<b>Taking output = 1 cum</b>							
<b>a) Materials</b>							
		Cement	tonne	0.29	6797.00	1971.13	M-052
		Sand	cum	1.34	740.00	991.60	M-170
<b>b) Labour</b>							
		Mate	day	0.04	391.00	15.64	L-17
		Mazdoor	day	0.90	391.00	351.90	L-18
		Bhisti	day	0.08	391.00	31.28	L-01
<b>Total Material and Labour = (a+b)</b>						<b>say</b>	<b>3361.60</b>
<b>12.6</b>	<b>1500, 1700 &amp; 2100</b>	Plain / Reinforced cement concrete in open foundation as per drawings & MoRT&H technical specifications Clauses 1500, 1700, 2100. (including centering, shuttering, staging etc. but excluding reinforcement)					
<b>A. PCC Grade M15</b>							
<b>Unit = cum</b>							
<b>Taking output = 15 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
<b>b) Machinery</b>							
		Mechanical Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
<b>c) Material</b>							
		Cement	tonne	4.13	6797.00	28071.61	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	8.10	4236.00	34311.60	M-023

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		20 mm Aggregate	cum	4.05	4374.00	17714.70	M-022
		10 mm Aggregate	cum	1.35	4269.00	5763.15	M-020
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>6839.00</b>			
		<b>d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				4103.29	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				22692.03	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				19406.65	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1487.84	
		Cost for 15 cum = a+b+c+d+e+f+g				150272.13	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				10018.14	
					<b>say</b>	<b><u>10018.10</u></b>	
		<b>B. PCC Grade M20</b>					
		<b>Unit : cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.16	6797.00	35072.52	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
		20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
		10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7321.00</b>			
		<b>d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				4392.56	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				24291.75	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				20774.76	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1592.73	
		Cost for 15 cum = a+b+c+d+e+f+g				160865.89	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				10724.39	
					<b>say</b>	<b><u>10724.40</u></b>	
		<b>C. RCC Grade M20</b>					
		<b>Case- I:- Using Concrete Mixer</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mechanical Concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.21	6797.00	35412.37	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7375.00</b>			
		<b>d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				4424.63	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				24469.06	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				20926.40	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1604.36	
		Cost for 15 cum = a+b+c+d+e+f+g				162040.07	
		<b>Rate per cum = ( a+b+c+d+e+f +g)/15</b>				10802.67	
						<b>say</b>	<b><u>10802.70</u></b>

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

**Unit : cum**

**Taking Output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason (1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	41.66	6797.00	283163.02	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)** **7228.00**

**d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)** 34691.06

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)** 191848.49

**f) Contractor's profit @ 15 % on (a+b+c+d+e)** 164072.40

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)** 12578.88

Cost for 120 cum = a+b+c+d+e+f+g 1270467.30

**Rate per cum = ( a+b+c+d+e+f +g)/120** 10587.23

**say** **10587.20**

**D. PCC Grade M25**

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Case-I:- Using Concrete Mixer**

**Unit = cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason (1st calss)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Mechanical concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	5.99	6797.00	40714.03	M-052
Sand	cum	6.75	740.00	4995.00	M-170
40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020

**Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) 7698.00**

**d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c) 4329.58**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d) 25478.31**

**f) Contractor's profit @ 15 % on (a+b+c+d+e) 21789.52**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f) 1670.53**

Cost for 15 cum = a+b+c+d+e+f+g 168723.53

**Rate per cum = ( a+b+c+d+e+f+g )/15 11248.24**

**say 11248.20**

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

**Unit : cum**

**Taking Output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason (1st calss)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	47.95	6797.00	325916.15	M-052
Sand	cum	54.00	740.00	39960.00	M-170
40 mm Aggregate	cum	43.20	4236.00	182995.20	M-023
20 mm Aggregate	cum	43.20	4374.00	188956.80	M-022
10 mm Aggregate	cum	21.60	4269.00	92210.40	M-020

**Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) 7553.00**

**d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c) 33987.60**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d) 200006.83**

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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f) Contractor's profit @ 15 % on (a+b+c+d+e)	171049.56
g) Add Cess @ 1.00 % on (a+b+c+d+e+f)	13113.80
cost of 120 cum = a+b+c+d+e+f+g	1324493.78
Rate per cum = (a+b+c+d+e+f+g)/120	11037.45
<b>say</b>	<b><u>11037.40</u></b>

**E. RCC Grade M25****Case-I:- Using Concrete Mixer***Unit = cum**Taking output = 15 cum*

<b>a) Labour</b>							
Mate	day	0.86	391.00	336.26	L-17		
Mason (1st calss)	day	1.50	512.00	768.00	L-15		
Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18		
Bhisti	day	3.00	391.00	1173.00	L-01		
<b>b) Machinery</b>							
Mechanical concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014		
Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027		
<b>c) Material</b>							
Cement	tonne	6.05	6797.00	41121.85	M-052		
Sand	cum	6.75	740.00	4995.00	M-170		
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022		
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020		
<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7756.00</b>					
d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)							3922.46
e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)							25576.66
f) Contractor's profit @ 15 % on (a+b+c+d+e)							21873.63
g) Add Cess @ 1.00 % on (a+b+c+d+e+f)							1676.98
cost of 15 cum = a+b+c+d+e+f+g							169374.84
Rate per cum (a+b+c+d+e+f+g)/15							11291.66
<b>say</b>							<b><u>11291.70</u></b>

**Case-II:- With Batching Plant, Transit Mixer and Concrete Pump***Unit: cum**Taking Output = 120 cum*

<b>a) Labour</b>							
Mate	day	0.84	391.00	328.44	L-17		
Mason (1st calss)	day	3.00	512.00	1536.00	L-15		
Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18		
Bhisti	day	3.00	391.00	1173.00	L-01		
<b>b) Machinery</b>							
Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013		
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026		
Loader	hour	6.00	1030.00	6180.00	P&M-030		
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079		
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015		
<b>c) Material</b>							
Cement	tonne	48.38	6797.00	328838.86	M-052		
Sand	cum	54.00	740.00	39960.00	M-170		
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022		
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020		

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) 7608.00**

d) <b>Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>	34235.71
e) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	201466.89
f) <b>Contractor's profit @ 15 % on (a+b+c+d+e)</b>	172298.24
g) <b>Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	13209.53
cost of 120 cum = a+b+c+d+e+f+g	1334162.67
<b>Rate per cum (a+b+c+d+e+f+g)/120</b>	11118.02
<b>say</b>	<b><u>11118.00</u></b>

**F. PCC Grade M30  
Case-I:- Using Concrete Mixer**

**Unit = cum  
Taking output = 15 cum**

<b>a) Labour</b>							
Mate	day	0.86	391.00	336.26	L-17		
Mason (1st calss)	day	1.50	512.00	768.00	L-15		
Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18		
Bhisti	day	3.00	391.00	1173.00	L-01		
<b>b) Machinery</b>							
Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014		
Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027		
<b>c) Material</b>							
Cement	tonne	6.08	6797.00	41325.76	M-052		
Sand	cum	6.75	740.00	4995.00	M-170		
40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023		
20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022		
10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020		

**Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) 7738.00**

d) <b>Formwork @ 3.50 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>	4062.36
e) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	25551.58
f) <b>Contractor's profit @ 15 % on (a+b+c+d+e)</b>	21852.19
g) <b>Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	1675.33
cost of 15 cum = a+b+c+d+e+f+g	169208.78
<b>Rate per cum (a+b+c+d+e+f+g)/15</b>	11280.59
<b>say</b>	<b><u>11280.60</u></b>

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

**Unit : cum  
Taking Output = 120 cum**

<b>a) Labour</b>							
Mate	day	0.84	391.00	328.44	L-17		
Mason (1st calss)	day	3.00	512.00	1536.00	L-15		
Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18		
Bhisti	day	3.00	391.00	1173.00	L-01		
<b>b) Machinery</b>							
Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013		
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026		
Loader	hour	6.00	1030.00	6180.00	P&M-030		
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079		

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	48.60	6797.00	330334.20	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		40 mm Aggregate	cum	43.20	4236.00	182995.20	M-023
		20 mm Aggregate	cum	43.20	4374.00	188956.80	M-022
		10 mm Aggregate	cum	21.60	4269.00	92210.40	M-020
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7590.00</b>			
		<b>d) Formwork @ 3.50 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				31876.39	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				200497.49	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				171469.19	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				13145.97	
		cost of 120 cum = a+b+c+d+e+f+g				1327743.08	
		<b>Rate per cum (a+b+c+d+e+f+g)/120</b>				11064.53	
					<b>say</b>	<b><u>11064.50</u></b>	
		<b>G. RCC Grade M30</b>					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Meachanical concrete mixer ( 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.10	6797.00	41461.70	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7778.00</b>			
		<b>d) Formwork @ 3.50 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				4083.27	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				25683.15	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				21964.71	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1683.96	
		cost of 15 cum = a+b+c+d+e+f+g				170080.05	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				11338.67	
					<b>say</b>	<b><u>11338.70</u></b>	
		<b>Case-II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason (1st calss)	day	3.00	512.00	1536.00	L-15



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	48.80	6797.00	331693.60	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7632.00</b>			
		<b>d) Formwork @ 3.50 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				32053.25	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				201609.88	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				172420.53	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				13218.91	
		cost of 120 cum = a+b+c+d+e+f+g				1335109.60	
		<b>Rate per cum (a+b+c+d+e+f+g)/120</b>				11125.91	
					<b>say</b>	<b><u>11125.90</u></b>	
		<b>H. RCC Grade M35</b>					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Mechanical concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.33	6797.00	43025.01	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7882.00</b>			
		<b>d) Formwork @ 3.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				3546.85	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				25901.57	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				22151.50	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1698.28	
		cost of 15 cum = a+b+c+d+e+f+g				171526.47	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				11435.10	
					<b>say</b>	<b><u>11435.10</u></b>	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Case-II: - With Batching Plant, Transit Mixer and Concrete Pump**

**Unit ; cum**

**Taking Output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason (1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18
Bhisti	day	0.60	391.00	234.60	L-01

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	50.64	6797.00	344200.08	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) 7738.00**

**d) Formwork @ 3.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c) 27856.44**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d) 203427.25**

**f) Contractor's profit @ 15 % on (a+b+c+d+e) 173974.77**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f) 13338.07**

cost of 120 cum = a+b+c+d+e+f+g 1347144.65

**Rate per cum = (a+b+c+d+e+f+g)/120 11226.21**

**say 11226.20**

Note:- 1. Needle vibrator is an item of minor T&P which is already included in Add GST (multiplying factor). Hence not added in rate analysis of cement concrete works.

2. 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**

**12.7 1200** Providing and Constructing Temporary Island 16 m diameter for Construction of Well Foundation for 8 m dia. Well.

**A. Assuming depth of water 1.0 m and height of island to be 1.25 m.**

**Unit = 1 No**

**Taking output = 1 No.**

**a) Labour**

Mate	day	0.60	391.00	234.60	L-17
Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18

**b) Machinery**

Crane with grab 1 cum capacity	hour	6.00	1036.00	6216.00	P&M-019
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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>c) Material</b>					
		Earth (compacted)	cum	251.20	18.0	4521.60	M-061
		Sand bags	each	750.00	2.50	1875.00	M-088
		<b>d) Consumables @ 2.5% on cost of (a+b+c)</b>				155.40	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				4013.14	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				3432.11	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				263.13	
		<b>Rate per No. (a+b+c+d+e+f+g)</b>				26575.98	
					<b>say</b>	<b><u>26576.00</u></b>	
		<b>B. Assuming depth of water 4.0 m and height of island 4.5 m.</b>					
		<b>Unit = 1No</b>					
		<b>Taking output = 1 No</b>					
		<b>a) Labour</b>					
		Mate	day	5.60	391.00	2189.60	L-17
		Mazdoor(unskilled)	day	140.00	391.00	54740.00	L-18
		<b>b) Machinery</b>					
		Crane with grab 1 cum capacity	hour	50.00	1036.00	51800.00	P&M-019
		<b>c) Material</b>					
		Earth (compacted)	cum	904.32	18.0	16277.76	M-061
		Sand bags	each	6000.00	2.50	15000.00	M-088
		Wooden ballies 8" Dia	each	855.00	261.00	223155.00	M-240
		Wooden ballies 2" Dia for bracing	metre	190.00	37.30	7087.00	M-238
		<b>d) Consumables and other arrangements for piling ballies @ 2.5 per cent of (a+b+c).</b>				9256.23	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				80720.84	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				69033.97	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				5292.60	
		<b>Rate per No. (a+b+c+d+e+f+g)</b>				534553.00	
					<b>say</b>	<b><u>534553.00</u></b>	
		<b>Note:-</b> 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.					
		<b>C. Providing and constructing one span service road to reach island location from one pier location to another pier location</b>					
		Assuming span length 30 m, width of service road 10m and depth of water 1m					
		<b>Unit = 1 meter</b>					
		<b>Taking output = 30 metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.24	391.00	93.84	L-17
		Mazdoor(unskilled)	day	6.00	391.00	2346.00	L-18
		<b>b) Machinery</b>					
		Front end Loader 1 cum capacity	hour	27.00	1030.00	27810.00	P&M-031
		Tipper 5.5 cum capacity	hour	28.00	374.00	10472.00	P&M-073
		<b>c) Material</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Earth	cum	450.00	18.0	8100.00	M-061
		Sand bags	each	300.00	2.50	750.00	M-088
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				10543.93	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				9017.37	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				691.33	
		Cost for 30 m (a+b+c+d+e+f)				69824.47	
		<b>Rate per m (a+b+c+d+e+f)/30</b>				2327.48	
					<b>say</b>	<b><u>2327.50</u></b>	
<b>12.8</b>	<b>1200 &amp; 1900</b>	<b>Providing and Laying Cutting Edge of Mild Steel weighing 40 kg per metre for Well Foundation complete as per drawings &amp; MoRT&amp;H technical specifications Clauses 1200 &amp; 1900</b>					
		<b>Unit = 1 MT</b>					
		<b>Taking output = 1 MT</b>					
		<b>a) Labour</b>					
		(for cutting, bending, making holes, joining, welding and erecting in position)					
		Mate	day	0.40	391.00	156.40	L-17
		Fitter	day	5.50	447.00	2458.50	L-13
		Blacksmith	day	5.50	480.00	2640.00	L-03
		Welder	day	5.50	512.00	2816.00	L-27
		Mazdoor(unskilled)	day	16.50	391.00	6451.50	L-18
		<b>b) Material</b>					
		Structural steel in plates, angles, etc including 5 per cent wastage	tonne	1.05	59530.00	62506.50	M-193
		Nuts & bolts	Kg	20.00	64.50	1290.00	M-141
		<b>c) Electrodes, cutting gas and other consumables @ 10 per cent of cost of (b) above</b>				6379.65	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				18015.38	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				15407.09	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1181.21	
		<b>Rate per MT (a+b+c+d+e+f)</b>				119302.23	
					<b>say</b>	<b><u>119302.20</u></b>	
<b>12.9</b>	<b>1200, 1500 &amp; 1700</b>	<b>Plain / Reinforced cement concrete in well foundation as per drawings &amp; MoRT&amp;H technical specifications Clauses 1200, 1500, 1700. (including centering, shuttering, staging etc. but excluding reinforcement) .</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>A. Well curb</b>					
		<b>(i) RCC M20 Grade</b>					
		Same as for 12.6 (C) except for formwork which shall be @ 20 per cent of the cost of concrete.					
		<b>Case I:- Using Concrete Mixer</b>					
		<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>				7375.00	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) formwork @ 20 per cent of the cost of concrete				1475.00	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1882.40	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1609.86	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				123.42	
		Rate perm (a+b+c+d+e+f+g)				12465.68	
					<b>say</b>	<b><u>12465.70</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7228.00	
		d) formwork @ 20 per cent of the cost of concrete				1445.60	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1844.87	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1577.77	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				120.96	
		Rate perm (a+b+c+d+e+f+g)				12217.21	
					<b>say</b>	<b><u>12217.20</u></b>	
		<b>(ii) RCC M25 Grade</b>					
		Same as for 12.6 (E) except for formwork which shall be@ 20 per cent of the cost of concrete.					
		<b>Case I:- Using Concrete Mixer</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7756.00	
		d) formwork @ 20 per cent of the cost of concrete				1551.20	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1979.64	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1693.03	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				129.80	
		Rate perm (a+b+c+d+e+f+g)				13109.67	
					<b>say</b>	<b><u>13109.70</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7608.00	
		d) formwork @ 20 per cent of the cost of concrete				1521.60	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1941.87	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1660.72	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				127.32	
		Rate per m (a+b+c+d+e+f+g)				12859.51	
					<b>say</b>	<b><u>12859.50</u></b>	
		<b>(iii) RCC M35 Grade</b>					
		Same as for 12.6 (H) except for formwork which shall be@ 20 per cent of the cost of concrete.					

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Case I:- Using Concrete Mixer**

a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)	7882.00
d) formwork @ 20 per cent of the cost of concrete	1576.40
e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)	2011.80
f) Contractor's profit @ 15 % on (a+b+c+d+e)	1720.53
g) Add Cess @ 1.00 % on (a+b+c+d+e+f)	131.91
Rate perm (a+b+c+d+e+f+g)	13322.64
<b>say</b>	<b><u>13322.60</u></b>

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

a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)	7738.00
d) formwork @ 20 per cent of the cost of concrete	1547.60
e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)	1975.05
f) Contractor's profit @ 15 % on (a+b+c+d+e)	1689.10
g) Add Cess @ 1.00 % on (a+b+c+d+e+f)	129.50
Rate perm (a+b+c+d+e+f+g)	13079.24
<b>say</b>	<b><u>13079.20</u></b>

If curb concrete is carried out within steel liner, cost of formwork shall be excluded.

**B. Well steining**

**(I) PCC M15 Grade**

Same as for 12.6 (A) except for formwork which shall be @ 10 per cent of the cost of concrete.

**Case I:- Using Concrete Mixer**

a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)	6839.00
d) formwork @ 10 per cent of the cost of concrete	683.90
e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)	1600.12
f) Contractor's profit @ 15 % on (a+b+c+d+e)	1368.45
g) Add Cess @ 1.00 % on (a+b+c+d+e+f)	104.91
Rate perm (a+b+c+d+e+f+g)	10596.39
<b>say</b>	<b><u>10596.40</u></b>

**(ii) PCC M20 Grade**

Same as for 12.6 (B) except for formwork which shall be @ 10 per cent of the cost of concrete.

**Case I:- Using Concrete Mixer**

a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)	7321.00
d) formwork @ 10 per cent of the cost of concrete	732.10
e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)	1712.89

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1464.90	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				112.31	
		Rate perm (a+b+c+d+e+f+g)				11343.20	
					<b>say</b>	<b><u>11343.20</u></b>	
		<b>(iii) RCC M20 Grade</b>					
		Same as for 12.6 (C) except for formwork which shall be @ 10 per cent of the cost of concrete.					
		<b>Case I:- Using Concrete Mixer</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7375.00	
		d) formwork @ 10 per cent of the cost of concrete				737.50	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1725.53	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1475.70	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				113.14	
		Rate perm (a+b+c+d+e+f+g)				11426.87	
					<b>say</b>	<b><u>11426.90</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7228.00	
		d) formwork @ 10 per cent of the cost of concrete				722.80	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1691.14	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1446.29	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				110.88	
		Rate perm (a+b+c+d+e+f+g)				11199.11	
					<b>say</b>	<b><u>11199.10</u></b>	
		<b>(iv) PCC M25 Grade</b>					
		Same as for 12.6 (D) except for formwork which shall be @ 10 per cent of the cost of concrete.					
		<b>Case I:- Using Concrete Mixer</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7698.00	
		d) formwork @ 10 per cent of the cost of concrete				769.80	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1801.10	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1540.34	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				118.09	
		Rate perm (a+b+c+d+e+f+g)				11927.33	
					<b>say</b>	<b><u>11927.30</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7553.00	
		d) formwork @ 10 per cent of the cost of concrete				755.30	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1767.18	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1511.32	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				115.87	
		Rate perm (a+b+c+d+e+f+g)				11702.66	
					<b>say</b>	<b><u>11702.70</u></b>	
		<b>(v) RCC M25 Grade</b>					
		Same as for 12.6 (E) except for formwork which shall be @ 10 per cent of the cost of concrete.					
		<b>Case I:- Using Concrete Mixer</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7756.00	
		d) formwork @ 10 per cent of the cost of concrete				775.60	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1814.67	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1551.94	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				118.98	
		Rate perm (a+b+c+d+e+f+g)				12017.19	
					<b>say</b>	<b><u>12017.20</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7608.00	
		d) formwork @ 10 per cent of the cost of concrete				760.80	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1780.04	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1522.33	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				116.71	
		Rate perm (a+b+c+d+e+f+g)				11787.88	
					<b>say</b>	<b><u>11787.90</u></b>	
		<b>(vi) PCC M30 Grade</b>					
		Same as for 12.6 (F) except for formwork which shall be @ 10 per cent of the cost of concrete.					
		<b>Case I:- Using Concrete Mixer</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7738.00	
		d) formwork @ 10 per cent of the cost of concrete				773.80	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1810.46	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1548.34	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				118.71	
		Rate perm (a+b+c+d+e+f+g)				11989.30	
					<b>say</b>	<b><u>11989.30</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7590.00	
		d) formwork @ 10 per cent of the cost of concrete				759.00	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1775.83	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1518.72	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				116.44	
		Rate perm (a+b+c+d+e+f+g)				11759.99	
					<b>say</b>	<b><u>11760.00</u></b>	
		<b>(vii) RCC M30 Grade</b>					
		Same as for 12.6 (G) except for formwork which shall be @ 10 per cent of the cost of concrete					
		<b>Case I:- Using Concrete Mixer</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7778.00	
		d) formwork @ 10 per cent of the cost of concrete				777.80	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1819.82	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1556.34	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				119.32	
		Rate perm (a+b+c+d+e+f+g)				12051.28	
					<b>say</b>	<b><u>12051.30</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7632.00	
		d) formwork @ 10 per cent of the cost of concrete				763.20	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1785.66	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1527.13	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				117.08	
		Rate perm (a+b+c+d+e+f+g)				11825.07	
					<b>say</b>	<b><u>11825.10</u></b>	
		<b>(viii) RCC M35 Grade</b>					
		Same as for 12.6 (H) except for formwork which shall be @ 10 per cent of the cost of concrete					
		<b>Case I:- Using Concrete Mixer</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				7882.00	
		d) formwork @ 10 per cent of the cost of concrete				788.20	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1844.15	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1577.15	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				120.92	
		Rate perm (a+b+c+d+e+f+g)				12212.42	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**say**      **12212.40**

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

**a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)**      7738.00

**d) formwork @ 10 per cent of the cost of concrete**      773.80

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**      1810.46

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**      1548.34

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**      118.71

**Rate perm (a+b+c+d+e+f+g)**      11989.30

**say**      **11989.30**

**(ix) RCC M40 Grade**

**Case-I :- Using concrete mixer**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate      day      0.92      391.00      359.72      L-17

Mason(1st class)      day      3.00      512.00      1536.00      L-15

Mazdoor (unskilled)      day      17.00      391.00      6647.00      L-18

Bhisti      day      3.00      391.00      1173.00      L-01

**b) Machinery**

Mechanical concrete mixer (0.40/0.28 cum) fitted with water measuring device & preferably also with load cell.      hour      6.00      215.00      1290.00      P&M-014

Electric generator 33 KVA      hour      6.00      252.00      1512.00      P&M-027

**c) Material**

Cement      tonne      6.45      6797.00      43840.65      M-052

Sand (Coarse)      cum      6.75      2887.00      19487.25      M-169

20 mm Aggregate      cum      8.10      4374.00      35429.40      M-022

10 mm Aggregate      cum      5.40      4269.00      23052.60      M-020

Admixture      kg      25.75      42.00      1081.50      M-004

**Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)**      **9027.30**

**d) Formwork @ 10 per cent on cost of concrete i.e. cost of material, labour and machinery**      13540.91

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**      31681.67

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**      27094.76

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**      2077.26

**cost of 15 cum = a+b+c+d+e+f+g**      209803.72

**Rate per cum = (a+b+c+d+e+f+g)/15**      13986.91

**say**      **13986.90**

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

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate      day      0.84      391.00      328.44      L-17

Mason(1st class)      day      3.00      512.00      1536.00      L-15

Mazdoor (unskilled)      day      15.00      391.00      5865.00      L-18

Bhisti      day      3.00      391.00      1173.00      L-01

**b) Machinery**

Batching Plant @ 20 cum/hour      hour      6.00      7088.00      42528.00      P&M-013

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	51.60	6797.00	350725.20	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		Admixture	kg	206.00	42.00	8652.00	M-004
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>8828.60</b>			
		<b>d) Formwork @ 10 per cent on cost of concrete i.e. cost of material, labour and machinery</b>				105942.86	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				247874.52	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				211986.90	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				16252.33	
		cost of 120 cum = a+b+c+d+e+f+g				1641485.26	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				13679.04	
						<b>say 13679.00</b>	

**C. Bottom Plug**

Concrete to be placed using tremie pipe  
Note: 10% extra cement to be added where under water concreting is involved

**(i) PCC Grade M20****Case -I:- Using Concrete Mixer****Unit = cum****Taking output = 15 cum****a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor (unskilled)	day	17.00	391.00	6647.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Mechanical concrete mixer (capacity 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	560.00	3360.00	P&M-020

**c) Material**

Cement	tonne	5.55	6797.00	37723.35	M-052
Sand	cum	6.75	740.00	4995.00	M-170
40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
Admixture	Kg	18.60	42.00	781.20	M-004

**Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)** **7773.80**

Add 5.00 % towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe. 5830.31

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** 26042.23

**e) Contractor's profit @ 15 % on (a+b+c+d)** 22271.80

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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f) Add Cess @ 1.00 % on (a+b+c+d+e) 1707.50

cost of 15 cum = a+b+c+d+e+f 172457.94

Rate per cum = (a+b+c+d+e+f)/15 11497.20

**say 11497.20**

**case-II:-Using Batching Plant, Transit Mixer and Crane/concrete pump**

**Unit = cum**

**Taking Output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor (unskilled)	day	15.00	391.00	5865.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	44.40	6797.00	301786.80	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
Admixture	Kg	148.80	42.00	6249.60	M-004

**Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) 7434.60**

Add 5.00 % towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe. 44607.49

d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 199248.28

e) Contractor's profit @ 15 % on (a+b+c+d) 170400.84

f) Add Cess @ 1.00 % on (a+b+c+d+e) 13064.06

cost of 120 cum = a+b+c+d+e+f 1319470.52

Rate per cum = (a+b+c+d+e+f)/120 10995.59

**say 10995.60**

**(ii) PCC Grade M25**

**Case-I:- Using Concrete Mixer**

**Unit = cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor (unskilled)	day	17.00	391.00	6647.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Mechanical concrete mixer (capacity 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	560.00	3360.00	P&M-020

**c) Material**

Cement	tonne	5.99	6797.00	40714.03	M-052
Sand	cum	6.75	740.00	4995.00	M-170
40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
		10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
		Admixture	Kg	21.60	42.00	907.20	M-004
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7981.60</b>			
		Add 5.00 % towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				5986.14	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				26738.29	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				22867.08	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1753.14	
		cost of 15 cum = a+b+c+d+e+f				177067.44	
		<b>Rate per cum = (a+b+c+d+e+f)/15</b>				11804.50	
					<b>say</b>	<b><u>11804.50</u></b>	
<b>Case-II:- Using Batching Plant, Transit Mixer and Crane/concrete pump</b>							
<b>Unit = cum</b>							
<b>Taking output = 120 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.84	391.00	328.44	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor (unskilled)	day	15.00	391.00	5865.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
<b>b) Machinery</b>							
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
<b>c) Material</b>							
		Cement	tonne	47.88	6797.00	325440.36	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		Admixture	Kg	172.80	42.00	7257.60	M-004
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7640.10</b>			
		Add 5.00 % towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				45840.57	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				204756.07	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				175111.21	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				13425.19	
		cost of 120 cum = a+b+c+d+e+f				1355944.44	
		<b>Rate per cum = (a+b+c+d+e+f)/120</b>				11299.54	
					<b>say</b>	<b><u>11299.50</u></b>	
<b>(iii) PCC Grade M30</b>							
<b>Case-I:- Using Concrete Mixer</b>							
<b>Unit = 1 cum</b>							
<b>Taking output = 15 cum</b>							
<b>a) Labour</b>							

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor (unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Mechanical concrete mixer (capacity 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	560.00	3360.00	P&M-020
		<b>c) Material</b>					
		Cement	tonne	6.08	6797.00	41325.76	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
		20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
		10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
		Admixture	Kg	21.60	42.00	907.20	M-004
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>8022.40</b>			
		Add 5.00 % towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				6016.73	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				26874.91	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				22983.92	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1762.10	
		cost of 15 cum = a+b+c+d+e+f				177972.18	
		<b>Rate per cum = (a+b+c+d+e+f)/15</b>				11864.81	
					<b>say</b>	<b><u>11864.80</u></b>	

**Case-II:- Using Batching Plant, Transit Mixer and Crane/concrete pump**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor (unskilled)	day	15.00	391.00	5865.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	48.64	6797.00	330606.08	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
Admixture	Kg	172.80	42.00	7257.60	M-004

**Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)** **7683.20**

Add 5.00 % towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.

46098.86

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				205909.76	
		e) Contractor's profit @ 15 % on (a+b+c+d)				176097.86	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				13500.84	
		cost of 120 cum = a+b+c+d+e+f				1363584.43	
		Rate per cum = (a+b+c+d+e+f)/120				11363.20	
					<b>say</b>	<b><u>11363.20</u></b>	
		<b>(iv) PCC Grade M35</b>					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor (unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Mechanical concrete mixer (capacity 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	560.00	3360.00	P&M-020
		<b>c) Material</b>					
		Cement	tonne	6.29	6797.00	42753.13	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
		20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
		10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
		Admixture	Kg	21.60	42.00	907.20	M-004
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>				<b>8117.50</b>	
		Add 5.00 % towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				6088.09	
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				27193.69	
		e) Contractor's profit @ 15 % on (a+b+c+d)				23256.55	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				1783.00	
		cost of 15 cum = a+b+c+d+e+f				180083.23	
		Rate per cum = (a+b+c+d+e+f)/15				12005.55	
					<b>say</b>	<b><u>12005.50</u></b>	
		<b>Case-II:- Using Batching Plant, Transit Mixer and Crane/concrete pump</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor (unskilled)	day	15.00	391.00	5865.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	50.28	6797.00	341753.16	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		Admixture	Kg	172.80	42.00	7257.60	M-004
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7776.10</b>			
		Add 5.00 % towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				46656.21	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				208399.29	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				178226.96	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				13664.07	
		cost of 120 cum = a+b+c+d+e+f				1380070.73	
		<b>Rate per cum = (a+b+c+d+e+f)/120</b>				11500.59	
					<b>say</b>	<b><u>11500.60</u></b>	
		<b>D. Intermediate plug</b>					
		<b>(i) PCC Grade M20</b>					
		<b>Case -I:- Using Concrete Mixer</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor (unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Mechanical concrete mixer (capacity 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	560.00	3360.00	P&M-020
		<b>c) Material</b>					
		Cement	tonne	5.55	6797.00	37723.35	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
		20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
		10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
		Admixture	Kg	18.60	42.00	781.20	M-004
		Add 0.50 % towards cost of making arrangement for concreting with tremie pipe.				583.03	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				24926.13	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				21317.29	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1634.33	
		cost of 15 cum = a+b+c+d+e+f				165066.89	
		<b>Rate per cum = (a+b+c+d+e+f)/15</b>				11004.46	
					<b>say</b>	<b><u>11004.50</u></b>	
		<b>case-II:-Using Batching Plant, Transit Mixer and Crane/concrete pump</b>					



**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Unit = cum**

**Taking Output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor (unskilled)	day	15.00	391.00	5865.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	44.40	6797.00	301786.80	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
Admixture	Kg	148.80	42.00	6249.60	M-004

Add 0.50 % towards cost of making arrangement for concreting with tremie pipe.

4460.75

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

190709.07

**e) Contractor's profit @ 15 % on**

**(a+b+c+d)**

163097.95

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

12504.18

cost of 120 cum = a+b+c+d+e+f

1262921.79

**Rate per cum = (a+b+c+d+e+f)/120**

10524.35

**say 10524.30**

**(ii) PCC Grade M25**

**Case-I:- Using Concrete Mixer**

**Unit = cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor (unskilled)	day	17.00	391.00	6647.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Mechanical concrete mixer (capacity 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	560.00	3360.00	P&M-020

**c) Material**

Cement	tonne	5.99	6797.00	40714.03	M-052
Sand	cum	6.75	740.00	4995.00	M-170
40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
Admixture	Kg	21.60	42.00	907.20	M-004

Add 0.50 % towards cost of making arrangement for concreting with tremie pipe.

598.61

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c)**

25592.36

**e) Contractor's profit @ 15 % on**

**(a+b+c+d)**

21887.06

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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f) Add Cess @ 1.00 % on (a+b+c+d+e) 1678.01

cost of 15 cum = a+b+c+d+e+f 169478.84

Rate per cum = (a+b+c+d+e+f)/15 11298.59

**say 11298.60**

**Case-II:- Using Batching Plant, Transit Mixer and Crane/concrete pump**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor (unskilled)	day	15.00	391.00	5865.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	47.88	6797.00	325440.36	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
Admixture	Kg	172.80	42.00	7257.60	M-004

Add 0.50 % towards cost of making arrangement for concreting with tremie pipe. 4584.06

d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 195980.81

e) Contractor's profit @ 15 % on (a+b+c+d) 167606.44

f) Add Cess @ 1.00 % on (a+b+c+d+e) 12849.83

cost of 120 cum = a+b+c+d+e+f 1297832.54

Rate per cum = (a+b+c+d+e+f)/120 10815.27

**say 10815.30**

**(iii) PCC Grade M30**

**Case-I:- Using Concrete Mixer**

**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor (unskilled)	day	17.00	391.00	6647.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Mechanical concrete mixer (capacity 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	560.00	3360.00	P&M-020

**c) Material**

Cement	tonne	6.08	6797.00	41325.76	M-052
Sand	cum	6.75	740.00	4995.00	M-170
40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
Admixture	Kg	21.60	42.00	907.20	M-004

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Add 0.50 % towards cost of making arrangement for concreting with tremie pipe. 601.67

d) Add GST (multiplying factor) @ 25723.13

0.2127 on (a+b+c)

e) Contractor's profit @ 15 % on 21998.90

(a+b+c+d)

f) Add Cess @ 1.00 % on (a+b+c+d+e) 1686.58

cost of 15 cum = a+b+c+d+e+f 170344.80

Rate per cum = (a+b+c+d+e+f)/15 11356.32

**say 11356.30**

**Case-II:- Using Batching Plant, Transit Mixer and Crane/concrete pump**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate day 0.84 391.00 328.44 L-17

Mason(1st class) day 3.00 512.00 1536.00 L-15

Mazdoor (unskilled) day 15.00 391.00 5865.00 L-18

Bhisti day 3.00 391.00 1173.00 L-01

**b) Machinery**

Batching Plant @ 20 cum/hour hour 6.00 7088.00 42528.00 P&M-013

Generator 100 KVA hour 6.00 498.00 2988.00 P&M-026

Loader hour 6.00 1030.00 6180.00 P&M-030

Transit Mixer hour 15.00 883.00 13245.00 P&M-079

Concrete Pump hour 6.00 409.00 2454.00 P&M-015

**c) Material**

Cement tonne 48.64 6797.00 330606.08 M-052

Sand cum 54.00 740.00 39960.00 M-170

20 mm Aggregate cum 64.80 4374.00 283435.20 M-022

10 mm Aggregate cum 43.20 4269.00 184420.80 M-020

Admixture Kg 172.80 42.00 7257.60 M-004

Add 0.50 % towards cost of making arrangement for concreting with tremie pipe. 4609.89

d) Add GST (multiplying factor) @ 197085.06

0.2127 on (a+b+c)

e) Contractor's profit @ 15 % on 168550.81

(a+b+c+d)

f) Add Cess @ 1.00 % on (a+b+c+d+e) 12922.23

cost of 120 cum = a+b+c+d+e+f 1305145.10

Rate per cum = (a+b+c+d+e+f)/120 10876.21

**say 10876.20**

**E. Top plug**

**(i). PCC Grade M15**

**Unit = cum**

**Taking output = 15 cum**

**a) Labour**

Mate day 0.86 391.00 336.26 L-17

Mason (1st class) day 1.50 512.00 768.00 L-15

Mazdoor(unskilled) day 17.00 391.00 6647.00 L-18

Bhisti day 3.00 391.00 1173.00 L-01

**b) Machinery**

Mechanical Concrete mixer (cap. 0.40/0.28 cum) hour 6.00 215.00 1290.00 P&M-014

Electric generator 33 KVA hour 6.00 252.00 1512.00 P&M-027

**c) Material**

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cement	tonne	4.13	6797.00	28071.61	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	8.10	4236.00	34311.60	M-023
		20 mm Aggregate	cum	4.05	4374.00	17714.70	M-022
		10 mm Aggregate	cum	1.35	4269.00	5763.15	M-020
		<b>d) Formwork @ 0.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				0.00	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				21819.26	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				18660.24	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1430.62	
		Cost for 15 cum = a+b+c+d+e+f+g				144492.43	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				9632.83	
					<b>say</b>	<b><u>9632.80</u></b>	
		<b>(ii) PCC Grade M20</b>					
		<b>Unit : cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.16	6797.00	35072.52	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
		20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
		10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
		<b>d) Formwork @ 0.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				0.00	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				23357.45	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				19975.73	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1531.47	
		Cost for 15 cum = a+b+c+d+e+f+g				154678.74	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				10311.92	
					<b>say</b>	<b><u>10311.90</u></b>	
		<b>(iii) PCC Grade M25</b>					
		<b>Case:- Using Concrete Mixer</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mechanical concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.99	6797.00	40714.03	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
		20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
		10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
		<b>d) Formwork @ 0.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				0.00	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				24557.40	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				21001.95	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1610.15	
		Cost for 15 cum = a+b+c+d+e+f+g				162625.09	
		<b>Rate per cum = ( a+b+c+d+e+f+g )/15</b>				10841.67	
						<b>say</b>	<b><u>10841.70</u></b>

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

**Unit : cum**

**Taking Output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason (1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	47.95	6797.00	325916.15	M-052
Sand	cum	54.00	740.00	39960.00	M-170
40 mm Aggregate	cum	43.20	4236.00	182995.20	M-023
20 mm Aggregate	cum	43.20	4374.00	188956.80	M-022
10 mm Aggregate	cum	21.60	4269.00	92210.40	M-020

**d) Formwork @ 0.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

cost of 120 cum = a+b+c+d+e+f+g

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

192777.67

164867.05

12639.81

1276620.51

10638.50

**say** **10638.50**

**(iv) PCC Grade M30**

**Case-I:- Using Concrete Mixer**

**Unit = cum**

**Taking output = 15 cum**

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		Bhisti	day	0.60	391.00	234.60	L-01
		<b>b) Machinery</b>					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.08	6797.00	41325.76	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	5.40	4236.00	22874.40	M-023
		20 mm Aggregate	cum	5.40	4374.00	23619.60	M-022
		10 mm Aggregate	cum	2.70	4269.00	11526.30	M-020
		<b>d) Formwork @ 0.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				0.00	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				24737.42	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				21155.90	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1621.95	
		cost of 15 cum = a+b+c+d+e+f+g				163817.19	
		<b>Rate per cum (a+b+c+d+e+f+g)/15</b>				10921.15	
					<b>say</b>	<b><u>10921.10</u></b>	

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

**Unit : cum**

**Taking Output = 120 cum**

		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason (1st calss)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	48.60	6797.00	330334.20	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		40 mm Aggregate	cum	43.20	4236.00	182995.20	M-023
		20 mm Aggregate	cum	43.20	4374.00	188956.80	M-022
		10 mm Aggregate	cum	21.60	4269.00	92210.40	M-020
		<b>d) Formwork @ 0.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				0.00	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				193717.38	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				165670.71	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				12701.42	
		cost of 120 cum = a+b+c+d+e+f+g				1282843.56	
		<b>Rate per cum (a+b+c+d+e+f+g)/120</b>				10690.36	
					<b>say</b>	<b><u>10690.40</u></b>	

**F. Well cap**

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**(i) RCC Grade M20****Case-I:- Using Concrete Mixer****Unit = cum****Taking output = 15 cum****a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason (1st calss)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell. hour 6.00 215.00 1290.00 P&M-014

Electric Electric generator 33 KVA hour 6.00 252.00 1512.00 P&M-027

**c) Material**

Cement	tonne	5.12	6797.00	34800.64	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork @ 4.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)**

4400.16

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

24333.74

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

20810.67

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

1595.48

cost of 15 cum = a+b+c+d+e+f+g

161143.95

**Rate per cum = (a+b+c+d+e+f+g)/15**

10742.93

**say 10742.90**

**Case-II:- With Batching Plant, Transit Mixer and Concrete Pump****Unit = cum****Taking output = 120 cum****a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason (1st calss)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Batching Plant @ 20 cum/hour hour 6.00 7088.00 42528.00 P&M-013

Generator 100 KVA hour 6.00 498.00 2988.00 P&M-026

Loader hour 6.00 1030.00 6180.00 P&M-030

Transit Mixer hour 15.00 883.00 13245.00 P&M-079

Concrete Pump hour 6.00 409.00 2454.00 P&M-015

**c) Material**

Admixture	kg	163.68	42.00	6874.56	M-004
Cement	tonne	40.92	6797.00	278133.24	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork @ 4.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)**

34764.85

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

192256.57

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

164421.40

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				12605.64	
		cost of 120 cum = a+b+c+d+e+f+g				1273169.70	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				10609.75	
					<b>say</b>	<b><u>10609.70</u></b>	
		<b>(ii) RCC Grade M25</b>					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell.	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.05	6797.00	41121.85	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				4362.19	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				25670.19	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				21953.62	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1683.11	
		cost of 15 cum = a+b+c+d+e+f+g				169994.23	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				11332.95	
					<b>say</b>	<b><u>11332.90</u></b>	
		<b>Case-II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason (1st calss)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture	kg	193.60	42.00	8131.20	M-004
		Cement	tonne	48.40	6797.00	328974.80	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) <b>Formwork @ 4.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				36848.78	
		e) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				203781.11	
		f) <b>Contractor's profit @ 15 % on (a+b+c+d+e)</b>				174277.40	
		g) <b>Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				13361.27	
		cost of 120 cum = a+b+c+d+e+f+g				1349487.99	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				11245.73	
					<b>say</b>	<b><u>11245.70</u></b>	
		<b>(iii) RCC Grade M30</b>					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell.	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.10	6797.00	41461.70	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) <b>Formwork @ 3.50 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				4083.27	
		e) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				25683.15	
		f) <b>Contractor's profit @ 15 % on (a+b+c+d+e)</b>				21964.71	
		g) <b>Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1683.96	
		cost of 15 cum = a+b+c+d+e+f+g				170080.05	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				11338.67	
					<b>say</b>	<b><u>11338.70</u></b>	
		<b>Case-II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason (1st calss)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>c) Material</b>					
		Admixture	kg	195.16	42.00	8196.72	M-004
		Cement	tonne	48.79	6797.00	331625.63	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork @ 3.50 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				32337.75	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				203399.38	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				173950.94	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				13336.24	
		cost of 120 cum = a+b+c+d+e+f+g				1346960.10	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				11224.67	
					<b>say</b>	<b><u>11224.70</u></b>	
		<b>(iv) RCC Grade M35</b>					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell.	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.33	6797.00	43025.01	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork @ 3.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				3546.85	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				25901.57	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				22151.50	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1698.28	
		cost of 15 cum = a+b+c+d+e+f+g				171526.47	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				11435.10	
					<b>say</b>	<b><u>11435.10</u></b>	
		<b>Case-II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason (1st calss)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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<b>b) Machinery</b>							
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
<b>c) Material</b>							
		Admixture	kg	202.56	42.00	8507.52	M-004
		Cement	tonne	50.64	6797.00	344200.08	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
<b>d) Formwork @ 3.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>						28104.63	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>						205239.69	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>						175524.80	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>						13456.90	
cost of 120 cum = a+b+c+d+e+f+g						1359147.07	
<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>						11326.23	
<b>say</b>						<b><u>11326.20</u></b>	

**(v) RCC M40 Grade  
Case-I:- Using Concrete Mixer**

**Unit = cum**

**Taking output = 15 cum**

<b>a) Labour</b>							
		Mate	day	0.92	391.00	359.72	L-17
		Mason (1st calss)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
<b>b) Machinery</b>							
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell.	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
<b>c) Material</b>							
		Cement	tonne	6.45	6797.00	43840.65	M-052
		Sand (Coarse)	cum	6.75	2887.00	19487.25	M-169
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
<b>d) Formwork @ 3.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>						4029.83	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>						29428.63	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>						25167.91	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>						1929.54	
cost of 15 cum = a+b+c+d+e+f+g						194883.53	
<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>						12992.24	
<b>say</b>						<b><u>12992.20</u></b>	

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

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason (1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	51.60	6797.00	350725.20	M-052
Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
Admixture	kg	206.00	42.00	8652.00	M-004

**d) Formwork @ 3.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)**

31782.86

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

232100.69

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

198496.83

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

15218.09

cost of 120 cum = a+b+c+d+e+f+g

1537027.10

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

12808.56

**say 12808.60**

**Note:-** Wherever concrete is carried out using batching plant, transit mixer, concrete pump, Admixtures @ 0.4 % of weight of cement has been added for achieving desired slump of concrete.

- 12.10 1200** Sinking of wells of circular shape in all kinds of soil, through all kinds of stratas and category, with or without water by all methods, other than pneumatic sinking including construction of cofferdams, wherever necessary including dressing for laying the well curbs, removal of underground snags, if any, such as logs, isolated boulders etc. encountered during sinking including use of Kentledge including supports, loading and unloading of weight etc.as per drawing and technical specification and removal of earths etc. with all lifts and lead upto 1000 m as per MoRT&H technical specification section 1200.

**Unit = Cum.**

**Taking output = 38.50 Cum**

**(Considering the external diameter of well = 7.00 m.)**

**(i) Depth below bed level upto 5.00 M**

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Rate of sinking = 0.121 m per hour.

**a) Labour**

Mate	day	0.33	391.00	129.03	L-17
Sinker (skilled)	day	2.75	512.00	1408.00	L-24
Sinking helper ( semi-skilled )	day	5.50	391.00	2150.50	L-25

**b) Machinery**

Crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.25	1036.00	8547.00	P&M-019
Consumables in sinking @10.00 % of (b)				854.70	

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

2784.08

**d) Contractor's profit @ 15 % on (a+b+c)**

2381.00

**e) Add Cess @ 1.00 % on (a+b+c+d)**

182.54

cost of 38.50 cum = a+b+c+d+e

18436.85

**Rate per cum = (a+b+c+d+e)/38.50**

478.88

**say**

**478.90**

**(ii) Depth beyond 5.00 m upto 10.00 m depth**

Rate of sinking = 0.097 m per hour.

**a) Labour**

Mate	day	0.41	391.00	160.31	L-17
Sinker (skilled)	day	3.44	512.00	1761.28	L-24
Sinking helper ( semi-skilled )	day	6.88	391.00	2690.08	L-25

**b) Machinery**

Crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.31	1036.00	10681.16	P&M-019
Air compressor with pneumatic chisel attachment	hour	3.25	361.00	1173.25	P&M-003
Consumables in sinking @10.00 % of (b)				1185.44	

**c) Add 20.00% of cost, for Kentledge including supports, loading arrangement and Labour.**

3530.30

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

4505.37

**e) Contractor's profit @ 15 % on (a+b+c+d)**

3853.08

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

295.40

cost of 38.50 cum = a+b+c+d+e+f

29835.68

**Rate per cum = (a+b+c+d+e+f)/38.50**

774.95

**say**

**775.00**

**(iii) Depth beyond 10.00 m upto 15.00 m depth**

Rate of sinking = 0.069 m per hour.

**a) Labour**

Mate	day	0.58	391.00	226.78	L-17
Sinker (skilled)	day	4.81	512.00	2462.72	L-24
Sinking helper ( semi-skilled )	day	9.63	391.00	3765.33	L-25

**b) Machinery**

Crane with grab bucket of 0.75 cum capacity and accessories.	hour	14.44	1036.00	14959.84	P&M-019
Air compressor with pneumatic chisel attachment	hour	3.25	361.00	1173.25	P&M-003
Consumables in sinking @10.00 % of (b)				1613.31	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		c) Add 30.00% of cost, for Kentledge including supports, loading arrangement and Labour.				7260.37	
		d) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				6691.88	
		e) <b>Contractor's profit @ 15 % on (a+b+c+d)</b>				5723.02	
		f) <b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				438.77	
		cost of 38.50 cum = a+b+c+d+e+f				44315.27	
		<b>Rate per cum = (a+b+c+d+e+f)/38.50</b>				1151.05	
					<b>say</b>	<b><u>1151.00</u></b>	
		<b>(iv) Depth beyond 15.00 m upto 20.00 m depth</b>					
		Rate of sinking = 0.097 m per hour.					
		<b>a) Labour</b>					
		Mate	day	0.74	391.00	289.34	L-17
		Sinker (skilled)	day	6.19	512.00	3169.28	L-24
		Sinking helper ( semi-skilled )	day	12.38	391.00	4840.58	L-25
		<b>b) Machinery</b>					
		Crane with grab bucket of 0.75 cum capacity and accessories.	hour	18.56	1036.00	19228.16	P&M-019
		Air compressor with pneumatic chisel attachment	hour	3.25	361.00	1173.25	P&M-003
		Consumables in sinking @10.00 % of (b)				2040.14	
		c) Add 50.00% of cost, for Kentledge including supports, loading arrangement and Labour.				15370.38	
		d) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				9807.84	
		e) <b>Contractor's profit @ 15 % on (a+b+c+d)</b>				8387.84	
		f) <b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				643.07	
		cost of 38.50 cum = a+b+c+d+e+f				64949.88	
		<b>Rate per cum = (a+b+c+d+e+f)/38.50</b>				1687.01	
					<b>say</b>	<b><u>1687.00</u></b>	
12.11	1200	Sinking of twin D type wells in all kinds of soil, through all strata and category, with or without water by all methods, other than pneumatic sinking including construction of cofferdams, wherever necessary including dressing for laying the well curbs, removal of underground snags, if any, such as logs, isolated boulders etc. encountered during sinking including use of Kentledge including supports, loading and unloading of weight etc.as per drawing and technical specification and removal of earths etc. with all lifts and lead upto 1000 m as per MoRT&H technical specification section 1200.					
		<b>Unit = Cum.</b>					
		<b>Taking output = 38.50 Cum</b>					
		<b>(Considering the external diameter of well = 7.00 m.)</b>					
		<b>(i) Depth below bed level upto 5.00 M</b>					
		Rate of sinking = 0.121 m per hour.					
		<b>a) Labour</b>					
		Mate	day	0.50	391.00	195.50	L-17

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Sinker (skilled)	day	4.13	512.00	2114.56	L-24
		Sinking helper ( semi-skilled )	day	8.25	391.00	3225.75	L-25
		<b>b) Machinery</b>					
		Crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.25	1036.00	8547.00	P&M-019
		Consumables in sinking @10.00 % of (b)				854.70	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				3177.21	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				2717.21	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				208.32	
		cost of 38.50 cum = a+b+c+d+e				21040.25	
		<b>Rate per cum = (a+b+c+d+e)/38.50</b>				546.50	
					<b>say</b>	<b><u>546.50</u></b>	
		<b>(ii) Depth beyond 5.00 m upto 10.00 m depth</b>					
		Rate of sinking = 0.097 m per hour.					
		<b>a) Labour</b>					
		Mate	day	0.62	391.00	242.42	L-17
		Sinker (skilled)	day	5.16	512.00	2641.92	L-24
		Sinking helper ( semi-skilled )	day	10.32	391.00	4035.12	L-25
		<b>b) Machinery</b>					
		Crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.31	1036.00	10681.16	P&M-019
		Air compressor with pneumatic chisel attachment	hour	3.25	361.00	1173.25	P&M-003
		Consumables in sinking @10.00 % of (b)				1185.44	
		<b>c) Add 20.00% of cost, for Kentledge including supports, loading arrangement and Labour.</b>				3991.86	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				5094.41	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				4356.84	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				334.02	
		cost of 38.50 cum = a+b+c+d+e+f				33736.45	
		<b>Rate per cum = (a+b+c+d+e+f)/38.50</b>				876.27	
					<b>say</b>	<b><u>876.30</u></b>	
		<b>(iii) Depth beyond 10.00 m upto 15.00 m depth</b>					
		Rate of sinking = 0.069 m per hour.					
		<b>a) Labour</b>					
		Mate	day	0.87	391.00	340.17	L-17
		Sinker (skilled)	day	7.22	512.00	3696.64	L-24
		Sinking helper ( semi-skilled )	day	14.45	391.00	5649.95	L-25
		<b>b) Machinery</b>					
		Crane with grab bucket of 0.75 cum capacity and accessories.	hour	14.44	1036.00	14959.84	P&M-019
		Air compressor with pneumatic chisel attachment	hour	3.25	361.00	1173.25	P&M-003
		Consumables in sinking @10.00 % of (b)				1613.31	
		<b>c) Add 30.00% of cost, for Kentledge including supports, loading arrangement and Labour.</b>				8229.95	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				7585.54	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Contractor's profit @ 15 % on (a+b+c+d)				6487.30	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				497.36	
		cost of 38.50 cum = a+b+c+d+e+f				50233.31	
		Rate per cum = (a+b+c+d+e+f)/38.50				1304.76	
					<b>say</b>	<b><u>1304.80</u></b>	
		<b>(iv) Depth beyond 15.00 m upto 20.00 m depth</b>					
		Rate of sinking = 0.097 m per hour.					
		<b>a) Labour</b>					
		Mate	day	1.11	391.00	434.01	L-17
		Sinker (skilled)	day	9.28	512.00	4751.36	L-24
		Sinking helper ( semi-skilled )	day	18.57	391.00	7260.87	L-25
		<b>b) Machinery</b>					
		Crane with grab bucket of 0.75 cum capacity and accessories.	hour	18.56	1036.00	19228.16	P&M-019
		Air compressor with pneumatic chisel attachment	hour	3.25	361.00	1173.25	P&M-003
		Consumables in sinking @10.00 % of (b)				2040.14	
		c) Add 50.00% of cost, for Kentledge including supports, loading arrangement and Labour.				17443.90	
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				11130.95	
		e) Contractor's profit @ 15 % on (a+b+c+d)				9519.40	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				729.82	
		cost of 38.50 cum = a+b+c+d+e+f				73711.85	
		Rate per cum = (a+b+c+d+e+f)/38.50				1914.59	
					<b>say</b>	<b><u>1914.60</u></b>	
<b>12.12</b>	<b>1200</b>	Sand Filling in Wells complete as per Drawing & MoRT&H technical specifications Clauses 1200. <b>Unit = 1 cum</b> <b>Taking output = 1 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-17
		Mazdoor (Unskilled)	day	0.30	391.00	117.30	L-18
		<b>b) Material</b>					
		Sand from local quarry (assuming 20 % voids )	cum	1.20	590.00	708.00	M-171
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				176.37	
		d) Contractor's profit @ 15 % on (a+b+c)				150.84	
		e) Add Cess @ 1.00 % on (a+b+c+d)				11.56	
		Rate per cum (a+b+c+d+e)				1167.98	
					<b>say</b>	<b><u>1168.00</u></b>	
<b>12.13</b>	<b>1200 &amp; 1900</b>	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 & MoRT&H technical specifications Clauses 1200 & 1900.  <b>Unit = 1 MT</b> <b>Taking output = 1 MT</b>					
		<b>a) Labour</b>					



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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(For cutting, bending, making holes, joining, welding and erection in position)

Mate	day	0.40	391.00	156.40	L-17
Fitter	day	5.50	447.00	2458.50	L-13
Blacksmith	day	5.50	480.00	2640.00	L-03
Welder	day	5.50	512.00	2816.00	L-27
Mazdoor (Unskilled)	day	16.50	391.00	6451.50	L-18

**b) Material**

Structural steel in plates, angles, etc including 5.00 % wastage	tonne	1.05	59530.00	62506.50	M-193
Nuts & Bolts	Kg	20.00	64.50	1290.00	M-141
Electrodes, cutting gas and other consumables @ 10.00 %				7831.89	

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

18324.27

**d) Contractor's profit @ 15 % on (a+b+c)**

15671.26

**e) Add Cess @ 1.00 % on (a+b+c+d)**

1201.46

**Rate for per MT (a+b+c+d+e)**

121347.79

**say 121347.80**

- 12.14 1100 & 1700** Bored Cast-in-Situ M-35 grade RCC pile excluding reinforcement complete as per Detailed Drawing & MoRTH technical specifications Clauses 1100, 1700 and removal of excavated earth with all lifts and lead upto 1000 m.

**A. 750 mm dia****Unit = meter****Taking output = 15 m****a) Materials**

i. Concrete Grade M35	cum	6.62	12005.50	79476.41	Item 12.9 (C) iv
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Rate for concrete adopted same as for item no. 12.9 ( C ) (IV), Case-I  
Concrete to be cast with a tremie pipe 200mm dia.

ii. Bentonite	kg	300.00	3.20	960.00	M-036
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**b) Labour**

Mate	day	0.14	391.00	54.74	L-17
Mazdoor(unskilled)	day	3.50	391.00	1368.50	L-18

**c) Machinery( for boring and construction )**

Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00	P&M-036
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Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00	P&M-020
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Front loader 1 cum bucket capacity.	hour	0.30	1030.00	309.00	P&M-030
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Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.30	374.00	112.20	P&M-073
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**d) Add GST (multiplying factor) @ 0.2127 on (a.ii+b+c)**

8398.77

**e) Contractor's profit @ 15 % on (a+b+c+d), except on a.i**

7182.78

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

550.68

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

135095.08

**Rate per metre (a+b+c+d+e+f)/15**

9006.34

**say 9006.30****B. 1000 mm dia****Unit = meter**

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Taking output = 10 m****a) Materials**

i. Concrete Grade M35	cum	7.85	12005.50	94243.18	Item 12.9 (C) iv
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Rate for concrete adopted same as for item no. 12.9 ( C ) (IV), Case-I  
Concrete to be cast with a tremie pipe 200mm dia.

ii. Bentonite	kg	350.00	3.20	1120.00	M-036
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**b) Labour**

Mate	day	0.16	391.00	62.56	L-17
Mazdoor(unskilled)	day	4.00	391.00	1564.00	L-18

**c) Machinery( for boring and construction )**

Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00	P&M-036
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Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00	P&M-020
--	------	------	--------	--------	---------

Front loader 1 cum bucket capacity.	hour	0.40	1030.00	412.00	P&M-030
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Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.40	374.00	149.60	P&M-073
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**d) Add GST (multiplying factor) @****0.2127 on (a.ii+b+c)**

8505.91

**e) Contractor's profit @ 15 % on****(a+b+c+d), except on a.i**

7274.41

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

557.70

Cost for 10 m = a+b+c+d+e+f

150571.36

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

15057.14

**say 15057.10****C. 1200 mm dia****Unit = meter****Taking output = 9 m****a) Materials**

i. Concrete Grade M35	cum	10.17	12005.50	122095.94	Item 12.9 (C) iv
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Rate for concrete adopted same as for item no. 12.9 ( C ) (IV), Case-I  
Concrete to be cast with a tremie pipe 200mm dia.

ii. Bentonite	kg	385.00	3.20	1232.00	M-036
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**b) Labour**

Mate	day	0.18	391.00	70.38	L-17
Mazdoor(unskilled)	day	4.50	391.00	1759.50	L-18

**c) Machinery( for boring and construction )**

Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00	P&M-036
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Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00	P&M-020
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Front loader 1 cum bucket capacity.	hour	0.50	1030.00	515.00	P&M-030
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Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.50	374.00	187.00	P&M-073
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**d) Add GST (multiplying factor) @****0.2127 on (a.ii+b+c)**

8602.84

**e) Contractor's profit @ 15 % on****(a+b+c+d), except on a.i**

7357.31

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

564.06

Cost for 9 m = a+b+c+d+e+f

179066.02

**Rate per metre (a+b+c+d+e+f)/9**

19896.22

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**say 19896.20**

<b>12.15</b>	<b>1100 &amp; 1700</b>	Driven Cast-in-place vertical M-35 grade RCC pile excluding reinforcement complete as per Detailed Drawing & MoRT&H technical specifications Clauses 1100, 1700. <b>A. 750 mm dia</b> <b>Unit = meter</b> <b>Taking output = 40 m</b>					
		<b>a) Materials</b>					
		i. Concrete Grade M35	cum	17.68	12005.50	212257.24	Item 12.9 (C) iv
		Rate for concrete adopted same as for item no. 12.9 ( C ) (IV), Case-I					
		Pile Shoes:-					
		ii. C.I shoes for pipe	kg	160.00	55.00	8800.00	M-051
		iii. M.S. calamps for shoe @ 35 kg per pile	kg	70.00	76.30	5341.00	M-130
		iv. Steel helmet and cushion block on top of casing head during driving	kg	50.00	71.55	3577.50	M-178
		<b>b) Labour</b>					
		Mate	day	0.12	391.00	46.92	L-17
		Mazdoor(unskilled)	day	3.00	391.00	1173.00	L-18
		<b>c) Machinery( for boring and construction )</b>					
		Piling Rig including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	5628.00	33768.00	P&M-037
		Light crane 5 t capacity for lowering reinforcement and handling steel casing	hour	0.50	560.00	280.00	P&M-020
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c), except on a.i</b>				11270.21	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d), except on a.i</b>				9638.49	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				738.95	
		Cost for 40 m = a+b+c+d+e+f					
		<b>Rate per metre (a+b+c+d+e+f)/40</b>					
						7172.28	
						<b>say <u>7172.30</u></b>	
		<b>B. 1000 mm dia</b>					
		<b>Unit = meter</b>					
		<b>Taking output = 30 m</b>					
		<b>a) Materials</b>					
		i. Concrete Grade M35	cum	23.57	12005.50	282969.64	Item 12.9 (C) iv
		Rate for concrete adopted same as for item no. 12.9 ( C ) (IV), Case-I					
		Pile Shoes:-					
		ii. C.I shoes for pipe	kg	160.00	55.00	8800.00	M-051
		iii. M.S. calamps for shoe @ 35 kg per pile	kg	70.00	76.30	5341.00	M-130
		iv. Steel helmet and cushion block on top of casing head during driving	kg	50.00	71.55	3577.50	M-178
		<b>b) Labour</b>					
		Mate	day	0.16	391.00	62.56	L-17
		Mazdoor(unskilled)	day	4.00	391.00	1564.00	L-18
		<b>c) Machinery( for boring and construction )</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Piling Rig including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	5628.00	33768.00	P&M-037
		Light crane 5 t capacity for lowering reinforcement and handling steel casing	hour	1.00	560.00	560.00	P&M-020
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c), except on a.i</b>				11416.26	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d), except on a.i</b>				9763.40	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				748.53	
		Cost for 30 m = a+b+c+d+e+f				358570.88	
		<b>Rate per metre (a+b+c+d+e+f)/30</b>				11952.36	
					<b>say</b>	<b><u>11952.40</u></b>	
		<b>C. 1200 mm dia</b>					
		<b>Unit = meter</b>					
		<b>Taking output = 20 m</b>					
		<b>a) Materials</b>					
		i. Concrete Grade M35	cum	22.63	12005.50	271684.47	Item 12.9 (C) iv
		Rate for concrete adopted same as for item no. 12.9 ( C ) (IV), Case-I					
		Pile Shoes:-					
		ii. C.I shoes for pipe	kg	160.00	55.00	8800.00	M-051
		iii. M.S. calamps for shoe @ 35 kg per pile	kg	70.00	76.30	5341.00	M-130
		iv. Steel helmet and cushion block on top of casing head during driving	kg	50.00	71.55	3577.50	M-178
		<b>b) Labour</b>					
		Mate	day	0.18	391.00	70.38	L-17
		Mazdoor(unskilled)	day	4.50	391.00	1759.50	L-18
		<b>c) Machinery( for boring and construction )</b>					
		Piling Rig including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	5628.00	33768.00	P&M-037
		Light crane 5 t capacity for lowering reinforcement and handling steel casing	hour	0.50	560.00	280.00	P&M-020
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c), except on a.i</b>				11399.95	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d), except on a.i</b>				9749.45	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				747.46	
		Cost for 20 m = a+b+c+d+e+f				347177.70	
		<b>Rate per metre (a+b+c+d+e+f)/20</b>				17358.89	
					<b>say</b>	<b><u>17358.90</u></b>	

**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.

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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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.

**12.16 1100 & 1700** Driven precast vertical M-35 grade RCC pile excluding reinforcement complete as per Detailed Drawing & MoRTH technical specifications Clauses 1100, 1700.

**A. 500 mm dia**

**Unit = meter**

**Taking output = 60 m**

**a) Materials**

i. Concrete Grade M35	cum	11.79	11435.10	134819.83	Item 12.9 (F) iv
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Rate for concrete adopted same as for item no. 12.9 ( F ) (IV). Case-I

Pile Shoes:-

ii. C.I shoes for pipe	kg	240.00	55.00	13200.00	M-051
iii. M.S. calamps for shoe	kg	105.00	76.30	8011.50	M-130
iv. Steel helmet and cushion block on top of casing head during driving	kg	30.00	71.55	2146.50	M-178

**b) Labour**

Mate	day	0.12	391.00	46.92	L-17
Mazdoor(unskilled)	day	3.00	391.00	1173.00	L-18

**c) Machinery**

Crane 20 tonne capacity	hour	6.00	1708.00	10248.00	P&M-017
Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	950.00	5700.00	P&M-081

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c), except on a.i**

8619.86

**e) Contractor's profit @ 15 % on**

**(a+b+c+d), except on a.i**

7371.87

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

565.18

Cost for 60 m = a+b+c+d+e+f

191902.66

**Rate per metre (a+b+c+d+e+f)/60**

3198.38

**say**

**3198.40**

**B. 750 mm dia**

**Unit = meter**

**Taking output = 50 m**

**a) Materials**

i. Concrete Grade M35	cum	22.10	11435.10	252715.71	Item 12.9 (F) iv
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Rate for concrete adopted same as for item no. 12.9 ( F ) (IV). Case-I

Pile Shoes:-

ii. C.I shoes for pipe	kg	160.00	55.00	8800.00	M-051
iii. M.S. calamps for shoe	kg	70.00	76.30	5341.00	M-130
iv. Steel helmet and cushion block on top of casing head during driving	kg	50.00	71.55	3577.50	M-178

**b) Labour**

Mate	day	0.16	391.00	62.56	L-17
Mazdoor(unskilled)	day	4.00	391.00	1564.00	L-18

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**c) Machinery( for boring and construction )**

Crane 20 tonne capacity	hour	6.00	1708.00	10248.00	P&M-017
Vibrating Pile driving hammer complete with power unit and accessories.	hour	1.00	950.00	950.00	P&M-081

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c), except on a.i**

6496.51

**e) Contractor's profit @ 15 % on (a+b+c+d), except on a.i**

5555.94

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

425.96

Cost for 50 m = a+b+c+d+e+f

295737.17

**Rate per metre (a+b+c+d+e+f)/50**

5914.74

**say 5914.70**

**C. 1000 mm dia**

**Unit = meter****Taking output = 40 m**

**a) Materials**

i. Concrete Grade M35	cum	31.43	11435.10	359405.19	Item 12.9 (F) iv
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Rate for concrete adopted same as for item no. 12.9 ( F ) (IV). Case-I

Pile Shoes:-

ii. C.I shoes for pipe	kg	160.00	55.00	8800.00	M-051
iii. M.S. calamps for shoe	kg	70.00	76.30	5341.00	M-130
iv. Steel helmet and cushion block on top of casing head during driving	kg	50.00	71.55	3577.50	M-178

**b) Labour**

Mate	day	0.16	391.00	62.56	L-17
Mazdoor(unskilled)	day	4.00	391.00	1564.00	L-18

**c) Machinery( for boring and construction )**

Crane 20 tonne capacity	hour	6.00	1708.00	10248.00	P&M-017
Vibrating Pile driving hammer complete with power unit and accessories.	hour	0.50	950.00	475.00	P&M-081

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c), except on a.i**

6395.48

**e) Contractor's profit @ 15 % on (a+b+c+d), except on a.i**

5469.53

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

419.33

Cost for 40 m = a+b+c+d+e+f

401757.59

**Rate per metre (a+b+c+d+e+f)/40**

10043.94

**say 10043.90**

**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.

**12.17 1100&1 700** Driven precast vertical M-35 grade RCC pile excluding reinforcement complete as per detailed Drawing & MoRT&H technical specifications Clauses 1100, 1700.

**A. 300 mm x 300 mm**

**Unit = meter****Taking output = 60 m**

**a) Materials**

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.	
		i. Concrete Grade M35	cum	5.40	11435.10	61749.54	Item 12.9 (F) iv	
		Rate for concrete adopted same as for item no. 12.9 ( F ) (IV). Case-I						
		Pile Shoes:-						
		ii. C.I shoes for pipe	kg	240.00	55.00	13200.00	M-051	
		iii. M.S. calamps for shoe	kg	105.00	76.30	8011.50	M-130	
		iv. Steel helmet and cushion block on top of casing head during driving	kg	30.00	71.55	2146.50	M-178	
		<b>b) Labour</b>						
		Mate	day	0.12	391.00	46.92	L-17	
		Mazdoor(unskilled)	day	3.00	391.00	1173.00	L-18	
		<b>c) Machinery( for boring and construction )</b>						
		Crane 20 tonne capacity	hour	6.00	1708.00	10248.00	P&M-017	
		Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	950.00	5700.00	P&M-081	
		Add 1.00 % of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				405.26		
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c), except on a.i</b>				8706.06		
		<b>e) Contractor's profit @ 15 % on (a+b+c+d), except on a.i</b>				7445.59		
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				570.83		
		Cost for 60 m = a+b+c+d+e+f				119403.20		
		<b>Rate per metre (a+b+c+d+e+f)/60</b>				1990.05		
					<b>say</b>	<b><u>1990.10</u></b>		

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**B. 500 mm x 500 mm***Unit = meter**Taking output = 50 m***a) Materials**

i. Concrete Grade M35	cum	12.50	11435.10	142938.75	Item 12.9 (F) iv
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Rate for concrete adopted same as for item no. 12.9 ( F ) (IV). Case-I

Pile Shoes:-

ii. C.I shoes for pipe	kg	160.00	55.00	8800.00	M-051
iii. M.S. calamps for shoe	kg	70.00	76.30	5341.00	M-130
iv. Steel helmet and cushion block on top of casing head during driving	kg	30.00	71.55	2146.50	M-178

**b) Labour**

Mate	day	0.16	391.00	62.56	L-17
Mazdoor(unskilled)	day	4.00	391.00	1564.00	L-18

**c) Machinery( for boring and construction )**

Crane 20 tonne capacity	hour	6.00	1708.00	10248.00	P&M-017
Vibrating Pile driving hammer complete with power unit and accessories.	hour	1.00	950.00	950.00	P&M-081

Add 1 .00 % of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.

**d) Add GST (multiplying factor) @****0.2127 on (a+b+c), except on a.i**

6254.06

**e) Contractor's profit @ 15 % on****(a+b+c+d), except on a.i**

5348.59

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

410.06

Cost for 50 m = a+b+c+d+e+f

184354.63

**Rate per metre (a+b+c+d+e+f)/50**

3687.09

**say 3687.10****C. 750 mm x 750 mm***Unit = meter**Taking output = 40 m***a) Materials**

i. Concrete Grade M35	cum	22.50	11435.10	257289.75	Item 12.9 (F) iv
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Rate for concrete adopted same as for item no. 12.9 ( F ) (IV). Case-I

Pile Shoes:-

ii. C.I shoes for pipe	kg	160.00	55.00	8800.00	M-051
iii. M.S. calamps for shoe	kg	70.00	76.30	5341.00	M-130
iv. Steel helmet and cushion block on top of casing head during driving	kg	30.00	71.55	2146.50	M-178

**b) Labour**

Mate	day	0.18	391.00	70.38	L-17
Mazdoor(unskilled)	day	4.50	391.00	1759.50	L-18

**c) Machinery( for boring and construction )**

Crane 20 tonne capacity	hour	6.00	1708.00	10248.00	P&M-017
Vibrating Pile driving hammer complete with power unit and accessories.	hour	0.50	950.00	475.00	P&M-081

Add 1 .00 % of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.



**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c), except on a.i				6195.69	
		e) Contractor's profit @ 15 % on (a+b+c+d), except on a.i				5298.67	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				406.23	
		Cost for 40 m = a+b+c+d+e+f				298319.13	
		<b>Rate per metre (a+b+c+d+e+f)/40</b>				7457.98	
					<b>say</b>	<b><u>7458.00</u></b>	

**Note:-** The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.

**12.18** 1100, 1900 Driven vertical steel piles complete as per detailed Drawing & MoRTH technical specifications Clauses 1100, 1900.

**A. 400 x 250 mm, H Section steel column (ISHB Series)**

**Unit = Running Meter**

**Taking output = 70 m**

**a) Labour**

Mate	day	0.12	391.00	46.92	L-17
Mazdoor(unskilled)	day	3.00	391.00	1173.00	L-18

**b) Machinery**

Crane 20 tonne capacity	hour	6.00	1708.00	10248.00	P&M-017
Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	950.00	5700.00	P&M-081

**c) Materials**

Structural steel including 5 per cent wastage @ 82.20 kg/m	tonnes	6.04	59530.00	359561.20	M-193
Add 0.5 per cent of (a+b+c) for providing steel helmet on top of pile head during driving, stacking of piles at site, providing anti-corrosion treatment and other imponderables during installation.				1797.81	

d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)

80512.68

e) Contractor's profit @ 15 % on (a+b+c+d)

68855.94

f) Add Cess @ 1.00 % on (a+b+c+d+e)

5278.96

Cost for 70 m = a+b+c+d+e+f

533174.50

**Rate per metre (a+b+c+d+e+f)/70**

7616.78

**say**

**7616.80**

**B. 450 x 250 mm, H Section steel column (ISHB Series)**

**Unit = Running Meter**

**Taking output = 60 m**

**a) Labour**

Mate	day	0.14	391.00	54.74	L-17
Mazdoor(unskilled)	day	3.50	391.00	1368.50	L-18

**b) Machinery**

Crane 20 tonne capacity	hour	6.00	1708.00	10248.00	P&M-017
Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	950.00	5700.00	P&M-081

**c) Materials**

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Structural steel including 5 per cent wastage @ 82.20 kg/m	tonnes	5.83	59530.00	347059.90	M-193
		Add 0.5 per cent of (a+b+c) for providing steel helmet on top of pile head during driving, stacking of piles at site, providing anti-corrosion treatment and other imponderables during installation.				1735.30	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				77883.60	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				66607.51	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				5106.58	
		Cost for 60 m = a+b+c+d+e+f				515764.12	
		<b>Rate per metre (a+b+c+d+e+f)/60</b>				8596.07	
					<b>say</b>	<b><u>8596.10</u></b>	
<b>12.19</b>	<b>1100</b>	<b>Pile Load Test on single Vertical Pile in accordance with IS:2911(Part-IV)</b>					
		<b>Unit = 1 MT</b>					
		<b>Taking output = 1 MT</b>					
		a) Initial and routine load test	tonne	1.00		770.00	
		b) Lateral load test	tonne	1.00		12430.00	
		<b>Note:-</b> 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.					
<b>12.20</b>	<b>1100, 1500 &amp;1700</b>	Reinforced cement concrete in pile cap complete as per drawings & MoRT&H technical specifications Clauses 1100, 1500, 1700. (including centering shuttering, staging etc. but excluding reinforcement)					
		<b>(i) RCC Grade M20</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.12	6797.00	34800.64	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork @ 4.00 % on cost of concrete i.e. cost of a)Material, b)Labour and c)Machinery</b>				4416.42	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				24423.69	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				20887.60	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1601.38	
		Cost for 15 cum = a+b+c+d+e+f+g				161739.64	
		<b>Rate per metre (a+b+c+d+e+f+g)/15</b>				10782.64	
					<b>say</b>	<b><u>10782.60</u></b>	
<b>Case-II:- With Batching Plant, Transit Mixer and Concrete Pump</b>							
<b>Unit = cum</b>							
<b>Taking output = 15 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.16	391.00	62.56	L-17
		Mason(1st calss)	day	0.38	512.00	194.56	L-15
		Mazdoor(unskilled)	day	2.50	391.00	977.50	L-18
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	391.00	391.00	L-18
<b>b) Machinery</b>							
		Batching Plant @ 20 cum/hour	hour	0.75	7088.00	5316.00	P&M-013
		Generator 100 KVA	hour	0.75	498.00	373.50	P&M-026
		Loader	hour	0.75	1030.00	772.50	P&M-030
		Transit Mixer	hour	2.00	883.00	1766.00	P&M-079
		Concrete Pump	hour	0.75	409.00	306.75	P&M-015
<b>c) Material</b>							
		Cement	tonne	5.12	6797.00	34800.64	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork @ 4.00 % on cost of concrete i.e. cost of a)Material, b)Labour and c)Machinery</b>				4337.52	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				23987.36	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				20514.43	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1572.77	
		Cost for 15 cum = a+b+c+d+e+f+g				158850.09	
		<b>Rate per metre (a+b+c+d+e+f+g)/15</b>				10590.01	
					<b>say</b>	<b><u>10590.00</u></b>	
<b>(ii) RCC Grade M25</b>							
<b>Unit = cum</b>							
<b>Taking output = 15 cum</b>							
<b>Case-I:- Using Concrete Mixer</b>							
<b>a) Labour</b>							
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	391.00	391.00	L-18
<b>b) Machinery</b>							
		Mechanical concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
<b>c) Material</b>							
		Cement	tonne	5.99	6797.00	40714.03	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork @ 4.00 % on cost of concrete i.e. cost of a)Material, b)Labour and c)Machinery</b>				4652.96	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				25731.78	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				22006.30	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				1687.15	
		Cost for 15 cum = a+b+c+d+e+f+g				170402.12	
		Rate per metre (a+b+c+d+e+f+g)/15				11360.14	
					<b>say</b>	<b><u>11360.10</u></b>	
<b>Case-II:- With Batching Plant, Transit Mixer and Concrete Pump</b>							
<i>Unit = cum</i>							
<i>Taking output = 15 cum</i>							
<b>a) Labour</b>							
		Mate	day	0.16	391.00	62.56	L-17
		Mason(1st calss)	day	0.38	512.00	194.56	L-15
		Mazdoor(unskilled)	day	2.50	391.00	977.50	L-18
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	391.00	391.00	L-18
<b>b) Machinery</b>							
		Batching Plant @ 20 cum/hour	hour	0.75	7088.00	5316.00	P&M-013
		Generator 100 KVA	hour	0.75	498.00	373.50	P&M-026
		Loader	hour	0.75	1030.00	772.50	P&M-030
		Transit Mixer	hour	2.00	883.00	1766.00	P&M-079
		Concrete Pump	hour	0.75	409.00	306.75	P&M-015
<b>c) Material</b>							
		Cement	tonne	5.99	6797.00	40714.03	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) Formwork @ 4.00 % on cost of concrete i.e. cost of a)Material, b)Labour and c)Machinery				4574.06	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				25295.44	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				21633.14	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				1658.54	
		Cost for 15 cum = a+b+c+d+e+f+g				167512.58	
		Rate per metre (a+b+c+d+e+f+g)/15				11167.51	
					<b>say</b>	<b><u>11167.50</u></b>	
<b>(iii) RCC Grade M30</b>							
<i>Unit = cum</i>							
<i>Taking output = 15 cum</i>							
<b>Case-I:- Using Concrete Mixer</b>							
<b>a) Labour</b>							
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	391.00	391.00	L-18
<b>b) Machinery</b>							
		Mechanical concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
<b>c) Material</b>							
		Cement	tonne	6.10	6797.00	41461.70	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) Formwork @ 4.00 % on cost of concrete i.e. cost of a)Material, b)Labour and c)Machinery				4682.86	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				25897.17	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				22147.75	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				1697.99	
		Cost for 15 cum = a+b+c+d+e+f+g				171497.38	
		Rate per metre (a+b+c+d+e+f+g)/15				11433.16	
					<b>say</b>	<b><u>11433.20</u></b>	
		<b>Case-II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.16	391.00	62.56	L-17
		Mason(1st calss)	day	0.38	512.00	194.56	L-15
		Mazdoor(unskilled)	day	2.50	391.00	977.50	L-18
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	0.75	7088.00	5316.00	P&M-013
		Generator 100 KVA	hour	0.75	498.00	373.50	P&M-026
		Loader	hour	0.75	1030.00	772.50	P&M-030
		Transit Mixer	hour	2.00	883.00	1766.00	P&M-079
		Concrete Pump	hour	0.75	409.00	306.75	P&M-015
		<b>c) Material</b>					
		Cement	tonne	6.10	6797.00	41461.70	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) Formwork @ 4.00 % on cost of concrete i.e. cost of a)Material, b)Labour and c)Machinery				4603.96	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				25460.84	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				21774.58	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				1669.38	
		Cost for 15 cum = a+b+c+d+e+f+g				168607.83	
		Rate per metre (a+b+c+d+e+f+g)/15				11240.52	
					<b>say</b>	<b><u>11240.50</u></b>	
		<b>(i) RCC Grade M35</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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<b>c) Material</b>								
		Cement	tonne	6.33	6797.00	43025.01	M-052	
		Sand	cum	6.75	740.00	4995.00	M-170	
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022	
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020	
		<b>d) Formwork @ 4.00 % on cost of concrete</b>				4745.40		
		i.e. cost of a)Material, b)Labour and						
		c)Machinery						
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>					26242.99	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>					22443.49	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>					1720.67	
		Cost for 15 cum = a+b+c+d+e+f+g					173787.46	
		<b>Rate per metre (a+b+c+d+e+f+g)/15</b>					11585.83	
					<b>say</b>	<b><u>11585.80</u></b>		

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

**Unit = cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.16	391.00	62.56	L-17
Mason(1st calss)	day	0.38	512.00	194.56	L-15
Mazdoor(unskilled)	day	2.50	391.00	977.50	L-18
Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	391.00	391.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	0.75	7088.00	5316.00	P&M-013
Generator 100 KVA	hour	0.75	498.00	373.50	P&M-026
Loader	hour	0.75	1030.00	772.50	P&M-030
Transit Mixer	hour	2.00	883.00	1766.00	P&M-079
Concrete Pump	hour	0.75	409.00	306.75	P&M-015

**c) Material**

Cement	tonne	6.33	6797.00	43025.01	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork @ 4.00 % on cost of concrete**

i.e. cost of a)Material, b)Labour and

c)Machinery

**e) Add GST (multiplying factor) @**

**0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on**

**(a+b+c+d+e)**

**g) Add Cess @ 1.00 % on**

**(a+b+c+d+e+f)**

Cost for 15 cum = a+b+c+d+e+f+g

**Rate per metre (a+b+c+d+e+f+g)/15**

**say 11393.20**

**12.21 1100, 1700 Levelling Course for Pile cap**

Providing and laying of PCC M15 levelling course 100 mm thick below the pile cap. (including centering, shuttering, staging etc. but excluding reinforcement)

**Unit = cum**

**Taking output = 15 cum**

**Case-I:- Using Concrete Mixer**

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	3.00	391.00	1173.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer (cap. 0.40/0.28 cum) fitted with water measuring device & preferably also with load cell.	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	4.13	6797.00	28071.61	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Aggregate	cum	8.10	4236.00	34311.60	M-023
		20 mm Aggregate	cum	4.05	4374.00	17714.70	M-022
		10 mm Aggregate	cum	1.35	4269.00	5763.15	M-020
		<b>d) Formwork @ 0.00 % on cost of concrete i.e. cost of a)Material, b)Labour and c)Machinery</b>				0.00	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				21819.26	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				18660.24	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1430.62	
		Cost for 15 cum = a+b+c+d+e+f+g				144492.43	
		<b>Rate per cum (a+b+c+d+e+f+g)/15</b>				9632.83	
					<b>say</b>	<b><u>9632.80</u></b>	
<b>12.22</b>	<b>1600</b>	Supplying, fitting & placing uncoated Mild steel reinforcement in foundation complete as per drawings & MoRT&H technical specifications Clauses 1600. <b>Unit = 1 MT</b> <b>Taking output = 1 MT</b>					
		<b>a) Material</b>					
		MS bars including 5 per cent overlaps and wastage	tonne	1.05	57000.00	59850.00	M-180
		Binding wire	Kg	6.00	69.00	414.00	M-039
		<b>b) Labour for cutting, bending, shifting to site, tying and placing in position</b>					
		Mate	day	0.28	391.00	109.48	L-17
		Blacksmith	day	1.50	480.00	720.00	L-03
		Mazdoor(unskilled)	day	5.50	391.00	2150.50	L-18
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				13451.99	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				11504.40	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				882.00	
		<b>Rate for per MT (a+b+c+d+e)</b>				89082.37	
					<b>say</b>	<b><u>89082.40</u></b>	
<b>12.23</b>	<b>1100 &amp; 1700</b>	Bored Cast-in-Situ M-30 grade RCC pile excluding reinforcement complete as per Detailed Drawing & MoRT&H technical specifications Clauses 1100, 1700 and removal of excavated earth with all lifts and lead upto 1000 m.					

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
<b>A. 750 mm dia</b>							
<i>Unit = meter</i>							
<i>Taking output = 15 m</i>							
<b>a) Materials</b>							
		i. Concrete Grade M30	cum	6.62	11864.80	78544.98	Item 12.9 (C) iii
Rate for concrete adopted same as for item no. 12.9 ( C ) (III), Case-I							
		ii. Bentonite	kg	300.00	3.20	960.00	M-036
<b>b) Labour</b>							
		Mate	day	0.14	391.00	54.74	L-17
		Mazdoor(unskilled)	day	3.50	391.00	1368.50	L-18
<b>c) Machinery( for boring and construction )</b>							
		Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00	P&M-036
		Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00	P&M-020
		Front loader 1 cum bucket capacity.	hour	0.30	1030.00	309.00	P&M-030
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.30	374.00	112.20	P&M-073
<b>d) Add GST (multiplying factor) @ 0.2127 on (a.ii+b+c)</b>						8398.77	
<b>e) Contractor's profit @ 15 % on (a.ii+b+c+d)</b>						7182.78	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						550.68	
Cost for 15 m = a+b+c+d+e+f						134163.64	
<b>Rate per metre (a+b+c+d+e+f)/15</b>						8944.24	
						<b>say</b>	<b><u>8944.20</u></b>
<b>B. 1000 mm dia</b>							
<i>Unit = meter</i>							
<i>Taking output = 10 m</i>							
<b>a) Materials</b>							
		i. Concrete Grade M30	cum	7.85	11864.80	93138.68	Item 12.9 (C) iii
Rate for concrete adopted same as for item no. 12.9 ( C ) (III), Case-I							
		ii. Bentonite	kg	350.00	3.20	1120.00	M-036
<b>b) Labour</b>							
		Mate	day	0.16	391.00	62.56	L-17
		Mazdoor(unskilled)	day	4.00	391.00	1564.00	L-18
<b>c) Machinery( for boring and construction )</b>							
		Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00	P&M-036
		Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00	P&M-020
		Front loader 1 cum bucket capacity.	hour	0.40	1030.00	412.00	P&M-030
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.40	374.00	149.60	P&M-073
<b>d) Add GST (multiplying factor) @ 0.2127 on (a.ii+b+c)</b>						8505.91	
<b>e) Contractor's profit @ 15 % on (a.ii+b+c+d)</b>						7274.41	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						557.70	
Cost for 10 m = a+b+c+d+e+f						149466.86	
<b>Rate per metre (a+b+c+d+e+f)/10</b>						14946.69	
						<b>say</b>	<b><u>14946.70</u></b>



**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**C. 1200 mm dia****Unit = meter****Taking output = 9 m****a) Materials**

i. Concrete Grade M30	cum	10.17	11864.80	120665.02	Item 12.9 (C) iii
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Rate for concrete adopted same as for item no. 12.9 ( C ) (III), Case-I

ii. Bentonite	kg	385.00	3.20	1232.00	M-036
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**b) Labour**

Mate	day	0.18	391.00	70.38	L-17
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Mazdoor(unskilled)	day	4.50	391.00	1759.50	L-18
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**c) Machinery( for boring and construction )**

Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00	P&M-036
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Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00	P&M-020
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Front loader 1 cum bucket capacity.	hour	0.50	1030.00	515.00	P&M-030
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Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.50	374.00	187.00	P&M-073
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**d) Add GST (multiplying factor) @****0.2127 on (a.ii+b+c)**

8602.84

**e) Contractor's profit @ 15 % on****(a.ii+b+c+d)**

7357.31

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

564.06

Cost for 9 m = a+b+c+d+e+f

177635.10

**Rate per metre (a+b+c+d+e+f)/9**

19737.23

**say 19737.20**

**12.24 1600** Supplying, fitting & placing Thermo-Mechanically treated bar/ Cold twisted deformed steel bar reinforcement in foundation complete as per drawings & MoRT&H technical specifications Clauses 1600.

**Unit = 1 MT****Taking output = 1 MT****a) Material**

Steel bars including 5 per cent overlaps and wastage	tonne	1.05	58000.00	60900.00	M-181
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Binding wire	Kg	6.00	69.00	414.00	M-039
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**b) Labour for cutting, bending, shifting to site, tying and placing in position**

Mate	day	0.40	391.00	156.40	L-17
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Blacksmith	day	2.00	480.00	960.00	L-03
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Mazdoor(unskilled)	day	6.00	391.00	2346.00	L-18
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**c) Add GST (multiplying factor) @****0.2127 on (a+b)**

13777.94

**d) Contractor's profit @ 15 % on****(a+b+c)**

11783.15

**e) Add Cess @ 1.00 % on (a+b+c+d)**

903.37

Rate for per MT (a+b+c+d+e)

91240.87

**say 91240.90**

**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE (i.e. LOCALLY AVAILABLE MATERIALS)**

**CHAPTER-12  
FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
12.25	2100	<b>PCC 1:3:6 (using jhama brick aggregate) in Foundation</b> Plain cement concrete 1:3:6 nominal mix in foundation (using jhama brick aggregate) 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days as per drawings & MoRTH technical specifications Clauses 2100. (including centering, shuttering, staging etc. but excluding reinforcement).					
		<b>Unit = cum</b> <b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.60	391.00	234.60	L-17
		Mason (1st calss)	day	1.00	512.00	512.00	L-15
		Mazdoor(unskilled)	day	12.00	391.00	4692.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Mechanical concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		Water tanker 6 KL capacity	hour	2.00	224.00	448.00	P&M-084
		<b>c) Material</b>					
		cement	tonne	3.45	6797.00	23449.65	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Jhama brick aggregate	cum	13.50	3417.00	46129.50	M-214
		Cost of water	KL	18.00	133.00	2394.00	M-196
		<b>d) Formawork @ 4.00 % on cost of material, labour &amp; machinery (on a+b+c)</b>				3473.19	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				19207.44	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				16426.56	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1259.37	
		Cost for 15 cum = a+b+c+d+e+f+g				127196.30	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				8479.75	
					<b>say</b>	<b><u>8479.80</u></b>	
12.26	1500, 1700 & 2100	Plain / Reinforced cement concrete (using jhama brick aggregate) in open foundation as per drawings & MoRTH technical specifications Clauses 1500, 1700, 2100 (including centering, shuttering, staging etc. but excluding reinforcement).					
		<b>A. PCC Grade M15 (using jhama brick aggregate)</b> <b>Unit = cum</b> <b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Mechanical Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cement	tonne	4.13	6797.00	28071.61	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Jhama brick aggregate	cum	8.10	3417.00	27677.70	M-214
		20 mm Jhama brick aggregate	cum	4.05	3917.00	15863.85	M-213
		10 mm Jhama brick aggregate	cum	1.35	3841.00	5185.35	M-212
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>6235.00</b>			
		<b>d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				3740.79	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				20687.32	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				17692.18	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1356.40	
		Cost for 15 cum = a+b+c+d+e+f+g				136996.47	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				9133.10	
					<b>say</b>	<b><u>9133.10</u></b>	
		<b>B. PCC Grade M20 (using jhama brick aggregate)</b>					
		<b>Unit : cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.16	6797.00	35072.52	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Jhama brick aggregate	cum	5.40	3417.00	18451.80	M-213
		20 mm Jhama brick aggregate	cum	5.40	3917.00	21151.80	M-212
		10 mm Jhama brick aggregate	cum	2.70	3841.00	10370.70	M-020
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>6785.00</b>			
		<b>d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				4070.72	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				22511.91	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				19252.61	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1476.03	
		Cost for 15 cum = a+b+c+d+e+f+g				149079.36	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				9938.62	
					<b>say</b>	<b><u>9938.60</u></b>	

**12.27 1200,** Plain / Reinforced cement concrete (using  
**1500 &** jhama brick aggregate ) in well foundation as  
**1700** per drawings & MoRTH technical specifications Clauses 1200, 1500, 1700(including centering, shuttering, staging etc. but excluding reinforcement.

**A. Well steining**

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FOUNDATIONS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**(i) PCC M15 Grade (using jhama brick aggregate)**

Same as for 12.27 (A) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.

Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)	6235.00
d) formwork @ 10 per cent of the cost of concrete	623.50
e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)	1458.80
f) Contractor's profit @ 15 % on (a+b+c+d+e)	1247.60
g) Add Cess @ 1.00 % on (a+b+c+d+e+f)	95.65
<b>Rate perm (a+b+c+d+e+f+g)</b>	<b>9660.55</b>
<b>say</b>	<b><u>9660.50</u></b>

**(ii) PCC M20 Grade (using jhama brick aggregate)**

Same as for 12.27 (B) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.

Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)	6785.00
d) formwork @ 10 per cent of the cost of concrete	678.50
e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)	1587.49
f) Contractor's profit @ 15 % on (a+b+c+d+e)	1357.65
g) Add Cess @ 1.00 % on (a+b+c+d+e+f)	104.09
<b>Rate perm (a+b+c+d+e+f+g)</b>	<b>10512.72</b>
<b>say</b>	<b><u>10512.70</u></b>

**B. Intermediate plug**

**(i) PCC Grade M20 (using jhama brick aggregate)**

**Case -I:- Using Concrete Mixer**

**Unit = cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor (unskilled)	day	17.00	391.00	6647.00	L-18
Bhisti	day	3.00	391.00	1173.00	L-01

**b) Machinery**

Mechanical concrete mixer (capacity 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	560.00	3360.00	P&M-020

**c) Material**

Cement	tonne	5.55	6797.00	37723.35	M-052
Sand	cum	6.75	740.00	4995.00	M-170
40 mm Jhama brick aggregate	cum	5.40	3417.00	18451.80	M-214
20 mm Jhama brick aggregate	cum	5.40	3917.00	21151.80	M-213
10 mm Jhama brick aggregate	cum	2.70	3841.00	10370.70	M-212
Admixture	Kg	18.60	42.00	781.20	M-004

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Add 0.50 % towards cost of making arrangement for concreting with tremie pipe.				542.80	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				23206.19	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				19846.36	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1521.55	
		cost of 15 cum = a+b+c+d+e+f				153677.02	
		<b>Rate per cum = (a+b+c+d+e+f)/15</b>				10245.13	
					<b>say</b>	<b><u>10245.10</u></b>	
		<b>C. Top plug</b>					
		<b>(i). PCC Grade M15 (using jhama brick aggregate)</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Mechanical Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	4.13	6797.00	28071.61	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		40 mm Jhama brick aggregate	cum	8.10	3417.00	27677.70	M-214
		20 mm Jhama brick aggregate	cum	4.05	3917.00	15863.85	M-213
		10 mm Jhama brick aggregate	cum	1.35	3841.00	5185.35	M-212
		<b>d) Formwork @ 0.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				0.00	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				19891.66	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				17011.71	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1304.23	
		Cost for 15 cum = a+b+c+d+e+f+g				131727.37	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				8781.82	
					<b>say</b>	<b><u>8781.80</u></b>	
		<b>(ii) PCC Grade M20 (using jhama brick aggregate)</b>					
		<b>Unit : cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason (1st calss)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	17.00	391.00	6647.00	L-18
		Bhisti	day	3.00	391.00	1173.00	L-01
		<b>b) Machinery</b>					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
		Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.16	6797.00	35072.52	M-052
		Sand	cum	6.75	740.00	4995.00	M-170

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		40 mm Jhama brick aggregate	cum	5.40	3417.00	18451.80	M-214
		20 mm Jhama brick aggregate	cum	5.40	3917.00	21151.80	M-213
		10 mm Jhama brick aggregate	cum	2.70	3841.00	10370.70	M-212
		<b>d) Formwork @ 0.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				0.00	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				21646.07	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				18512.12	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1419.26	
		Cost for 15 cum = a+b+c+d+e+f+g				143345.54	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				9556.37	
					<b>say</b>	<b><u>9556.40</u></b>	

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**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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- 13.1 1300 & 2200** Brick Masonry(1st Class) work in cement mortar in substructure complete excluding pointing & plastering, as per drawing & MoRT&H technical specification Clauses 1300, 2200.

**I. In 1:3 Cement Mortar**

**Unit = cum**

**Taking output = 1 cum**

**a) Material**

Bricks 1st class	each	380.00	12.20	4636.00	M-049
Cement mortar 1:3 (Rate as in Item 12.5 B sub-analysis)	cum	0.24	4642.30	1114.15	Item 12.5 B sub-analysis

**b) Labour**

Mate	day	0.10	391.00	39.10	L-17
Mason(1st Class)	day	0.80	512.00	409.60	L-15
Mazdoor(unskilled)	day	1.60	391.00	625.60	L-18
Bhisti	day	0.20	391.00	78.20	L-01

Add for scaffolding @ 5.00 % of cost of material and labour 345.13

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** 1541.60

**d) Contractor's profit @ 15 % on (a+b+c)** 1318.41

**e) Add Cess @ 1.00 % on (a+b+c+d)** 101.08

**Rate per cum (a+b+c+d+e)** 10208.87  
**say 10208.90**

**II. In 1:4 Cement Mortar**

**Unit = cum**

**Taking output = 1 cum**

**a) Material**

Bricks 1st class	each	380.00	12.20	4636.00	M-049
Cement mortar 1:4 (Rate as in Item 12.5 C sub-analysis)	cum	0.24	3946.40	947.14	Item 12.5 C sub-analysis

**b) Labour**

Mate	day	0.10	391.00	39.10	L-17
Mason(1st Class)	day	0.80	512.00	409.60	L-15
Mazdoor(unskilled)	day	1.60	391.00	625.60	L-18
Bhisti	day	0.20	391.00	78.20	L-01

Add for scaffolding @ 5.00 % of cost of material and labour 336.78

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** 1504.30

**d) Contractor's profit @ 15 % on (a+b+c)** 1286.51

**e) Add Cess @ 1.00 % on (a+b+c+d)** 98.63

**Rate per cum (a+b+c+d+e)** 9961.86  
**say 9961.90**

- 13.2 1300 & 2200** Pointing with cement mortar on brickwork in substructure as per drawing & MoRT&H technical specification Clauses 1300, 2200.

**I. In 1:3 Cement Mortar**

**Unit = Sqm**

**Taking output = 10 sqm**

**a) Material**

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**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cement mortar 1:3 (Rate as in Item 12.5 B sub-analysis)	cum	0.03	4642.30	139.27	Item 12.5 B sub-analysis
		<b>b) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mason(1st Class)	day	0.50	512.00	256.00	L-15
		Mazdoor(unskilled)	day	0.50	391.00	195.50	L-18
		Bhisti	day	0.20	391.00	78.20	L-01
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				145.62	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				124.53	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				9.55	
		<b>Rate per 10 sqm (a+b+c+d+e)</b>				964.31	
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				96.43	
					<b>say</b>	<b><u>96.40</u></b>	
		<b>II. In 1:4 Cement Mortar</b>					
		<i>Unit = Sqm</i>					
		<i>Taking output = 10 sqm</i>					
		<b>a) Material</b>					
		Cement mortar 1:4 (Rate as in Item 12.5 C sub-analysis)	cum	0.03	3946.40	118.39	Item 12.5 C sub-analysis
		<b>b) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mason(1st Class)	day	0.50	512.00	256.00	L-15
		Mazdoor(unskilled)	day	0.50	391.00	195.50	L-18
		Bhisti	day	0.20	391.00	78.20	L-01
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				141.18	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				120.74	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				9.26	
		<b>Rate per 10 sqm (a+b+c+d+e)</b>				934.90	
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				93.49	
					<b>say</b>	<b><u>93.50</u></b>	
		<b>Note:-</b> Scaffolding is already included in item 13.1					
<b>13.3</b>	<b>1300 &amp; 2200</b>	Plastering with cement mortar 15 mm thick on brickwork in substructure as per MoRT&H technical specification Clauses 1300 & 2200.					
		<b>I. In 1:3 Cement Mortar</b>					
		<i>Unit = 10 sqm</i>					
		<i>Taking output = 10 sqm</i>					
		<b>a) Material</b>					
		Cement mortar 1:3 (Rate as in Item 12.5 B sub-analysis)	cum	0.24	4642.30	1114.15	Item 12.5 B sub-analysis
		<b>b) Labour</b>					
		Mate	day	0.06	391.00	23.46	L-17
		Mason(1st Class)	day	0.60	512.00	307.20	L-15
		Mazdoor(unskilled)	day	0.60	391.00	234.60	L-18
		Bhisti	day	0.30	391.00	117.30	L-01
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				382.16	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				326.83	



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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e) Add Cess @ 1.00 % on (a+b+c+d) 25.06

Rate per 10 sqm (a+b+c+d+e) 2530.76

Rate per sqm (a+b+c+d+e)/10 253.08

**say 253.10**

**II. In 1:4 Cement Mortar**

**Unit = Sqm**

**Taking output = 10 sqm**

**a) Material**

Cement mortar 1:4 (Rate as in Item 12.5 C sub-analysis)	cum	0.24	3946.40	947.14	Item 12.5 C sub-analysis
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**b) Labour**

Mate	day	0.06	391.00	23.46	L-17
Mason(1st Class)	day	0.60	512.00	307.20	L-15
Mazdoor(unskilled)	day	0.60	391.00	234.60	L-18
Bhisti	day	0.30	391.00	117.30	L-01

c) Add GST (multiplying factor) @ 0.2127 on (a+b) 346.64

d) Contractor's profit @ 15 % on (a+b+c) 296.45

e) Add Cess @ 1.00 % on (a+b+c+d) 22.73

Rate per 10 sqm (a+b+c+d+e) 2295.51

Rate per sqm = (a+b+c+d+e)/10 229.55

**say 229.60**

**Note:-** Scaffolding is already included in item 13.1

**13.4 1500, 1700 & 2200** Plain/reinforced cement concrete in substructure complete including formwork as per drawings & MoRT&H technical specification Clauses 1500, 1700, 2200. (including centering, shuttering, staging etc. but excluding reinforcement)

**Unit = cum**

**Taking output = 1 cum**

**(i) PCC M15 Grade (Upto 5m height)**

**Case-I:- Using Concrete Mixer**

Same as Item 12.6 (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.

a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (A)	6839.00	Item 12.6 (A)
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d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c) 683.90

e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d) 1600.12

f) Contractor's profit @ 15 % on (a+b+c+d+e) 1368.45

g) Add Cess @ 1.00 % on (a+b+c+d+e+f) 104.91

Rate per Cum (a+b+c+d+e+f+g) 10596.39

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**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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say **10596.40**

**(ii) PCC M20 Grade (Upto 5m height)**

**Case-I:- Using Concrete Mixer**

Same as Item 12.6 (B) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (B)	7321.00	Item 12.6 (B)
<b>d) Formwork @10.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	732.10	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1712.89	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1464.90	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	112.31	
<b>Rate per Cum (a+b+c+d+e+f+g)</b>	11343.20	
	<b>say</b>	<b><u>11343.20</u></b>

**(iii) PCC M25 Grade**

**a. upto 5 m height**

**Case-I:- Using Concrete Mixer**

Same as Item 12.6 (D) upto 5 m height with the only change that the provision of form work shall be 10 per cent

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (D) Case I	7698.00	Item 12.6 (D) / C-I
<b>d) Formwork @10.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	769.80	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1801.10	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1540.34	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	118.09	
<b>Rate per cum (a+b+c+d+e+f+g)</b>	11927.33	
	<b>say</b>	<b><u>11927.30</u></b>

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

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (D) Case II	7553.00	Item 12.6 (D) / C-II
<b>d) Formwork @10.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	755.30	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1767.18	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1511.32	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	115.87	

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**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Rate per cum (a+b+c+d+e+f+g)** 11702.66  
**say** **11702.70**

**b. For height above 5 m upto 10 m**

Same as Item 12.6 (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

**Case-I:- Using Concrete Mixer**

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (D) Case I	7698.00	Item 12.6 (D) / C-I
<b>Add @2 .00 %</b> to cater extra lift	153.96	
<b>d) Formwork @12.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	942.24	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1870.53	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1599.71	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	122.64	
<b>Rate per cum (a+b+c+d+e+f+g)</b>	12387.07	
	<b>say</b>	<b><u>12387.10</u></b>

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

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (D) Case II	7553.00	Item 12.6 (D) / C-II
<b>Add @2 .00 %</b> to cater extra lift	151.06	
<b>d) Formwork @12.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	924.49	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1835.29	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1569.58	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	120.33	
<b>Rate per cum (a+b+c+d+e+f+g)</b>	12153.75	
	<b>say</b>	<b><u>12153.70</u></b>

**(c) For height above 10 m**

Same as Item 12.6 (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

**Case-I:- Using Concrete Mixer**

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (D) Case I	7698.00	Item 12.6 (D) / C-I
<b>d) formwork</b>		
<b>Add @ 4 .00 %</b> to cater extra lift	307.92	
<b>d) Formwork @ 15.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	1200.89	

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**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1958.29	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1674.76	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				128.40	
		Rate per cum (a+b+c+d+e+f+g)				12968.26	
					<b>say</b>	<b><u>12968.30</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (D) Case II				7553.00	Item 12.6 (D) / C-II
		Add @ 4.00 % to cater extra lift				302.12	
		d) Formwork @ 15.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)				1178.27	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1921.40	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1643.22	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				125.98	
		Rate per cum (a+b+c+d+e+f+g)				12723.99	
					<b>say</b>	<b><u>12724.00</u></b>	
		<b>(iv) PCC M30 Grade</b>					
		<b>a. upto 5 m height</b>					
		Same as Item 12.6 (F) upto 5 m height with the only change that the provision of form work shall be 10 per cent of cost of material, labour and machinery.					
		<b>Case-I:- Using Concrete Mixer</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (F) Case I				7738.00	Item 12.6 (F) / C-I
		d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)				773.80	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1810.46	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1548.34	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				118.71	
		Rate per cum (a+b+c+d+e+f+g)				11989.30	
					<b>say</b>	<b><u>11989.30</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (F) Case II				7590.00	Item 12.6 (F) / C-II
		d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)				759.00	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1775.83	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1518.72	

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**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	116.44
<b>Rate per cum (a+b+c+d+e+f+g)</b>	11759.99
<b>say</b>	<b><u>11760.00</u></b>

**For height above 5 m upto 10 m**

Same as Item 12.6 (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 of cost of material, labour and machinery.

**Case-I:- Using Concrete Mixer**

<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (F) Case I</b>	7738.00	Item 12.6 (F) / C-I
<b>Add @ 2 .00 % to cater extra lift</b>	154.76	
<b>d) Formwork @ 12.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>	947.13	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1880.24	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1608.02	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	123.28	
<b>Rate per cum (a+b+c+d+e+f+g)</b>	12451.44	
<b>say</b>	<b><u>12451.40</u></b>	

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

<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (F) Case II</b>	7590.00	Item 12.6 (F) / C-II
<b>Add @ 2 .00 % to cater extra lift</b>	151.80	
<b>d) Formwork @ 12.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>	929.02	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1844.28	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1577.26	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	120.92	
<b>Rate per cum (a+b+c+d+e+f+g)</b>	12213.29	
<b>say</b>	<b><u>12213.30</u></b>	

**(c) For height above 10 m**

Same as Item 12.6 (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 of cost of material, labour and machinery

**Case-I:- Using Concrete Mixer**

<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (F) Case I</b>	7738.00	Item 12.6 (F) / C-I
<b>Add @ 4 .00 % to cater extra lift</b>	309.52	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>d) Formwork @ 15.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				1207.13	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				1968.46	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				1683.47	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				129.07	
		<b>Rate per cum (a+b+c+d+e+f+g)</b>				13035.64	
					<b>say</b>	<b><u>13035.60</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (F) Case II</b>				7590.00	Item 12.6 (F) / C-II
		<b>Add @ 4 .00 % to cater extra lift</b>				303.60	
		<b>d) Formwork @ 15.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				1184.04	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				1930.81	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				1651.27	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				126.60	
		<b>Rate per cum (a+b+c+d+e+f+g)</b>				12786.32	
					<b>say</b>	<b><u>12786.30</u></b>	
		<b>(v) RCC M 20 Grade</b>					
		<b>a. upto 5 m height</b>					
		Same as Item 12.6 (C) upto 5 m height, except for formwork which shall be 10 per cent of cost of material, labour and machinery.					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (C) Case I</b>				7375.00	Item 12.6 (C) / C-I
		<b>d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				737.50	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				1725.53	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				1475.70	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				113.14	
		<b>Rate per cum (a+b+c+d+e+f+g)</b>				11426.87	
					<b>say</b>	<b><u>11426.90</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (C) Case II</b>				7228.00	Item 12.6 (C) / C-II
		<b>d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				722.80	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)	1691.14
f) Contractor's profit @ 15 % on (a+b+c+d+e)	1446.29
g) Add Cess @ 1.00 % on (a+b+c+d+e+f)	110.88
Rate per cum (a+b+c+d+e+f+g)	11199.11
<b>say</b>	<b><u>11199.10</u></b>

**b. For height above 5 m upto 10 m**

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.

**Case-I:- Using Concrete Mixer**

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (C) Case I	7375.00	Item 12.6 (C) / C-I
<b>Add @ 2 .00 %</b> to cater extra lift	147.50	
<b>d) Formwork @ 12.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	902.70	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1792.04	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1532.59	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	117.50	
Rate per cum (a+b+c+d+e+f+g)	11867.32	
<b>say</b>	<b><u>11867.30</u></b>	

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

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6(C) Case II	7228.00	Item 12.6 (C) / C-II
<b>Add @ 2 .00 %</b> to cater extra lift	144.56	
<b>d) Formwork @ 12.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	884.71	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1756.32	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1502.04	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	115.16	
Rate per cum (a+b+c+d+e+f+g)	11630.78	
<b>say</b>	<b><u>11630.80</u></b>	

**(c) For height above 10 m**

Same as Item 12.6 (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 of cost of material, labour and machinery.

**Case-I:- Using Concrete Mixer**

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (C) Case I	7375.00	Item 12.6 (C) / C-I
<b>Add @ 4 .00 %</b> to cater extra lift	295.00	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>d) Formwork @ 15.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				1150.50	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				1876.12	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				1604.49	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				123.01	
		<b>Rate per cum (a+b+c+d+e+f+g)</b>				12424.12	
					<b>say</b>	<b><u>12424.10</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (C) Case II</b>				7228.00	Item 12.6 (C) / C-II
		<b>Add @ 4 .00 % to cater extra lift</b>				289.12	
		<b>d) Formwork @ 15.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				1127.57	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				1838.73	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				1572.51	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				120.56	
		<b>Rate per cum (a+b+c+d+e+f+g)</b>				12176.48	
					<b>say</b>	<b><u>12176.50</u></b>	
		<b>(vi) RCC M 25 Grade</b>					
		<b>a. upto 5 m height</b>					
		Same as Item 12.6 (E) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent. of cost of material, labour and machinery.					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (E) Case I</b>				7756.00	Item 12.6 (E) / C-I
		<b>d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				775.60	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				1814.67	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				1551.94	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				118.98	
		<b>Rate per cum (a+b+c+d+e+f+g)</b>				12017.19	
					<b>say</b>	<b><u>12017.20</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (E) Case II</b>				7608.00	Item 12.6 (E) / C-II
		<b>d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				760.80	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				1780.04	



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1522.33	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				116.71	
		<b>Rate per cum (a+b+c+d+e+f+g)</b>				11787.88	
					<b>say</b>	<b><u>11787.90</u></b>	
		<b>b. For height above 5 m upto 10 m</b>					
		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					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (E) Case I</b>				7756.00	Item 12.6 (E) / C-I
		<b>Add @ 1.18 % to cater extra lift</b>				91.52	
		<b>d) Formwork @ 11.80 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				926.01	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				1866.13	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				1595.95	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				122.36	
		<b>Rate per cum (a+b+c+d+e+f+g)</b>				12357.96	
					<b>say</b>	<b><u>12358.00</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (E) Case II</b>				7608.00	Item 12.6 (E) / C-II
		<b>Add @ 1.18 % to cater extra lift</b>				89.77	
		<b>d) Formwork @ 11.80 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				908.34	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				1830.52	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				1565.49	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				120.02	
		<b>Rate per cum (a+b+c+d+e+f+g)</b>				12122.15	
					<b>say</b>	<b><u>12122.10</u></b>	
		<b>(c) For height above 10 m</b>					
		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					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (E) Case I</b>				7756.00	Item 12.6 (E) / C-I
		<b>Add @ 4.00 % to cater extra lift</b>				310.24	
		<b>d) Formwork @ 15.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				1209.94	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1973.04	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1687.38	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				129.37	
		Rate per cum (a+b+c+d+e+f+g)				13065.97	
					<b>say</b>	<b><u>13066.00</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (E) Case II				7608.00	Item 12.6 (E) / C-II
		Add @ 4 .00 % to cater extra lift				304.32	
		d) Formwork @ 15.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)				1186.85	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1935.39	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1655.18	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				126.90	
		Rate per cum (a+b+c+d+e+f+g)				12816.64	
					<b>say</b>	<b><u>12816.60</u></b>	
		<b>(vii) RCC M 30 Grade</b>					
		<b>a. upto 5 m height</b>					
		Same as Item 12.6 (G) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery.					
		<b>Case-I:- Using Concrete Mixer</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (G) Case I				7778.00	Item 12.6 (G) / C-I
		d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)				777.80	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1819.82	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1556.34	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				119.32	
		Rate per cum (a+b+c+d+e+f+g)				12051.28	
					<b>say</b>	<b><u>12051.30</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (G) Case II				7632.00	Item 12.6 (G) / C-II
		d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)				763.20	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1785.66	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1527.13	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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	<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>					117.08	
	<b>Rate per cum (a+b+c+d+e+f+g)</b>					11825.07	
					<b>say</b>	<b><u>11825.10</u></b>	

**b. For height above 5 m upto 10 m**

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**

	<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (G) Case I</b>					7778.00	Item 12.6 (G) / C-I
	<b>Add @ 1.6 % to cater extra lift</b>					124.45	
	<b>d) Formwork @ 11.50 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>					908.78	
	<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>					1874.15	
	<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>					1602.81	
	<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>					122.88	
	<b>Rate per cum (a+b+c+d+e+f+g)</b>					12411.07	
					<b>say</b>	<b><u>12411.10</u></b>	

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

	<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (G) Case II</b>					7632.00	Item 12.6 (G) / C-II
	<b>Add @ 1.6 % to cater extra lift</b>					122.11	
	<b>d) Formwork @ 11.50 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>					891.72	
	<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>					1838.97	
	<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>					1572.72	
	<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>					120.58	
	<b>Rate per cum (a+b+c+d+e+f+g)</b>					12178.10	
					<b>say</b>	<b><u>12178.10</u></b>	

**(c) For height above 10 m**

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**

	<b>a+b+c) Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c) of Item 12.6 (G) Case I</b>					7778.00	Item 12.6 (G) / C-I
	<b>Add @ 3.50 % to cater extra lift</b>					272.23	
	<b>d) Formwork @ 14.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>					1127.03	
	<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>					1952.00	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1669.39	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				127.99	
		Rate per cum (a+b+c+d+e+f+g)				12926.64	
					<b>say</b>	<b><u>12926.60</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (G) Case II				7632.00	Item 12.6 (G) / C-II
		Add @ 3.50 % to cater extra lift				267.12	
		d) Formwork @ 14.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)				1105.88	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1915.36	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1638.05	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				125.58	
		Rate per cum (a+b+c+d+e+f+g)				12684.00	
					<b>say</b>	<b><u>12684.00</u></b>	
		<b>(viii) RCC M 35 Grade</b>					
		<b>a. upto 5 m height</b>					
		Same as Item 12.6 (H) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery.					
		<b>Case-I:- Using Concrete Mixer</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6(H) Case I				7882.00	Item 12.6 (H) / C-I
		d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)				788.20	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1844.15	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1577.15	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				120.92	
		Rate per cum (a+b+c+d+e+f+g)				12212.42	
					<b>say</b>	<b><u>12212.40</u></b>	
		<b>Case II:- With Batching Plant, Transit Mixer and Concrete Pump</b>					
		a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (H) Case II				7738.00	Item 12.6 (H) / C-II
		d) Formwork @10.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)				773.80	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				1810.46	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1548.34	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				118.71	
		Rate per cum (a+b+c+d+e+f+g)				11989.30	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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say **11989.30**

**b. For height above 5 m upto 10 m**

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**

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (H) Case I	7882.00	Item 12.6 (H) / C-I
<b>Add @ 1.40 %</b> to cater extra lift	110.35	
<b>d) Formwork @ 11.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	879.16	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1886.97	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1613.77	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	123.72	
<b>Rate per cum (a+b+c+d+e+f+g)</b>	12495.97	
	say	<b><u>12496.00</u></b>

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

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (H) Case II	7738.00	Item 12.6 (H) / C-II
<b>Add @ 1.40 %</b> to cater extra lift	108.33	
<b>d) Formwork @ 11.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	863.10	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1852.50	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1584.29	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	121.46	
<b>Rate per cum (a+b+c+d+e+f+g)</b>	12267.67	
	say	<b><u>12267.70</u></b>

**(c) For height above 10 m**

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**

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (H) Case I	7882.00	Item 12.6 (H) / C-I
<b>Add @ 3.00 %</b> to cater extra lift	236.46	
<b>d) Formwork @ 13.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)	1055.40	
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>	1951.28	
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>	1668.77	
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>	127.94	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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<b>Rate per cum (a+b+c+d+e+f+g)</b>		12921.85					
	<b>say</b>					<b><u>12921.80</u></b>	

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

<b>a+b+c)</b> Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.6 (H) Case II		7738.00					Item 12.6 (H) / C-II
<b>Add @ 3.00 %</b> to cater extra lift		232.14					
<b>d) Formwork @ 13.00 %</b> on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)		1036.12					
<b>e) Add GST (multiplying factor) @ 0.2127</b> on (a+b+c+d)		1915.63					
<b>f) Contractor's profit @ 15 %</b> on (a+b+c+d+e)		1638.28					
<b>g) Add Cess @ 1.00 %</b> on (a+b+c+d+e+f)		125.60					
<b>Rate per cum (a+b+c+d+e+f+g)</b>		12685.77					
	<b>say</b>					<b><u>12685.80</u></b>	

**Note:-** The basic components of this analysis are the same as those of items 12.6 (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.

**13.5 1600 & 2200** Supplying, fitting & placing Thermo-Mechanically treated bar/ Cold twisted deformed steel bar reinforcement in substructure complete as per drawings & MoRTH technical specification Clauses 1600, 2200.

**Output: MT**

**Taking output = 1 MT**

<b>a) Material</b>							
Steel bars including 5 per cent overlaps and wastage	tonne	1.05	58000.00	60900.00			M-181
Binding wire	kg	6.00	69.00	414.00			M-039
<b>b) Labour for cutting, bending, shifting to site, tying and placing in position</b>							
Mate	day	0.34	391.00	132.94			L-17
Blacksmith	day	2.00	480.00	960.00			L-03
Mazdoor(unskilled)	day	6.50	391.00	2541.50			L-18
<b>c) Add GST (multiplying factor) @ 0.2127</b> on (a+b)				13814.53			

**CHAPTER-13**  
**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Contractor's profit @ 15 % on (a+b+c)				11814.45	
		e) Add Cess @ 1.00 % on (a+b+c+d)				905.77	
		<b>Rate for per MT (a+b+c+d+e)</b>				91483.19	
					<b>say</b>	<b><u>91483.20</u></b>	
13.6	1600 & 2200	Supplying, fitting & placing MS bar reinforcement in substructure complete as per drawings & MoRT&H technical specification Clauses 1600, 2200. <b>Unit = MT</b> <b>Taking output = 1 MT</b>					
		a) <b>Material</b>					
		MS bars including 5 per cent overlaps and wastage	tonne	1.05	57000.00	59850.00	M-180
		Binding wire	kg	6.00	69.00	414.00	M-039
		b) <b>Labour for straightening, cutting, bending, shifting to site, tying and placing in position</b>					
		Mate	day	0.28	391.00	109.48	L-17
		Blacksmith	day	1.50	480.00	720.00	L-03
		Mazdoor(unskilled)	day	5.50	391.00	2150.50	L-18
		c) <b>Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				13451.99	
		d) <b>Contractor's profit @ 15 % on (a+b+c)</b>				11504.40	
		e) <b>Add Cess @ 1.00 % on (a+b+c+d)</b>				882.00	
		<b>Rate for per MT (a+b+c+d+e)</b>				89082.37	
					<b>say</b>	<b><u>89082.40</u></b>	
13.7	2706 & 2200	Providing weepholes in brick masonry / stone masonry, plain / reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe or uPVC pipe (110 mm OD of 6.0 Kg/cm <sup>2</sup> pressure) extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and MoRT&H technical specification clauses 2706, 2200.  <b>Unit = Mtr.</b> <b>Taking output = 30 Mtr.</b>					
		a) <b>Labour</b>					
		Mate	day	0.03	391.00	11.73	L-17
		Mason(1st Class)	day	0.50	512.00	256.00	L-15
		Mazdoor(unskilled)	day	0.25	391.00	97.75	L-18
		b) <b>Material</b>					
		AC pipe / uPVC pipe (6.00 kg/cm <sup>2</sup> ) 100 mm dia including wastage @ 5 per cent.	metre	31.50	198.50	6252.75	M-001
		Average length of weep hole is taken as one metre for the purpose of analysis.					
		MS clamps (assume total 30 nos weep hole)	each.	30.00	51.60	1548.00	M-131
		Cement mortar 1:3 (Rate as sub-analysis in Item 12.5.III)	cum	0.05	3946.40	197.32	Item 12.5 (III) sub-analysis(c)
		c) <b>Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1778.93	
		d) <b>Contractor's profit @ 15 % on (a+b+c)</b>				1521.37	

**CHAPTER-13**  
**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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e) Add Cess @ 1.00 % on (a+b+c+d) 116.64

Cost for 30 m = a+b+c+d+e 11780.49

Rate per mtr (a+b+c+d+e)/30 392.68

**say 392.70**

- 13.8 710.1.4.** Backfilling behind abutment, wing wall & of return wall complete as per drawings, IRC:78 & MoRT&H & 2200 clause 710.1.4 of IRC:78 & MoRT&H technical specification Clause 2200.

**Unit = cum**

**Taking output = 10 cum**

**I) Granular material**

**a) Labour**

Mate day 0.32 391.00 125.12 L-17

Mazdoor(unskilled) day 7.00 391.00 2737.00 L-18

Bhisti day 1.00 391.00 391.00 L-19

**b) Machinery**

Plate compactor hour 2.50 84.00 210.00 P&M-051

Water Tanker hour 0.05 224.00 11.20 P&M-084

**c) Material**

Granular material cum 12.00 2274.50 27294.00 M-111

Water cum 0.30 133.00 39.90 M-196

**d) Add GST (multiplying factor) @**

**0.2127 on (a+b+c) 6552.91**

**e) Contractor's profit @ 15 % on 5604.17**

**(a+b+c+d)**

**f) Add Cess @ 1.00 % on (a+b+c+d+e) 429.65**

Cost for 10 cum of granular backfill = 43394.95

a+b+c+d+e+f

Rate per cum = (a+b+c+d+e+f)/10 4339.50

**say 4339.50**

**II) Sandy material**

**a) Material**

Sand from local quarry cum 12.00 590.00 7080.00 M-171

**b) Labour**

Mate day 0.40 391.00 156.40 L-17

Mazdoor(unskilled) day 10.00 391.00 3910.00 L-18

Bhisti day 0.40 391.00 156.40 L-01

**c) Add GST (multiplying factor) @**

**0.2127 on (a+b) 2404.11**

**d) Contractor's profit @ 15 % on 2056.04**

**(a+b+c)**

**e) Add Cess @ 1.00 % on 157.63**

**(a+b+c+d+e+f)**

Cost for 10 cum of sandy backfill = 15920.57

a+b+c+d+e

Rate per cum = (a+b+c+d+e)/10 1592.06

**say 1592.10**



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**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
13.9	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 MoRT&H 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 clause 710.1.4 of IRC:78 & MoRT&H technical specification Clause 2200.					
		<b>Unit = cum</b>					
		<b>Taking output = 10 cum.</b>					
		<b>a) Labour</b>					
		Mate	day	0.34	391.00	132.94	L-17
		Mazdoor(unskilled)	day	7.00	391.00	2737.00	L-18
		Mazdoor(Skilled)	day	1.00	475.00	475.00	L-20
		Bhisti	day	0.50	391.00	195.50	L-01
		<b>b) Material</b>					
		Filter media as per specifications.	cum	12.00	2496.30	29955.60	M-096
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				7124.61	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				6093.10	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				467.14	
		cost for 10 cum of Fiter Media = a+b+c+d+e				47180.88	
		<b>Rate per cum = (a+b+c+d+e)/10</b>				4718.09	
					<b>say</b>	<b><u>4718.10</u></b>	
13.10	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.					
		<b>a) Labour</b>					
		Mate	day	0.06	391.00	23.46	L-17
		Mazdoor (unskilled)	day	1.00	391.00	391.00	L-18
		Mazdoor (Skilled)	day	0.50	475.00	237.50	L-20
		<b>b) Material</b>					
		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.	cu cm	19200	1.10	21120.00	M-085

**CHAPTER-13**  
**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Add 1 % of cost of bearing assembly for foundation anchorage bolts and consumables.				211.20	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				4675.82	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				3998.85	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				306.58	
		cost for 19200 cu.cm of elastomeric bearing = a+b+c+d+e				30964.40	
		<b>Rate per cu.cum of elastomeric bearing = (a+b+c+d+e)/19200</b>				1.61	
		<b>say</b>				<b><u>1.60</u></b>	
<b>13.11</b>	<b>2000 &amp; 2200</b>	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.					
		<b>Unit: one tonne capacity</b>					
		Considering a Pot bearing assembly of 250 tonne capacity for this analysis.					
		<b>a) Labour</b>					
		Mate	day	0.08	391.00	31.28	L-17
		Mazdoor(unskilled)	day	1.50	391.00	586.50	L-18
		Mazdoor(Skilled)	day	0.50	475.00	237.50	L-20
		<b>b) Material</b>					
		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.	No	1.00	54435.00	54435.00	M-148
		<i>(Average rate of Fixed POT-PTFE Bearings, Free POT-PTFE Bearings, Guided sliding (L) POT-PTFE Bearings, Guided sliding (T) POT-PTFE Bearings taken for analysis purpose)</i>					
		Add 1 % for of cost of bearing assembly for foundation anchorage bolts and consumables.				544.35	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				11876.03	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				10156.60	

**CHAPTER-13**  
**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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e)	Add Cess @ 1.00 % on (a+b+c+d)					778.67	
	cost for 250 tonnes capacity bearing =					78645.93	
	a+b+c+d+e						
	<b>Rate per tonne capacity =</b>					314.58	
	<b>(a+b+c+d+e)/250</b>						
					<b>say</b>	<b><u>314.60</u></b>	

**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE (i.e. LOCALLY AVAILABLE MATERIALS)**

- 13.12 1500, 1700 & 2200** Plain/reinforced cement concrete (using jhama brick aggregate) in substructure complete including formwork as per drawings & MoRTH technical specification Clauses 1500, 1700, 2200. (including centering, shuttering, staging etc. but excluding reinforcement).

**Unit = cum**

**Taking output = 1 cum**

**(i) PCC M15 Grade (using jhama brick aggregate)**

**Case-I:- Using Concrete Mixer (Upto 5m height)**

Same as Item 12.27 (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.

**a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.27 (A)**

6235.00 Item 12.27  
(A)

**d) Formwork @15.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)**

935.25

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

1525.11

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

1304.30

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

100.00

**Rate per Cum (a+b+c+d+e+f+g)**

10099.66

**say 10099.70**

**(ii) PCC M20 Grade (using jhama brick aggregate)**

**(Upto 5m height)**

**Case-I:- Using Concrete Mixer**

Same as Item 12.27 (B) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.

**a+b+c) Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.27 (B)**

6785.00 Item 12.27  
(B)

**d) Formwork @15.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)**

1017.75

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

1659.64

**CHAPTER-13**  
**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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f) Contractor's profit @ 15 % on (a+b+c+d+e)	1419.36
g) Add Cess @ 1.00 % on (a+b+c+d+e+f)	108.82
<b>Rate per Cum (a+b+c+d+e+f+g)</b>	<b>10990.57</b>
<b>say</b>	<b><u>10990.60</u></b>

**13.13 2504.2.2** Providing & laying filter media with jhama brick aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil & bigger size towards the wall & providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and MoRT&H technical specification clause 2504.2.2

**Unit = cum**  
**Taking output = 10 cum.**

<b>a) Material</b>							
Filter media as per specifications (considering jhama brick aggregate)	cum	12.00	2349.00	28188.00	M-216		
<b>b) Labour</b>							
Mate	day	0.40	391.00	156.40	L-17		
Mazdoor(unskilled)	day	7.00	391.00	2737.00	L-18		
Mazdoor(Skilled)	day	1.00	475.00	475.00	L-20		
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				6712.05			
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				5740.27			
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				440.09			
cost for 10 cum of Filter Media = a+b+c+d+e				44448.80			
<b>Rate per cum = (a+b+c+d+e)/10</b>				4444.88			
<b>say</b>				<b><u>4444.90</u></b>			

OTHER ADDITIONAL ITEMS

**13.14 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 MoRT&H specifications complete including all accessories as per drawing and Technical Specifications.

**Unit: one tonne capacity**

Considering a 250 tonne capacity bearing for this analysis

<b>a) Labour</b>							
Mate	day	0.06	391.00	23.46	L-17		
Mazdoor (Skilled)	day	0.50	475.00	237.50	L-20		
Mazdoor (unskilled)	day	1.00	391.00	391.00	L-18		
<b>b) Material</b>							
Cast steel rocker bearing assembly of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	1.00	115000.00	115000.00	M-272		

**CHAPTER-13**  
**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Add 1% of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				1150.00	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				24843.78	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				21246.86	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				1628.93	
		cost for 250 tonnes capacity bearing = a+b+c+d+e				164521.52	
		<b>Rate per tonne capacity = (a+b+c+d+e)/250</b>				658.09	
		<b>say</b>				<b><u>658.00</u></b>	
13.15	2000 , 1000 & 2200	<b>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 MoRT&amp;H specifications complete including all accessories as per drawing and Technical Specifications.</b>					
		<b>Unit: one tonne capacity</b>					
		Considering a 250 tonne capacity bearing for this analysis					
		<b>a) Labour</b>					
		Mate	day	0.06	391.00	23.46	L-17
		Mazdoor (unskilled)	day	1.00	391.00	391.00	L-18
		Mazdoor (Skilled)	day	0.50	475.00	237.50	L-20
		<b>b) Material</b>					
		Forged steel roller bearing of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	1.00	101000.00	101000.00	M-273
		Add 1 % of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				1010.00	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				21836.20	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				18674.72	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				1431.73	
		cost for 250 tonnes capacity bearing = a+b+c+d+e				144604.61	
		<b>Rate per tonne capacity = (a+b+c+d+e)/250</b>				578.42	
		<b>say</b>				<b><u>578.00</u></b>	
13.16	2000 & 2200	<b>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 &amp; 9.2 (for PTFE) and clause 2004 of MoRT&amp;H Specifications.</b>					

**CHAPTER-13**  
**SUB-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Unit: one tonne capacity  
Considering a 80 tonne capacity bearing for this analysis

**a) Labour**

Mate	day	0.06	391.00	23.46	L-17
Mazdoor (unskilled)	day	1.00	391.00	391.00	L-18
Mazdoor (Skilled)	day	0.50	475.00	237.50	L-20

**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.	1.00	20585.00	20585.00	M-274
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Add 1 % for foundation anchorage bolts and consumables. 205.85

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** 4560.89

**d) Contractor's profit @ 15 % on (a+b+c)** 3900.55

**e) Add Cess @ 1.00 % on (a+b+c+d)** 299.04

cost for 80 tonnes capacity bearing = a+b+c+d+e 30203.29

**Rate per tonne capacity = (a+b+c+d+e)/80** 377.54

**say 378.00**

**13.17 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 MoRT&H Technical Specifications.**

**Unit: one tonne capacity**

Considering the sliding bearing of 80 tonnes design capacity for this analysis.

**a) Labour**

Mate	day	0.04	391.00	15.64	L-17
Mazdoor (unskilled)	day	0.75	391.00	293.25	L-18
Mazdoor (Skilled)	day	0.35	391.00	136.85	L-18

**b) Material**

Supply of sliding plate bearing of 80 tonne design capacity complete as per drawings and Technical Specifications.	each.	1.00	18430.00	18430.00	M-275
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Add 1 % of cost of bearing assembly for foundation anchorage bolts and consumables. 184.30

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** 4054.07

**d) Contractor's profit @ 15 % on (a+b+c)** 3467.12

**e) Add Cess @ 1.00 % on (a+b+c+d)** 265.81

cost for 80 tonnes of capacity bearing = a+b+c+d+e 26847.04

**Rate per tonne capacity = (a+b+c+d+e)/80** 335.59

**say 336.00**

**CHAPTER-14**  
**SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
14.1	1500, 1700 & 2100	Plain / Reinforced cement concrete in superstructure including all formworks required as per drawings & MoRT&H technical specifications Clauses 1500, 1700, 2100. (including centering, shuttering, staging etc. but excluding reinforcement) <b>A. RCC Grade M20</b> <b>Case-I:- Using Concrete Mixer</b> <b>i) For solid slab superstructure</b> <b>a. Height upto 5 m</b>					
		<b>Unit = 1 cum</b> <b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.12	6797.00	34800.64	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 20.00 % of (a+b+c)</b>				22000.78	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				28077.40	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				24012.31	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1840.94	
		Cost for 15 cum = a+b+c+d+e+f+g				185935.33	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				12395.69	
					<b>say</b>	<b><u>12395.70</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = 1 cum</b> <b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.12	6797.00	34800.64	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 25.00 % of (a+b+c)</b>				27500.98	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				29247.29	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				25012.82	

**CHAPTER-14**  
**SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1917.65	
		Cost for 15 cum = a+b+c+d+e+f+g				193682.64	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				12912.18	
					<b>say</b>	<b><u>12912.20</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.12	6797.00	34800.64	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 30.00 % of (a+b+c)</b>				33001.17	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				30417.18	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				26013.34	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1994.36	
		Cost for 15 cum = a+b+c+d+e+f+g				201429.94	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				13428.66	
					<b>say</b>	<b><u>13428.70</u></b>	
		<b>ii) For T-Beam and slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.12	6797.00	34800.64	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 25.00 % of (a+b+c)</b>				27500.98	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				29247.29	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				25012.82	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				1917.65	
		Cost for 15 cum = a+b+c+d+e+f+g				193682.64	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				12912.18	



**CHAPTER-14**  
**SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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say 12912.20

**b. Height 5 m to 10 m**

**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18

**b) Machinery**

Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	5.12	6797.00	34800.64	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork and staging @ 30.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

Cost for 15 cum = a+b+c+d+e+f+g

**Rate per cum = (a+b+c+d+e+f+g)/15**

say 13428.70

**c. Height above 10 m**

**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18

**b) Machinery**

Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	5.12	6797.00	34800.64	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork and staging @ 35.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

Cost for 15 cum = a+b+c+d+e+f+g

**Rate per cum = (a+b+c+d+e+f+g)/15**

say 13945.10

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

**i) For solid slab superstructure**

**CHAPTER-14**  
**SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**a. Height upto 5 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	40.92	6797.00	278133.24	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 20.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

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

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

**say 12145.20**

**b. Height 5 m to 10 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	40.92	6797.00	278133.24	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 25.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

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

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

**say 12651.20**

**c. Height above 10 m**

**Unit = cum**

**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Taking output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	40.92	6797.00	278133.24	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 30.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

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

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

**say 13157.30**

**ii) For T-Beam and slab superstructure**

**a. Height upto 5 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	40.92	6797.00	278133.24	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 25.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

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

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

**say 12651.20**

**b. Height 5 m to 10 m**

**Unit = cum**

**Taking output = 120 cum**

**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	40.92	6797.00	278133.24	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 30.00 % of (a+b+c)</b>				258674.00	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				238419.83	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				203901.08	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				15632.42	
		Cost for 120 cum = a+b+c+d+e+f+g				1578874.01	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				13157.28	
						<b>say</b>	<b><u>13157.30</u></b>

**c. Height above 10 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.84	391.00	328.44	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	40.92	6797.00	278133.24	M-052
Sand	cum	54.00	740.00	39960.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 35.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

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

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

**say** **13663.30**

**B. RCC Grade M 25**

**Case-I:- Using Concrete Mixer**

**i) For solid slab superstructure**

**a. Height upto 5 m**

**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18

**b) Machinery**

Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	5.99	6797.00	40714.03	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork and staging @ 20.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

Cost for 15 cum = a+b+c+d+e+f+g

**Rate per cum = (a+b+c+d+e+f+g)/15**

**say**

29586.73  
25303.12  
1939.91  
195930.50  
13062.03  
**13062.00**

**b. Height 5 m to 10 m**

**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18

**b) Machinery**

Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	5.99	6797.00	40714.03	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork and staging @ 25.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

Cost for 15 cum = a+b+c+d+e+f+g

**Rate per cum = (a+b+c+d+e+f+g)/15**

**say**

28979.32  
30819.51  
26357.42  
2020.74  
204094.28  
13606.29  
**13606.30**

**c. Height above 10 m**

**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18

**b) Machinery**

**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.99	6797.00	40714.03	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 30.00 % of (a+b+c)</b>				34775.19	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				32052.29	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				27411.72	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2101.56	
		Cost for 15 cum = a+b+c+d+e+f+g				212258.05	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				14150.54	
					<b>say</b>	<b><u>14150.50</u></b>	
		<b>ii) For T-Beam and slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.99	6797.00	40714.03	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 25.00 % of (a+b+c)</b>				28979.32	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				30819.51	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				26357.42	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2020.74	
		Cost for 15 cum = a+b+c+d+e+f+g				204094.28	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				13606.29	
					<b>say</b>	<b><u>13606.30</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.99	6797.00	40714.03	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 30.00 % of (a+b+c)</b>				34775.19	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				32052.29	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				27411.72	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2101.56	
		Cost for 15 cum = a+b+c+d+e+f+g				212258.05	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				14150.54	
					<b>say</b>	<b><u>14150.50</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.86	391.00	336.26	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	5.99	6797.00	40714.03	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 35.00 % of (a+b+c)</b>				40571.05	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				33285.07	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				28466.01	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2182.39	
		Cost for 15 cum = a+b+c+d+e+f+g				220421.82	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				14694.79	
					<b>say</b>	<b><u>14694.80</u></b>	
		<b>Case-II:- Using Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>i) For solid slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>c) Material</b>					
		Cement	tonne	47.95	6797.00	325916.15	M-052
		Sand	cum	54.20	740.00	40108.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 20.00 % of (a+b+c)</b>				182035.52	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				232313.73	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				198679.03	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				15232.06	
		Cost for 120 cum = a+b+c+d+e+f+g				1538437.92	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				12820.32	
					<b>say</b>	<b><u>12820.30</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	47.95	6797.00	325916.15	M-052
		Sand	cum	54.20	740.00	40108.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 25.00 % of (a+b+c)</b>				227544.40	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				241993.47	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				206957.32	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				15866.73	
		Cost for 120 cum = a+b+c+d+e+f+g				1602539.50	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				13354.50	
					<b>say</b>	<b><u>13354.50</u></b>	
		<b>c. Height above 10 m</b>					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	47.95	6797.00	325916.15	M-052
		Sand	cum	54.20	740.00	40108.00	M-170



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 30.00 % of (a+b+c)</b>				273053.28	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				251673.21	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				215235.61	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				16501.40	
		Cost for 120 cum = a+b+c+d+e+f+g				1666641.08	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				13888.68	
					<b>say</b>	<b><u>13888.70</u></b>	
<b>ii) For T-Beam and slab superstructure</b>							
<b>a. Height upto 5 m</b>							
<b>Unit = cum</b>							
<b>Taking output = 120 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.84	391.00	328.44	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18
<b>b) Machinery</b>							
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
<b>c) Material</b>							
		Cement	tonne	47.95	6797.00	325916.15	M-052
		Sand	cum	54.20	740.00	40108.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 25.00 % of (a+b+c)</b>				227544.40	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				241993.47	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				206957.32	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				15866.73	
		Cost for 120 cum = a+b+c+d+e+f+g				1602539.50	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				13354.50	
					<b>say</b>	<b><u>13354.50</u></b>	
<b>b. Height 5 m to 10 m</b>							
<b>Unit = cum</b>							
<b>Taking output = 120 cum</b>							
<b>a) Labour</b>							
		Mate	day	0.84	391.00	328.44	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18
<b>b) Machinery</b>							
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
<b>c) Material</b>							
		Cement	tonne	47.95	6797.00	325916.15	M-052
		Sand	cum	54.20	740.00	40108.00	M-170

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 30.00 % of (a+b+c)</b>				273053.28	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				251673.21	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				215235.61	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				16501.40	
		Cost for 120 cum = a+b+c+d+e+f+g				1666641.08	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				13888.68	
					<b>say</b>	<b><u>13888.70</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.84	391.00	328.44	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	18.00	391.00	7038.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	47.95	6797.00	325916.15	M-052
		Sand	cum	54.20	740.00	40108.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 35.00 % of (a+b+c)</b>				318562.16	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				261352.94	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				223513.90	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				17136.07	
		Cost for 120 cum = a+b+c+d+e+f+g				1730742.66	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				14422.86	
					<b>say</b>	<b><u>14422.90</u></b>	
		<b>C. RCC Grade M 30</b>					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>i) For solid slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.10	6797.00	41461.70	M-052
		Sand	cum	6.75	740.00	4995.00	M-170

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery (a+b+c)</b>		<b>7805.00</b>			
		d) Formwork and staging @ 20.00 % of (a+b+c)				23414.32	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				29881.36	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				25555.09	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				1959.22	
		Cost for 15 cum = a+b+c+d+e+f+g				197881.59	
		Rate per cum = (a+b+c+d+e+f+g)/15				13192.11	
					<b>say</b>	<b><u>13192.10</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.10	6797.00	41461.70	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) Formwork and staging @ 25.00 % of (a+b+c)				29267.90	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				31126.41	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				26619.89	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				2040.86	
		Cost for 15 cum = a+b+c+d+e+f+g				206126.66	
		Rate per cum = (a+b+c+d+e+f+g)/15				13741.78	
					<b>say</b>	<b><u>13741.80</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.10	6797.00	41461.70	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) Formwork and staging @ 30.00 % of (a+b+c)				35121.48	

**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				32371.47	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				27684.68	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				2122.49	
		Cost for 15 cum = a+b+c+d+e+f+g				214371.72	
		Rate per cum = (a+b+c+d+e+f+g)/15				14291.45	
					<b>say</b>	<b><u>14291.40</u></b>	
		<b>ii) For T-Beam and slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.10	6797.00	41461.70	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) Formwork and staging @ 25.00 % of (a+b+c)				29267.90	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				31126.41	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				26619.89	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				2040.86	
		Cost for 15 cum = a+b+c+d+e+f+g				206126.66	
		Rate per cum = (a+b+c+d+e+f+g)/15				13741.78	
					<b>say</b>	<b><u>13741.80</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.10	6797.00	41461.70	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) Formwork and staging @ 30.00 % of (a+b+c)				35121.48	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				32371.47	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				27684.68	

**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2122.49	
		Cost for 15 cum = a+b+c+d+e+f+g				214371.72	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				14291.45	
					<b>say</b>	<b><u>14291.40</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.10	6797.00	41461.70	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 35.00 % of (a+b+c)</b>				40975.06	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				33616.52	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				28749.48	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2204.13	
		Cost for 15 cum = a+b+c+d+e+f+g				222616.79	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				14841.12	
					<b>say</b>	<b><u>14841.10</u></b>	
		<b>Case-II:- Using Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>i) For solid slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.88	391.00	344.08	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	48.79	6797.00	331625.63	M-052
		Sand	cum	54.60	740.00	40404.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 20.00 % of (a+b+c)</b>				183317.94	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				233950.36	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				200078.70	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				15339.37	

**CHAPTER-14**  
**SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Cost for 120 cum = a+b+c+d+e+f+g 1549276.08  
**Rate per cum = (a+b+c+d+e+f+g)/120** 12910.63

**say** **12910.60**

**b. Height 5 m to 10 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.88	391.00	344.08	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	48.79	6797.00	331625.63	M-052
Sand	cum	54.60	740.00	40404.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 25.00 % of (a+b+c)**

229147.43

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

243698.29

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

208415.31

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

15978.51

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

1613829.25

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

13448.58

**say** **13448.60**

**c. Height above 10 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.88	391.00	344.08	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	48.79	6797.00	331625.63	M-052
Sand	cum	54.60	740.00	40404.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 30.00 % of (a+b+c)**

274976.91

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

253446.22

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

216751.93

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

16617.65

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

1678382.42

**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Rate per cum = (a+b+c+d+e+f+g)/120

13986.52

**say 13986.50**

**ii) For T-Beam and slab superstructure**

**a. Height upto 5 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.88	391.00	344.08	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	48.79	6797.00	331625.63	M-052
Sand	cum	54.60	740.00	40404.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 25.00 % of (a+b+c)**

229147.43

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

243698.29

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

208415.31

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

15978.51

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

1613829.25

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

13448.58

**say 13448.60**

**b. Height 5 m to 10 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.88	391.00	344.08	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	48.79	6797.00	331625.63	M-052
Sand	cum	54.60	740.00	40404.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 30.00 % of (a+b+c)**

274976.91

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

253446.22

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

216751.93

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

16617.65

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

1678382.42

**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Rate per cum = (a+b+c+d+e+f+g)/120 13986.52

**say 13986.50**

**c. Height above 10 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.88	391.00	344.08	L-17
Mason(1st class)	day	3.00	512.00	1536.00	L-15
Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Cement	tonne	48.79	6797.00	331625.63	M-052
Sand	cum	54.60	740.00	40404.00	M-170
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 35.00 % of (a+b+c)**

320806.40

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

263194.15

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

225088.54

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

17256.79

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

1742935.59

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

14524.46

**say 14524.50**

**D. RCC / PSC Grade M 35**

**Case-I:- Using Concrete Mixer**

**i) For solid slab superstructure**

**a. Height upto 5 m**

**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.90	391.00	351.90	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18

**b) Machinery**

Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	6.33	6797.00	43025.01	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork and staging @ 18.00 % of (a+b+c)**

21354.28

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

29775.70

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

25464.73

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

1952.30

Cost for 15 cum = a+b+c+d+e+f+g

197181.93

Rate per cum = (a+b+c+d+e+f+g)/15

13145.46



**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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say **13145.50**

**b. Height 5 m to 10 m**

**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.90	391.00	351.90	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18

**b) Machinery**

Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	6.33	6797.00	43025.01	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork and staging @ 23.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

Cost for 15 cum = a+b+c+d+e+f+g

**Rate per cum = (a+b+c+d+e+f+g)/15**

say **13702.50**

**c. Height above 10 m**

**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.90	391.00	351.90	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18

**b) Machinery**

Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	6.33	6797.00	43025.01	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork and staging @ 28.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

Cost for 15 cum = a+b+c+d+e+f+g

**Rate per cum = (a+b+c+d+e+f+g)/15**

say **14259.50**

**ii) For T-Beam and slab superstructure**

**a. Height upto 5 m**

**Unit = 1 cum**

**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Taking output = 15 cum**

**a) Labour**

Mate	day	0.90	391.00	351.90	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18

**b) Machinery**

Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	6.33	6797.00	43025.01	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork and staging @ 23.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

Cost for 15 cum = a+b+c+d+e+f+g

**Rate per cum = (a+b+c+d+e+f+g)/15**

**say 13702.50**

**b. Height 5 m to 10 m**

**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.90	391.00	351.90	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18

**b) Machinery**

Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	6.33	6797.00	43025.01	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork and staging @ 28.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

Cost for 15 cum = a+b+c+d+e+f+g

**Rate per cum = (a+b+c+d+e+f+g)/15**

**say 14259.50**

**c. Height above 10 m**

**Unit = 1 cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.90	391.00	351.90	L-17
Mason(1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18

**b) Machinery**

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.33	6797.00	43025.01	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 33.00 % of (a+b+c)</b>				39149.52	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				33560.75	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				28701.78	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2200.47	
		Cost for 15 cum = a+b+c+d+e+f+g				222247.42	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				14816.49	
					<b>say</b>	<b><u>14816.50</u></b>	
		<b>(iii) For Box girder and balanced cantilever</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.33	6797.00	43025.01	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 38.00 % of (a+b+c)</b>				45081.27	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				34822.43	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				29780.79	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2283.19	
		Cost for 15 cum = a+b+c+d+e+f+g				230602.59	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				15373.51	
					<b>say</b>	<b><u>15373.50</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18
		<b>b) Machinery</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.33	6797.00	43025.01	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 48.00 % of (a+b+c)</b>				56944.76	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				37345.80	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				31938.82	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2448.64	
		Cost for 15 cum = a+b+c+d+e+f+g				247312.92	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				16487.53	
					<b>say</b>	<b><u>16487.50</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.90	391.00	351.90	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	21.00	391.00	8211.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Cement	tonne	6.33	6797.00	43025.01	M-052
		Sand	cum	6.75	740.00	4995.00	M-170
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 58.00 % of (a+b+c)</b>				68808.25	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				39869.16	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				34096.85	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2614.09	
		Cost for 15 cum = a+b+c+d+e+f+g				264023.26	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				17601.55	
					<b>say</b>	<b><u>17601.60</u></b>	
		<b>Case-II:- Using Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>i) For solid slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.88	391.00	344.08	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	50.64	6797.00	344200.08	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 18.00 % of (a+b+c)</b>				167169.63	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				233095.76	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				199347.83	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				15283.33	
		Cost for 120 cum = a+b+c+d+e+f+g				1543616.71	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				12863.47	
						<b>say</b>	<b><u>12863.50</u></b>
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.88	391.00	344.08	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unsilled)	day	19.00	391.00	7429.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	50.64	6797.00	344200.08	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 23.00 % of (a+b+c)</b>				213605.64	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				242972.70	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				207794.77	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				15930.93	
		Cost for 120 cum = a+b+c+d+e+f+g				1609024.20	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				13408.54	
						<b>say</b>	<b><u>13408.50</u></b>
		<b>c. Height above 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.88	391.00	344.08	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unsilled)	day	19.00	391.00	7429.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>c) Material</b>					
		Cement	tonne	50.64	6797.00	344200.08	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 28.00 % of (a+b+c)</b>				260041.64	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				252849.64	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				216241.72	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				16578.53	
		Cost for 120 cum = a+b+c+d+e+f+g				1674431.69	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				13953.60	
					<b>say</b>	<b><u>13953.60</u></b>	
		<b>ii) For T-Beam and slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.88	391.00	344.08	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	50.64	6797.00	344200.08	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 23.00 % of (a+b+c)</b>				213605.64	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				242972.70	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				207794.77	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				15930.93	
		Cost for 120 cum = a+b+c+d+e+f+g				1609024.20	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				13408.54	
					<b>say</b>	<b><u>13408.50</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.88	391.00	344.08	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cement	tonne	50.64	6797.00	344200.08	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 28.00 % of (a+b+c)</b>				260041.64	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				252849.64	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				216241.72	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				16578.53	
		Cost for 120 cum = a+b+c+d+e+f+g				1674431.69	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				13953.60	
					<b>say</b>	<b><u>13953.60</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.88	391.00	344.08	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unsilled)	day	19.00	391.00	7429.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	50.64	6797.00	344200.08	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 33.00 % of (a+b+c)</b>				306477.65	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				262726.57	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				224688.66	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				17226.13	
		Cost for 120 cum = a+b+c+d+e+f+g				1739839.18	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				14498.66	
					<b>say</b>	<b><u>14498.70</u></b>	
		<b>iii) For Box girder and balanced cantilever</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.88	391.00	344.08	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unsilled)	day	19.00	391.00	7429.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	50.64	6797.00	344200.08	M-052

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 38.00 % of (a+b+c)</b>				352913.66	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				272603.51	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				233135.60	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				17873.73	
		Cost for 120 cum = a+b+c+d+e+f+g				1805246.66	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				15043.72	
					<b>say</b>	<b><u>15043.70</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.88	391.00	344.08	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	50.64	6797.00	344200.08	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 48.00 % of (a+b+c)</b>				445785.68	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				292357.39	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				250029.48	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				19168.93	
		Cost for 120 cum = a+b+c+d+e+f+g				1936061.64	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				16133.85	
					<b>say</b>	<b><u>16133.80</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.88	391.00	344.08	L-17
		Mason(1st class)	day	3.00	512.00	1536.00	L-15
		Mazdoor(unskilled)	day	19.00	391.00	7429.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Cement	tonne	50.64	6797.00	344200.08	M-052
		Sand	cum	54.00	740.00	39960.00	M-170
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Formwork and staging @ 58.00 % of (a+b+c)				538657.69	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				312111.27	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				266923.37	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				20464.12	
		Cost for 120 cum = a+b+c+d+e+f+g				2066876.62	
		Rate per cum = (a+b+c+d+e+f+g)/120				17223.97	
					<b>say</b>	<b><u>17224.00</u></b>	
		<b>E. PSC Grade M 40</b>					
		<b>Case-I:- Using Concrete Mixer</b>					
		<b>i) For solid slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.96	391.00	375.36	L-17
		Mason(1st class)	day	2.00	512.00	1024.00	L-15
		Mazdoor(unskilled)	day	22.00	391.00	8602.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	25.80	42.00	1083.60	M-004
		Cement	tonne	6.45	6797.00	43840.65	M-052
		Sand (Coarse)	cum	6.75	2887.00	19487.25	M-169
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) Formwork and staging @ 20.00 % of (a+b+c)				27139.37	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				34635.27	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				29620.72	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				2270.92	
		Cost for 15 cum = a+b+c+d+e+f+g				229363.15	
		Rate per cum = (a+b+c+d+e+f+g)/15				15290.88	
					<b>say</b>	<b><u>15290.90</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.96	391.00	375.36	L-17
		Mason(1st class)	day	2.00	512.00	1024.00	L-15
		Mazdoor(unskilled)	day	22.00	391.00	8602.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	25.80	42.00	1083.60	M-004
		Cement	tonne	6.45	6797.00	43840.65	M-052
		Sand (Coarse)	cum	6.75	2887.00	19487.25	M-169
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 25.00 % of (a+b+c)</b>				33924.22	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				36078.40	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				30854.92	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2365.54	
		Cost for 15 cum = a+b+c+d+e+f+g				238919.94	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				15928.00	
					<b>say</b>	<b><u>15928.00</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.96	391.00	375.36	L-17
		Mason(1st class)	day	2.00	512.00	1024.00	L-15
		Mazdoor(unskilled)	day	22.00	391.00	8602.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	25.80	42.00	1083.60	M-004
		Cement	tonne	6.45	6797.00	43840.65	M-052
		Sand (Coarse)	cum	6.75	2887.00	19487.25	M-169
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		<b>d) Formwork and staging @ 30.00 % of (a+b+c)</b>				40709.06	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				37521.54	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				32089.12	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				2460.17	
		Cost for 15 cum = a+b+c+d+e+f+g				248476.74	
		<b>Rate per cum = (a+b+c+d+e+f+g)/15</b>				16565.12	
					<b>say</b>	<b><u>16565.10</u></b>	
		<b>ii) For T-Beam and slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.96	391.00	375.36	L-17
		Mason(1st class)	day	2.00	512.00	1024.00	L-15
		Mazdoor(unskilled)	day	22.00	391.00	8602.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	25.80	42.00	1083.60	M-004
		Cement	tonne	6.45	6797.00	43840.65	M-052
		Sand (Coarse)	cum	6.75	2887.00	19487.25	M-169
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Formwork and staging @ 25.00 % of (a+b+c)				33924.22	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				36078.40	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				30854.92	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				2365.54	
		Cost for 15 cum = a+b+c+d+e+f+g				238919.94	
		Rate per cum = (a+b+c+d+e+f+g)/15				15928.00	
					<b>say</b>	<b><u>15928.00</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.96	391.00	375.36	L-17
		Mason(1st class)	day	2.00	512.00	1024.00	L-15
		Mazdoor(unskilled)	day	22.00	391.00	8602.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	25.80	42.00	1083.60	M-004
		Cement	tonne	6.45	6797.00	43840.65	M-052
		Sand (Coarse)	cum	6.75	2887.00	19487.25	M-169
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) Formwork and staging @ 30.00 % of (a+b+c)				40709.06	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				37521.54	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				32089.12	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				2460.17	
		Cost for 15 cum = a+b+c+d+e+f+g				248476.74	
		Rate per cum = (a+b+c+d+e+f+g)/15				16565.12	
					<b>say</b>	<b><u>16565.10</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 15 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.96	391.00	375.36	L-17
		Mason(1st class)	day	2.00	512.00	1024.00	L-15
		Mazdoor(unskilled)	day	22.00	391.00	8602.00	L-18
		<b>b) Machinery</b>					
		Mechanical concrete mixer 0.40/0.28 cum capacity fitted with water measuring device & preferably also with load cell	hour	6.00	215.00	1290.00	P&M-014
		Generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	25.80	42.00	1083.60	M-004
		Cement	tonne	6.45	6797.00	43840.65	M-052
		Sand (Coarse)	cum	6.75	2887.00	19487.25	M-169
		20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
		10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020
		d) Formwork and staging @ 35.00 % of (a+b+c)				47493.90	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				38964.67	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				33323.32	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				2554.79	
		Cost for 15 cum = a+b+c+d+e+f+g				258033.54	
		Rate per cum = (a+b+c+d+e+f+g)/15				17202.24	
					<b>say</b>	<b><u>17202.20</u></b>	
		<b>Case-II:- Using Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>i) For solid slab / voided slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	206.40	42.00	8668.80	M-004
		Cement	tonne	51.60	6797.00	350725.20	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		d) Formwork and staging @ 18.00 % of (a+b+c)				190894.06	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				266176.31	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				227638.94	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				17452.32	
		Cost for 120 cum = a+b+c+d+e+f+g				1762684.16	
		Rate per cum = (a+b+c+d+e+f+g)/120				14689.03	
					<b>say</b>	<b><u>14689.00</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	206.40	42.00	8668.80	M-004
		Cement	tonne	51.60	6797.00	350725.20	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 23.00 % of (a+b+c)</b>				243920.18	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				277454.97	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				237284.65	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				18191.82	
		Cost for 120 cum = a+b+c+d+e+f+g				1837374.17	
		Rate per cum = (a+b+c+d+e+f+g)/120				15311.45	
					<b>say</b>	<b><u>15311.50</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	206.40	42.00	8668.80	M-004
		Cement	tonne	51.60	6797.00	350725.20	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 28.00 % of (a+b+c)</b>				296946.31	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				288733.62	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				246930.37	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				18931.33	
		Cost for 120 cum = a+b+c+d+e+f+g				1912064.18	
		Rate per cum = (a+b+c+d+e+f+g)/120				15933.87	
					<b>say</b>	<b><u>15933.90</u></b>	
		ii) For T-beam & slab including launching of precast by launching truss upto 40 m span					
		a. Height upto 5 m					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Labour					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		b) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		c) Material					
		Admixture @ 0.4 per cent of cement	kg	206.40	42.00	8668.80	M-004
		Cement	tonne	51.60	6797.00	350725.20	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		d) Formwork and staging @ 23.00 % of (a+b+c)				243920.18	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				277454.97	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				237284.65	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				18191.82	
		Cost for 120 cum = a+b+c+d+e+f+g				1837374.17	
		Rate per cum = (a+b+c+d+e+f+g)/120				15311.45	
					<b>say</b>	<b><u>15311.50</u></b>	
		b. Height 5 m to 10 m					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Labour					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		b) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		c) Material					
		Admixture @ 0.4 per cent of cement	kg	206.40	42.00	8668.80	M-004
		Cement	tonne	51.60	6797.00	350725.20	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		d) Formwork and staging @ 28.00 % of (a+b+c)				296946.31	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				288733.62	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				246930.37	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				18931.33	
		Cost for 120 cum = a+b+c+d+e+f+g				1912064.18	
		Rate per cum = (a+b+c+d+e+f+g)/120				15933.87	
					<b>say</b>	<b><u>15933.90</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	206.40	42.00	8668.80	M-004
		Cement	tonne	51.60	6797.00	350725.20	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 33.00 % of (a+b+c)</b>				349972.44	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				300012.28	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				256576.09	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				19670.83	
		Cost for 120 cum = a+b+c+d+e+f+g				1986754.18	
		Rate per cum = (a+b+c+d+e+f+g)/120				16556.28	
					<b>say</b>	<b><u>16556.30</u></b>	
		<b>iii) For cast-in-situ Box girder, segmental construction and balanced cantilever</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	206.40	42.00	8668.80	M-004
		Cement	tonne	51.60	6797.00	350725.20	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Formwork and staging @ 38.00 % of (a+b+c)				402998.57	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				311290.94	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				266221.81	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				20410.34	
		Cost for 120 cum = a+b+c+d+e+f+g				2061444.19	
		Rate per cum = (a+b+c+d+e+f+g)/120				17178.70	
					<b>say</b>	<b><u>17178.70</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	206.40	42.00	8668.80	M-004
		Cement	tonne	51.60	6797.00	350725.20	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		d) Formwork and staging @ 48.00 % of (a+b+c)				509050.82	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				333848.25	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				285513.24	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				21889.35	
		Cost for 120 cum = a+b+c+d+e+f+g				2210824.20	
		Rate per cum = (a+b+c+d+e+f+g)/120				18423.54	
					<b>say</b>	<b><u>18423.50</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	206.40	42.00	8668.80	M-004
		Cement	tonne	51.60	6797.00	350725.20	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Formwork and staging @ 58.00 % of (a+b+c)				615103.07	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				356405.57	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				304804.68	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				23368.36	
		Cost for 120 cum = a+b+c+d+e+f+g				2360204.22	
		Rate per cum = (a+b+c+d+e+f+g)/120				19668.37	
		<b>say</b>				<b><u>19668.40</u></b>	
		<b>F. PSC Grade M 45 Using Batching Plant, Transit Mixer and Concrete Pump</b>					
		<b>i) For solid slab / voided slab superstructure</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = cum Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	223.20	42.00	9374.40	M-004
		Cement	tonne	55.80	6797.00	379272.60	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		d) Formwork and staging @ 16.00 % of (a+b+c)				174364.09	
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				268882.50	
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				229953.32	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				17629.75	
		Cost for 120 cum = a+b+c+d+e+f+g				1780605.20	
		Rate per cum = (a+b+c+d+e+f+g)/120				14838.38	
		<b>say</b>				<b><u>14838.40</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = cum Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	223.20	42.00	9374.40	M-004

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cement	tonne	55.80	6797.00	379272.60	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 21.00 % of (a+b+c)</b>				228852.86	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				280472.26	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				239865.10	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				18389.66	
		Cost for 120 cum = a+b+c+d+e+f+g				1857355.42	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				15477.96	
					<b>say</b>	<b><u>15478.00</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	223.20	42.00	9374.40	M-004
		Cement	tonne	55.80	6797.00	379272.60	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 26.00 % of (a+b+c)</b>				283341.64	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				292062.02	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				249776.88	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				19149.56	
		Cost for 120 cum = a+b+c+d+e+f+g				1934105.65	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				16117.55	
					<b>say</b>	<b><u>16117.50</u></b>	
		<b>ii) For T-beam &amp; slab including launching of precast by launching truss upto 40 m span</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	223.20	42.00	9374.40	M-004
		Cement	tonne	55.80	6797.00	379272.60	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 21.00 % of (a+b+c)</b>				228852.86	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				280472.26	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				239865.10	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				18389.66	
		Cost for 120 cum = a+b+c+d+e+f+g				1857355.42	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				15477.96	
					<b>say</b>	<b><u>15478.00</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	223.20	42.00	9374.40	M-004
		Cement	tonne	55.80	6797.00	379272.60	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 26.00 % of (a+b+c)</b>				283341.64	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				292062.02	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				249776.88	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				19149.56	
		Cost for 120 cum = a+b+c+d+e+f+g				1934105.65	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				16117.55	
					<b>say</b>	<b><u>16117.50</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Admixture @ 0.4 per cent of cement	kg	223.20	42.00	9374.40	M-004
		Cement	tonne	55.80	6797.00	379272.60	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 31.00 % of (a+b+c)</b>				337830.42	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				303651.79	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				259688.66	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				19909.46	
		Cost for 120 cum = a+b+c+d+e+f+g				2101855.87	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				16757.13	
					<b>say</b>	<b><u>16757.10</u></b>	
		<b>iii) For cast-in-situ Box girder, segmental construction and balanced cantilever</b>					
		<b>a. Height upto 5 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unsilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	223.20	42.00	9374.40	M-004
		Cement	tonne	55.80	6797.00	379272.60	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 36.00 % of (a+b+c)</b>				392319.19	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				315241.55	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				269600.44	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				20669.37	
		Cost for 120 cum = a+b+c+d+e+f+g				2087606.09	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				17396.72	
					<b>say</b>	<b><u>17396.70</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unsilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	223.20	42.00	9374.40	M-004
		Cement	tonne	55.80	6797.00	379272.60	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 46.00 % of (a+b+c)</b>				501296.75	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				338421.08	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				289424.00	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				22189.17	
		Cost for 120 cum = a+b+c+d+e+f+g				2241106.54	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				18675.89	
					<b>say</b>	<b><u>18675.90</u></b>	
		<b>c. Height above 10 m</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 120 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(uns skilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	223.20	42.00	9374.40	M-004
		Cement	tonne	55.80	6797.00	379272.60	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 56.00 % of (a+b+c)</b>				610274.30	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				361600.60	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				309247.57	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				23708.98	
		Cost for 120 cum = a+b+c+d+e+f+g				2394606.99	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				19955.06	
					<b>say</b>	<b><u>19955.10</u></b>	

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SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**G. PSC Grade M 50**

Using Batching Plant, Transit Mixer and Concrete Pump

i) For cast-in-situ Box girder, segmental construction and balanced cantilever

**a. Height upto 5 m****Unit = cum****Taking output = 120 cum****a) Labour**

Mate	day	0.94	391.00	367.54	L-17
Mason(1st class)	day	3.50	512.00	1792.00	L-15
Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Admixture @ 0.4 per cent of cement	kg	235.20	42.00	9878.40	M-004
Cement	tonne	58.80	6797.00	399663.60	M-052
Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 35.00 % of (a+b+c)****e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)****f) Contractor's profit @ 15 % on (a+b+c+d+e)****g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

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

**Rate per cum = (a+b+c+d+e+f+g)/120****say 17599.90****b. Height 5 m to 10 m****Unit = cum****Taking output = 120 cum****a) Labour**

Mate	day	0.94	391.00	367.54	L-17
Mason(1st class)	day	3.50	512.00	1792.00	L-15
Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Admixture @ 0.4 per cent of cement	kg	235.20	42.00	9878.40	M-004
Cement	tonne	58.80	6797.00	399663.60	M-052
Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 45.00 % of (a+b+c)****e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)****f) Contractor's profit @ 15 % on (a+b+c+d+e)****g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

22459.73

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**SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Cost for 120 cum = a+b+c+d+e+f+g 2268432.43  
**Rate per cum = (a+b+c+d+e+f+g)/120** **18903.60**

**say** **18903.60**

**c. Height above 10 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.94	391.00	367.54	L-17
Mason(1st class)	day	3.50	512.00	1792.00	L-15
Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Admixture @ 0.4 per cent of cement	kg	235.20	42.00	9878.40	M-004
Cement	tonne	58.80	6797.00	399663.60	M-052
Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 55.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)**

Cost for 120 cum = a+b+c+d+e+f+g 2424876.04  
**Rate per cum = (a+b+c+d+e+f+g)/120** **20207.30**

**say** **20207.30**

**H. PSC Grade M 55**

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

**i) For cast-in-situ Box girder, segmental construction and balanced cantilever**

**a. Height upto 5 m**

**Unit = cum**

**Taking output = 120 cum**

**a) Labour**

Mate	day	0.94	391.00	367.54	L-17
Mason(1st class)	day	3.50	512.00	1792.00	L-15
Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18

**b) Machinery**

Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
Loader	hour	6.00	1030.00	6180.00	P&M-030
Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
Concrete Pump	hour	6.00	409.00	2454.00	P&M-015

**c) Material**

Admixture @ 0.4 per cent of cement	kg	254.00	42.00	10668.00	M-004
Cement	tonne	63.50	6797.00	431609.50	M-052
Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020

**d) Formwork and staging @ 35.00 % of (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

Cost for 120 cum = a+b+c+d+e+f+g 328323.33

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				280788.22	
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				21527.10	
		Cost for 120 cum = a+b+c+d+e+f+g				2174236.80	
		Rate per cum = (a+b+c+d+e+f+g)/120				18118.64	
					<b>say</b>	<b><u>18118.60</u></b>	
		<b>b. Height 5 m to 10 m</b>					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	254.00	42.00	10668.00	M-004
		Cement	tonne	63.50	6797.00	431609.50	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 45.00 % of (a+b+c)</b>				514532.72	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				352643.57	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				301587.35	
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				23121.70	
		Cost for 120 cum = a+b+c+d+e+f+g				2335291.38	
		Rate per cum = (a+b+c+d+e+f+g)/120				19460.76	
					<b>say</b>	<b><u>19460.80</u></b>	
		<b>c. Height above 10 m</b>					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		<b>a) Labour</b>					
		Mate	day	0.94	391.00	367.54	L-17
		Mason(1st class)	day	3.50	512.00	1792.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Batching Plant @ 20 cum/hour	hour	6.00	7088.00	42528.00	P&M-013
		Generator 100 KVA	hour	6.00	498.00	2988.00	P&M-026
		Loader	hour	6.00	1030.00	6180.00	P&M-030
		Transit Mixer	hour	15.00	883.00	13245.00	P&M-079
		Concrete Pump	hour	6.00	409.00	2454.00	P&M-015
		<b>c) Material</b>					
		Admixture @ 0.4 per cent of cement	kg	254.00	42.00	10668.00	M-004
		Cement	tonne	63.50	6797.00	431609.50	M-052
		Sand (Coarse)	cum	54.00	2887.00	155898.00	M-169
		20 mm Aggregate	cum	64.80	4374.00	283435.20	M-022
		10 mm Aggregate	cum	43.20	4269.00	184420.80	M-020
		<b>d) Formwork and staging @ 55.00 % of (a+b+c)</b>				628873.32	
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				376963.82	
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				322386.48	



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				24716.30	
		Cost for 120 cum = a+b+c+d+e+f+g				2496345.96	
		<b>Rate per cum = (a+b+c+d+e+f+g)/120</b>				20802.88	
					<b>say</b>	<b><u>20802.90</u></b>	
		<b>Note:-</b> 1. Wherever concrete is carried out using batching plant, transit mixer, concrete pump, admixers conforming IS: 9103 @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.					
		2. Cement provided for various components of the super structure is for estimating purpose only. Actual quantity of cement will be as per approved mix design. Similarly, the provision for coarse and fine aggregates is for estimating purpose and the exact quantity shall be as per the mix design.					
		3. The items like needle and surface vibrators are part of minor T & P which is already covered under the Add GST (multiplying factor). As such these items have not been added separately in the rate analysis.					
14.2	1600	Supplying, fitting & placing Thermo-Mechanically treated bar/ Cold twisted deformed steel bar reinforcement in superstructure complete as per drawings & MoRT&H technical specification Clauses 1600.					
		<b>Unit = 1 MT</b>					
		<b>Taking output = 1 MT</b>					
		<b>a) Labour for cutting, bending, tying and placing in position</b>					
		Mate	day	0.44	391.00	172.04	L-17
		Blacksmith	day	3.00	480.00	1440.00	L-03
		Mazdoor(unskilled)	day	8.00	391.00	3128.00	L-18
		<b>b) Material</b>					
		Steel bar including 5 per cent for laps and wastage	tonne	1.05	58000.00	60900.00	M-181
		Binding wire	Kg	8.00	69.00	552.00	M-039
		<b>Basic Cost of Labour &amp; Material (a+b)</b>		<b>66192.10</b>			
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>					
						14079.05	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>					
						12040.66	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>					
						923.12	
		<b>Rate per MT = a+b+c+d</b>					
						93234.87	
					<b>say</b>	<b><u>93234.90</u></b>	
14.3	1800	High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawings & MoRT&H technical specification Clauses 1800.					
		<b>Unit = 1 MT</b>					
		<b>Taking output = 0.377 MT</b>					
		Details of cost for 12T13 strand 40 m long cable (weight = 0.377 MT)					
		<b>a) Labour</b>					

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**SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**i) For making and fixing cables, anchorages**

Mate		day	0.16	391.00	62.56	L-17
Blacksmith		day	1.00	480.00	480.00	L-03
Mazdoor(unskilled)		day	3.00	391.00	1173.00	L-18

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>ii) For prestressing</b>					
		Mate	day	0.05	391.00	19.55	L-17
		Fitter	day	0.25	447.00	111.75	L-13
		Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18
		<b>iii) For grouting</b>					
		Mate	day	0.05	391.00	19.55	L-17
		Mason(1st class)	day	0.25	512.00	128.00	L-15
		Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Stressing jack with pump	hour	2.50	325.00	812.50	P&M-060
		Grouting pump with agitator	hour	1.00	304.00	304.00	P&M-032
		Generator	hour	3.50	252.00	882.00	P&M-027
		<b>c) Material</b>					
		H.T. Strand @ 9.42 kg/m including 2 per cent for wastage and extra length for jacking	tonne	0.39	78254.00	30127.79	M-115
		Sheathing duct ID 66 mm along with 5 per cent extra length 40 x 1.05 = 42 m.	metre	42.00	60.00	2520.00	M-175
		Tube anchorage set complete with bearing plate, permanent wedges etc	each	2.00	5360.00	10720.00	M-195
		Cement for grouting including 3 per cent wastage @ 3.00 kg/m = 3 x 1.03 x 40 = 123.60 kg (say, = 125 kg)	tonne	0.125	6797.00	849.63	M-052
		Add 0.50 per cent cost of material for Spacers, Insulation tape and miscellaneous items				2210.87	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				10890.92	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				9314.12	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				714.08	
		Cost for 0.377 MT (a+b+c+d+e+f)				72122.32	
		<b>Rate per MT = (a+b+c+d+e+f)/0.377</b>				191305.88	
					<b>say</b>	<b><u>191305.90</u></b>	
		<b>Note:-</b> 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 all formworks & required reinforcement complete as per drawings & MoRTH technical specification Clauses 2702. (including centering, shuttering, staging etc. but excluding reinforcement)					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>a) Labour</b>					
		Mazdoor(unskilled) for cleaning deck slab concrete surface.	day	0.15	391.00	58.65	L-18
		<b>b) Material</b>					
		Cement concrete M30 Grade, <b>Rate as per relevant item of concrete in Item 14.1 excluding formwork</b>	cum	1.00	7805.00	7805.00	Item no. 14.1.C.Ca se-1
		Steel bar reinforcement, <b>Rate as per item No 14.2(Excluding OH &amp; CP)</b>	tonne	0.075	66192.10	4964.41	Item no. 14.2
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				2728.53	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				2333.49	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				178.90	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Rate per cum (a+b+c+d+e)				18068.97	
					say	<b><u>18069.00</u></b>	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**14.5 516 & 2702 Mastic Asphalt**

Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, 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 0.005 cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 degree C, protruding 1 mm to 4 mm over mastic surface, all complete as per MoRT&H Technical Specification Clause 516, 2702.

**Unit = sqm**

**Taking output = 72.50 sqm (2.001 tonnes)(0.87 cum) assuming a density of 2.3 tonnes/cum.**

**a) Labour**

Mate	day	0.49	391.00	191.59	L-17
Mazdoor(unskilled)	day	11.00	391.00	4301.00	L-18
Mazdoor(Skilled)	day	1.25	475.00	593.75	L-20

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	0.06	386.00	23.16	P&M-033
Air compressor 210 cfm	hour	0.06	235.00	14.10	P&M-001
Mastic cooker	hour	6.00	138.00	828.00	P&M-043
Bitumen boiler 1500 litres capacity	hour	6.00	222.00	1332.00	P&M-011
Tractor	hour	1.00	265.00	265.00	P&M-076

**c) Material**

Base mastic (without coarse aggregates) = 60 per cent  
Coarse aggregate(3.35mm to 9.5 mm size) = 40 per cent .

**i) Bitumen (VG-30)**

@ 16.00% by weight of mix.  $2.001 \times \frac{16.00}{100} = 0.320$  tonne

	tonne	0.320	61186.00	19579.52	M-041
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**ii) Coarse Aggregate**

Crushed stone chipping 6.7 mm size 100% passing 11.2 mm and retained on 2.36 mm @ 40.00 % by weight of mix =  $2.001 \times \frac{40}{100} = 0.8$  MT =  $0.8/1.456 = 0.549$  cum

	cum	0.549	3972.90	2181.12	M-075
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**iii) Fine Aggregate**

Crusher stone dust or grit passing 2.36 mm & retained on 75 micron @ 26.00 % by weight of mix =  $2.001 \times \frac{26.00}{100} = 0.520$  tonnes =  $0.520/1.625 = 0.32$  cum

	cum	0.32	2252.60	720.83	M-069
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**iv) Filler**

Lime stone dust filler with calcium carbonate content not less than 80 per cent by weight @ 18.00 % by weight of mix =  $2.001 \times \frac{18.00}{100} = 0.36$  tonne

	tonne	0.36	3540.00	1274.40	M-126
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**v) Stone Chips for skid restance**

Stone chips of 13.2 mm nominal size @ 0.005 cum per 10 sqm =  $72.50 \times 0.005/10 = 0.036$  cum

	cum	0.036	4325.50	155.72	M-184
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**vi) Bitumen (VG-30) for precoating**

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Bitumen for coating of chips @ 2.00 % by weight = $0.036 \times 1.456 \times 2.001/100$ = $0.001048\text{MT} = 1.05\text{kg}$	tonne	0.0010	61186.00	61.19	M-041
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				6704.60	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				5733.90	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				439.60	
		Cost for 72.50 sqm = a+b+c+d+e+f				44399.47	
		<b>Rate per sqm = (a+b+c+d+e+f)/72.50</b>				612.41	
					<b>say</b>	<b><u>612.40</u></b>	

**Note:-** 1.The rates for 6 mm or any other thickness may be worked out on pro-rata basis.

2. Where tack coat is required to be provided before laying mastic asphalt, the same is required to be measured and paid separately.

3.The quantities of binder, filler and aggregates are for estimating purpose. Exact quantities shall be as per mix design.

4.This rate analysis is based on 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 16 per cent of the mastic asphalt blocks without aggregates and falls within the standards laid down by MoRTH Specifications.

- 14.6 2703, 1500, 1600 & 1700** Construction of precast RCC railing of M 30 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 (No. SD / 202 ), including all formworks required and MoRTH Technical Specification Clause 2703, 1500, 1600, 1700. (including centering, shuttering, staging etc. and reinforcement)

**Unit = 1 M**

**Taking output = 2 x 24 m span = 48.00**

**m**

**a) Material**

**Cement concrete M30 Grade**, Rate as per relevant item of concrete in Item 14.1(C) Case-I, i(a) i.e. per cum basic cost (a+b+c)

No. of vertical posts =  $(12 + 2)/2 = 28$

Nos., External area of vertical post

$0.25 \times 0.275 = 0.069\text{sqm}$ , Concrete in

Vertical posts =  $0.069 \times 28 = 1.932$

cum, Hand rail in 3 tiers =  $3 \times 24 = 72$

m, External area =  $0.170 \times 0.175 =$

$0.03\text{ sqm}$ , Concrete in hand rails =

$0.03 \times 72 = 2.16\text{ cum}$ , Total Concrete =

$1.932 + 2.16 = 4.092\text{ cum}$ . (Refer

MoRTH SD / 202).

cum	4.092	7805.00	31938.06	Item no. 14.1.C.Cas e-1.i(a)
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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Add 5.00% of above cost for form work for casting in casting yard.				1596.90	
		Steel bar reinforcement, <b>Rate as per item No 14.2(Excluding OH &amp; CP)</b>	tonne	0.865	66192.10	57256.17	Item no. 14.2
		Refer MoRTH SD / 202.					
		Add 5 per cent of (a) for handling and fixing of precast panels in position				4539.56	
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				20276.84	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				17341.13	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				1329.49	
		<b>Rate for 48 m (a+b+c+d)</b>				134278.14	
		<b>Rate per metre (a+b+c+d)/48</b>				2797.46	
					<b>say</b>	<b><u>2797.50</u></b>	
		<b>Note:-</b> 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 M 30 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 (No. SD / 202), including all formworks required and MoRT&H Technical Specification Clause 2703, 1500, 1600, 1700. (including centering, shuttering, staging etc. and reinforcement)					
		<b>Unit = 1 M</b>					
		<b>Taking output = 2 x 24 m span = 48.00 m.</b>					
		<b>a) Material</b>					
		<b>Cement concrete M30 Grade</b> , Rate as per relevant item of concrete in Item 14.1(C) Case-I, i(a) i.e. per cum basic cost (a+b+c)	cum	4.092	7805.00	31938.06	Item no. 14.1.C.Case-1.i(a)
		No. of vertical posts = $(12 + 2)2 = 28$ Nos., External area of vertical post $0.25 \times 0.275 = 0.069 \text{sqm}$ , Concrete in vehicle posts = $0.069 \times 28 = 1.932$ cum, Hand rail in 3 tiers = $3 \times 24 = 72$ m, External area = $0.170 \times 0.175 = 0.03 \text{sqm}$ , Concrete in hand rails = $0.03 \times 72 = 2.16$ cum, Total Concrete = $1.932 + 2.16 = 4.092$ cum. (Refer MoRTH SD / 202).					
		Add 12.00 % of above cost for form work.				3832.57	
		Steel bar reinforcement, <b>Rate as per item No 14.2(Excluding OH &amp; CP)</b>	tonne	0.865	66192.10	57256.17	Item no. 14.2
		refer MoRTH SD / 202.					
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				19786.80	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				16922.04	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Add Cess @ 1.00 % on (a+b+c)				1297.36	
		<b>Rate for 48 m (a+b+c+d)</b>				131032.99	
		<b>Rate per metre (a+b+c+d)/48</b>				2729.85	
					<b>say</b>	<b><u>2729.90</u></b>	
		<b>Note:-</b> 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.					
<b>14.8</b>	<b>2703.2 &amp; 1900</b>	<b>Providing, fitting and fixing mild steel railing complete as per drawing and Technical Specification as per approved drawings and MoRT&amp;H Technical Specification Clause 2703.2 &amp; 1900.</b>					
		<b>Unit = 1 M</b>					
		<b>Taking output = 2 x 50 m span = 100.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	2.80	391.00	1094.80	L-17
		Mazdoor(unskilled)	day	40.00	391.00	15640.00	L-18
		Mazdoor (Skilled)	day	30.00	475.00	14250.00	L-20
		<b>b) Material:</b>					
		1) ISMC 100 = 2.806 x 1.05 = 2.9463 MT	tonne	2.9463	59530.00	175393.24	M-179
		2) MS Flat = 0.964 x 1.05 = 1.0122 MT	tonne	1.0122	59530.00	60256.27	M-133
		3) MS bars = 0.17 x 1.05 = 0.1785 MT	tonne	0.1785	57000.00	10174.50	M-180
		4) MS bolts, nuts and washers	kg	150.00	64.50	9675.00	M-141
		Add @ 5.00% of cost of material for painting one shop coat with red oxide primer and three coats of synthetic enamel paint and consumables to safeguard against weathering and corrosion.				12774.95	
		Add for cost of concrete for fixing vertical posts in the performed recess @ 1.00% of cost of material.				2554.99	
		Add for electricity charges, welding and drilling equipment, electrodes and other consumables @ 1.00% of cost of material.				2554.99	
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				64739.23	
		d) Contractor's profit @ 15 % on (a+b+c)				55366.19	
		e) Add Cess @ 1.00 % on (a+b+c+d)				4244.74	
		Cost for 100 m steel railing = a+b+c+d+e				428718.90	
		<b>Rate per metre (a+b+c+d+e)/100</b>				4287.19	
					<b>say</b>	<b><u>4287.20</u></b>	
<b>14.9</b>	<b>2705</b>	<b>Providing and placing in position drainage Spouts complete as per drawing (SD / 205) and MoRT&amp;H Technical Specification Clause 515, 2705.</b>					
		<b>Unit = 1 No.</b>					
		<b>Taking output = 1 No.</b>					
		<b>a) Labour</b>					
		<b>For fabrication</b>					
		Mate	day	0.01	391.00	3.91	L-17
		Mazdoor(unskilled)	day	0.02	391.00	7.82	L-18



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Blacksmith, welder etc.	day	0.02	480.00	9.60	L-03
		<b>For fixing in position</b>					
		Mate	day	0.01	391.00	3.91	L-17
		Mason(1st class)	day	0.01	512.00	5.12	L-15
		Mazdoor(unskilled)	day	0.02	391.00	7.82	L-18
		<b>b) Material</b>					
		i) Corrosion resistant Structural steel including 5 per cent wastage	Kg	4.00	59.53	238.12	M-193
		ii) GI pipe 100mm dia	metre	6.00	873.00	5238.00	M-109
		iii) GI bolt 10 mm Dia	each	6.00	12.00	72.00	M-107
		iv) Galvanised MS flat clamp	each	2.00	53.50	107.00	M-103
		Add @ 5.00% of cost of material and labour for electrodes, cutting gas, sealant, anti-corrosive bituminous paint, mild steel grating etc.				284.67	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1271.51	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1087.42	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				83.37	
		<b>Rate per metre (a+b+c+d+e)</b>				8420.27	
					<b>say</b>	<b><u>8420.30</u></b>	
		<b>Note:-</b> 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 including all formworks required as per drawings and MoRT&H Technical Specification Clause 2700.					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>a) Material &amp; labour</b>					
		Concrete, <b>Rate as per item No. 12.6 (A)</b> excluding formworks	cum	1.00	6839.00	6839.00	Item 12.6.A
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				1454.66	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				1244.05	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				95.38	
		<b>Rate per cum (a+b+c+d)</b>				9633.08	
		<b>Rate per cum</b>			<b>say</b>	<b><u>9633.10</u></b>	
14.11	1500,1600,1700 & 2704	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawings and MoRT&H Technical Specification Clause 2704, 1500, 1600, 1700.					
		<b>A. RCC M 30 Grade</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>a) Material</b>					
		Cement concrete M30 Grade, <b>for rate refer relevant item of concrete in item 12.6(G)</b> excluding formwork i.e. per cum basic cost (a+b+c) (Excluding OH & CP)	cum	1.00	7778.00	7778.00	Item 12.6(G)

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		(Refer relevant item of concrete in item No. 12.6(G) except that form work may be added at the rate of 2.00% of cost.				155.56	
		<b>Steel bar reinforcement, Rate as per item No 14.2(Excluding OH &amp; CP)</b>	tonne	0.05	66192.10	3309.61	Item 12.2
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				2391.42	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				2045.19	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				156.80	
		<b>Rate per cum (a+b+c+d)</b>				15836.57	
					<b>say</b>	<b><u>15836.60</u></b>	
		<b>B. RCC M 25 Grade</b>					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>a) Material</b>					
		Cement concrete M25 Grade, <b>for rate refer relevant item of concrete in item 12.6(E)</b> excluding formwork i.e. per cum basic cost (a+b+c) (Excluding OH & CP)	cum	1.00	7756.00	7756.00	Item 12.6(E)
		(Refer relevant item of concrete in item No. 12.6(G) except that form work may be added at the rate of 2.00% of cost.				155.12	
		<b>Steel bar reinforcement, Rate as per item No 14.2(Excluding OH &amp; CP)</b>	tonne	0.05	66192.10	3309.61	Item 12.2
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				2386.65	
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				2041.11	
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				156.48	
		<b>Rate per cum (a+b+c+d)</b>				15804.96	
					<b>say</b>	<b><u>15805.00</u></b>	
		<b>Note:-</b> The grade of reinforced cement concrete may be adopted as M30 for severe conditions and M25 for moderate conditions.					
14.12	1600	<b>Providing anti-corrosive treatment to Twisted steel/ deformed bar reinforcement with Fusion Bonded Epoxy Coating (FBEC).</b> <b>Unit = 1 MT</b> <b>Taking output = 1 MT</b> <b>To be taken as per the prevailing market rates.</b> <b>Note:-</b> Contractors generally do not have expertise for this item . The job is therefore, got done from specialised firms who have the expertise in the field of construction chemicals. The prevailing rate in the market is required to be ascertained from the market and added in the cost estimate. Detailed guidelines in this regard have been issued by MoRT&H vide their circular no. RW/NH-34041/44/91-S&R dated 21.3.2000.					
14.13	1800 & 2300	<b>Precast - pretensioned Girders</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Providing, precasting, transportation and placing in position precast pretensioned concrete girders as per drawings and MoRT&H Technical Specification Clause 1800, 2300. (including centering, shuttering, staging etc. but excluding reinforcement)					
		<b>Unit = 1 cum</b>					
		<b>Taking output = 1 cum</b>					
		Grade of concrete - M40					
		<b>a) Labour</b>					
		(i) Cutting, bending, making reinforcement cage, placing in position, binding etc. complete					
		Mate	day	0.07	391.00	27.37	L-17
		Mazdoor(Skilled)	day	0.35	475.00	166.25	L-20
		Mazdoor(unsilled)	day	1.40	391.00	547.40	L-18
		(ii) Cable cutting and threading in position including binding by insulation tape with HDPE pipes etc., prestressing and cutting of extra length of HT strand after de-stressing.					
		<b>Taking quantity of HT strand 60 Kg/cum</b>					
		Mate	day	0.03	391.00	11.73	L-17
		Mazdoor(Skilled)	day	0.14	475.00	66.50	L-20
		Mazdoor(unsilled)	day	0.50	391.00	195.50	L-18
		(iii) Erection and dismantling of shuttering					
		<b>Taking shuttering area 10 sqm/cum of concrete</b>					
		Mate	day	0.12	391.00	46.92	L-17
		Mazdoor(Skilled)	day	1.00	475.00	475.00	L-20
		Mazdoor(unsilled)	day	2.00	391.00	782.00	L-18
		(iv) Concreting by Batching plant and stationary concrete pump					
		Mate	day	0.03	391.00	11.73	L-17
		Mazdoor(Skilled)	day	0.05	475.00	23.75	L-20
		Mazdoor(unsilled)	day	0.60	391.00	234.60	L-18
		(v) Steam curing and manual curing					
		Mate	day	0.01	391.00	3.91	L-17
		Mazdoor(unsilled)	day	0.35	391.00	136.85	L-18
		(vi) Handling of precast girder, stacking in stockyard and again loading in trailer					
		Mate	day	0.01	391.00	3.91	L-17
		Mazdoor(unsilled)	day	0.25	391.00	97.75	L-18
		(vii) Placement of girders in position over pier caps including placement of sand jacks, channel, levelling etc.					
		Mate	day	0.01	391.00	3.91	L-17
		Mazdoor(Skilled)	day	0.06	475.00	28.50	L-20
		Mazdoor(unsilled)	day	0.24	391.00	93.84	L-18
		<b>b) Machinery</b>					
		<b>i) At casting yard</b>					
		Batching Plant @ 20 cum/hour	hour	0.05	7088.00	354.40	P&M-013
		Generator 100 KVA	hour	0.05	498.00	24.90	P&M-026
		Loader	hour	0.05	1030.00	51.50	P&M-030
		Transit Mixer	hour	0.10	883.00	88.30	P&M-079
		Concrete Pump	hour	0.05	409.00	20.45	P&M-015
		Crane 35 tonne capacity	hour	0.10	1708.00	170.80	P&M-017
		Trailer 30 tonne capacity	hour	0.10	890.00	89.00	P&M-078
		<b>ii) For transportation and placement at site</b>					
		Crane 35 tonne capacity	hour	0.15	1708.00	256.20	P&M-017
		Trailer 30 tonne capacity	hour	0.15	890.00	133.50	P&M-078
		<b>c) Material</b>					
		Twisted steel/ deformed bar	tonne	0.10	58000.00	5800.00	M-181

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		HT strand with 5 per cent as wastage and extra length for anchoring	tonne	0.06	78254.00	4695.24	M-115
		LDO for steam curing	Litre	37.00	88.40	3270.80	M-124
		Admixture @ 0.4% of cement	Kg	1.88	42.00	78.96	M-004
		Cement	tonne	0.47	6797.00	3194.59	M-052
		Sand	cum	0.45	740.00	333.00	M-170
		20 mm Aggregate	cum	0.54	4374.00	2361.96	M-022
		10 mm Aggregate	cum	0.36	4269.00	1536.84	M-020
		Add consumables such as binding wire, foam, packing tape, shuttering oil, HDPE pipe for unbonding of strand, bolt & nuts etc @ 1.00% of material cost				212.71	
		Cost of formwork, steam curing arrangement, pretensioning arrangement etc @ 5.00% of cost material, labour and machinery				1281.53	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				5724.20	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				4895.45	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				375.32	
		<b>Rate per cum = (a+b+c+d+e+f)</b>				37907.07	
					<b>say</b>	<b><u>37907.10</u></b>	
<b>14.14</b>	<b>800</b>	<b>Crash Barriers</b> 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.					
<b>14.15</b>	<b>800</b>	<b>Painting on concrete surface</b> 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 as per drawings and MoRT&H Technical Specification Clause 800.  <b>Unit = sqm</b> <b>Taking output = 10 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-17
		Painter	day	0.25	475.00	118.75	L-22
		Mazdoor(Skilled)	day	0.25	475.00	118.75	L-20
		<b>b) Material</b>					
		Water based paint of approved quality for cement concrete surface	Litres	5.00	66.00	330.00	M-197
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				121.54	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				103.94	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				7.97	
		Cost for 10 sqm (a+b+c+d)				804.86	
		<b>Rate per sqm (a+b+c+d+e)/10</b>				80.49	
					<b>say</b>	<b><u>80.50</u></b>	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**14.16 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 per drawings and MoRT&H Technical Specification Clause 2604.

**Unit = Running meter**

**Taking output = 12 m**

**a) Labour**

Mate	day	0.02	391.00	7.82	L-17
Mazdoor(unskilled)	day	0.40	391.00	156.40	L-18
Mazdoor(Skilled)	day	0.20	475.00	95.00	L-20

**b) Material**

Galvanised M.S plate 200 mm wide, 12 mm thick @ 94.20 kg/sqm including 5 per cent wastage	kg	237.50	63.00	14962.50	M-101
Add 1.00% of cost of steel plate cutting, welding consumables and galvanised nails.				149.63	

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

3269.49

**d) Contractor's profit @ 15 % on (a+b+c)**

2796.12

**e) Add Cess @ 1.00 % on (a+b+c+d)**

214.37

Cost for 12 m = (a+b+c+d+e)

21651.32

**Rate per m = (a+b+c+d+e)/12**

1804.28

**say 1804.30**

**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.

**14.17 2605 Filler joint**

(i) Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawings and MoRT&H Technical Specification Clause 2605.

**Unit = Running meter**

**Taking output = 12 m**

**a) Labour**

Cutting, bending, carrying & fixing etc.

Mate	day	0.04	391.00	15.64	L-17
Mazdoor(unskilled)	day	0.50	391.00	195.50	L-18
Mazdoor(Skilled)	day	0.50	475.00	237.50	L-20

**b) Material**

Copper plate - 12m long x 250 mm wide	kg	55.00	850.00	46750.00	M-063
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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) Add GST (multiplying factor) @ 0.2127 on (a+b)**

10039.15

**d) Contractor's profit @ 15 % on (a+b+c)**

8585.67

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Add Cess @ 1.00 % on (a+b+c+d)				658.23	
		Cost for 12 m = (a+b+c+d)				66481.69	
		Rate per m = (a+b+c+d+e)/12				5540.14	
					<b>say</b>	<b><u>5540.10</u></b>	
		(ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawings and MoRT&H Technical Specification Clause 2605.					
		<b>Unit = Running meter</b>					
		<b>Taking output = 12 m</b>					
		<b>a) Labour</b>					
		For carrying, placing & fixing.					
		Mate	day	0.008	391.00	3.13	L-17
		Mazdoor(unskilled)	day	0.10	391.00	39.10	L-18
		Mazdoor(Skilled)	day	0.10	475.00	47.50	L-20
		<b>b) Material</b>					
		20 mm thick compressible fibre board 12 m long x 25 cm deep.	sqm	3.00	747.40	2242.20	M-062
		Area = 12 x 0.25 = 3 sqm					
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				496.00	
		d) Contractor's profit @ 15 % on (a+b+c)				424.19	
		e) Add Cess @ 1.00 % on (a+b+c+d)				32.52	
		Cost for 12 m = (a+b+c+d+e)				3284.64	
		Rate per m = (a+b+c+d+e)/12				273.72	
					<b>say</b>	<b><u>273.70</u></b>	
		(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 drawings and MoRT&H Technical Specification Clause 2605.					
		<b>Unit = Running meter</b>					
		<b>Taking output = 12 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-17
		Mazdoor(unskilled)	day	0.20	391.00	78.20	L-18
		Mazdoor(Skilled)	day	0.10	475.00	47.50	L-20
		<b>b) Material</b>					
		Premoulded joint filler 12 m long, 20 mm thick and 300 mm deep.	sqm	3.60	816.20	2938.32	M-150
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				652.55	
		d) Contractor's profit @ 15 % on (a+b+c)				558.07	
		e) Add Cess @ 1.00 % on (a+b+c+d)				42.79	
		Cost for 12 m = (a+b+c+d+e)				4321.34	
		Rate per m = (a+b+c+d+e)/12				360.11	
					<b>say</b>	<b><u>360.10</u></b>	
		(iv) Providing and filling joint sealing compound as per drawings and technical specifications with Sand and 6 per cent bitumen by weight as per drawings and MoRT&H Technical Specification Clause 2605.					
		<b>Unit = Running meter</b>					
		<b>Taking output = 12 m</b>					

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		12m long x 100 mm wide x 10mm deep recess					
		<b>a) Labour</b>					
		Mate	day	0.02	391.00	7.82	L-17
		Mazdoor(unskilled)	day	0.50	391.00	195.50	L-18
		Mazdoor(Skilled)	day	0.10	475.00	47.50	L-20
		<b>b) Material</b>					
		Sand	cum	0.012	740.00	8.88	M-170
		Volume 12 x 0.1 x 0.01 = 0.012 cum					
		Weight 0.012 x 1400 = 16.8kg					
		<b>Bitumen (VG-30)</b>	Tonne	0.001	61186.00	61.19	M-041
		16.8 x 0.06 = 1 kg					
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				68.25	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				58.37	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				4.48	
		Cost for 12 m = (a+b+c+d)				451.98	
		<b>Rate per m = (a+b+c+d+e)/12</b>				37.67	
					<b>say</b>	<b><u>37.70</u></b>	

**Note:-** For arriving at the final rate of filler joints per m length and per cm depth of joint filling compound, the rates at Sl. No. i), ii), iii) & iv) shall be added.

**14.18 2600 Asphaltic Plug joint**

Providing and laying of asphaltic plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm, depth of joint varying from 75 mm to 100 mm, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate of 200 mm x 6 mm of weldable structural steel conforming to IS: 2062, asphaltic plug to consist of bitumen binder, carefully selected single size aggregate of 12.5 mm nominal size and a heat resistant foam caulking / backer rod, all as per drawings and MoRT&H Technical Specification Clause 2605.

**Unit = meter**

**Taking output = 12.00 m**

		<b>a) Labour</b>					
		Mate	day	0.052	391.00	20.33	L-17
		Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18
		Mazdoor(Skilled)	day	0.30	475.00	142.50	L-20
		<b>b) Material</b>					
		Crushed stone aggregate 12.5 mm nominal size	cum	0.75	4304.00	3228.00	M-021
		<b>Bitumen (VG-30)</b>	Tonne	0.0775	61186.00	4741.92	M-041
		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	Tonne	0.113	59530.00	6726.89	M-193
		Add 1.00 % for welding and foam caulking/backer rod and other incidentals.				152.51	
		<b>c) Machinery</b>					
		Mastic cooker 1 tonne capacity	hour	1.00	138.00	138.00	P&M-043
		Smooth 3-wheeled steel roller 8-10T capacity	hour	0.50	439.00	219.50	P&M-070
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				3352.29	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		e) Contractor's profit @ 15 % on (a+b+c+d)				2866.94	
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				219.80	
		Cost for 12 m asphalt plug joint = (a+b+c+d+e+f)				22199.67	
		<b>Rate per m = (a+b+c+d+e+f)/12</b>				1849.97	
					<b>say</b>	<b><u>1850.00</u></b>	
		<b>Note:-</b> 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.					
<b>14.19</b>	<b>2606</b>	<b>Elastomeric Slab Steel Expansion Joint</b>					
		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 as per drawings and MoRT&H Technical Specification Clause 2606.					
		<b>Unit = meter</b>					
		<b>Taking output = 12.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.06	391.00	23.46	L-17
		Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18
		Mazdoor(Skilled)	day	0.50	475.00	237.50	L-20
		<b>b) Material</b>					
		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	12.00	20900.00	250800.00	M-086
		Add 5.00 % of cost of material for anchorage reinforcement, welding and other incidentals.				12540.00	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				56151.09	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				48021.46	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				3681.65	
		Cost for 12 m = (a+b+c+d+e)				371846.15	
		<b>Rate per m = (a+b+c+d+e)/12</b>				30987.18	
					<b>say</b>	<b><u>30987.20</u></b>	
<b>14.20</b>	<b>2600</b>	<b>Compression Seal Joint</b>					



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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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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 as per drawings and MoRTH Technical Specification Clause 2600.

**Unit = Running meter**

**Taking output = 12 m**

**a) Labour**

Mate	day	0.036	391.00	14.08	L-17
Mazdoor(unskilled)	day	0.60	391.00	234.60	L-18
Mazdoor(Skilled)	day	0.30	475.00	142.50	L-20

**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 5.00 % wastage.	Tonne	0.446	59530.00	26550.38	M-193
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Add 5.00% of cost of above for structural steel for anchorage, welding and other incidentals. 1347.08

Preformed continuous chloroprene elastomer or closed cell foam sealing element with high tear strength, vulcanised in a single operation for the full length of a joint to ensure water tightness.	metre	12.00	20900.00	250800.00	M-086
Add 1.00 % of cost of sealing element for lubricant-cum-adhesive and other consumables.				2508.00	

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

59895.60

**d) Contractor's profit @ 15 % on (a+b+c)**

51223.84

**e) Add Cess @ 1.00 % on (a+b+c+d)**

3927.16

Cost for 12 m = (a+b+c+d+e)

396643.23

**Rate per m = (a+b+c+d+e)/12**

33053.60

**say 33053.60**

**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.

**14.21 2607 Strip Seal Expansion Joint**

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		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 as per drawings and MoRT&H Technical Specification Clause 2607.					
		<b>Unit = Running meter</b> <b>Taking output = 12 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.05	391.00	19.55	L-17
		Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18
		Mazdoor(Skilled)	day	0.25	475.00	118.75	L-20
		<b>b) Material</b>					
		Supply of complete assembly of strip seal expansion joint comprising of edge beams, anchorage, strip seal element and complete accessories as per approved specifications and drawings.	metre	12.00	12204.00	146448.00	M-192
		Add 5.00 % of cost of material for anchorage reinforcement, welding and other incidentals.				7348.87	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				32825.18	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				28072.70	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				2152.24	
		Cost for 12 m = (a+b+c+d+e)				217376.28	
		<b>Rate per m = (a+b+c+d+e)/12</b>				18114.69	
					<b>say</b>	<b><u>18114.70</u></b>	

**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.

**14.22 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 140 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 as per drawings and MoRT&H Technical Specification Clause 2600.

**Unit = Running meter**  
**Taking output = 12 m**

**a) Labour**

Mate	day	0.056	391.00	21.90	L-17
Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18
Mazdoor(Skilled)	day	0.40	475.00	190.00	L-20

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>b) Material</b>					
		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	12.00	11785.00	141420.00	M-127
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				30208.27	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				25834.67	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				1980.66	
		Cost for 12 m Modular strip/box seal joint = (a+b+c+d+e)				200046.50	
		<b>Rate per m = (a+b+c+d+e)/12</b>				16670.54	
					<b>say</b>	<b><u>16670.50</u></b>	
		<b>Note:-</b> 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.					
<b>14.23</b>	<b>2600</b>	<b>Modular Strip / Box Seal Joint</b> Providing and laying of a modular strip box seal expansion joint catering to a horizontal movement beyond 140 mm and upto 210 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 as per drawings and MoRT&H Technical Specification Clause 2600.  <b>Unit = Running meter</b> <b>Taking output = 12 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.07	391.00	27.37	L-17
		Mazdoor(unskilled)	day	1.25	391.00	488.75	L-18
		Mazdoor(Skilled)	day	0.50	475.00	237.50	L-20
		<b>b) Material</b>					
		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	12.00	14305.00	171660.00	M-128
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				36672.38	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				31362.90	

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Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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e) **Add Cess @ 1.00 % on (a+b+c+d)** 2404.49

Cost for 12 m Modular strip/box seal joint = 242853.39  
(a+b+c+d+e)

**Rate per m = (a+b+c+d+e)/12** 20237.78

**say** **20237.80**

**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.

**12.24** **1500, 1700, 2100** Providing and laying reinforced cement concrete in superstructure in footpath slab at all heights including all formworks required as per drawings & MoRTH technical specifications Clauses 1500, 1700, 2100.

**A. RCC Grade M20**

**Case- I:- Using Concrete Mixer**

**Unit = cum**

**Taking output = 15 cum**

**a) Labour**

Mate	day	0.86	391.00	336.26	L-17
Mason (1st class)	day	1.50	512.00	768.00	L-15
Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18

**b) Machinery**

Mechanical Concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00	P&M-014
Electric generator 33 KVA	hour	6.00	252.00	1512.00	P&M-027

**c) Material**

Cement	tonne	5.12	6797.00	34800.64	M-052
Sand	cum	6.75	740.00	4995.00	M-170
20 mm Aggregate	cum	8.10	4374.00	35429.40	M-022
10 mm Aggregate	cum	5.40	4269.00	23052.60	M-020

**d) Formwork @ 4.00% on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)** 24333.74

**f) Contractor's profit @ 15 % on (a+b+c+d+e)** 20810.67

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)** 1595.48

Cost for 15 cum = a+b+c+d+e+f+g 161143.95

**Rate per cum = ( a+b+c+d+e+f+g )/15** 10742.93

**say** **10742.90**

**Additional items for steel superstructure**

**14.25** **1900** **Supply and fabrication of steel work at fabricators workshop**

**CHAPTER-14**  
**SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Supply and fabrication of mild steel of IS:2062 structural steel work at fabricators workshop comprising of main truss, cross girders, deck stringers, wind bracings, kerb channel, jacking beams, connecting plates and other members and delivered at bridge site in undamaged condition 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 MoRT&H technical specification Clause 1900 and as directed by the Engineer-in-Charge.					
		Unit = MT Worked out based on 40m single span or in multiples Taking output = 425.472 MT					
		<b>a) Labour</b> <b>(for cutting, bending, making holes, joining, welding and erecting in position)</b>					
		Mate	Day	421.22	391.00	1,64,697.02	L-17
		Fitter	Day	2,340.10	447.00	10,46,024.70	L-13
		Blacksmith	Day	2,340.10	480.00	11,23,248.00	L-03
		Welder	Day	2,340.10	512.00	11,98,131.20	L-27
		Mazdoor (Unskilled)	Day	2,340.14	391.00	9,14,994.74	L-18
		<b>b) Material</b>					
		Structural steel in plates, angles, etc including 5 per cent wastage	tonne	446.750	59,530.00	2,65,95,027.50	M-193
		Nuts & bolts	Kg	12,764.20	64.50	8,23,290.90	M-141
		One coat of ready mixed, red lead primer painting at the shop confirming 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 <i>(For analysis purpose only rate assumed after deducting item no 10.6 of MoRD from 8.9 of MoRT&amp;H)</i>	Sqm	4,995.04	17.90	89,411.22	
		Add @ 1% on cost of Structural steel, nuts & bolts for scaffolding and temporary arrangement for assembling				2,74,183.00	
		Electrodes, cutting gas and other consumables @ 10 % of cost of cost of Structural steel, nuts & bolts above				27,41,832.00	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				7419279.96	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				6345106.35	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				486458.15	
		Cost of 425.472 MT = a+b+c+d+e				4,92,21,684.75	
		<b>Rate per MT = (a+b+c+d+e)/425.472</b>				<b>1,15,687.25</b>	
					<b>say</b>	<b><u>115687.20</u></b>	
14.26	1900	Taking delivery of fabricated steelwork					

**CHAPTER-14  
SUPER-STRUCTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Taking delivery of fabricated steel work leading to and at site as necessary, assembling and erection of fabricated steel structure to proper line, level and camber as per approved drawings complete in all respect including transportation and handling in and around site, as per approved drawing and specifications including supply of all fasteners, painting of all exposed surfaces of steel work after erection with one site coat of red lead primer paint conforming to IS-102 and two coats aluminium paint conforming to IS-2339 including all labour, consumables and other materials, machinery, tools and tackles complete as per MoRTH technical specification Clause no. 1900 and as directed by the Engineer-in-Charge.

Unit = MT

Worked out based on 40m single span or in multiples

Taking output = 1 MT

**a) Assembling and erection at site including labour component, erection cum dismantling of Staging, Scaffolding, Falseswork etc complete. (A full proof method statement of erection programme at site has to be submitted and get approved before start)**

Formwork, Staging and Cost of erection 15%+15%=30% per MT cost of Item: 14.25 (a+b) i.e 30% of (a+b)/425.472

**82,193.05**

24657.91

**b) One coat of ready mixed, red lead primer painting after erection at site confirming to IS:102**

2/5 part considered for one coat of primer and also Two coat of aluminium paint over steel primer after cleaning as specified under 1906 of section 1900.

Sqm

11.740

99.60

1,169.30

*(For analysis purpose only rate assumed from item no. 8.9 plus rate of prime coat as derived above in item no. 14.25)*

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

5244.74

**d) Contractor's profit @ 15 % on (a+b+c)**

4485.40

**e) Add Cess @ 1.00 % on (a+b+c+d)**

343.88

Cost of 1 MT = a+b+c+d

35,901.23

**Rate per MT = (a+b+c+d+e)/1**

**35,901.23**

say

**35901.20**

**CHAPTER - 15**  
**RIVER TRAINING AND PROTECTION WORKS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
15.1	2503	<b>Boulder apron laid dry without wire crates.</b> 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 MoRT&H Technical specifications clause 2503.					
		<b>Unit = cum</b> <b>Taking output = 1 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mason (2ns Class)	day	0.35	475.00	166.25	L-16
		Mazdoor (unskilled)	day	0.75	391.00	293.25	L-18
		<b>b) Material</b>					
		Stone boulders with least dimension of 200 mm	cum	1.00	3000.90	3000.90	M-182
		Stone spalls of minimum size 25 mm	cum	0.20	3044.90	608.98	M-191
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				868.88	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				743.09	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				56.97	
		<b>Rate per cum = (a+b+c+d+e)</b>				5753.96	
					<b>say</b>	<b><u>5754.00</u></b>	
		<b>Note:-</b> Nominal excavation required for preparation of bed has been taken into account while making provision for labour.					
15.2	2503	<b>Boulder Apron Laid in Wire Crates</b> Providing and laying of boulder apron laid in wire crates made with 4mm dia GI wire conforming to IS: 280 & IS:4826 in 100 mm x 100 mm mesh (weaved diagonally) including 10 per cent extra for laps and joints laid with stone boulders weighing not less than 40 kg each as per drawing and MoRT&H Technical specifications clause 2503.					
		<b>Unit = cum</b> <b>Taking output = 3 mx1.5mx1.25m = 5.63 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mazdoor (Skilled)	day	0.35	475.00	166.25	L-20
		Mazdoor(unskilled)	day	0.75	391.00	1173.0	L-18
		<b>b) Material</b>					
		Galvanised steel wire crates of mesh size of 100 mm x 100 mm woven with 4 mm dia GI wire in rolls of required size.	kg	70.40	72.60	5111.04	M-104
		Stone boulders with least dimension of 200 mm	cum	5.63	3000.90	16895.07	M-182
		Stone spalls of minimum size 25 mm	cum	1.13	3044.90	3440.74	M-191
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				5700.7	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				4875.37	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				373.78	

**CHAPTER - 15**  
**RIVER TRAINING AND PROTECTION WORKS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Cost for 5.63 cum = a+b+c+d 37751.61  
**Rate per cum = (a+b+c+d)/5.63** 6705.44  
**say** 6705.40

**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.

**15.3 2503 i. Cement Concrete Blocks (size 0.5 x 0.5 x 0.5 m)**

Providing and laying of apron with cement concrete blocks of size 0.5 x 0.5 x 0.5 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 as per drawings & MoRT&H technical specifications Clauses 2503.

**Unit = cum**

**Taking out put = 1 cum**

Concrete Grade M15, <b>Rate as per item No. 12.6 (A) including OH &amp; CP</b>	cum	1.00	10018.10	10018.10	Item 12.6 (A)
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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.				200.36	
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**Rate per cum** 10218.46  
**say** 10218.50

**ii. 1st class brick blocks in CM 1:6 (size 0.5 x 0.5 x 0.5 m)**

Providing and laying of apron with 1st class brick blocks in CM 1:6 of size 0.5 x 0.5 x 0.5 m cast in-situ as per drawings & MoRT&H technical specifications Clauses 2503.

**Unit = cum**

**Taking out put = 1 cum**

1st Class brick work in CM 1:6, <b>Rate as per item No. 12.5 (iv) including OH &amp; CP</b>	cum	1.00	9157.60	9157.60	Item 12.5(iv)
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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.				183.15	
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**Rate per cum** 9340.75  
**say** 9340.80

**15.4 2504** Providing and laying pitching on slopes laid over prepared filter media in front of toe of embankment complete as per drawing and MoRT&H Technical specifications clause 2504.

**A. Stone/Boulder**

**Unit = cum**

**Taking output = 1 cum**



**CHAPTER - 15**  
**RIVER TRAINING AND PROTECTION WORKS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>a) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mason(2nd class)	day	0.35	475.00	166.25	L-16
		Mazdoor(unskilled)	day	0.75	391.00	293.25	L-18
		<b>b) Material</b>					
		Stone boulders with least dimension of 200 mm	cum	1.00	3000.90	3000.90	M-182
		Stone spalls of minimum size 25 mm	cum	0.20	3044.90	608.98	M-191
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				868.88	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				743.09	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				56.97	
		<b>Rate per cum = (a+b+c+d+e)</b>				5753.96	
					<b>say</b>	<b><u>5754.00</u></b>	
		<b>B. Cement Concrete Blocks of size 0.3 x 0.3 x 0.3 m cast in cement concrete of Grade M 15 with nominal surface reinforcement.</b>					
		<b>Unit = cum</b>					
		<b>Taking output = 1 cum</b>					
		Concrete Grade M15, Rate as per item No. 12.6 (A) including OH & CP	cum	1.00	10018.10	10018.10	Item 12.6 (A)
		Add 3.00% of cost to account for nominal surface reinforcement and filling of granular material in recesses between blocks.				300.54	
		<b>Rate per cum</b>				10318.64	
					<b>say</b>	<b><u>10318.60</u></b>	
<b>15.5</b>	<b>2504</b>	Providing and laying Filter material underneath pitching in slopes complete as per drawing and MoRT&H Technical specifications clause 2504.					
		<b>Unit = cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.05	391.00	19.55	L-17
		Mazdoor (Skilled)	day	0.25	475.00	118.75	L-20
		Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18
		<b>b) Material</b>					
		Graded stone aggregate of required size	cum	1.20	2496.30	2995.56	M-096
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				749.74	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				641.19	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				49.16	
		<b>Rate per cum = (a+b+c+d+e)</b>				4964.95	
					<b>say</b>	<b><u>4964.90</u></b>	
		Includes Mazdoor required for trimming of slope to proper profile and preparation of bed.					
<b>15.6</b>	<b>700 &amp; 2504</b>	<b>Geotextile Filter</b>					

**CHAPTER - 15**  
**RIVER TRAINING AND PROTECTION WORKS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Laying of a geotextile 120 gsm non woven membrane, 100% polyester of thickness 1 to 1.25 mm between pitching and embankment slopes on which pitching is laid to prevent escape of the embankment material through the voids of the stone pitching/cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching as per drawing and MoRT&H Technical specifications clause 700, 2504.					
		<b>Unit = sqm</b>					
		<b>Taking output = 10 sqm.</b>					
		<b>a) Labour</b>					
		Mate	day	0.02	391.00	7.82	L-17
		Mazdoor(unskilled)	day	0.30	391.00	117.30	L-18
		Mazdoor(Skilled)	day	0.10	475.00	47.50	L-20
		<b>b) Material</b>					
		Geotextile 120 gsm non woven membrane, 100% polyester of thickness 1 to 1.25 mm	sqm	11.00	58.50	643.50	M-106
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				173.59	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				148.46	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				11.38	
		Cost for 10 sqm = a+b+c+d+e				1149.55	
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				114.95	
					<b>say</b>	<b><u>115.00</u></b>	
<b>15.7</b>	<b>2504.4</b>	<b>Toe protection</b> A toe wall for toe protection can either be in brick masonry in case of pitching with bricks in wire crates or it can be in PCC M 15 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, brick work and PCC M 15 have been analysed and given in respective chapters.					
<b>15.8</b>	<b>2505</b>	Providing and laying Flooring complete as per drawing and Technical specifications laid over 100 mm thick cement concrete bedding as per drawing and MoRT&H Technical specifications clause 2505.					
		<b>A. Rubble stone laid in cement mortar 1:3, 300 mm thick</b>					
		<b>Unit = Sqm</b>					
		<b>Taking output = 10 sqm.</b>					
		<b>a) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mazdoor(unskilled)	day	0.35	391.00	136.85	L-18
		Mazdoor(Skilled)	day	0.75	475.00	356.25	L-20
		<b>b) Material</b>					
		<b>Cement mortar 1:3, (Rate as in Item 12.5.II.B sub-analysis) excluding OH &amp; CP</b>	cum	0.99	4642.30	4595.88	Item 12.5.II (B) sub-analysis

**CHAPTER - 15**  
**RIVER TRAINING AND PROTECTION WORKS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cement concrete bedding PCC M 15, <b>Rate as per item no. 12.6.A.(basic rate)</b>	cum	1.00	6839.00	6839.00	Item 12.6.A
		Stone boulders with least dimension of 200 mm	cum	3.00	3000.90	9002.70	M-182
		Stone spalls of minimum size 25 mm	cum	0.60	3044.90	1826.94	M-191
		Add 1 per cent of cost to account for excavation for preparation of bed.				227.73	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				4892.31	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				4184.00	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				320.77	
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				3239.81	
					<b>say</b>	<b><u>3239.80</u></b>	
15.8		<b>B. Cement Concrete Blocks of size 0.3 x 0.3 x 0.3 m cast in cement concrete of Grade M 15</b>					
		<b>Unit = sqm</b>					
		<b>Taking Out put = 9.55 sqm</b>					
		<b>a) Concrete Grade M15, Rate as per item No. 12.6 (A) including OH &amp; CP</b>	cum	2.70	10018.10	27048.87	Item 12.6 (A)
		Cement Concrete bedding PCC M 15, Rate as per item No. 12.6 (A) including OH & CP	cum	0.96	10018.10	9617.38	Item 12.6 (A)
		<b>b) Add 1 per cent of cost to account for excavation for preparation of bed.</b>				366.66	
		<b>Rate per sqm = (a+b)/9.55</b>				3877.79	
					<b>say</b>	<b><u>3877.80</u></b>	
15.9	2506	<b>Dry Rubble Flooring</b>					
		Construction of dry rubble flooring at cross drainage works for relatively less important works.					
		<b>Unit = cum</b>					
		<b>Taking output = 1 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mason(2nd class)	day	0.35	475.00	166.25	L-16
		Mazdoor(unskilled)	day	0.75	391.00	293.25	L-18
		<b>b) Material</b>					
		Stone boulders with least dimension of 200 mm	cum	1.00	3000.90	3000.90	M-182
		Stone spalls of minimum size 25 mm	cum	0.20	3044.90	608.98	M-191
		Add 1.00 % for trimming and preparation of base.				40.85	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				877.57	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				750.52	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				57.54	
		<b>Rate per cum = (a+b+c+d+e)</b>				5811.50	
					<b>say</b>	<b><u>5811.50</u></b>	
15.10	2507.2	<b>Curtain wall complete as per drawing and Technical specification</b>					

**CHAPTER - 15**  
**RIVER TRAINING AND PROTECTION WORKS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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Curtain wall can either be in brick masonry or in PCC M 15 nominal mix . Rates for Curtain wall can be adopted from respective clauses depending upon approved design. The rate for excavation for foundation, brick work and PCC M 15 have been analysed and given in respective chapters.

**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 as per drawing and MoRT&H Technical specifications clause 2507.2.

**Unit = cum**

**Taking Output = 1 cum**

**a) Labour**

Mate	day	0.05	391.00	19.55	L-17
Mason(2nd class)	day	0.25	475.00	118.75	L-16
Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18

**b) Material**

Stone boulders with least dimension of 200 mm	cum	1.00	3000.90	3000.90	M-182
Stone spalls of minimum size 25 mm	cum	0.20	3044.90	608.98	M-191
Add 1.00 % of cost of (a+b) for trimming and preparation of bed.				41.39	

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

889.21

**d) Contractor's profit @ 15 % on (a+b+c)**

760.47

**e) Add Cess @ 1.00 % on (a+b+c+d)**

58.30

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

5888.55

**say 5888.50**

**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 as per drawing and MoRT&H Technical specifications clause 2503.3.

**Unit = cum**

**Taking output = 7 x 3 x 0.6 = 12.60 cum**

**a) Labour**

Mate	day	0.28	391.00	109.48	L-17
Mazdoor (Skilled)	day	2.00	475.00	950.00	L-20
Mazdoor(unskilled)	day	5.00	391.00	1955.00	L-18

**b) Material**

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**RIVER TRAINING AND PROTECTION WORKS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size.	kg	195.20	72.60	14171.52	M-104
		Stone boulders with least dimension of 200 mm	cum	12.60	3000.90	37811.34	M-182
		Stone spalls of minimum size 25 mm	cum	2.52	3044.90	7673.15	M-191
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				13330.01	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				11400.08	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				874.01	
		Cost for 12.60 cum (a+b+c+d+e)				88274.58	
		<b>Rate per cum (a+b+c+d+e)/12.60</b>				7005.92	
					<b>say</b>	<b><u>7005.90</u></b>	
<b>15.13</b>	<b>2503.3</b>	<b>Gabian Structure for Erosion Control, River Training Works and Protection works</b>					
		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. as per drawing and MoRT&H Technical specifications clause 2503.3.					
		<b>Unit = cum</b>					
		<b>Taking output = 2 x 1 x 0.3 x 10 Nos. = 6.00 cum</b>					
		<b>a) Labour</b>					
		Mate	day	0.14	391.00	54.74	L-17
		Mazdoor (Skilled)	day	1.00	475.00	475.00	L-20
		Mazdoor(unskilled)	day	2.50	391.00	977.50	L-18
		<b>b) Material</b>					
		Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size.	kg	208.00	72.60	15100.80	M-104
		Stone boulders with least dimension of 200 mm	cum	6.00	3000.90	18005.40	M-182
		Stone spalls of minimum size 25 mm	cum	1.20	3044.90	3653.88	M-191
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				8139.46	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				6961.02	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				533.68	
		Cost for 6.00 cum (a+b+c+d+e)				53901.47	
		<b>Rate per cum (a+b+c+d+e)/6.00</b>				8983.58	
					<b>say</b>	<b><u>8983.60</u></b>	

**CHAPTER - 15**  
**RIVER TRAINING AND PROTECTION WORKS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Note:-** Readymade woven wire crate rolls have been considered in the rate analysis. In case readymade rolls are not available, GI wire 4mm dia. @ 32 kg per 10 sqm may be provided. In that case 2 per cent of the cost of GI wire may be added for weaving the wire crates.

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	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 as per drawing and MoRT&H Technical specifications clause 2809.					
		<b>Unit = Sqm ( Thickness 75 mm)</b>					
		<b>Taking output = 10 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18
		<b>b) Machinery</b>					
		Air Compressor 250 cfm with pneumatic breaker/jack hammer along with accessories.	hour	1.00	353.00	353.00	P&M-002
		Tractor trolley.	hour	0.50	265.00	132.50	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				189.76	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				162.28	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				12.44	
		Cost for 10 sqm = (a+d+c+d+e)				1256.62	
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				125.66	
					<b>say</b>	<b><u>125.70</u></b>	
16.2	2809	Removal of existing 12 mm thick mastic asphalt laid over asphaltic wearing coat comprising of 50 mm thick asphaltic concrete including disposal with all lift and lead upto 1000 m as per drawing and MoRT&H Technical specifications clause 2809.					
		<b>Unit = Sqm</b>					
		<b>Taking output = 10 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.03	391.00	11.73	L-17
		Mazdoor(unskilled)	day	0.75	391.00	293.25	L-18
		<b>b) Machinery</b>					
		Air Compressor 250 cfm with pneumatic breaker.	hour	0.75	353.00	264.75	P&M-002
		Tractor-trolley.	hour	0.40	265.00	106.00	P&M-076
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				143.73	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				122.92	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				9.42	
		Cost for 10 sqm = (a+d+c+d+e)				951.80	
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				95.18	
					<b>say</b>	<b><u>95.20</u></b>	
16.3	2807	Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical Specification					
		<b>Unit = Sqm</b>					
		<b>Taking output = 1 sqm</b>					

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Assuming thickness 25 mm					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-17
		Mason(2nd class)	day	0.04	475.00	19.00	L-16
		Mazdoor(unskilled)	day	0.14	391.00	54.74	L-18
		<b>b) Machinery</b>					
		Compressor with guniting equipment along with accessories	hour	0.75	385.00	288.75	P&M-004
		<b>c) Material</b>					
		Cement	tonne	0.016	6797.00	108.75	M-052
		Graded sand	cum	0.04	740.00	29.60	M-170
		Wire mesh 50 mm x 50 mm size of 3 mm wire	kg	2.00	69.90	139.80	M-207
		Epoxy	kg	0.67	702.00	470.34	M-089
		Accelerator compound for guniting @ 4 .00% of weight of cement	kg	0.64	156.00	99.84	M-002
		Add 2.00 % of cost of material for miscellaneous consumables like nozzles, wire brush, cotton waste etc.				16.97	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				261.98	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				224.05	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				17.18	
		<b>Rate per sqm = (a+b+c+d+e+f)</b>				1734.91	
					<b>say</b>	<b><u>1734.90</u></b>	
<b>16.4</b>	<b>2800</b>	Providing and inserting 15 mm dia GI nipples of required length with approved fixing compound after drilling holes for grouting including subsequent cutting/removal and sealing of the hole as necessary of nipples after completion of grouting with Cement/Epoxy as per drawing and MoRT&H Technical specifications clause 2800.					
		<b>Unit = Number</b>					
		<b>Taking output = 1 No.</b>					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-17
		Mazdoor (Skilled) labour for drilling	day	0.08	475.00	38.00	L-20
		Mazdoor (Skilled) labour for fixing nipple and sealing inlets	day	0.08	475.00	38.00	L-20
		Mazdoor(unskilled) for cutting and removing of nipples	day	0.04	391.00	15.64	L-18
		<b>b) Material</b>					
		Nipples	No	1.00	35.50	35.50	M-108
		Cement, fixing compound and consumables @ 15.00 % of cost of nipple				5.33	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				29.01	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				24.81	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				1.90	
		<b>Rate per No. = (a+b+c+d+e)</b>				192.09	
					<b>say</b>	<b><u>192.10</u></b>	



**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
16.5	2806	Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per drawing and MoRT&H Technical specifications clause 2806.					
		<b>A. Cement Grout</b>					
		<b>Unit = kg</b>					
		<b>Taking output = 1 kg</b>					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-17
		Mazdoor (Skilled)	day	0.10	475.00	47.50	L-20
		Mazdoor (unskilled)	day	0.10	391.00	39.10	L-18
		<b>b) Machinery</b>					
		Grout pump with agitator and accessories	hour	0.10	304.00	30.40	P&M-032
		<b>c) Material</b>					
		Cement including 10.00 % wastage	tonne	0.0011	6797.00	7.48	M-052
		Admixtures (anti shrinkage compound)@ 10.00 % of cost of cement				0.75	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				27.47	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				23.49	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1.80	
		<b>Rate per kg = (a+b+c+d+e+f)</b>				181.89	
					<b>say</b>	<b><u>181.90</u></b>	
		<b>B. Cement Mortar (1:1) Grouting</b>					
		<b>Unit = kg</b>					
		<b>Taking output = 1 kg</b>					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-17
		Mazdoor (Skilled)	day	0.10	475.00	47.50	L-20
		Mazdoor (unskilled)	day	0.10	391.00	39.10	L-18
		<b>b) Machinery</b>					
		Grout pump with agitator and accessories	hour	0.10	304.00	30.40	P&M-032
		<b>c) Material</b>					
		Cement including 10.00 % wastage	tonne	0.00055	6797.00	3.74	M-052
		Sand	cum	0.0004	740.00	0.30	M-170
		Admixtures (anti shrinkage compound) @ 20.00 % of cost of cement				0.75	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				26.73	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				22.86	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1.75	
		<b>Rate per kg = (a+b+c+d+e+f)</b>				177.04	
					<b>say</b>	<b><u>177.00</u></b>	
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 as per drawing and MoRT&H Technical specifications clause 2807.					
		<b>Unit = sqm</b>					

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Taking output = 10 sqm for an average thickness of 25mm.**

**a) Labour**

Mate	day	0.06	391.00	23.46	L-17
Mazdoor (Skilled)	day	0.75	475.00	356.25	L-20
Mazdoor (unskilled)	day	0.75	391.00	293.25	L-18

**b) Machinery**

Grout pump with agitator and accessories	hour	2.00	304.00	608.00	P&M-032
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**c) Material**

Pre-packed polymer concrete based on epoxy system complete with curing compound, initiator and promoter including 5 per cent wastage.	kg	315.00	33.50	10552.50	M-151
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

2516.98

**e) Contractor's profit @ 15 % on (a+b+c+d)**

2152.57

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

165.03

Cost for 10 sqm = a+b+c+d+e+f

16668.03

**Rate per sqm = (a+b+c+d+e+f)/10**

1666.80

**say 1666.80**

**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** Providing and sealing of crack / porous concrete with Epoxy resin by injection through nipples complete as per drawing and MoRT&H Technical specifications clause 2803.

**Unit = kg**

**Taking output = 1 kg**

**a) Labour**

Mate	day	0.01	391.00	3.91	L-17
Mazdoor (Skilled)	day	0.10	475.00	47.50	L-20
Mazdoor (unskilled)	day	0.10	391.00	39.10	L-18

**b) Machinery**

Epoxy Injection gun	hour	0.10	194.00	19.40	P&M-029
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**c) Material**

Epoxy including 10 per cent wastage	kg	1.10	702.00	772.20	M-089
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

187.62

**e) Contractor's profit @ 15 % on (a+b+c+d)**

160.46

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

12.30

**Rate per kg = (a+b+c+d+e+f)**

1242.50

**say 1242.50**

**16.8 2804** Providing and applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per drawing and MoRT&H Technical specifications clause 2804.

Average thickness of 10mm

**Unit = sqm**

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>Taking output = 10 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mazdoor (Skilled)	day	0.50	475.00	237.50	L-20
		Mazdoor (unskilled)	day	0.50	391.00	195.50	L-18
		<b>b) Material</b>					
		Epoxy resin-hardener mix for prime coat	kg	2.50	361.00	902.50	M-093
		Epoxy mortar	kg	2.20	430.00	946.00	M-090
		Epoxy resin -hardener mix for seal coat.	kg	2.00	361.00	722.00	M-093
		Add 8.40 % cost of material for other consumables like acetone etc and to cover wastage.				215.92	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				688.10	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				588.47	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				45.12	
		Cost for 10 sqm = a+b+c+d+e				4556.75	
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				455.67	
					<b>say</b>	<b><u>455.70</u></b>	

- 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 MoRT&H Technical specifications clause 2807.6.

**unit: sqm**

**Taking output = 10 sqm, 40 mm average thickness.**

<b>a) Labour</b>							
		Mate	day	0.04	391.00	15.64	L-17
		Mazdoor (Skilled)	day	0.50	475.00	237.50	L-20
		Mazdoor (unskilled)	day	0.50	391.00	195.50	L-18
<b>b) Machinery</b>							
		Air compressor	hour	1.00	235.00	235.00	P&M-001
		Shotcreteing equipment	hour	1.00	318.00	318.00	P&M-057
		water tanker 6 KL capacity	hour	0.02	224.00	4.48	P&M-084
<b>c) Material</b>							
		Cement	tonne	0.12	6797.00	815.64	M-052
		Sand	cum	0.15	740.00	111.00	M-170
		Coarse aggregate of size 4.75mm	cum	0.15	4282.60	642.39	M-009
		Quick setting compound	kg	2.50	64.10	160.25	M-154
		Water	KL	0.10	133.00	13.30	M-196
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				584.65	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				500.00	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				38.33	

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		Cost for 10 sqm = a+b+c+d+e+f				3871.68	
		<b>Rate per sqm = (a+b+c+d+e+f)/10</b>				387.17	
					<b>say</b>	<b><u>387.20</u></b>	
<b>16.10</b>	<b>2800</b>	Applying pre-packed cement based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete as per drawing and MoRT&H Technical specifications clause 2800.					
		<b>Unit = sqm</b>					
		<b>Taking output = 10 sqm</b>					
		Assumed thickness - 10 mm					
		<b>a) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mazdoor (Skilled)	day	0.50	475.00	237.50	L-20
		Mazdoor (unskilled)	day	0.50	391.00	195.50	L-18
		<b>b) Material</b>					
		Acrylic polymer bonding coat	Litre	1.40	289.00	404.60	M-003
		pre-packed cement based polymer mortar of strength 45 Mpa at 28 days	kg	12.00	33.50	402.00	M-151
		Add 3.00 % on cost of material for wastage.				24.20	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				272.14	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				232.74	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				17.84	
		Cost for 10 sqm = a+b+c+d+e				1802.15	
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				180.22	
					<b>say</b>	<b><u>180.20</u></b>	
<b>16.11</b>	<b>2805</b>	Epoxy bonding of new concrete to old concrete as per drawing and MoRT&H Technical specifications clause 2805.					
		<b>Unit = sqm</b>					
		<b>Taking output = 10 sqm</b>					
		<b>a) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-17
		Mazdoor (Skilled)	day	0.50	475.00	237.50	L-20
		Mazdoor (unskilled)	day	0.50	391.00	195.50	L-18
		<b>b) Material</b>					
		Epoxy resin with pot life not less than 60-90 minutes and satisfying testing as per clause 2803.9	kg	8.00	702.00	5616.00	M-089
		Add 3 per cent of (a ) above for wastage.				168.48	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1325.78	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1133.84	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				86.93	
		Cost for 10 sqm = a+b+c+d+e				8779.67	
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				877.97	
					<b>say</b>	<b><u>878.00</u></b>	

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
16.12	2810	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestressing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and MoRTH Technical specifications clause 2810.					
		<b>Span assumed: 25 m</b>					
		<b>No. of cables: 4 no.</b>					
		<b>No. of anchorages : 8 no.</b>					
		<b>Unit = MT</b>					
		<b>Taking output = 1 MT</b>					
		Assume 12.7mm dia. Strand in 12T13 system. Weight-9.42 kg/m of cable.					
		<b>a) Labour</b>					
		<b>i) For making holes in the structure .</b>					
		Mate	day	0.24	391.00	93.84	L-17
		Mazdoor (Semi-skilled)	day	3.00	447.00	1341.00	L-19
		Mazdoor(unsilled)	day	3.00	391.00	1173.00	L-18
		<b>ii) For making and fixing anchorages for cables and placement of cables .</b>					
		Mate	day	0.44	391.00	172.04	L-17
		Blacksmith	day	3.00	480.00	1440.00	L-03
		Mazdoor(unsilled)	day	8.00	391.00	3128.00	L-18
		<b>iii) For prestressing</b>					
		Mate	day	0.13	391.00	50.83	L-17
		Fitter	day	0.70	447.00	312.90	L-13
		Mazdoor(unsilled)	day	2.65	391.00	1036.15	L-18
		<b>iv) For grouting</b>					
		Mate	day	0.13	391.00	50.83	L-17
		Mason(1st class)	day	0.70	512.00	358.40	L-15
		Mazdoor(unsilled)	day	2.65	391.00	1036.15	L-18
		<b>b) Machinery</b>					
		Stressing jack with pump	hour	4.00	325.00	1300.00	P&M-060
		Grouting pump with agitator	hour	1.35	304.00	410.40	P&M-032
		<b>c) Material</b>					
		HTS strand including 5 per cent wastage and extra length for jacking	tonne	1.05	78254.00	82166.70	M-115
		HDPE pipes 75mm dia including 5 per cent wastage	metre	112.00	123.00	13776.00	M-112
		Cement for grouting	Tonne	0.400	6797.00	2718.80	M-052
		Tube anchorage set complete with bearing plate, permanent wedges etc	No	8.00	5360.00	42880.00	M-195
		Epoxy	kg	6.00	702.00	4212.00	M-089
		MS plates for deviator (where deviator blocks are not provided)	tonne	2.10	59500.00	124950.00	M-129
		Add 20 per cent cost of material for other materials like lead sheet, sleeves, deviator fixtures etc.				54140.70	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				71626.24	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				61256.10	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				4696.30	
		<b>Rate per MT = (a+b+c+d+e+f)</b>				474326.38	
						<b>say 474326.40</b>	

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
16.13	2810	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestressing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and MoRTH Technical specifications clause 2810.					
		<b>Span assumed: 50 m</b>					
		<b>No. of cables: 4 no.</b>					
		<b>No. of anchorages : 8 no.</b>					
		<b>Unit = MT</b>					
		<b>Taking output = 3.10 MT</b>					
		Assume 12.7mm dia. Strand in 19T13 system. Weight-14.73 kg/m of cable.					
		<b>a) Labour</b>					
		<b>i) For making holes in the structure.</b>					
		Mate	day	0.08	391.00	31.28	L-17
		Mazdoor(Semi-skilled)	day	8.00	447.00	3576.00	L-19
		Mazdoor	day	8.00	391.00	3128.00	L-18
		<b>ii) For making and fixing anchorages for cables and placement of cables .</b>					
		Mate	day	1.28	391.00	500.48	L-17
		Blacksmith	day	7.00	480.00	3360.00	L-03
		Mazdoor(unskilled)	day	25.00	391.00	9775.00	L-18
		<b>iii) For prestressing</b>					
		Mate	day	0.20	391.00	78.20	L-17
		Fitter	day	1.00	447.00	447.00	L-13
		Mazdoor	day	4.00	391.00	1564.00	L-18
		<b>iv) For grouting</b>					
		Mate	day	0.26	391.00	101.66	L-17
		Mason(1st class)	day	1.50	512.00	768.00	L-15
		Mazdoor(unskilled)	day	5.00	391.00	1955.00	L-18
		<b>b) Machinery</b>					
		Stressing jack with pump	hour	7.00	325.00	2275.00	P&M-060
		Grouting pump with agitator	hour	3.00	304.00	912.00	P&M-032
		<b>c) Material</b>					
		HTS strand including 5 per cent wastage and extra length for jacking	tonne	3.10	78254.00	242587.40	M-115
		HDPE pipes 90mm dia including 5 per cent wastage	metre	224.00	158.80	35571.20	M-113
		Cement for grouting	tonne	1.01	6797.00	6864.97	M-052
		Tube anchorage set complete with bearing plate, permanent wedges etc	No	8.00	5360.00	42880.00	M-195
		Epoxy	kg	10.00	702.00	7020.00	M-089
		MS plates for deviator (where deviator blocks are not provided)	tonne	7.00	59500.00	416500.00	M-129
		Add 20 per cent cost of material for other materials like lead sheet, sleeves, deviator fixtures etc.				150284.71	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				197849.27	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				169204.38	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				12972.34	
		<b>Cost for 3.10 MT = a+b+c+d+e+f</b>				1310205.88	
		<b>Rate per MT = (a+b+c+d+e+f)/3.10</b>				422647.06	
						<b>say 422647.10</b>	

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
16.14	2810	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestressing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and MoRT&H Technical specifications clause 2810.					
		<b>Span assumed: 100 m</b>					
		<b>No. of cables: 6 no.</b>					
		<b>No. of anchorages : 12 no.</b>					
		<b>Unit = MT</b>					
		<b>Taking output = 9.28 MT</b>					
		Assume 12.7mm dia. Strand in 19T13 system. Weight-14.73 kg/m of cable.					
		<b>a) Labour</b>					
		<b>i) For making holes in the structure .</b>					
		Mate	day	1.72	391.00	672.52	L-17
		Mazdoor(Semi-skilled)	day	18.00	447.00	8046.00	L-19
		Mazdoor(unskilled)	day	25.00	391.00	9775.00	L-18
		<b>ii) For making and fixing anchorages for cables and placement of cables .</b>					
		Mate	day	4.00	391.00	1564.00	L-17
		Blacksmith	day	20.00	480.00	9600.00	L-03
		Mazdoor(unskilled)	day	80.00	391.00	31280.00	L-18
		<b>iii) For prestressing</b>					
		Mate	day	0.30	391.00	117.30	L-17
		Fitter	day	1.50	447.00	670.50	L-13
		Mazdoor(unskilled)	day	6.00	391.00	2346.00	L-18
		<b>iv) For grouting</b>					
		Mate	day	1.00	391.00	391.00	L-17
		Mason(1st class)	day	5.00	512.00	2560.00	L-15
		Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-18
		<b>b) Machinery</b>					
		Stressing jack with pump	hour	10.00	325.00	3250.00	P&M-060
		Grouting pump with agitator	hour	10.00	304.00	3040.00	P&M-032
		<b>c) Material</b>					
		HTS strand including 5 per cent wastage and extra length for jacking	tonne	9.28	78254.00	726197.12	M-115
		HDPE pipes 90 mm dia including 5 per cent wastage	metre	672.00	158.80	106713.60	M-113
		Cement for grouting	tonne	3.04	6797.00	20662.88	M-052
		Tube anchorage set complete with bearing plate, permanent wedges etc	No	12.00	5360.00	64320.00	M-195
		Epoxy	kg	14.00	702.00	9828.00	M-089
		MS plates for deviator (where deviator blocks are not provided)	tonne	20.00	59500.00	1190000.00	M-129
		Add 20 per cent cost of material for other materials like lead sheet, sleeves, deviator fixtures etc.				423544.32	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				557784.11	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				477027.35	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				36572.10	
		<b>Cost for 9.28 MT = a+b+c+d+e+f</b>				3693781.79	
		<b>Rate per MT = (a+b+c+d+e+f)/9.28</b>				398036.83	
						<b>say <u>398036.80</u></b>	

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
16.15	2808	Replacement of Bearings complete as per drawing and MoRT&H Technical specifications clause 2808. <b>Unit = No</b> <b>Taking output = 3 No.</b>					
		<b>a) labour</b>					
		Mate	day	0.64	391.00	250.24	L-17
		Mazdoor (Skilled)	day	4.00	475.00	1900.00	L-20
		Mazdoor(unskilled)	day	12.00	391.00	4692.00	L-18
		<b>b) Machinery</b>					
		Jack of 40 tonne lifting capacity.	hour	21.00	213.00	4473.00	P&M-040
		<b>c) Material</b>					
		Cost of bearing					*
		Wooden packing	cum	0.15	28300.00	4245.00	M-233
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				3309.66	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				2830.49	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				217.00	
		Cost of repair of 3 bearings = a+b+c+d+e+f				21917.39	
		<b>Rate Per No = (a+b+c+d+e+f)/3</b>				7305.80	
					<b>say</b>	<b><u>7305.80</u></b>	
		<b>*Note:- This rate is exclusive of the cost of bearing. Actual cost of bearing may be added as per the type and design.</b>					
		The work entails replacement of all the bearings on one side of the span.					
16.16	2808	Rectification of Bearings complete as per drawing and MoRT&H Technical specifications clause 2808. <b>Unit = 1 No</b> <b>Taking output = 3 No.</b> <b>Lifting of superstructure span by jacking up from below i.e. by placing the jacks on pier/abutment caps for span length of 30m.</b>					
		<b>a) labour</b>					
		Mate	day	0.64	391.00	250.24	L-17
		Mazdoor (Skilled)	day	4.00	475.00	1900.00	L-20
		Mazdoor(unskilled)	day	12.00	391.00	4692.00	L-18
		<b>b) Machinery</b>					
		Jack of 40 tonne lifting capacity.	hour	21.00	213.00	4473.00	P&M-040
		<b>c) Material</b>					
		Cost of parts to be replaced for 3 bearings.					*
		Wooden packing	cum	0.15	28300.00	4245.00	M-233
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				3309.66	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				2830.49	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				217.00	
		Cost of repair of 3 bearings = a+b+c+d+e+f				21917.39	
		<b>Rate Per No = (a+b+c+d+e+f)/3</b>				7305.80	
					<b>say</b>	<b><u>7305.80</u></b>	



**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**\*Note:- This rate is exclusive of the cost of the parts of bearing. Actual cost of the parts of bearing may be added as per the type and design.**

The rectification of 3 bearings included in this analysis are on the same side of the span.

**16.17** Replacement of expansion joints as per drawing and MoRTH Technical specifications clause 2808.

**Unit -1 M**

**Taking output = 12 M**

**a) Labour**

Removal of old expansion joint including breaking of concrete, cutting of lugs and shifting of broken material etc.

Mate	day	0.26	391.00	101.66	L-17
Mazdoor (Skilled)	day	0.50	475.00	237.50	L-20
Mazdoor (unskilled)	day	6.00	391.00	2346.00	L-18

**b) Material**

M-30 grade cement concrete excluding OH & CP (Rate as per items 14.1 C (i))	cum	3.60	7805.00	28098.00	Item 14.1(C)
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Epoxy for bonding new concrete to old concrete @ 0.8 kg/sqm	kg	9.60	702.00	6739.20	M-089
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

7981.01

**d) Contractor's profit @ 15 % on (a+b+c)**

6825.50

**e) Add Cess @ 1.00 % on (a+b+c+d)**

523.29

Cost for replacement of 12 RM =  
a+b+c+d+e

52852.16

**Rate per RM = (a+b+c+d+e)/12**

4404.35

**say 4404.30**

**Note:-** i.This rate is exclusive of the cost of the expansion joint.

ii.The rate for the installation of new expansion joints may be taken from the chapter on superstructure. Broken concrete will have to be replaced which has been included in this analysis.

**16.18** Replacement of Damaged Concrete Railing.

**Unit = M**

**Taking output = 10 M**

**a) Labour**

Mate	day	0.20	391.00	78.20	L-17
Mazdoor(unskilled)	day	5.00	391.00	1955.00	L-18

**b) Machinery**

Tractor-trolley for disposal of dismantled material	hour	1.00	265.00	265.00	P&M-076
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

488.83

**d) Contractor's profit @ 15 % on (a+b+c)**

418.05

**e) Add Cess @ 1.00 % on (a+b+c+d)**

32.05

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

3237.13

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

323.71

**say 323.70**

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
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**Note:-** The rate for the provision of new railing may be adopted from the chapter on superstructure.

<b>16.19</b>	<b>Replacement of Crash Barrier.</b> <i>Unit = M</i> <i>Taking output = 10 M</i>						
	<b>a) Labour</b>						
	Mate	day	0.40	391.00	156.40	L-17	
	Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-18	
	<b>b) Machinery</b>						
	Tractor-trolley for disposal of dismantled material	hour	1.00	265.00	265.00	P&M-076	
	<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				921.29		
	<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				787.90		
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				60.41		
	Cost for 10 m = a+b+c+d+e					6101.00	
	<b>Rate per metre = (a+b+c+d+e)/10</b>					610.10	
					<b>say</b>	<b><u>610.10</u></b>	

**Note:-** The rate for the construction of new crash barrier may be adopted from chapter 8 on Traffic and Transportation.

<b>16.20</b>	<b>Replacement of Damaged Mild Steel Railing</b> <i>Unit = RM</i> <i>Taking output = 10 M</i>						
	<b>a) Labour</b>						
	Labour for dismantling old railing and disposal of dismantled material.						
	Mate	day	0.16	391.00	62.56	L-17	
	Mazdoor(unskilled)	day	4.00	391.00	1564.00	L-18	
	<b>b) Machinery</b>						
	Tractor-trolley for disposal of dismantled material	hour	1.00	265.00	265.00	P&M-076	
	<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				402.33		
	<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				344.08		
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				26.38		
	Cost for 10 m = a+b+c+d+e					2664.36	
	<b>Rate per metre = (a+b+c+d+e)/10</b>					266.44	
					<b>say</b>	<b><u>266.40</u></b>	

**Note:-** The rate for the construction of new steel railing may be adopted from chapter on superstructure.

<b>16.21</b>	<b>Repair of Crash Barrier</b> 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.						
	<i>Unit = Running meter.</i> <i>Taking output = 10 M.</i>						
	<b>a) Labour</b>						
	Mate	day	0.04	391.00	15.64	L-17	
	Mazdoor(unskilled)	day	1.00	391.00	391.00	L-18	

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		<b>b) Material</b>					
		M-30 grade cement concrete excluding OH & CP (Rate as per items 14.1 C (i))	cum	0.30	7805.00	2341.50	Item 14.1(C)
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				584.53	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				499.90	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				38.33	
		Cost for 10 m = a+b+c+d+e				3870.90	
		<b>Rate per m = (a+b+c+d+e)/10</b>				387.09	
					<b>say</b>	<b><u>387.10</u></b>	
		<b>Note:-</b> 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.					
16.22		<b>Repair of RCC Railing</b> Repair of RCC railing to bring it to the original shape. <b>Unit = meter.</b> <b>Taking output = 10 M.</b>					
		<b>a) Labour</b>					
		Mate	day	0.016	391.00	6.26	L-17
		Mazdoor(unskilled)	day	0.20	391.00	78.20	L-18
		Mazdoor(skilled)	day	0.20	475.00	95.00	L-20
		<b>b) Material</b>					
		M-30 grade cement concrete excluding OH & CP (Rate as per items 14.1 C (i))	cum	0.10	7805.00	780.50	Item 14.1(C)
		TMT bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.013	66192.10	860.50	Item 14.2
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				387.21	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				331.15	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				25.39	
		Cost for 10 m = a+b+c+d+e				2564.20	
		<b>Rate per m = (a+b+c+d+e)/10</b>				256.42	
					<b>say</b>	<b><u>256.40</u></b>	
		<b>Note:-</b> It is assumed that damage is to the extent of 10 per cent of the volume of concrete. This will require 0.10 cum of concrete and 0.013 t of steel.					
16.23		<b>Repair of Steel Railing</b> Repair of steel railing to bring it to the original shape. <b>Unit = Running meter.</b> <b>Taking output = 10 M.</b>					
		<b>a) Labour</b>					
		Mate	day	0.016	391.00	6.26	L-17
		Mazdoor(unskilled)	day	0.20	391.00	78.20	L-18
		Mazdoor (Skilled)	day	0.20	475.00	95.00	L-20
		<b>b) Material</b>					
		Mild steel ISMC series	kg	29.00	59.50	1725.50	M-177
		Flat iron	kg	10.00	59.53	595.30	M-133
		MS Bolt and nuts	kg	1.00	64.50	64.50	M-141
		Add 5 .00% of cost of material for painting.				119.27	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				570.89	

**CHAPTER-16**  
**REPAIR AND REHABILITATION**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount(₹)	Ref.
		d) Contractor's profit @ 15 % on (a+b+c)				488.24	
		e) Add Cess @ 1.00 % on (a+b+c+d)				37.43	
		Cost of repair for 10m = a+b+c+d+e				3780.58	
		Cost of meter = (a+b+c+d+e)/10				378.06	
					<b>say</b>	<b><u>378.10</u></b>	

**Note:-** It is assumed that the damage to the steel railing is to the extent of 10 per cent .

Government of Tripura  
Public Works Department



**ANALYSIS OF RATES**  
*for*  
**TRIPURA SCHEDULE OF RATES**  
*for*  
**ROAD & BRIDGE WORKS**  
**(PART-II)**  
*for*  
**ODRs AND RURAL ROADS.**  
**Year:- 2023**

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**Chapter 1**  
**LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
1.1		<b>Loading and Unloading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by Manual Means</b>				
		(i) Loading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by manual means including a lead upto 30 m Unit = cum Taking output = 5.5 cum				
		<b>a) Labour</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Machinery</b>				
		Truck	hour	0.50	418.00	209.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>87.70</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>75.00</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>5.75</b>
		Cost for 5.5 cum = a+b+c+d+e				580.77
		<b>Rate per cum = (a+b+c+d+e)/5.5</b>				<b>105.60</b>
					<b>say</b>	<b><u>105.60</u></b>
		(ii) Loading of Earth, Sand, Moorum, Manure, Flyash by manual means including a lead upto 30 m Unit = cum Taking output = 5.5 cum				
		<b>a) Labour</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Machinery</b>				
		Truck	hour	0.25	418.00	104.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>43.85</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>37.50</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>2.88</b>
		Cost for 5.5 cum = a+b+c+d+e				290.39
		<b>Rate per cum = (a+b+c+d+e)/5.5</b>				<b>52.80</b>
					<b>say</b>	<b><u>52.80</u></b>
		(iii) Unloading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by manual means including a lead upto 30 m Unit = cum Taking output = 5.5 cum				
		<b>a) Labour</b>				

## Chapter 1

## LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Machinery</b>				
		Truck	hour	0.25	418.00	104.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>43.85</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>37.50</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>2.88</b>
		Cost for 5.5 cum = a+b+c+d+e				290.39
		<b>Rate per cum = (a+b+c+d+e)/5.5</b>				<b>52.80</b>
					<b>say</b>	<b><u>52.80</u></b>
		<b>(iv) Unloading of Earth, Sand, Moorum, Manure, Flyash by manual means including a lead upto 30 m</b>				
		Unit = cum				
		Taking output = 5.5 cum				
		<b>a) Labour</b>				
		Mate	day	0.005	391.00	1.96
		Mazdoor (Unskilled)	day	0.125	391.00	48.88
		<b>b) Machinery</b>				
		Truck	hour	0.166	418.00	69.39
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>25.57</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>21.87</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>1.68</b>
		Cost for 5.5 cum = a+b+c+d+e				169.33
		<b>Rate per cum = (a+b+c+d+e)/5.5</b>				<b>30.79</b>
					<b>say</b>	<b><u>30.80</u></b>

**1.2 Loading and Unloading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by Mechanical Means**

- (i) Loading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by mechanical means including a lead upto 30 m

Placing tipper at loading point, loading with front end loader excluding time for haulage and return trip.

Unit = cum

Taking output = 5.5 cum

**Time required for**

- |   |     |      |
|---|-----|------|
| i) Positioning of tipper at loading point                               | Min | 1.00 |
| ii) Loading by front end loader 1 cum bucket capacity @ 45 cum per hour | Min | 7.33 |
| iii) Waiting time, unforeseen contingencies, etc.                       | Min | 2.00 |

## Chapter 1

## LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>Total</b>	<b>Min</b>	<b>10.33</b>		
		<b>a) Machinery</b>				
		(i) Tipper 10 t capacity	hour	0.172	374.00	64.33
		(ii) Front end-loader 1 cum bucket capacity @ 45 cum per hour	hour	0.122	1,030.00	125.66
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>40.41</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>34.56</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>2.65</b>
		Cost for 5.5 cum = a+b+c+d				267.61
		<b>Rate per cum = (a+b+c+d) /5.5</b>				<b>48.66</b>
					<b>say</b>	<b><u>48.70</u></b>
		<b>(ii) Loading of Earth, Sand, Moorum, Manure, Flyash by mechanical means including a lead upto 30 m.</b>				
		Placing tipper at loading point, loading with front end loader excluding time for haulage and return trip.				
		Unit = cum				
		Taking output = 5.5 cum				
		<b>Time required for</b>				
		i) Positioning of tipper at loading point	Min	1.00		
		ii) Loading by front end loader 1 cum bucket capacity @ 100 cum per hour	Min	3.30		
		iii) Waiting time, unforeseen contingencies, etc.	Min	2.00		
		<b>Total</b>	<b>Min</b>	<b>6.30</b>		
		<b>a) Machinery</b>				
		(i) Tipper 10 t capacity	hour	0.105	374.00	39.27
		(ii) Front end-loader 1 cum bucket capacity @ 100 cum per hour	hour	0.055	1,030.00	56.65
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>20.40</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>17.45</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>1.34</b>
		Cost for 5.5 cum = a+b+c+d				135.11
		<b>Rate per cum = (a+b+c+d)/5.5</b>				<b>24.57</b>
					<b>say</b>	<b><u>24.60</u></b>
		<b>(iii) Unloading of Earth, Sand, Lime, Moorum, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Manure, Crushed Slag, Flyash, Stone for Masonry Work by mechanical means.</b>				
		Unit = cum				
		Taking output = 5.5 cum				
		Placing tipper at unloading point excluding time for haulage and return trip				
		<b>Time required for</b>				
		i) Positioning of tipper at unloading point	Min	1.00		



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		ii) Manoeuvring, reversing, dumping and turning for return	Min	2.00		
		iii) Waiting time, unforeseen contingencies, etc.	Min	2.00		
		<b>Total</b>	<b>Min</b>	<b>5.00</b>		
		<b>a) Machinery</b>				
		Tipper 10 t capacity	hour	0.08	374.00	29.92
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>6.36</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>5.44</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>0.42</b>
		Cost for 5.5 cum = a+b+c+d				42.14
		<b>Rate per cum = (a+b+c+d)/5.5</b>				<b>7.66</b>
					<b>say</b>	<b><u>7.70</u></b>
<b>1.3</b>		<b>Loading, Unloading and Stacking of Bricks by Manual Means</b>				
		(i) Loading of Bricks by manual means including a lead upto 30 m Unit = 1000 Nos. Taking output = 2000 Nos.				
		<b>a) Labour</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Machinery</b>				
		Truck	hour	0.33	418.00	137.94
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>50.96</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>43.58</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>3.34</b>
		Cost for 2000 Nos. = a+b+c+d+e				337.49
		<b>Rate for 1000 bricks = (a+b+c+d+e)/2</b>				<b>168.74</b>
					<b>say</b>	<b><u>168.70</u></b>
		(ii) Unloading and Stacking of Bricks by manual means including a lead upto 30 m Unit = 1000 Nos. Taking output = 2000 Nos.				
		<b>a) Labour</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Machinery</b>				
		Truck	hour	0.33	418.00	137.94
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>50.96</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>43.58</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>3.34</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Cost for 2000 Nos. = a+b+c+d+e				337.49
		<b>Rate for 1000 bricks = (a+b+c+d+e)/2</b>				<b>168.74</b>
					<b>say</b>	<b><u>168.70</u></b>
<b>1.4</b>		<b>Loading and Unloading of Cement by Manual Means</b>				
		(i) Loading of Cement by manual means including a lead upto 30 m				
		Unit = t				
		Taking output = 10 t				
		<b>a) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Mazdoor (Unskilled)	day	1.50	391.00	586.50
		<b>b) Machinery</b>				
		Truck	hour	1.00	418.00	418.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>218.65</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>186.99</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>14.34</b>
		Cost for 10 t = a+b+c+d+e				1,447.93
		<b>Rate per tonnes = (a+b+c+d+e)/10</b>				<b>144.79</b>
					<b>say</b>	<b><u>144.80</u></b>
		(ii) Unloading of Cement by manual means including a lead upto 30 m				
		Unit = t				
		Taking output = 10 t				
		<b>a) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Mazdoor (Unskilled)	day	1.50	391.00	586.50
		<b>b) Machinery</b>				
		Truck	hour	1.00	418.00	418.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>218.65</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>186.99</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>14.34</b>
		Cost for 10 t = a+b+c+d+e				1,447.93
		<b>Rate per tonne = (a+b+c+d+e)/10</b>				<b>144.79</b>
					<b>say</b>	<b><u>144.80</u></b>
<b>1.5</b>		<b>Loading and Unloading of Structural Steel and Steel Bars by manual means</b>				
		(i) Loading of Structural Steel, Steel Bars by manual means including a lead upto 30 m				
		Unit = t				
		Taking output = 10 t				
		<b>a) Labour</b>				
		Mate	day	0.07	391.00	27.37

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mazdoor (Unskilled)	day	1.80	391.00	703.80
		<b>b) Machinery</b>				
		Truck	hour	1.00	418.00	418.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>244.43</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>209.04</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>16.03</b>
		Cost for 10 t = a+b+c+d+e				1,618.66
		<b>Rate per tonnes = (a+b+c+d+e)/10</b>				<b>161.87</b>
					<b>say</b>	<b><u>161.90</u></b>
		<b>(ii) Unloading of Structural Steel, Steel Bars by manual means including a lead upto 30 m</b>				
		Unit = t				
		Taking output = 10 t				
		<b>a) Labour</b>				
		Mate	day	0.07	391.00	27.37
		Mazdoor (Unskilled)	day	1.80	391.00	703.80
		<b>b) Machinery</b>				
		Truck	hour	1.00	418.00	418.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>244.43</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>209.04</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>16.03</b>
		Cost for 10 t = a+b+c+d+e				1,618.66
		<b>Rate per t = (a+b+c+d+e)/10</b>				<b>161.87</b>
					<b>say</b>	<b><u>161.90</u></b>
<b>1.6</b>		<b>Loading and Unloading of Bitumen Drums by Manual Means</b>				
		<b>(i) Loading of Bitumen Drums by manual means including a lead upto 30 m</b>				
		Unit = t				
		Taking output = 10 t				
		<b>a) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Mazdoor (Unskilled)	day	1.60	391.00	625.60
		<b>b) Machinery</b>				
		Truck	hour	1.25	418.00	522.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>249.19</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>213.11</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>16.34</b>
		Cost for 10 t = a+b+c+d+e				1,650.20
		<b>Rate per tonnes = (a+b+c+d+e)/10</b>				<b>165.02</b>
					<b>say</b>	<b><u>165.00</u></b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(ii) Unloading of Bitumen Drums by Manual Means including a lead upto 30 m Unit = t Taking output = 10 t				
		<b>a) Labour</b>				
		Mate	day	0.05	391.00	19.55
		Mazdoor (Unskilled)	day	1.20	391.00	469.20
		<b>b) Machinery</b>				
		Truck	hour	1.25	418.00	522.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>215.09</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>183.95</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>14.10</b>
		Cost for 10 t = a+b+c+d+e				1,424.40
		<b>Rate per t = (a+b+c+d+e)/10</b>				<b>142.44</b>
					<b>say</b>	<b><u>142.40</u></b>

**Note:** The rate is inclusive of the self weight of drum

**1.7 100 Loading and Unloading of Timber by Manual Means**

		(i) Loading of Timber by manual means including a lead upto 30 m Unit = t Taking output = 5 t				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Truck	hour	1.00	418.00	418.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>175.40</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>150.01</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>11.50</b>
		Cost for 5 t = a+b+c+d+e				1,161.55
		<b>Rate per t = (a+b+c+d+e)/5</b>				<b>232.31</b>
					<b>say</b>	<b><u>232.30</u></b>
		(ii) Unloading of Timber by manual means including a lead upto 30 m Unit = t Taking output = 5 t				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Truck	hour	1.00	418.00	418.00

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				175.40
		d) Contractor's profit @ 15 % on (a+b+c)				150.01
		e) Add Cess @ 1.00 % on (a+b+c+d)				11.50
		Cost for 5 t = a+b+c+d+e				1,161.55
		Rate per t = (a+b+c+d+e)/5				232.31
					say	<u>232.30</u>

**Note:** Density of wood has been assumed as 900 kg per cum. If the density is less the output may be reduced proportionately.

## 1.8 Loading and Unloading of C.C. Blocks, Kerb, etc.

- (i) Loading with care C.C. Blocks, km Stone, 200 m Stone, Boundary Pillar, Kerb, Channel, Bond Stone, etc. by manual means including a lead upto 30 m

Unit = cum

Taking output = 5.5 cum

## a) Labour

Mate	day	0.08	391.00	31.28
Mazdoor (Unskilled)	day	2.00	391.00	782.00

## b) Machinery

Truck	hour	1.50	418.00	627.00
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- c) Add GST (multiplying factor) @ 0.2127 on (a+b) **306.35**  
d) Contractor's profit @ 15 % on (a+b+c) **261.99**  
e) Add Cess @ 1.00 % on (a+b+c+d) **20.09**

Cost for 5.5 cum = a+b+c+d+e 2,028.71

Rate per cum = (a+b+c+d+e)/5.5 **368.86**

say **368.90**

- (ii) Unloading with care C.C. Blocks, km Stone, 200 m Stone, Boundary Pillar, Kerb, Channel, Bond Stone, etc. by manual means including a lead upto 30 m

Unit = cum

Taking output = 5.5 cum

## a) Labour

Mate	day	0.08	391.00	31.28
Mazdoor (Unskilled)	day	2.00	391.00	782.00

## b) Machinery

Truck	hour	1.50	418.00	627.00
-------	------	------	--------	--------

- c) Add GST (multiplying factor) @ 0.2127 on (a+b) **306.35**  
d) Contractor's profit @ 15 % on (a+b+c) **261.99**  
e) Add Cess @ 1.00 % on (a+b+c+d) **20.09**

Cost for 5.5 cum = a+b+c+d+e 2,028.71

Rate per cum = (a+b+c+d+e)/5.5 **368.86**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
------------	--------------------------	-------------	------	----------	-------------	------------

say **368.90**

**1.9 Loading and Unloading of Hume Pipes**

- (i) Loading of RCC Hume pipes by mechanical means including a lead upto 30 m

**A. 1000 / 1200 mm dia Hume pipe**

Unit = per pipe

Taking output = 9 pipes

**a) Labour**

Mate	day	0.02	391.00	7.82
Mazdoor (Unskilled)	day	0.50	391.00	195.50

**b) Machinery**

Truck	hour	0.33	418.00	137.94
Crane	hour	0.33	1,288.00	425.04

**c) Add GST (multiplying factor) @ 0.2127 on (a+b) **162.99****

**d) Contractor's profit @ 15 % on (a+b+c) **139.39****

**e) Add Cess @ 1.00 % on (a+b+c+d) **10.69****

Cost for 9 pipes = a+b+c+d+e 1,079.37

**Rate per pipe = (a+b+c+d+e)/9 **119.93****

say **119.90**

**B. 900/ 750 mm dia Hume pipe**

Unit = per pipe

Taking output = 15 pipes

**a) Labour**

Mate	day	0.02	391.00	7.82
Mazdoor (Unskilled)	day	0.50	391.00	195.50

**b) Machinery**

Truck	hour	0.33	418.00	137.94
Crane	hour	0.33	1,288.00	425.04

**c) Add GST (multiplying factor) @ 0.2127 on (a+b) **162.99****

**d) Contractor's profit @ 15 % on (a+b+c) **139.39****

**e) Add Cess @ 1.00 % on (a+b+c+d) **10.69****

Cost for 15 pipes = a+b+c+d+e 1,079.37

**Rate per pipe = (a+b+c+d+e)/15 **71.96****

say **72.00**

**C. 600/450 mm dia Hume pipe**

Unit = per pipe

Taking output = 21 pipe

**a) Labour**

Mate	day	0.02	391.00	7.82
Mazdoor (Unskilled)	day	0.50	391.00	195.50

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Machinery</b>				
		Truck	hour	0.33	418.00	137.94
		Crane	hour	0.33	1,288.00	425.04
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>162.99</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>139.39</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>10.69</b>
		Cost for 21 pipes = a+b+c+d+e				1,079.37
		<b>Rate per pipe = (a+b+c+d+e)/21</b>				<b>51.40</b>
					<b>say</b>	<b><u>51.40</u></b>
		<b>(ii) Unloading of RCC Hume pipe by manual means including a lead upto 30 m</b>				
		<b>A. 1000/1200 mm dia RCC Hume pipes</b>				
		Unit = per pipe				
		Taking output = 5 pipes				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Truck	hour	2.00	418.00	836.00
		<b>c) Material</b>				
		Wooden sleepers 250mm x 250mm x125mm hire charges 3 nos sleeper	hour	2.00	22.50	45.00
		Crow bars 2 nos not less than 40 mm dia (hire-charges)	hour	2.00	10.90	21.80
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>278.52</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>238.19</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>18.26</b>
		Cost for 5 pipes = a+b+c+d+e+f/5				1,844.41
		<b>Rate per pipe = (a+b+c+d+e+f)</b>				<b>368.88</b>
					<b>say</b>	<b><u>368.90</u></b>
		<b>B. 900/ 750 mm dia Hume pipe</b>				
		Unit = per pipe				
		Taking output = 6 pipes				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Truck	hour	2.00	418.00	836.00
		<b>c) Materials</b>				
		Wooden sleepers 250mm x250mm x 125mm hire charges 3 nos. sleeper	hour	2.00	22.50	45.00

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Crow bars 2 nos not less than 40 mm dia	hour	2.00	10.90	21.80
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>278.52</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>238.19</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>18.26</b>
		Cost for 6 pipes = a+b+c+d+e+f				1,844.41
		<b>Rate per pipe = (a+b+c+d+e+f)/6</b>				<b>307.40</b>
					<b>say</b>	<b><u>307.40</u></b>
		<b>C. 600/450 mm dia Hume pipe</b>				
		Unit = per pipe				
		Taking output = 8 pipes				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Truck	hour	2.00	418.00	836.00
		<b>c) Materials</b>				
		Wooden sleepers 250mm x 250mm x 125mm hire charges 3 nos. sleeper	hour	2.00	22.50	45.00
		Crow bars 2 nos not less than 40 mm dia	hour	2.00	10.90	21.80
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>278.52</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>238.19</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>18.26</b>
		Cost for 8 pipes = a+b+c+d+e+f				1,844.41
		<b>Rate per pipe = (a+b+c+d+e+f)/8</b>				<b>230.55</b>
					<b>say</b>	<b><u>230.60</u></b>
		<b>(iii) Unloading of RCC Hume pipes by mechanical means including a lead upto 30 m</b>				
		<b>A. 1000/1200 mm dia Hume pipe</b>				
		Unit = per pipe				
		Taking output = 9 pipes				
		<b>a) Labour</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Machinery</b>				
		Truck	hour	0.33	418.00	137.94
		Crane	hour	0.33	1,288.00	425.04
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>162.99</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>139.39</b>



**Chapter 1**  
**LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>10.69</b>
		Cost for 9 pipes = a+b+c+d+e				1,079.37
		<b>Rate per pipe = (a+b+c+d+e)/9</b>				<b>119.93</b>
					<i>say</i>	<b><u>119.90</u></b>
		<b>B. 900/ 750 mm dia Hume pipe</b>				
		Unit = per pipe				
		Taking output = 15 pipes				
		<b>a) Labour</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Machinery</b>				
		Truck	hour	0.33	418.00	137.94
		Crane	hour	0.33	1,288.00	425.04
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>162.99</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>139.39</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>10.69</b>
		Cost for 15 pipes = a+b+c+d+e				1,079.37
		<b>Rate per pipe = (a+b+c+d+e)/15</b>				<b>71.96</b>
					<i>say</i>	<b><u>72.00</u></b>
		<b>C. 600/450 mm dia Hume pipe</b>				
		Unit = per pipe				
		Taking output = 21 pipes				
		<b>a) Labour</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Machinery</b>				
		Truck	hour	0.33	418.00	137.94
		Crane	hour	0.33	1,288.00	425.04
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>162.99</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>139.39</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>10.69</b>
		Cost for 21 pipes = a+b+c+d+e				1,079.37
		<b>Rate per pipe = (a+b+c+d+e)/21</b>				<b>51.40</b>
					<i>say</i>	<b><u>51.40</u></b>

**1.10 Haulage excluding Loading & Unloading**

Haulage of materials by tipper/ truck excluding cost of loading, unloading and stacking.

Unit = t.km

Taking output 10 t load and lead 10 km = 100 t.km

**Case-I : Surfaced Road**

**Chapter 1**  
**LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Speed with load: 20 km per hour

Speed while returning empty: 35 km per hour

(Considering hilly roads and the timing of movements in Meghalaya & Tripura on the NH)

**a) Machinery**

**Tipper 10 t capacity**

Haulage with load	hour	0.50	374.00	187.00
Empty return trip	hour	0.29	374.00	108.46

**b) Add GST (multiplying factor) @ 0.2127 on (a) 62.84**

**c) Contractor's profit @ 15 % on (a+b) 53.75**

**d) Add Cess @ 1.00 % on (a+b+c) 4.12**

Cost for 100 t.km = a+b+c+d 416.17

**Rate per t.km = (a+b+c)+d/100 4.16**

**say 4.20**

**Note:** In case of carriage of Hume pipes, output of truck be taken as 8 t and the rate for t is to be divided by number of pipes of different diameters as indicated in item 1.9 to get the rate per pipe.

**Case-II: Unsurfaced Gravel Road**

Speed with load: 15 km/hour

Speed for empty return trip: 30 km/hour

**a) Machinery**

**Tipper 10 t capacity**

Haulage with load	hour	0.67	374.00	250.58
Empty return trip	hour	0.33	374.00	123.42

**b) Add GST (multiplying factor) @ 0.2127 on (a) 79.55**

**c) Contractor's profit @ 15 % on (a+b) 68.03**

**d) Add Cess @ 1.00 % on (a+b+c) 5.22**

Cost for 100 t.km = a+b+c+d 526.80

**Rate per t.km = (a+b+c+d)/100 5.27**

**say 5.30**

**Note:** In case of carriage of Hume pipes, output of truck be taken as 8 t and the rate per t is to be divided by number of pipes of different diameters as indicated in item 1.9 to get the rate per pipe.

**Case-III: Katcha Track and Track in River Bed/Nallah Bed and Choe Bed**

Speed with load: 10 km per hour

Speed while returning empty: 15 km per hour

**a) Machinery**

**i) Tipper 10 t capacity**

Haulage with load	hour	1.00	374.00	374.00
Empty return trip	hour	0.67	374.00	250.58

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		b) Add GST (multiplying factor) @ 0.2127 on (a)				132.85
		c) Contractor's profit @ 15 % on (a+b)				113.61
		d) Add Cess @ 1.00 % on (a+b+c)				8.71
		Cost for 100 t.km = a+b+c+d				879.75
		Rate per t.km = (a+b+c+d)/100				8.80
					<b>say</b>	<b><u>8.80</u></b>

**Note:** In case of carriage of Hume pipes, output of truck be taken as 8 t and the cost for 8 t is to be divided by number of pipes of different diameters as indicated in item 1.9 to get the rate per pipe.

**1.11 Supply of Quarried stone and hand breaking**

- (i) Supply of quarried stone and hand breaking into coarse aggregate to Grading 1 (90 mm to 45 mm) as per Table 400.8 of Technical Specifications.

Unit = cum

Taking output = 1 cum

**a) Labour**

Mate	day	0.048	391.00	18.77
Mazdoor (Unskilled)	day	1.20	391.00	469.20

**b) Material**

Supply of quarried stone 150-200 mm size	cum	1.10	2,843.10	3,127.41
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c) Add GST (multiplying factor) @ 0.2127 on (a+b) 768.99

d) Contractor's profit @ 15 % on (a+b+c) 657.66

e) Add Cess @ 1.00 % on (a+b+c+d) 50.42

Rate per cum = a+b+c+d+e 5,092.44

**say** **5092.40**

- (ii) Supply of quarried stone and hand breaking into coarse aggregate to Grading 2 (63 mm to 45 mm) as per Table 400.8 of Technical Specifications.

Unit = cum

Taking output = 1 cum

**a) Labour**

Mate	day	0.06	391.00	23.46
Mazdoor (Unskilled)	day	1.50	391.00	586.50

**b) Material**

Supply of quarried stone 150-200 mm size	cum	1.10	2,843.10	3,127.41
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c) Add GST (multiplying factor) @ 0.2127 on (a+b) 794.94

d) Contractor's profit @ 15 % on (a+b+c) 679.85

e) Add Cess @ 1.00 % on (a+b+c+d) 52.12

Rate per cum = a+b+c+d+e 5,264.28

**say** **5264.30**

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Sr. No.	Ref. to MORO Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(iii) Supply of quarried stone and hand breaking into coarse aggregate to Grading 3 (53 mm to 22.4 mm) as per Table 400.8 of Technical Specifications. Unit = cum Taking output = 1 cum				
		<b>a) Labour</b>				
		Mate	day	0.072	391.00	28.15
		Mazdoor (Unskilled)	day	1.80	391.00	703.80
		<b>b) Material</b>				
		Supply of quarried stone 150-200 mm size	cum	1.10	2,843.10	3,127.41
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>820.89</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>702.04</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>53.82</b>
		<b>Rate per cum = a+b+c+d+e</b>				<b>5,436.11</b>
					<b>say</b>	<b><u>5436.10</u></b>

**1.12 Crushing of Stone boulders in to aggregates 100 per cent passing through 53 mm sieve as per Table 500.6 of Technical Specification.**

Crushing of Stone boulders of 150 mm size and below in an integrated stone crushing unit of 200 t/ h capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates 100 per cent passing through 53 mm sieve as per Table 500.6 of Technical Specification including cost of stones.

Unit = cum

Taking output = 750 cum at crusher location

<b>a) Labour</b>					
Mate	day	0.76	391.00	297.16	
Mazdoor (Skilled)	day	2.00	475.00	950.00	
Mazdoor (Unskilled)	day	17.00	391.00	6,647.00	
<b>b) Material</b>					
Stone Boulder of size 150 mm and below	cum	800.00	2,824.50	22,59,600.00	
<b>c) Machinery</b>					
Integrated stone crusher of 200 t/h including belt conveyor and vibrating screens	hour	6.00	15,579.00	93,474.00	
Front end loader 1 cum bucket capacity	hour	20.00	1,030.00	20,600.00	
Tipper 5.5 cum capacity	hour	20.00	374.00	7,480.00	
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>					<b>5,08,150.54</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>					<b>4,34,579.81</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>					<b>33,317.79</b>
Cost for 750 cum = (a+b+c+d+e+f)					33,65,096.29
<b>Rate per cum = [(a+b+c+d+e+f) x 0.85]/ 750</b>					<b>3,813.78</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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say **3813.80**

- Note:**
- 1 800 cum of stone boulders are needed to get 750 cum of stone aggregates.
  - 2 85 per cent of above cost will be attributed to the production of 750 cum of stone aggregates of 40 mm size and balance 15 per cent will be for smaller size aggregates and stone dust which comes out as a by-product.
  - 3 The integrated stone crusher includes primary and secondary crushing units.

**1.13 Crushing of Stone boulders in to aggregates 100 per cent passing through 22.4 mm sieve as per Table 500.6 of Technical Specification.**

Crushing of Stone boulders of 150 mm size and below in an integrated stone crushing unit of 200 t/ h capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates 100 per cent passing through 22.4 mm sieve as per Table 500.6 of Technical Specification including cost of stones.

Unit = cum

Taking output = 670 cum at crusher location

**a) Labour**

Mate	day	0.76	391.00	297.16
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	17.00	391.00	6,647.00

**b) Material**

Stone boulder of size 150 mm and below	cum	800.00	2,824.50	22,59,600.00
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**c) Machinery**

Integrated stone crusher of 200 t/h including belt conveyor and vibrating screens	hour	6.00	15,579.00	93,474.00
Front end loader 1 cum bucket capacity	hour	10.00	1,030.00	10,300.00
Tipper 5.5 cum capacity	hour	10.00	374.00	3,740.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **5,05,164.24**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **4,32,025.86**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **33,121.98**

Cost for 670 cum = (a+b+c+d+e+f) 33,45,320.24

**Rate per cum = [(a+b+c+d+e+f) x 0.90]/ 670** **4,493.71**

say **4493.70**

- Note:**
- 1 800 cum of stone boulders are needed to get 670 cum of stone chips of required size.
  - 2 90 per cent of above cost will be attributed to the production of 670 cum of stone aggregate and balance 10 per cent will be for smaller size aggregates and stone dust which comes out as a by-product.
  - 3 The integrated stone crusher includes primary and secondary crushing units.

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
1.14		<b>Crushing of Stone boulders in to aggregates 100 per cent passing through 13.2 mm sieve as per Table 500.9 of Technical Specification.</b>				
		Crushing of Stone boulders of 150 mm size and below in an integrated stone crushing unit of 200 t/ h capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates 100 per cent passing through 13.2 mm sieve as per Table 500.9 of Technical Specification including cost of stones.				
		Unit = cum				
		Taking output = 600 cum at crusher location				
		<b>a) Labour</b>				
		Mate	day	0.76	391.00	297.16
		Mazdoor (Skilled)	day	2.00	475.00	950.00
		Mazdoor (Unskilled)	day	17.00	391.00	6,647.00
		<b>b) Material</b>				
		Stone Boulder of size 150 mm and below	cum	800.00	2,824.50	22,59,600.00
		<b>c) Machinery</b>				
		Integrated stone crusher of 200 t/h including belt conveyor and vibrating screens	hour	6.00	15,579.00	93,474.00
		Front end loader 1 cum bucket capacity	hour	10.00	1,030.00	10,300.00
		Tipper 5.5 cum capacity	hour	10.00	374.00	3,740.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>5,05,164.24</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>4,32,025.86</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>33,121.98</b>
		Cost for 600 cum = (a+b+c+d+e+f)				33,45,320.24
		<b>Rate per cum = [(a+b+c+d+e+f) x 0.95]/ 600</b>				<b>5,296.76</b>
					<b>say</b>	<b><u>5296.80</u></b>
		<b>Note:</b>				
		1 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm and 125 cum stone dust.				
		2 95 per cent of above cost will be attributed to the production of 600 cum of stone chips of 13.2 mm size and balance 5 per cent to the production of stone dust which comes out as a by-product.				
		3 The integrated stone crusher includes primary and secondary crushing units.				
		4 The analysis for crushing of stone chips of size 11.2 mm will be same as for 13.2 mm				
1.15		<b>Crushing of Stone boulders in to aggregates 100 per cent passing through 9.5 mm sieve as per Table 500.9 of Technical Specification.</b>				

**Chapter 1**  
**LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Crushing of Stone boulders of 150 mm size and below in an integrated stone crushing unit of 200 t/ h capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates 100 per cent passing through 9.5 mm sieve as per Table 500.9 of Technical Specification including cost of stones.

Unit = cum

Taking output = 600 cum at crusher location

**a) Labour**

Mate	day	0.76	391.00	297.16
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	17.00	391.00	6,647.00

**b) Material**

Stone Boulder of size 150 mm and below	cum	800.00	2,824.50	22,59,600.00
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**c) Machinery**

Integrated stone crusher of 200 t/h including belt conveyor and vibrating screens	hour	6.00	15,579.00	93,474.00
Front end loader 1 cum bucket capacity	hour	10.00	1,030.00	10,300.00
Tipper 5.5 cum capacity	hour	10.00	374.00	3,740.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **5,05,164.24**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **4,32,025.86**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **33,121.98**

Cost for 600 cum = (a+b+c+d+e+f) 33,45,320.24

**Rate per cum = [(a+b+c+d+e+f) x 0.95]/ 600** **5,296.76**

**say 5296.80**

- Note:**
- 1 800 cum of stone boulders are needed to get 600 cum of stone chips of size 9.5 mm and 125 cum stone dust.
  - 2 95 per cent of above cost will be attributed to the production of 600 cum of stone chips of 9.5 mm size and balance 5 per cent to the production of stone dust which comes out as a by-product.
  - 3 The integrated stone crusher includes primary and secondary crushing units.

**1.16 100 Setting Out**

Unit = 1 km

The analysis of rate per km shall account for the following:

- (i) Reference benchmark 1 (one) no.
- (ii) Working benchmark 4 (four) nos per km and near all drainage structure and bridges
- (iii) Reference Pillars/Burjees @ 50 m interval on both sides of the formation width
- (iv) The marking of centre line setting out curves and recording of levels, etc. by the surveyor will be incidental to the work and no extra payment shall be made for the same

**Chapter 1**  
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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(v) The rate analysis for a typical benchmark as per Drawing 200.1				
		1. Excavation for structure earthwork in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil. As per item No.11.1.A.I(i) of Chapter 11	cum	0.325	458.20	148.92
		2. Plain cement concrete M10 (1:3:6) nominal mix in levelling course below open foundation as per drawing and technical specification. As per item No.11.4.I(i) of Chapter 11	cum	0.10	9,983.70	998.37
		3. Brick masonry work in cement mortar 1:3 in foundation complete excluding pointing and plastering as per drawing and technical specification. As per item No.11.5.I of Chapter 11	cum	0.475	9,717.20	4,615.67
		4. Plastering with cement mortar 1:4, 15 mm thick cement plaster on brick work as per technical specifications. As per item No.12.3 of Chapter 12	sqm	2.63	223.20	587.02
		<b>Note:</b> Add 5 per cent cost of items No.1 to 4 for white washing, lettering and painting, etc.				317.50
		Cost for 1 (one) no Bench Mark =				<b>6,667.47</b>
					<b>say</b>	<b><u>6667.50</u></b>
		(vi) The rate analysis for a typical reference pillar as per Drawing 200.2				
		1. Excavation for structure earthwork in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil. As per item No.11.1.A.I(i) of Chapter 11	cum	0.192	458.20	87.97
		2. Plain cement concrete M10 (1:3:6) nominal mix in levelling course below open foundation as per drawing and technical specification. As per item No.11.4.I(i) of Chapter 11	cum	0.06	9,983.70	599.02
		3. Brick masonry work in cement mortar 1:3 in foundation complete excluding pointing and plastering as per drawing and technical specification. As per item No.11.5.I of Chapter 11	cum	0.193	9,717.20	1,875.42
		4. Plastering with cement mortar 1:4, 15 mm thick cement plaster on brick work as per technical specifications. As per item No.12.3 of Chapter 12	sqm	1.50	223.20	334.80
		Add 5 per cent cost of items No.1 to 4 for white washing, lettering and painting, etc.				144.86
		Cost for 1 (one) no Bench Mark =				<b>3,042.08</b>
					<b>say</b>	<b><u>3042.10</u></b>
<b>1.17</b>		<b>Haulage excluding Loading &amp; Unloading for Hume pipes.</b>				



**Chapter 1**  
**LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Haulage of materials by tipper excluding cost of loading, unloading and stacking.

Unit = t.km

Taking output 8 t load and lead 10 km = 80 t.km

**Case-I : Surfaced Road**

Speed with load: 25 km per hour

Speed while returning empty: 35 km per hour

**a) Machinery**

**Truck 10 t capacity** (considering out put of 8 t for hume pipes)

Haulage with load	hour	0.40	418.00	167.20
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Empty return trip	hour	0.29	418.00	121.22
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**b) Add GST (multiplying factor) @ 0.2127 on (a) 61.35**

**c) Contractor's profit @ 15 % on (a+b) 52.47**

**d) Add Cess @ 1.00 % on (a+b+c) 4.02**

**e) Cost for 80 t.km = a+b+c+d 406.25**

**So, Rate per Pipe per Km:-**

**i) For 1000/ 1200 mm dia = (d) / 3 nos / 10 km**

(considering 2.85 Tonne per pipe of 2.50 mtr length) **13.54**

**say 13.50**

**ii) For 900/ 750 mm dia = (d) / 4 nos / 10 km**

(considering 2.07 Tonne per pipe of 2.50 mtr length) **10.16**

**say 10.20**

**iii) For 600/ 450 mm dia = (d) / 6 nos / 10 km**

(considering 1.40 Tonne per pipe of 2.50 mtr length) **6.77**

**say 6.80**

**Case-II: Unsurfaced Gravel Road**

Speed with load: 15 km/hour

Speed for empty return trip: 20 km/hour

**a) Machinery**

**Truck 10 t capacity** (considering out put of 8 t for hume pipes)

Haulage with load	hour	0.67	418.00	280.06
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Empty return trip	hour	0.50	418.00	209.00
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**b) Add GST (multiplying factor) @ 0.2127 on (a) 104.02**

**c) Contractor's profit @ 15 % on (a+b) 88.96**

**d) Add Cess @ 1.00 % on (a+b+c) 6.82**

**e) Cost for 80 t.km = a+b+c+d 688.87**

**i) For 1000/ 1200 mm dia = (d) / 3 nos / 10 km**

(considering 2.85 Tonne per pipe of 2.50 mtr length) **22.96**

**say 23.00**

**ii) For 900/ 750 mm dia = (d) / 4 nos / 10 km**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(considering 2.07 Tonne per pipe of 2.50 mtr length)				17.22
					<b>say</b>	<b><u>17.20</u></b>
		<b>iii) For 600/ 450 mm dia = (d) / 6 nos / 10 km</b>				
		(considering 1.40 Tonne per pipe of 2.50 mtr length)				11.48
					<b>say</b>	<b><u>11.50</u></b>
		<b>Case-III: Katcha Track and Track in River Bed/Nallah Bed and Choe Bed</b>				
		Speed with load: 10 km per hour				
		Speed while returning empty: 15 km per hour				
		<b>a) Machinery</b>				
		<b>i) Truck 10 t capacity</b> (considering out put of 8 t for hume pipes)				
		Haulage with load	hour	1.00	418.00	418.00
		Empty return trip	hour	0.67	418.00	280.06
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>148.48</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>126.98</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>9.74</b>
		<b>e) Cost for 80 t.km = a+b+c+d</b>				<b>983.25</b>
		<b>i) For 1000/ 1200 mm dia = (d) / 3 nos / 10 km</b>				
		(considering 2.85 Tonne per pipe of 2.50 mtr length)				32.78
					<b>say</b>	<b><u>32.80</u></b>
		<b>ii) For 900/ 750 mm dia = (d) / 4 nos / 10 km</b>				
		(considering 2.07 Tonne per pipe of 2.50 mtr length)				24.58
					<b>say</b>	<b><u>24.60</u></b>
		<b>iii) For 600/ 450 mm dia = (d) / 6 nos / 10 km</b>				
		(considering 1.40 Tonne per pipe of 2.50 mtr length)				16.39
					<b>say</b>	<b><u>16.40</u></b>

**Note:-**

1. In case of carriage of Hume pipes, output of truck be taken as 8 t and the cost for 8 t is to be divided by number of pipes of different diameters as indicated in item 1.9 to get the rate per pipe.

2. The length of each pipe is taken as 2.50 mtr.

3. For 1(one) trip of truck following lengths are considered for different dia of pipe.

i. 1000/ 1200 mm of total 7.50 mtr length (3 nos).

ii. 900/ 750 mm of total 10.00 mtr length (4 nos).

iii. 600/ 450 mm of total 15.00 mtr length (6nos).

ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE (i.e. LOCALLY AVAILABLE MATERIALS)

**1.18 100 Setting Out (As per drawing 200.1 and 200.2)**  
**(using PCC with jhama brick aggregate)**

Unit = 1 km

## Chapter 1

## LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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The analysis of rate per km shall account for the following:

- (i) Reference benchmark 1 (one) no.
- (ii) Working benchmark 4 (four) nos per km and near all drainage structure and bridges
- (iii) Reference Pillars/Burjees @ 50 m interval on both sides of the formation width = 40 nos
- (iv) The marking of centre line setting out curves and recording of levels, etc. by the surveyor will be incidental to the work and no extra payment shall be made for the same

**A. Ordinary Soil**

- 1) Construction of typical benchmark as per drawing 200.1 (considering PCC M10 with jhama brick aggregate in place of brick work)

- a. Earthwork in excavation for foundations as per drawing and technical specification.

As per item No.11.1.A.I(i) of Chapter 11 cum 2.925 458.20 1,340.24

- b. Plain cement concrete work in M10 (with jhama brick aggregate)in foundation complete as per drawing and technical specification.

As per item No.11.9.I(ii) of Chapter 11 cum 5.175 9,191.60 47,566.53

- c. Plastering with cement mortar 1:4 as per technical specifications.

As per item No.12.3 of Chapter 12 sqm 23.67 223.20 5,283.14

- 2) Construction of typical refernce pillar as per drawing 200.2 (considering PCC M10 with jhama brick aggregate in place of brick work)

- a. Earthwork in excavation for foundations as per drawing and technical specification.

As per item No.11.1.A.I(i) of Chapter 11 cum 7.680 458.20 3,518.98

- b. Plain cement concrete work in M10 (with jhama brick aggregate)in foundation complete as per drawing and technical specification.

As per item No.11.9.I(ii) of Chapter 11 cum 10.12 9,191.60 93,018.99

- c. Plastering with cement mortar 1:4 as per technical specifications.

As per item No.12.3 of Chapter 12 sqm 60.00 223.20 13,392.00

**Note:** Add 5 per cent cost of items No.(1) & (2) for white washing, lettering and painting, etc. 8,205.99

**Rate Per KM**

**1,72,325.87**

**say 172325.90**

**B. In Ordinary Rock (not requiring blasting)**

- 1) Construction of typical benchmark as per drawing 200.1 (considering PCC M10 with jhama brick aggregate in place of brick work)

- a. Earthwork in excavation for foundations as per drawing and technical specification.

As per item No.11.1.A.II(i) of Chapter 11 cum 2.925 572.80 1,675.44

- b. Plain cement concrete work in M10 (with jhama brick aggregate)in foundation complete as per drawing and technical specification.

**Chapter 1**  
**LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		As per item No.11.9.I(ii) of Chapter 11	cum	5.175	9,191.60	47,566.53
		c. Plastering with cement mortar 1:4 as per technical specifications.				
		As per item No.12.3 of Chapter 12	sqm	23.67	223.20	5,283.14
		2) Construction of typical refernce pillar as per drawing 200.2 (considering PCC M10 with jhama brick aggregate in place of brick work)				
		a. Earthwork in excavation for foundations as per drawing and technical specification.				
		As per item No.11.1.A.II(i) of Chapter 11	cum	7.680	572.80	4,399.10
		b. Plain cement concrete work in M10 (with jhama brick aggregate)in foundation complete as per drawing and technical specification.				
		As per item No.11.9.I(ii) of Chapter 11	cum	10.12	9,191.60	93,018.99
		c. Plastering with cement mortar 1:4 as per technical specifications.				
		As per item No.12.3 of Chapter 12	sqm	60.00	223.20	13,392.00
		<b>Note:</b> Add 5 per cent cost of items No.(1) & (2) for white washing, lettering and painting, etc.				8,266.76
		<b>Rate Per KM</b>				<b>1,73,601.97</b>
					<b>say</b>	<b><u>173602.00</u></b>

**C. In Hard Rock (blasting prohibited)**

		1) Construction of typical benchmark as per drawing 200.1 (considering PCC M10 with jhama brick aggregate in place of brick work)				
		a. Earthwork in excavation for foundations as per drawing and technical specification.				
		As per item No.11.1.A.III of Chapter 11	cum	2.925	617.40	1,805.90
		b. Plain cement concrete work in M10 (with jhama brick aggregate)in foundation complete as per drawing and technical specification.				
		As per item No.11.9.I(ii) of Chapter 11	cum	5.175	9,191.60	47,566.53
		c. Plastering with cement mortar 1:4 as per technical specifications.				
		As per item No.12.3 of Chapter 12	sqm	23.67	223.20	5,283.14
		2) Construction of typical refernce pillar as per drawing 200.2 (considering PCC M10 with jhama brick aggregate in place of brick work)				
		a. Earthwork in excavation for foundations as per drawing and technical specification.				
		As per item No.11.1.A.III of Chapter 11	cum	7.680	617.40	4,741.63
		b. Plain cement concrete work in M10 (with jhama brick aggregate)in foundation complete as per drawing and technical specification.				
		As per item No.11.9.I(ii) of Chapter 11	cum	10.12	9,191.60	93,018.99
		c. Plastering with cement mortar 1:4 as per technical specifications.				
		As per item No.12.3 of Chapter 12	sqm	60.00	223.20	13,392.00

**Chapter 1**  
**LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**Note:** Add 5 per cent cost of items No.(1) & (2) for white washing, lettering and painting, etc. 8,290.41

**Rate Per KM** **1,74,098.60**

**say** **174098.60**

**1.19 100 Setting Out (As per drawing enclosed) (using PCC with jhama brick aggregate)**

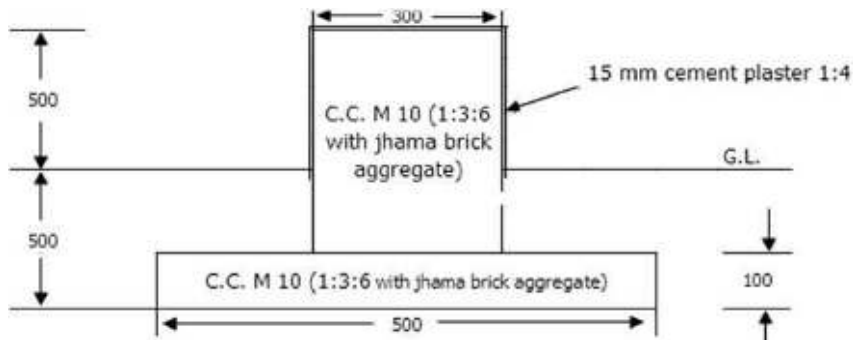
Unit = 1 km

The analysis of rate per km shall account for the following:

- (i) Reference benchmark 1 (one) no.
- (ii) Working benchmark 4 (four) nos per km and near all drainage structure and bridges (4 nos assumed),

**Total - 9 nos.**

- (iii) Reference Pillars/Burjees @ 50 m interval on both sides of the formation width **40 nos.**
- (iv) The marking of centre line setting out curves and recording of levels, etc. by the surveyor will be incidental to the work and no extra payment shall be made for the same
- (v) The rate analysis for a typical benchmark as per Drawing enclosed.



**For all calss of soil**

1. Excavation for structure earthwork in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil.

0.50 x 0.50 x 0.50

As per item No.11.1.A.I(i) of Chapter 11 cum 0.130 458.22 59.57

2. Plain cement concrete M10 (1:3:6) nominal mix in levelling course below open foundation as per drawing and technical specification.

As per item No.11.9.I(ii) of Chapter 11 cum 0.11 9,191.60 1,011.08

3. Plastering with cement mortar 1:4 as per technical specifications.

As per item No.12.3 of Chapter 12 sqm 0.81 223.20 180.79

Add 5 per cent for white washing, lettering and painting, etc. 62.57

Cost for 1 (one) no Bench Mark/ reference pillar = **1,314.01**

**Chapter 1**

**LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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*Rate per Km* = 49 x 1,314.01 = **64386.40**  
*say* **64386.40**

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
2.1	201	<b>Clearing Grass and Removal of Rubbish</b>				
		Clearing grass and removal of rubbish up to a distance of 30 m outside the periphery of the area as per MoRD Technical Specification Clause 201.				
		<b>By Manual Means</b>				
		Unit = hectare				
		Taking output = 1 hectare				
		<b>a) Labour</b>				
		Mate	day	1.60	391.00	625.60
		Mazdoor (Unskilled)	day	40.00	391.00	15,640.00
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>3,459.69</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>2,958.79</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>226.84</b>
		<b>Rate per hectare = a+b+c+d</b>				<b>22,910.93</b>
					<b>say</b>	<b><u>22910.90</u></b>
2.2	201	<b>Clearing and Grubbing Road Land</b>				
		Clearing and grubbing road land including uprooting wild vegetation , grass, bushes, shrubs,saplings and trees of girth upto 300 mm , removal of stumps of such trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, upto a lead of 1000 m including removal and disposal of top organic soil not exceeding 150 mm in thickness as per MoRD Technical Specification clause 201.				
		Unit = hectare				
		Taking output = 1 hectare				
		<b>(I) By Manual Means</b>				
		<b>(A) In area of non-thorny jungle</b>				
		<b>a) Labour</b>				
		Mate	day	6.00	391.00	2,346.00
		Mazdoor (Unskilled)	day	150.00	391.00	58,650.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	1.00	265.00	265.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>13,030.21</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>11,143.68</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>854.35</b>
		<b>Rate per hectare = a+b+c+d+e</b>				<b>86,289.25</b>
					<b>say</b>	<b><u>86289.20</u></b>
		<b>(B) In area of thorny jungle</b>				
		<b>a) Labour</b>				
		Mate	day	8.00	391.00	3,128.00
		Mazdoor (Unskilled)	day	200.00	391.00	78,200.00

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Machinery</b>				
		Tractor with trolley	hour	2.00	265.00	530.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>17,411.20</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>14,890.38</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>1,141.60</b>
		<b>Rate per hectare = a+b+c+d+e</b>				<b>1,15,301.17</b>
						<b>say <u>115301.20</u></b>
		<b>(II) By Mechanical Means</b>				
		<b>(A) In area of non-thorny jungle</b>				
		<b>a) Labour</b>				
		Mate	day	0.16	391.00	62.56
		Mazdoor (Unskilled)	day	4.00	391.00	1,564.00
		<b>b) Machinery</b>				
		Dozer D 50 with attachment or suitable machinery for removal of trees & stumps	hour	10.00	2,654.00	26,540.00
		Tractor with Trolley	hour	1.00	265.00	265.00
		<b>c) Overheads @ 10 % on (a+b)</b>				<b>6,047.39</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>5,171.84</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>396.51</b>
		<b>Rate per hectare = a+b+c+d+e</b>				<b>40,047.30</b>
						<b>say <u>40047.30</u></b>
		<b>(B) In area of thorny jungle</b>				
		<b>a) Labour</b>				
		Mate	day	0.24	391.00	93.84
		Mazdoor (Unskilled)	day	6.00	391.00	2,346.00
		<b>b) Machinery</b>				
		Dozer D 50 with attachment for removal of trees & stumps	hour	12.00	2,654.00	31,848.00
		Tractor with trolley	hour	1.50	265.00	397.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>7,377.57</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>6,309.44</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>483.72</b>
		<b>Rate per hectare = a+b+c+d+e</b>				<b>48,856.07</b>
						<b>say <u>48856.10</u></b>

**Note:** The top soil removed during clearing and grubbing of site, if suitable for re-use shall be transported, conserved and stacked as directed by the Engineer and shall be incidental to the work.

**2.3 201 Cutting of Trees including Cutting of Trunks, Branches and Removal of Stumps**



**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORO Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Cutting of trees, including cutting of trunks , branches and removal of stumps & roots, refilling, compaction of backfilling and stacking of serviceable material by manual means with all lifts as per MoRD Technical Specification Clause 201.

**A. Lead upto 100 m**

Unit = each

**(i) Girth above 300 mm to 600 mm**

**a) Labour**

Mate	day	0.024	391.00	9.38
Mazdoor (Unskilled)	day	0.60	391.00	234.60

**b) Machinery**

Tractor with trolley	hour	0.07	265.00	18.55
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 55.84**

**d) Contractor's profit @ 15 % on (a+b+c) 47.76**

**e) Add Cess @ 1.00 % on (a+b+c+d) 3.66**

**Rate for each tree = a+b+c+d+e 369.79**

**say 369.80**

**(ii) Girth above 600 mm to 900 mm**

**a) Labour**

Mate	day	0.036	391.00	14.08
Mazdoor (Unskilled)	day	0.90	391.00	351.90

**b) Machinery**

Tractor with trolley	hour	0.21	265.00	55.65
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 89.68**

**d) Contractor's profit @ 15 % on (a+b+c) 76.70**

**e) Add Cess @ 1.00 % on (a+b+c+d) 5.88**

**Rate for each tree = a+b+c+d+e 593.88**

**say 593.90**

**(iii) Girth above 900 mm to 1800 mm**

**a) Labour**

Mate	day	0.08	391.00	31.28
Mazdoor (Unskilled)	day	2.00	391.00	782.00

**b) Machinery**

Tractor with trolley	hour	0.28	265.00	74.20
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 188.77**

**d) Contractor's profit @ 15 % on (a+b+c) 161.44**

**e) Add Cess @ 1.00 % on (a+b+c+d) 12.38**

**Rate for each tree = a+b+c+d+e 1,250.06**

**say 1250.10**

**(iv) Girth above 1800 mm to 2700 mm**

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour</b>				
		Mate	day	0.16	391.00	62.56
		Mazdoor (Unskilled)	day	4.00	391.00	1,564.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.42	265.00	111.30
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>369.64</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>316.13</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>24.24</b>
		<b>Rate for each tree = a+b+c+d +e</b>				<b>2,447.86</b>
					<b>say</b>	<b><u>2447.90</u></b>
		<b>(v) Girth above 2700 mm to 4500 mm</b>				
		<b>a) Labour</b>				
		Mate	day	0.32	391.00	125.12
		Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	1.00	265.00	265.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>748.30</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>639.96</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>49.06</b>
		<b>Rate for each tree = a+b+c+d+e</b>				<b>4,955.45</b>
					<b>say</b>	<b><u>4955.50</u></b>
		<b>(vi) Girth above 4500 mm</b>				
		<b>a) Labour</b>				
		Mate	day	1.00	391.00	391.00
		Mazdoor (Unskilled)	day	25.00	391.00	9,775.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	2.00	265.00	530.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>2,275.04</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,945.66</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>149.17</b>
		<b>Rate for each tree = a+b+c+d+e</b>				<b>15,065.86</b>
					<b>say</b>	<b><u>15065.90</u></b>
		<b>B. Lead upto 1000 m</b>				
		Unit = each				
		<b>(i) Girth above 300 mm to 600 mm</b>				
		<b>a) Labour</b>				
		Mate	day	0.024	391.00	9.38
		Mazdoor (Unskilled)	day	0.60	391.00	234.60
		<b>b) Machinery</b>				

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Tractor with trolley	hour	0.10	265.00	26.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>57.53</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>49.20</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>3.77</b>
		<b>Rate for each tree = a+b+c+d+e</b>				<b>380.99</b>
					<b>say</b>	<b><u>381.00</u></b>
		<b>(ii) Girth above 600 mm to 900 mm</b>				
		<b>a) Labour</b>				
		Mate	day	0.036	391.00	14.08
		Mazdoor (Unskilled)	day	0.90	391.00	351.90
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.30	265.00	79.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>94.75</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>81.03</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>6.21</b>
		<b>Rate for each tree = a+b+c+d+e</b>				<b>627.48</b>
					<b>say</b>	<b><u>627.50</u></b>
		<b>(iii) Girth above 900 mm to 1800 mm</b>				
		<b>a) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.40	265.00	106.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>195.53</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>167.22</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>12.82</b>
		<b>Rate for each tree = a+b+c+d+e</b>				<b>1,294.85</b>
					<b>say</b>	<b><u>1294.90</u></b>
		<b>(iv) Girth above 1800 mm to 2700 mm</b>				
		<b>a) Labour</b>				
		Mate	day	0.16	391.00	62.56
		Mazdoor (Unskilled)	day	4.00	391.00	1,564.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.60	265.00	159.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>379.79</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>324.80</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>24.90</b>
		<b>Rate for each tree = a+b+c+d+e</b>				<b>2,515.05</b>
					<b>say</b>	<b><u>2515.10</u></b>

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>(v) Girth above 2700 mm to 4500 mm</b>				
		<b>a) Labour</b>				
		Mate	day	0.32	391.00	125.12
		Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	1.20	265.00	318.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				
						<b>759.58</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				
						<b>649.60</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				
						<b>49.80</b>
		<b>Rate for each tree = a+b+c+d+e</b>				
						<b>5,030.10</b>
					<b>say</b>	<b><u>5030.10</u></b>

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>(vi) Girth above 4500 mm</b>				
		<b>a) Labour</b>				
		Mate	day	1.00	391.00	391.00
		Mazdoor (Unskilled)	day	25.00	391.00	9,775.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	2.40	265.00	636.00
		<b>Note:-</b> The unit quantity of the Tractor with Trolley has been considered by comparing item 2.3.A.V & VI and 2.3.B.V & VI.				
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>2,297.59</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,964.94</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>150.65</b>
		<b>Rate for each tree = a+b+c+d+e</b>				<b>15,215.17</b>
						<b>say <u>15215.20</u></b>

**2.4 201 Uprooting and Removing Stumps & Roots**

Uprooting and Removing Stumps & roots, compaction of backfilling and stacking of servicable material by manual means as per MoRD Technical Specification Clause 201.

**A. Lead upto 100 m**

Unit = each

**(i) Girth above 300 mm to 600 mm**

**a) Labour**

Mate 0.016 391.00 6.26

Mazdoor (Unskilled) 0.40 391.00 156.40

**b) Machinery**

Tractor with trolley 0.018 265.00 4.77

**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 35.61**

**d) Contractor's profit @ 15 % on (a+b+c) 30.46**

**e) Add Cess @ 1.00 % on (a+b+c+d) 2.33**

**Rate for each stump & root = a+b+c+d+e 235.83**

**say 235.80**

**(ii) Girth above 600 mm to 900 mm**

**a) Labour**

Mate 0.024 391.00 9.38

Mazdoor (Unskilled) 0.60 391.00 234.60

**b) Machinery**

Tractor with trolley 0.05 265.00 13.25

**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 54.71**

**d) Contractor's profit @ 15 % on (a+b+c) 46.79**

**e) Add Cess @ 1.00 % on (a+b+c+d) 3.59**

**Chapter 2  
SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Rate for each stump & root = a+b+c+d+e				362.33
					say	<u>362.30</u>

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**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>(iii) Girth above 900 mm to 1800 mm</b>						
<b>a) Labour</b>						
		Mate		0.053	391.00	20.72
		Mazdoor (Unskilled)		1.33	391.00	520.03
<b>b) Machinery</b>						
		Tractor with trolley		0.07	265.00	18.55
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						<b>118.96</b>
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						<b>101.74</b>
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						<b>7.80</b>
<b>Rate for each stump &amp; root = a+b+c+d+e</b>						<b>787.81</b>
						<b>say <u>787.80</u></b>
<b>(iv) Girth above 1800 mm to 2700 mm</b>						
<b>a) Labour</b>						
		Mate		0.11	391.00	43.01
		Mazdoor (Unskilled)		2.66	391.00	1,040.06
<b>b) Machinery</b>						
		Tractor with trolley		0.11	265.00	29.15
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						<b>236.57</b>
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						<b>202.32</b>
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						<b>15.51</b>
<b>Rate for each stump &amp; root = a+b+c+d+e</b>						<b>1,566.62</b>
						<b>say <u>1566.60</u></b>
<b>(v) Girth above 2700 mm to 4500 mm</b>						
<b>a) Labour</b>						
		Mate		0.21	391.00	82.11
		Mazdoor (Unskilled)		5.33	391.00	2,084.03
<b>b) Machinery</b>						
		Tractor with trolley		0.25	265.00	66.25
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						<b>474.83</b>
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						<b>406.08</b>
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						<b>31.13</b>
<b>Rate for each stump &amp; root = a+b+c+d+e</b>						<b>3,144.44</b>
						<b>say <u>3144.40</u></b>
<b>(vi) Girth above 4500 mm</b>						
<b>a) Labour</b>						
		Mate		0.60	391.00	234.60
		Mazdoor (Unskilled)		15.00	391.00	5,865.00
<b>b) Machinery</b>						

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**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Tractor with trolley		0.75	265.00	198.75
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,339.66</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,145.70</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>87.84</b>
		<b>Rate for each stump &amp; root = a+b+c+d+e</b>				<b>8,871.55</b>
					<b>say</b>	<b><u>8871.50</u></b>
<b>B. Lead upto 1000 m</b>						
Unit = each						
<b>(i) Girth above 300 mm to 600 mm</b>						
<b>a) Labour</b>						
		Mate		0.016	391.00	6.26
		Mazdoor (Unskilled)		0.40	391.00	156.40
<b>b) Machinery</b>						
		Tractor with trolley		0.025	265.00	6.63
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>36.01</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>30.79</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>2.36</b>
		<b>Rate for each stump &amp; root = a+b+c+d+e</b>				<b>238.44</b>
					<b>say</b>	<b><u>238.40</u></b>
<b>(ii) Girth above 600 mm to 900 mm</b>						
<b>a) Labour</b>						
		Mate		0.024	391.00	9.38
		Mazdoor (Unskilled)		0.60	391.00	234.60
<b>b) Machinery</b>						
		Tractor with trolley		0.075	265.00	19.88
		<b>c) Overheads @ 10 % on (a+b)</b>				<b>56.12</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>48.00</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>3.68</b>
		<b>Rate for each stump &amp; root = a+b+c+d+e</b>				<b>371.66</b>
					<b>say</b>	<b><u>371.70</u></b>
<b>(iii) Girth above 900 mm to 1800 mm</b>						
<b>a) Labour</b>						
		Mate		0.053	391.00	20.72
		Mazdoor (Unskilled)		1.33	391.00	520.03
<b>b) Machinery</b>						
		Tractor with trolley		0.10	265.00	26.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>120.65</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>103.19</b>



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		e) Add Cess @ 1.00 % on (a+b+c+d)				7.91
		Rate for each stump & root = a+b+c+d+e				799.00
					<b>say</b>	<b><u>799.00</u></b>
		(iv) Girth above 1800 mm to 2700 mm				
		a) Labour				
		Mate		0.11	391.00	43.01
		Mazdoor (Unskilled)		2.66	391.00	1,040.06
		b) Machinery				
		Tractor with trolley		0.15	265.00	39.75
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				238.82
		d) Contractor's profit @ 15 % on (a+b+c)				204.25
		e) Add Cess @ 1.00 % on (a+b+c+d)				15.66
		Rate for each stump & root = a+b+c+d+e				1,581.55
					<b>say</b>	<b><u>1581.50</u></b>
		(v) Girth above 2700 mm to 4500 mm				
		a) Labour				
		Mate		0.21	391.00	82.11
		Mazdoor (Unskilled)		5.33	391.00	2,084.03
		b) Machinery				
		Tractor with trolley		0.30	265.00	79.50
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				477.65
		d) Contractor's profit @ 15 % on (a+b+c)				408.49
		e) Add Cess @ 1.00 % on (a+b+c+d)				31.32
		Rate for each stump & root = a+b+c+d+e				3,163.10
					<b>say</b>	<b><u>3163.10</u></b>
		(vi) Girth above 4500 mm				
		a) Labour				
		Mate		0.60	391.00	234.60
		Mazdoor (Unskilled)		15.00	391.00	5,865.00
		b) Machinery				
		Tractor with trolley		1.00	265.00	265.00
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				1,353.75
		d) Contractor's profit @ 15 % on (a+b+c)				1,157.75
		e) Add Cess @ 1.00 % on (a+b+c+d)				88.76
		Rate for each stump & root = a+b+c+d+e				8,964.86
					<b>say</b>	<b><u>8964.90</u></b>

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
2.5	202	<b>Dismantling of Structures</b>				
		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 whenever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.				
		Unit = cum				
		Taking output = 1.25 cum				
		<b>(I) By Manual Means</b>				
		<b>(A) Lime Concrete</b>				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				
						<b>101.71</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				
						<b>86.99</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				
						<b>6.67</b>
		Cost for 1.25 cum = a+b+c+d				
						673.56
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				
						<b>538.84</b>
					<b>say</b>	<b><u>538.80</u></b>
		<b>(B) Cement Concrete</b>				
		<b>a) Labour</b>				
		Mate	day	0.05	391.00	19.55
		Mazdoor (Unskilled)	day	1.25	391.00	488.75
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				
						<b>123.33</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				
						<b>105.48</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				
						<b>8.09</b>
		Cost for 1.25 cum = a+b+c+d				
						816.75
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				
						<b>653.40</b>
					<b>say</b>	<b><u>653.40</u></b>
		<b>(C) Reinforced Cement Concrete</b>				
		<b>a) Labour</b>				
		Mate	day	0.15	391.00	58.65
		Blacksmith	day	0.25	480.00	120.00
		Mazdoor (Unskilled)	day	3.50	391.00	1,368.50

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>344.30</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>294.45</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>22.57</b>
		Cost for 1.25 cum = a+b+c+d+e				2,280.02
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>1,824.02</b>
					<b>say</b>	<b><u>1824.00</u></b>
		<b>(II) By Mechanical Means</b>				
		<b>(A) Cement Concrete</b>				
		<b>a) Labour</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Machinery</b>				
		Air compressor 210 cfm with 2 leads of pneumatic breaker @1.5 cum per hour	hour	0.83	235.00	195.05
		Tractor with trolley	hour	0.83	265.00	<b>219.95</b>
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>131.52</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>112.48</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>8.62</b>
		Cost for 1.25 cum = a+b+c+d+e				870.94
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>696.75</b>
					<b>say</b>	<b><u>696.70</u></b>
		<b>(B) Reinforced Cement Concrete</b>				
		<b>a) Labour</b>				
		Mate	day	0.05	391.00	19.55
		Mazdoor (Unskilled)	day	0.91	391.00	355.81
		Blacksmith	day	0.25	480.00	120.00
		<b>b) Machinery</b>				
		Air compressor 170-210 cfm working with 2 Jack Hammers simultaneously @1.00 cum per hour	hour	1.25	235.00	293.75
		Tractor with trolley	hour	1.25	265.00	331.25
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>238.30</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>203.80</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>15.62</b>
		Cost for 1.25 cum = a+b+c+d+e				1,578.08
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>1,262.47</b>
					<b>say</b>	<b><u>1262.50</u></b>

2.6 202 Dismantling Brick/Tile Work as per MoRD Technical Specification No. 202.

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Dismantling of existing structures like culverts, bridges, retaining walls and other structures comprising of brick masonry including disposal of unserviceable material and stacking the serviceable material with all lift and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.

Unit = cum

Taking output = 1.25

**(A) Lime mortar**

**a) Labour**

Mate	day	0.02	391.00	7.82
Mazdoor (Unskilled)	day	0.50	391.00	195.50

**b) Machinery**

Tractor with trolley	hour	0.27	265.00	71.55
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

**58.46**

**d) Contractor's profit @ 15 % on (a+b+c)**

**50.00**

**e) Add Cess @ 1.00 % on (a+b+c+d)**

**3.83**

Cost for 1.25 cum = a+b+c+d+e

387.17

**Rate per cum = (a+b+c+d+e) /1.25**

**309.73**

**say 309.70**

**(B) Cement mortar**

**a) Labour**

Mate	day	0.03	391.00	11.73
Mazdoor (Unskilled)	day	0.75	391.00	293.25

**b) Machinery**

Tractor with trolley	hour	0.27	265.00	71.55
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

**80.09**

**d) Contractor's profit @ 15 % on (a+b+c)**

**68.49**

**e) Add Cess @ 1.00 % on (a+b+c+d)**

**5.25**

Cost for 1.25 cum = a+b+c+d+e

530.36

**Rate per cum = (a+b+c+d+e)/1.25**

**424.29**

**say 424.30**

**(C) Mud Mortar**

**a) Labour**

Mate	day	0.016	391.00	6.26
Mazdoor (Unskilled)	day	0.40	391.00	156.40

**b) Machinery**

Tractor with trolley	hour	0.27	265.00	71.55
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

**49.82**

**d) Contractor's profit @ 15 % on (a+b+c)**

**42.60**

**e) Add Cess @ 1.00 % on (a+b+c+d)**

**3.27**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Cost for 1.25 cum = a+b+c+d+e				329.89
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>263.91</b>
					<b>say</b>	<b><u>263.90</u></b>
		<b>(D) Dry Brick Pitching or Brick Soling</b>				
		<b>a) Labour</b>				
		Mate	day	0.014	391.00	5.47
		Mazdoor (Unskilled)	day	0.35	391.00	136.85
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>45.49</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>38.90</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>2.98</b>
		Cost for 1.25 cum = a+b+c+d+e				301.25
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>241.00</b>
					<b>say</b>	<b><u>241.00</u></b>
2.7	202	<b>Dismantling Stone Masonry as per MoRD Technical Specification Clause 202.</b>				
		Dismantling of existing structures like culverts, bridges, retaining walls and other structures comprising of stone masonry including disposal of unserviceable material and stacking the serviceable material with all lift and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.				
		Unit = cum				
		Taking output = 1.25 cum				
		<b>(A) Rubble Stone Masonry in Lime Mortar</b>				
		<b>a) Labour</b>				
		Mate	day	0.024	391.00	9.38
		Mazdoor (Unskilled)	day	0.60	391.00	234.60
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>67.11</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>57.40</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>4.40</b>
		Cost for 1.25 cum = a+b+c+d+e				444.45
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>355.56</b>
					<b>say</b>	<b><u>355.60</u></b>
		<b>(B) Rubble Stone Masonry in Cement Mortar</b>				
		<b>a) Labour</b>				
		Mate	day	0.03	391.00	11.73
		Mazdoor (Unskilled)	day	0.75	391.00	293.25

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>80.09</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>68.49</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>5.25</b>
		Cost for 1.25 cum = a+b+c+d+e				530.36
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>424.29</b>
					<b>say</b>	<b><u>424.30</u></b>
		<b>(C) Rubble Stone Masonry in Mud Mortar</b>				
		<b>a) Labour</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>58.46</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>50.00</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>3.83</b>
		Cost for 1.25 cum = a+b+c+d+e				387.17
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>309.73</b>
					<b>say</b>	<b><u>309.70</u></b>
		<b>(D) Dry Rubble Masonry</b>				
		<b>a) Labour</b>				
		Mate	day	0.018	391.00	7.04
		Mazdoor (Unskilled)	day	0.45	391.00	175.95
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>54.14</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>46.30</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>3.55</b>
		Cost for 1.25 cum = a+b+c+d+e				358.53
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>286.82</b>
					<b>say</b>	<b><u>286.80</u></b>
		<b>(E) Dismantling Stone Pitching / Dry Stone Spalls</b>				
		<b>a) Labour</b>				
		Mate	day	0.016	391.00	6.26
		Mazdoor (Unskilled)	day	0.40	391.00	156.40
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				49.82
		d) Contractor's profit @ 15 % on (a+b+c)				42.60
		e) Add Cess @ 1.00 % on (a+b+c+d)				3.27
		Cost for 1.25 cum = a+b+c+d+e				329.89
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>263.91</b>
					<b>say</b>	<b><u>263.90</u></b>
		<b>(F) Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials</b>				
		<b>a) Labour</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				58.46
		d) Contractor's profit @ 15 % on (a+b+c)				50.00
		e) Add Cess @ 1.00 % on (a+b+c+d)				3.83
		Cost for 1.25 cum = a+b+c+d+e				387.17
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>309.73</b>
					<b>say</b>	<b><u>309.70</u></b>
2.8	202	<b>Dismantling Wood Work Wrought and Planed Fixed in Frames of Trusses upto a height of 5 m above Plinth Level as per MoRD Technical Specification Clause 202.</b>				
		Dismantling of existing Wood work, including T&P and scaffolding whenever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.				
		Unit = cum				
		Taking output = 1.25 cum				
		<b>a) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Carpenter 1st Class	day	0.50	512.00	256.00
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.27	265.00	71.55
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				157.83
		d) Contractor's profit @ 15 % on (a+b+c)				134.98
		e) Add Cess @ 1.00 % on (a+b+c+d)				10.35
		Cost for 1.25 cum = a+b+c+d+e				1,045.16
		<b>Rate per cum = (a+b+c+d+e)/1.25</b>				<b>836.13</b>

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**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)																																																				
					<b>say</b>	<b><u>836.10</u></b>																																																				
2.9	202	<p><b>Dismantling Steel Work in all Types of Sections upto a height of 5 m above Plinth Level excluding Cutting of rivet as per MoRD Technical Specification Clause 202.</b></p> <p>Dismantling of existing Steel work, including T&amp;P and scaffolding whenever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.</p> <p>Unit = t</p> <p>Taking output = 1</p> <p><b>(A) Including dismembering</b></p> <p><b>a) Labour</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Mate</td> <td style="width: 10%; text-align: center;">day</td> <td style="width: 10%; text-align: center;">0.14</td> <td style="width: 10%; text-align: right;">391.00</td> <td style="width: 10%; text-align: right;">54.74</td> </tr> <tr> <td>Blacksmith</td> <td style="text-align: center;">day</td> <td style="text-align: center;">1.00</td> <td style="text-align: right;">480.00</td> <td style="text-align: right;">480.00</td> </tr> <tr> <td>Mazdoor (Unskilled)</td> <td style="text-align: center;">day</td> <td style="text-align: center;">2.50</td> <td style="text-align: right;">391.00</td> <td style="text-align: right;">977.50</td> </tr> <tr> <td colspan="4">Add 2.50 per cent of cost of labour for gas cutting, ropes, pulleys, etc.</td> <td style="text-align: right;">37.81</td> </tr> </table> <p><b>b) Machinery</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Tractor with trolley</td> <td style="width: 10%; text-align: center;">hour</td> <td style="width: 10%; text-align: center;">0.17</td> <td style="width: 10%; text-align: right;">265.00</td> <td style="width: 10%; text-align: right;">45.05</td> </tr> </table> <p><b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b> <span style="float: right;"><b>339.28</b></span></p> <p><b>d) Contractor's profit @ 15 % on (a+b+c)</b> <span style="float: right;"><b>290.16</b></span></p> <p><b>e) Add Cess @ 1.00 % on (a+b+c+d)</b> <span style="float: right;"><b>22.25</b></span></p> <p><b>Rate per t = a+b+c+d+e</b> <span style="float: right;"><b>2,246.77</b></span></p> <p style="text-align: right;"><b>say <u>2246.80</u></b></p> <p><b>(B) Excluding dismembering</b></p> <p><b>a) Labour</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Mate</td> <td style="width: 10%; text-align: center;">day</td> <td style="width: 10%; text-align: center;">0.10</td> <td style="width: 10%; text-align: right;">391.00</td> <td style="width: 10%; text-align: right;">39.10</td> </tr> <tr> <td>Mazdoor (Unskilled)</td> <td style="text-align: center;">day</td> <td style="text-align: center;">2.00</td> <td style="text-align: right;">391.00</td> <td style="text-align: right;">782.00</td> </tr> <tr> <td>Blacksmith</td> <td style="text-align: center;">day</td> <td style="text-align: center;">0.50</td> <td style="text-align: right;">480.00</td> <td style="text-align: right;">240.00</td> </tr> <tr> <td colspan="4">Add 2.50 per cent of cost of labour for gas cutting, ropes, pulleys, etc.</td> <td style="text-align: right;">26.53</td> </tr> </table> <p><b>b) Machinery</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Tractor with trolley</td> <td style="width: 10%; text-align: center;">hour</td> <td style="width: 10%; text-align: center;">0.17</td> <td style="width: 10%; text-align: right;">265.00</td> <td style="width: 10%; text-align: right;">45.05</td> </tr> </table> <p><b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b> <span style="float: right;"><b>240.92</b></span></p> <p><b>d) Contractor's profit @ 15 % on (a+b+c)</b> <span style="float: right;"><b>206.04</b></span></p> <p><b>e) Add Cess @ 1.00 % on (a+b+c+d)</b> <span style="float: right;"><b>15.80</b></span></p> <p><b>Rate per t = a+b+c+d+e</b> <span style="float: right;"><b>1,595.43</b></span></p> <p style="text-align: right;"><b>say <u>1595.40</u></b></p> <p><b>(C) Extra over Items (A) and (B) for cutting rivets</b></p> <p>Unit = each</p> <p>Taking output = 10 rivets</p>	Mate	day	0.14	391.00	54.74	Blacksmith	day	1.00	480.00	480.00	Mazdoor (Unskilled)	day	2.50	391.00	977.50	Add 2.50 per cent of cost of labour for gas cutting, ropes, pulleys, etc.				37.81	Tractor with trolley	hour	0.17	265.00	45.05	Mate	day	0.10	391.00	39.10	Mazdoor (Unskilled)	day	2.00	391.00	782.00	Blacksmith	day	0.50	480.00	240.00	Add 2.50 per cent of cost of labour for gas cutting, ropes, pulleys, etc.				26.53	Tractor with trolley	hour	0.17	265.00	45.05						
Mate	day	0.14	391.00	54.74																																																						
Blacksmith	day	1.00	480.00	480.00																																																						
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Tractor with trolley	hour	0.17	265.00	45.05																																																						



**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour</b>				
		Mate	day	0.01	391.00	3.91
		Blacksmith	day	0.13	480.00	62.40
		Mazdoor (Unskilled)	day	0.13	391.00	50.83
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>24.92</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>21.31</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>1.63</b>
		Cost for 10 rivets = a+b+c+d				165.00
		<b>Rate for each rivet = (a+b+c+d) /10</b>				<b>16.50</b>
					<b>say</b>	<b><u>16.50</u></b>
<b>2.10</b>	<b>202</b>	<b>Scraping of bricks dismantled from brick work including stacking as per MoRD Technical Specification Clause 202.</b>				
		Scraping of bricks from dismantled brick work, including T & P and scaffolding whenever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.				
		Unit = Nos.				
		Taking output = 1000 Nos.				
		<b>In Lime/ Cement Mortar</b>				
		<b>a) Labour</b>				
		Mate	day	0.14	391.00	54.74
		Mazdoor (Unskilled)	day	3.50	391.00	1,368.50
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>302.72</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>258.89</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>19.85</b>
		<b>Rate per 1000 Nos. = a+b+c+d</b>				<b>2,004.71</b>
					<b>say</b>	<b><u>2004.70</u></b>
<b>2.11</b>	<b>202</b>	<b>Scraping of Stone from Dismantled Stone Masonry as per MoRD Technical Specification Clause 202.</b>				
		Scraping of stone from dismantled stone masonry, including T&P and scaffolding whenever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.				
		Unit = cum				
		Taking output = 1 cum				
		<b>In Cement or Lime Mortar</b>				
		<b>a) Labour</b>				
		Mate	day	0.06	391.00	23.46

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**SITE CLEARANCE**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mazdoor (Unskilled)	day	1.40	391.00	547.40
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>121.42</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>103.84</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>7.96</b>
		<b>Rate per cum = a+b+c+d</b>				<b>804.09</b>
					<b>say</b>	<b><u>804.10</u></b>
<b>2.12</b>	<b>202</b>	<b>Scraping Plaster in Lime or Cement Mortar from Brick / Stone Masonry as per MoRD Technical Specification Clause 202.</b>				
		Scraping plaster in Lime or Cement Mortar from Brick / stone masonry, including T&P and scaffolding whenever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.				
		Unit = sqm				
		Taking output = 100 sqm				
		<b>a) Labour</b>				
		Mate	day	0.16	391.00	62.56
		Mazdoor (Unskilled)	day	4.00	391.00	1,564.00
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>345.97</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>295.88</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>22.68</b>
		Cost for 100 sqm = a+b+c+d				2,291.09
		<b>Rate per sqm = (a+b+c+d)/100</b>				<b>22.91</b>
					<b>say</b>	<b><u>22.90</u></b>
<b>2.13</b>	<b>202</b>	<b>Removing all types of Hume pipes.</b>				
		Removing all types of Hume pipes and stacking within a lead of 1000 m excluding Earthwork and Dismantling of Masonry Works as per MoRD Technical Specification Clause 202 .				
		Unit = m				
		Taking output = 1 m				
		<b>(A) Upto 600 mm dia Hume pipe</b>				
		<b>a) Labour</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.52	391.00	203.32
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>44.91</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>38.41</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>2.94</b>
		<b>Rate per m = a+b+c+d</b>				<b>297.40</b>
					<b>say</b>	<b><u>297.40</u></b>
		<b>(B) Above 600 mm to 900 mm dia Hume pipe</b>				

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**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour</b>				
		Mate	day	0.03	391.00	11.73
		Mazdoor (Unskilled)	day	0.70	391.00	273.70
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>60.71</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>51.92</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>3.98</b>
		<b>Rate per m = a+b+c+d</b>				<b>402.04</b>
					<b>say</b>	<b><u>402.00</u></b>
		<b>(C) Above 900 mm dia Hume pipe</b>				
		<b>a) Labour</b>				
		Mate	day	0.05	391.00	19.55
		Mazdoor (Unskilled)	day	1.20	391.00	469.20
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>103.96</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>88.91</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>6.82</b>
		<b>Rate per m = a+b+c+d</b>				<b>688.43</b>
					<b>say</b>	<b><u>688.40</u></b>
		<b>Note:</b>				
		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.				
<b>2.14</b>	<b>202</b>	<b>Dismantling of Flexible Pavements</b>				
		Dismantling of flexible pavements and disposal of dismantled materials with all lifts and upto a lead of 100 m, stacking serviceable materials and unserviceable materials separately as per MoRD Technical Specification Clause 202.				
		Unit = cum				
		Taking output = 1 cum				
		<b>(I) By Manual Means</b>				
		<b>(A) Bituminous Courses</b>				
		<b>a) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Mazdoor (Unskilled)	day	1.50	391.00	586.50
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.38	265.00	100.70
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>151.16</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>129.27</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>9.91</b>
		<b>Rate per cum = a+b+c+d+e</b>				<b>1,001.00</b>
					<b>say</b>	<b><u>1001.00</u></b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**(B) Granular Courses****a) Labour**

Mate	day	0.04	391.00	15.64
Mazdoor (Unskilled)	day	1.00	391.00	391.00

**b) Machinery**

Tractor with trolley	hour	0.33	265.00	87.45
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)****105.09****d) Contractor's profit @ 15 % on (a+b+c)****89.88****e) Add Cess @ 1.00 % on (a+b+c+d)****6.89****Rate per cum = a+b+c+d+e****695.95****say 696.00****(II) By Mechanical Means****(A) Bituminous Courses****a) Labour**

Mate	day	0.01	391.00	3.91
Mazdoor (Unskilled)	day	0.30	391.00	117.30

**b) Machinery**

Tractor with trolley	hour	0.38	265.00	100.70
Tractor with ripper @ 60 cum per hour	hour	0.016	250.00	4.00

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)****48.05****d) Contractor's profit @ 15 % on (a+b+c)****41.09****e) Add Cess @ 1.00 % on (a+b+c+d)****3.15****Rate per cum = a+b+c+d+e****318.21****say 318.20**

**2.15    202    Dismantling of Cement Concrete Pavements as per MoRD Technical Specification Clause 202.**

Dismantling of cement concrete pavements 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 with all lifts and upto a lead of 1000 m, stacking serviceable materials and unserviceable materials separately as per MoRD Technical Specification Clause 202.

Unit = cum

Taking output = 1 cum

**a) Labour**

Mate	day	0.03	391.00	11.73
Mazdoor (Semi-skilled)	day	0.50	447.00	223.50
Mazdoor (Unskilled)	day	0.50	391.00	195.50

**b) Machinery**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Air compressor 210 cfm with two leads for pneumatic cutters / hammers @ 1 cum per hour	hour	1.00	235.00	235.00
		Tractor with trolley	hour	0.40	265.00	106.00
		Joint Cutting Machine with 2-3 blades	hour	1.00	186.00	186.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>203.71</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>174.22</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>13.36</b>
		<b>Rate per cum = a+b+c+d</b>				<b>1,349.01</b>
					<b>say</b>	<b><u>1349.00</u></b>
		<i>Note: The above analysis is for removal of complete pavement. In case full depth repair work is required to be done after dismantling, provision of a concrete saw cutter may be added for 0.25h.</i>				
<b>2.16</b>	<b>202</b>	<b>Dismantling Guard Rails</b>				
		Dismantling of Guard rails by manual means and disposal of dismantled material with all lifts and upto a lead of 1000 m, stacking serviceable materials and unserviceable materials separately as per MoRD Technical Specification Clause 202.				
		Unit = running m				
		Taking Output = 1 m				
		<b>a) Labour</b>				
		Mate	day	0.006	391.00	2.35
		Mazdoor (Unskilled)	day	0.15	391.00	58.65
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.05	265.00	13.25
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>15.79</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>13.51</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>1.04</b>
		<b>Rate per m = a+b+c+d+e</b>				<b>104.58</b>
					<b>say</b>	<b><u>104.60</u></b>
<b>2.17</b>	<b>202</b>	<b>Dismantling Kerb Stones</b>				
		Dismantling of Kerb Stones by manual means and disposal of dismantled material with all lifts and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.				
		Unit = running m				
		Taking output = 10 m				
		<b>a) Labour</b>				
		Mate	day	0.006	391.00	2.35
		Mazdoor (Unskilled)	day	0.15	391.00	58.65
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.20	265.00	53.00

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**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				24.25
		d) Contractor's profit @ 15 % on (a+b+c)				20.74
		e) Add Cess @ 1.00 % on (a+b+c+d)				1.59
		Cost of 10 m = a+b+c+d+e				160.57
		Rate per m = (a+b+c+d+e)/10				16.06
					<b>say</b>	<b><u>16.10</u></b>
<b>2.18</b>	<b>202</b>	<b>Dismantling Kerb Stone Channels</b>				
		Dismantling of Kerb Stone channels by manual means and disposal of dismantled material with all lifts and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.				
		Unit = running m				
		Taking output = 10 m				
		<b>a) Labour</b>				
		Mate	day	0.015	391.00	5.87
		Mazdoor (Unskilled)	day	0.225	391.00	87.98
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.30	265.00	79.50
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				36.87
		d) Contractor's profit @ 15 % on (a+b+c)				31.53
		e) Add Cess @ 1.00 % on (a+b+c+d)				2.42
		Cost of 10 m = a+b+c+d+e				244.16
		Rate per m = (a+b+c+d+e)/10				24.42
					<b>say</b>	<b><u>24.40</u></b>
<b>2.19</b>	<b>202</b>	<b>Dismantling Kilometre Stones</b>				
		Dismantling of Kilometre Stones including cutting of earth, and disposal of dismantled material with all lifts and upto a lead of 1000 m and backfilling of pit as per MoRD Technical Specification Clause 202.				
		Unit = each				
		Taking output = 1 km stone				
		<b>(A) 5th km Stone</b>				
		Quantity of cement concrete = 0.392 cum				
		<b>a) Labour</b>				
		Mate	day	0.03	391.00	11.73
		Mazdoor (Unskilled)	day	0.75	391.00	293.25
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.15	265.00	39.75
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				73.32
		d) Contractor's profit @ 15 % on (a+b+c)				62.71
		e) Add Cess @ 1.00 % on (a+b+c+d)				4.81

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**Rate for one 5th km stone = a+b+c+d+e** **485.57**

**say** **485.60**

**(B) Ordinary km Stones**

Quantity of cement concrete = 0.269 cum

**a) Labour**

Mate	day	0.02	391.00	7.82
Mazdoor (Unskilled)	day	0.50	391.00	195.50

**b) Machinery**

Tractor with trolley	hour	0.08	265.00	19.88
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** **47.47**

**d) Contractor's profit @ 15 % on (a+b+c)** **40.60**

**e) Add Cess @ 1.00 % on (a+b+c+d)** **3.11**

**Rate for one ordinary km stone = a+b+c+d+e** **314.38**

**say** **314.40**

**(C) 200 m Stones**

Quantity of cement concrete = 0.048 cum

**a) Labour**

Mate	day	0.004	391.00	1.56
Mazdoor (Unskilled)	day	0.10	391.00	39.10

**b) Machinery**

Tractor with trolley	hour	0.02	265.00	5.30
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** **9.78**

**d) Contractor's profit @ 15 % on (a+b+c)** **8.36**

**e) Add Cess @ 1.00 % on (a+b+c+d)** **0.64**

**Rate for one 200 m stone = a+b+c+d+e** **64.74**

**say** **64.70**

**2.20 202 Dismantling of Fencing**

Dismantling of barbed wire fencing / wire mesh fencing including posts, foundation concrete, backfilling of pit by manual means including disposal of dismantled material with all lifts and upto a lead of 1000 m and stacking the serviceable and unserviceable material separately as per MoRD Technical Specification Clause 202.

Unit = running m

Taking output = 30 m

**a) Labour**

Mate	day	0.15	391.00	58.65
Mazdoor (Unskilled)	day	3.00	391.00	1,173.00
Blacksmith	day	0.75	480.00	360.00

**b) Machinery**

**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Tractor with trolley	hour	0.15	265.00	39.75
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>347.00</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>296.76</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>22.75</b>
		Cost of 30 m = a+b+c+d+e				2,297.91
		<b>Rate per m = (a+b+c+d+e)/30</b>				<b>76.60</b>
					<b>say</b>	<b><u>76.60</u></b>

**2.21 202 Dismantling of CI Water Pipe Line**

Dismantling of CI water pipe line 600 mm dia including disposal with all lifts and upto a lead of 1000 m and stacking the serviceable and unserviceable material separately under supervision of the concerned department but excluding earth excavation and dismantling of masonry works as per MoRD Technical Specification Clause 202.

Unit = running m

Taking output = 10 m

**a) Labour**

Mate	day	0.09	391.00	35.19
Mazdoor (Unskilled)	day	2.00	391.00	782.00
Plumber	day	0.25	475.00	118.75

**b) Machinery**

Truck 10 t capacity	hour	0.25	418.00	104.50
Crane with 3 t capacity	hour	0.50	560.00	280.00

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** **280.86**

**d) Contractor's profit @ 15 % on (a+b+c)** **240.19**

**e) Add Cess @ 1.00 % on (a+b+c+d)** **18.41**

Cost for 10 m = a+b+c+d+e 1,859.91

**Rate per m = (a+b+c+d+e)/10** **185.99**

**say** **186.00**

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

**2.22 202 Removal of Cement Concrete Pipe of Sewer Gutter**

Removal of Cement Concrete Pipe of Sewer Gutter 1500 mm dia under the supervision of the concerned department including disposal with all lifts and upto a lead of 1000 m and stacking the serviceable and unserviceable material separately but excluding earth excavation and dismantling of masonry works as per MoRD Technical Specification Clause 202.

Unit = running m

Taking output = 10 m

**a) Labour**



**Chapter 2**  
**SITE CLEARANCE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	0.10	391.00	39.10
		Mazdoor (Unskilled)	day	2.50	391.00	977.50
		<b>b) Machinery</b>				
		Crane upto 8 t capacity	hour	0.30	1,288.00	386.40
		Truck 10 t capacity flat body	hour	1.00	418.00	418.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>387.33</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>331.25</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>25.40</b>
		Cost for 10 m = a+b+c+d+e				2,564.97
		<b>Rate per m = (a+b+c+d+e)/10</b>				<b>256.50</b>
					<b>say</b>	<b><u>256.50</u></b>
		<b>Note:</b> The rate analysis does not include any excavation in earth or dismantling of masonry works which are to be measured and paid separately.				
<b>2.23</b>	<b>202</b>	<b>Removal of Telephone/Electric Poles and Lines</b>				
		Removal of telephone / electric poles with wires including excavation and dismantling of foundation concrete and lines under the supervision of concerned department, disposal with all lifts and upto a lead of 1000 m and stacking the serviceable and unserviceable material separately as per MoRD Technical Specification Clause 202.				
		Unit = each				
		Taking output = 30 Nos.				
		<b>a) Labour</b>				
		Mate	day	0.48	391.00	187.68
		Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
		Electrician/Lineman	day	2.00	475.00	950.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	1.50	265.00	397.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,158.19</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>990.51</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>75.94</b>
		Cost for 30 poles = a+b+c+d+e				7,669.81
		<b>Rate per pole = (a+b+c+d+e)/30</b>				<b>255.66</b>
					<b>say</b>	<b><u>255.70</u></b>

**Chapter 3**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
3.1		<b>Preparation of Foundation for Embankment</b>				
	301.4	<b>Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means</b> Scarifying Existing Granular Surface by manual means to a depth of 50 mm and disposal of scarified material with a lift upto 3 m and leads upto 1000 m as per MoRD Technical Specification Clause 301.4. Unit = sqm Taking output = 100 sqm				
		<b>a) Labour</b>				
		Mate	day	0.16	391.00	62.56
		Mazdoor (Unskilled)	day	4.00	391.00	1,564.00
		<b>b) Machinery</b>				
		Tractor with trolley	hour	1.50	265.00	397.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>430.52</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>368.19</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>28.23</b>
		Cost for 100 sqm = a+b+c+d+e				2,850.99
		<b>Rate per sqm = (a+b+c+d+e)/100</b>				<b>28.51</b>
					<b>say</b>	<b><u>28.50</u></b>
3.2		<b>Preparation of Foundation for Embankment</b>				
	301.4	<b>Scarifying Existing Bituminous Surface to a depth of 150 mm by Mechanical Means</b> Scarifying Existing bituminous Road Surface by mechanical means to a Depth of 150 mm and disposal of scarified material with a lift upto 3 m and leads upto 1000 m as per MoRD Technical Specification Clause 301.4. Unit = sqm Taking output = 100 sqm				
		<b>a) Labour</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Machinery</b>				
		Tractor with ripper attachment @ 60 cum per hour	hour	0.25	250.00	62.50
		Front end loader 1 cum bucket capacity @ 50 cum per hour	hour	0.30	1,030.00	309.00
		Tipper 5.5 cum capacity, 4 trips per hour	hour	0.68	374.00	254.32
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>154.73</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>132.33</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>10.15</b>
		Cost for 100 sqm = a+b+c+d+e				1,024.69
		<b>Rate per sqm = (a+b+c+d+e)/100</b>				<b>10.25</b>
					<b>say</b>	<b><u>10.20</u></b>
3.3	301.5	<b>Construction of Embankment with Material Obtained from Roadway Cutting</b>				

**Chapter 3**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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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 Tables 300.1 and 300.2 as per MoRD Technical Specification Clause 301.5.

Unit = cum

Taking output = 100 cum

**A For Spreading beyond 100 m**

**a) Labour**

Mate	day	0.04	391.00	15.64
Mazdoor (Unskilled)	day	1.00	391.00	391.00

**b) Machinery**

Dozer D-50 for spreading @ 200 cum per hour	hour	0.50	2,654.00	1,327.00
Tractor with attachment for grading @ 25 cum per hour	hour	4.00	358.00	1,432.00
Water tanker 6 kl capacity	hour	2.00	224.00	448.00
Three wheel 80-100 kN Static Roller	hour	1.25	439.00	548.75

**c) Material**

Water	kl	12.00	133.00	1,596.00
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **1,224.81**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **1,047.48**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **80.31**

**Rate for 100 cum = a+b+c+d+e+e** **8,110.99**

**Rate per cum = (a+b+c+d+e+e)/100** **81.11**

**say 81.10**

**B For Spreading within 100 m**

**a) Labour**

Mate	day	0.02	391.00	7.82
Mazdoor (Unskilled)	day	0.50	391.00	195.50

**b) Machinery**

Tractor with attachment for grading @ 25 cum per hour	hour	4.00	358.00	1,432.00
Water tanker 6 kl capacity	hour	2.00	224.00	448.00
Three wheel 80-100 kN Static Roller	hour	1.25	439.00	548.75

**c) Material**

Water	kl	12.00	133.00	1,596.00
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **899.31**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **769.11**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **58.96**

**Rate for 100 cum = a+b+c+d+e+f** **5,955.45**

**Rate per cum = (a+b+c+d+e+f)/100** **59.55**

**say 59.60**

**Chapter 3**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**Note:** In case the earth cutting is done by dozer and pushed for filling in the embankment, the input of dozer in the cost of embankment shall be deleted as the same is already provided in the cost of excavation. However, if the earth is dumped by tippers from roadway cutting, the input of dozer for spreading is required to be provided.

**3.4 301.5 Construction of Embankment with Material Obtained from Borrow Pits**

Construction of embankment with approved material obtained from borrow pits with a lift upto 1.5 m, transporting to site, spreading, grading to required slope and compacting to meet requirement of Tables 300.1 and 300.2 with a lead upto 1000 m as per MoRD Technical Specification Clause 301.5.

Unit = cum

Taking output = 100 cum

**a) Labour**

Mate	day	0.04	391.00	15.64
Mazdoor (Unskilled)	day	1.00	391.00	391.00

**b) Machinery**

Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	1.67	1,344.00	2,244.48
Tipper 5.5 cum with 10 t capacity	hour	4.50	374.00	1,683.00
Loading of earth as per item 1.1 (ii)	cum	100.00	52.80	5,280.00
Unloading of earth as per item 1.1 (iv)	cum	100.00	30.80	3,080.00
Dozer D-50 for spreading @ 200 cum per hour	hour	0.50	2,654.00	1,327.00
Tractor with attachment for grading @ 25 cum per hour	hour	4.00	358.00	1,432.00
Water tanker 6 kl capacity	hour	2.00	224.00	448.00
Three wheel 80-100 kN Static Roller @ 80 cum per hour	hour	1.25	439.00	548.75

**c) Material**

Water	kl	12.00	133.00	1,596.00
Compensation for earth taken from private land	cum	100.00	18.00	1,800.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 2,443.04**

**e) Contractor's profit @ 15 % on (a+b+c+d) 2,089.34**

**f) Add Cess @ 1.00 % on (a+b+c+d+e) 160.18**

Cost for 100 cum = a+b+c+d+e+f 24,538.43

**Rate per cum = (a+b+c+d+e+f)/100 245.38**

**say 245.40**

**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.

**3.5 302.3 (i) Excavation in Cutting in Soil by manual means with lead upto 50 m**

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**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Excavation in Roadway cutting in soil by using manual means for carrying of cut earth to embankment site with all lifts and lead upto 50 m as per MoRD Technical Specification Clause 302.3.

Unit = cum

Taking output = 120 cum

**a) Labour**

Mate	day	1.80	391.00	703.80
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Mazdoor (Unskilled)	day	45.00	391.00	17,595.00
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**b) Add GST (multiplying factor) @ 0.2127 on (a) 3,892.15**

**c) Contractor's profit @ 15 % on (a+b) 3,328.64**

**d) Add Cess @ 1.00 % on (a+b+c) 255.20**

Cost of 120 cum = a+b+c+d 25,774.79

**Rate per cum = (a+b+c+d)/120 214.79**

**say 214.80**

**(ii) Excavation in Soil with Dozer with lead upto 100 m**

Excavation for roadway in soil by mechanical means with Dozer including cutting and pushing the earth to site of embankment upto a distance of 100 m, including trimming bottom and side slopes in accordance with requirements of lines, grades and cross-sections as per MoRD Technical Specification Clause 302.3.

Unit = cum

Taking output = 180 cum

**a) Labour**

Mate	day	0.08	391.00	31.28
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Mazdoor (Unskilled)	day	2.00	391.00	782.00
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**b) Machinery**

Dozer D-50 @ 50 cum per hour (cutting with pushing)	hour	3.60	2,654.00	9,554.40
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 2,205.21**

**d) Contractor's profit @ 15 % on (a+b+c) 1,885.93**

**e) Add Cess @ 1.00 % on (a+b+c+d) 144.59**

Cost for 180 cum = a+b+c+d+d 14,603.41

**Rate per cum = (a+b+c+d+d)/180 81.13**

**say 81.10**

**(iii) Excavation in Soil using Hydraulic Excavator and Tipplers with disposal upto 1000 m**

Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tipplers, trimming bottom and side slopes in accordance with requirements of lines, grades and cross-sections and transporting to the embankment location with all lifts and lead upto 1000 m as per MoRD Technical Specification Clause 302.3.

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**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit = cum				
		Taking output = 360 cum				
		<b>a) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		<b>b) Machinery</b>				
		Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour	hour	3.60	1,344.00	4,838.40
		Tipper 5.5 cum capacity, 4 trips per hour	hour	15.00	374.00	5,610.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>2,395.36</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>2,048.56</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>157.06</b>
		Cost for 360 cum = a+b+c+d+e				15,862.65
		<b>Rate per cum = (a+b+c+d+e)/360</b>				<b>44.06</b>
					<b>say</b>	<b><u>44.10</u></b>

**3.6 302.3.6 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 all lifts and lead upto 1000 m trimming of bottom and side slopes in accordance with requirements of lines, grades and cross-sections as per MoRD Technical Specification Clause 302.3.6.

Unit = cum

Taking output = 300 cum

**a) Labour**

Mate	day	0.08	391.00	31.28
Mazdoor (Unskilled)	day	2.00	391.00	782.00

**b) Machinery**

Hydraulic excavator 0.90 cum bucket capacity @ 50 cum per hour	hour	6.00	1,344.00	8,064.00
Tipper 5.5 cum capacity, 4 trips per hour.	hour	12.50	374.00	4,675.00

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

**2,882.57**

**d) Contractor's profit @ 15 % on (a+b+c)**

**2,465.23**

**e) Add Cess @ 1.00 % on (a+b+c+d)**

**189.00**

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

19,089.08

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

**63.63**

**say 63.60**

**3.7 302.3.11 Removal of Unsuitable Soil with Disposal upto 1000 m**

Removal of unsuitable soil including excavation, loading and disposal upto 1000 m lead but excluding compaction ground supporting embankment / subgrade, replacement by suitable soil, which shall be paid separately as per MoRD Technical Specification Clause 303.5.2 and as per MoRD Technical Specification Clause 302.3.11.

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**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit = cum				
		Taking output = 360 cum				
		<b>a) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mazdoor	day	2.00	391.00	782.00
		<b>b) Machinery</b>				
		Excavator 0.90 cum bucket capacity @ 100 cum per hour	hour	3.60	1,344.00	4,838.40
		Tipper 5.5 cum capacity, 4 trips per hour	hour	15.00	374.00	5,610.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>2,395.36</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>2,048.56</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>157.06</b>
		Cost for 360 cum = a+b+c+d+e				15,862.65
		<b>Rate per cum = (a+b+c+d+e)/360</b>				<b>44.06</b>
					<b>say</b>	<b><u>44.10</u></b>

*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 303.5.2.*

**3.8 302.3.5 (i) Excavation in ordinary Rock by manual means**

Excavation in ordinary rock using manual means including carrying of excavated material to embankment site with all lifts and lead upto 50 m as per MoRD Technical Specification Clause 302.3.5.

Unit = cum

Taking output = 120 cum

**a) Labour**

Mate	day	2.80	391.00	1,094.80
Mazdoor (Unskilled)	day	70.00	391.00	27,370.00

**b) Add GST (multiplying factor) @ 0.2127 on (a)** **6,054.46**

**c) Contractor's profit @ 15 % on (a+b)** **5,177.89**

**d) Add Cess @ 1.00 % on (a+b+c)** **396.97**

Cost for 120 cum = a+b+c+d 40,094.12

**Rate per cum = (a+b+c+d)/120** **334.12**

**say** **334.10**

**(ii) Excavation in Ordinary Rock with Dozer with lead upto 100 m**

Excavation for roadway in ordinary rock by mechanical means with dozer including cutting and pushing the cut earth to site of embankment upto a distance of 100 m, including trimming bottom and side slopes in accordance with the requirements of lines, grades and cross-sections as per MoRD Technical Specification Clause 302.3.5.

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit = cum				
		Taking output = 108 cum				
		<b>a) Labour</b>				
		Mate	day	0.12	391.00	46.92
		Mazdoor (Unskilled)	day	3.00	391.00	1,173.00
		<b>b) Machinery</b>				
		Dozer D-50 @ 50% of 50 cum per hour	hour	2.16	2,654.00	5,732.64
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,478.81</b>
		<b>d) Contractor's profit @ 15 % on (a+b)</b>				<b>1,264.71</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>96.96</b>
		Cost for 108 cum = a+b+c+d+d				9,793.04
		<b>Rate per cum = (a+b+c+d+d)/108</b>				<b>90.68</b>
					<b>say</b>	<b><u>90.70</u></b>
		<b>(iii) Excavation in Ordinary Rock using Hydraulic Excavator and Tippers with disposal upto 1000 m</b>				
		Excavation for roadwork in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site with all lifts and lead upto 1000 m, trimming bottom and side slopes in accordance with requirements of lines, grades and cross-sections and as per MoRD Technical Specification Clause 302.3.5.				
		Unit = cum				
		Taking output = 240 cum				
		<b>a) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		<b>b) Machinery</b>				
		Hydraulic Excavator 0.90 cum bucket capacity @ 40 cum per hour	hour	6.00	1,344.00	8,064.00
		Tipper 5.5 cum with 10t capacity, 4 trips per hour.	hour	11.00	374.00	4,114.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>2,763.25</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>2,363.18</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>181.18</b>
		Cost for 240 cum = a+b+c+d+d				18,298.88
		<b>Rate per cum = (a+b+c+d+d)/240</b>				<b>76.25</b>
					<b>say</b>	<b><u>76.20</u></b>
<b>3.9</b>	<b>302.3.2</b>	<b>Stripping, Storing and Relaying Top Soil from Right-of-Way (R.O.W)</b>				



**Chapter 3**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Stripping, storing and preservation of top soil by keeping it damp in stock piles and keep wet till it is used by road side at 15 m interval and re-application on embankment slopes, cut slopes and other areas in localities where the available embankment material is not conducive to plant growth as per MoRD Technical Specification Clause 302.3.2.

Unit = cum

Taking output = 10 cum

**a) Labour**

Mate	day	0.20	391.00	78.20
Mazdoor (Unskilled)	day	5.00	391.00	1,955.00

**b) Machinery**

Dozer D-50 @ 100 cum per hour	hour	0.10	2,654.00	265.40
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

**488.91**

**d) Contractor's profit @ 15 % on (a+b+c)**

**418.13**

**e) Add Cess @ 1.00 % on (a+b+c+d)**

**32.06**

Cost for 10 cum = (a+b+c+d+d)

3,237.70

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

**323.77**

**say 323.80**

**3.10 302.3.2 Stripping, Storing and Relaying Top Soil from Borrow Areas in Agricultural Fields**

Stripping of top soil from borrow areas located in agriculture fields, storing at a suitable place, spreading and relaying after taking the borrow earth to maintain fertility of the agricultural field, finishing it to the required levels to the satisfaction of the farmer/land owners as per MoRD Technical Specification Clause 302.3.2.

Unit = cum

Taking output = 300 cum

**a) Labour**

Mate	day	4.00	391.00	1,564.00
Mazdoor (Unskilled)	day	100.00	391.00	39,100.00

**b) Machinery**

Dozer D-50 with 100 cum per hour output (Initially stacking and relaying)	hour	6.00	2,654.00	15,924.00
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)**

**12,036.27**

**d) Contractor's profit @ 15 % on (a+b+c)**

**10,293.64**

**e) Add Cess @ 1.00 % on (a+b+c+d)**

**789.18**

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

79,707.09

**Rate per sqm = (a+b+c+d+d)/300**

**265.69**

**say 265.70**

**3.11 309 Turfing with Sods**

**Chapter 3**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		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 as per MoRD Technical Specification Clause 309.				
		Unit = sqm				
		Talking output = 300 sqm				
		<b>a) Labour</b>				
		Mate	day	0.12	391.00	46.92
		Mazdoor (Unskilled)	day	3.00	391.00	1,173.00
		<b>b) Machinery</b>				
		Water tanker including watering for 3 months	hour	6.00	224.00	1,344.00
		Tractor with Trolley	hour	1.00	265.00	265.00
		<b>c) Material</b>				
		Farmyard manure @ 0.18 cum per 100 sqm at site of work	cum	0.18	541.00	97.38
		Water	kl	36.00	133.00	4,788.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,640.83</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,403.27</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>107.58</b>
		Cost for 300 sqm = a+b+c+d+e+f				10,865.99
		<b>Rate per sqm = (a+b+c+d+e+f)/300</b>				<b>36.22</b>
					<b>say</b>	<b><u>36.20</u></b>

**3.12 303.1 Construction of Subgrade and Earthen Shoulders**

Construction of subgrade and earthen shoulders with approved material obtained from borrow pits with all lifts and leads, transporting to site , spreading, grading to required slope and compacted to meet requirement of Table 300.2 as per MoRD Technical Specification Clause 303.1.

Unit = cum

Taking output = 100 cum

**a) Labour**

Mate	day	0.04	391.00	15.64
Mazdoor (Unskilled)	day	1.00	391.00	391.00

**b) Machinery**

i. Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour	hour	1.00	1,344.00	1,344.00
ii. Tipper 5.5 cum capacity, 4 trips per hour	hour	4.50	374.00	1,683.00
iii. Add rate for loading as per item 1.1 (ii)	cum	100.00	52.80	5,280.00
iv. Add rate for unloading as per item 1.1 (iv)	cum	100.00	30.80	3,080.00
v. Dozer D-50 for spreading @ 200 cum per hour	hour	0.50	2,654.00	1,327.00
vi. Tractor with attachment for grading @ 25 cum per hour	hour	4.00	358.00	1,432.00
vii. Water tanker with 6 kl capacity	hour	2.00	224.00	448.00

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		viii. Three wheel 80-100 kN Static Roller @ 70 cum per hour	hour	1.43	439.00	627.77
		<b>c) Material</b>				
		Water	kl	12.00	133.00	1,596.00
		Compensation for earth taken from private land	cum	100.00	18.00	1,800.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) ex/c (b.iii) &amp; (b.iv)</b>				<b>2,268.32</b>
		<b>e) Contractor's profit @ 15 % , ex/c (b.iii) &amp; (b.iv)</b>				<b>1,939.91</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e), , ex/c (b.iii) &amp; (b.iv)</b>				<b>148.73</b>
		Cost for 100 cum = a+b+c+d+e+f				23,381.37
		<b>Rate per cum = (a+b+c+d+e+f)/100</b>				<b>233.81</b>
					<b>say</b>	<b><u>233.80</u></b>

**3.13 301.4 Compacting Original Ground**

**(i) Compacting original ground supporting embankment**

Loosening, Levelling 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 Tables 300.1 and 300.2 for embankment construction as per MoRD Technical Specification Clause 301.4.1.

Unit = cum

Taking output = 600 cum

**a) Labour**

Mate	day	0.08	391.00	31.28
Mazdoor (Unskilled)	day	2.00	391.00	782.00

**b) Machinery**

Tractor with ripper attachment	hour	6.00	265.00	1,590.00
Three wheel 80-100 kN Static Roller	hour	7.50	439.00	3,292.50
Water tanker 6 kl capacity	hour	4.00	224.00	896.00

**c) Material**

Water	kl	24.00	133.00	3,192.00
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 2,081.01**

**e) Contractor's profit @ 15 % on (a+b+c+d) 1,779.72**

**f) Add Cess @ 1.00 % on (a+b+c+d+e) 136.45**

Cost for 600 cum = a+b+c+d+e+f 13,780.95

**Rate per cum = (a+b+c+d+e+f)/600 22.97**

**say 23.00**

**303 (ii) Compacting original ground supporting subgrade**

Loosening of the ground upto a level of 300 mm below the subgrade level, watered, graded and compacted in layers to meet requirement of Tables 300.1 and 300.2 for subgrade construction as per MoRD Technical Specification Clause 303.5.2.

Unit = cum

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Taking output = 600 cum				
		<b>a) Labour</b>				
		Mate	day	0.24	391.00	93.84
		Mazdoor (Unskilled)	day	6.00	391.00	2,346.00
		<b>b) Machinery</b>				
		Tractor with ripper attachment	hour	10.00	265.00	2,650.00
		Water tanker 6 kl capacity	hour	4.00	224.00	896.00
		Three wheel 80-100 kN Static Roller @ 70 cum per hour	hour	8.60	439.00	3,775.40
		<b>c) Material</b>				
		Water	kl	24.00	133.00	3,192.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				
						<b>2,755.15</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				
						<b>2,356.26</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				
						<b>180.65</b>
		Cost for 600 cum = a+b+c+d+e+f				
						18,245.30
		<b>Rate per cum = (a+b+c+d+e+f)/600</b>				
						<b>30.41</b>
					<b>say</b>	<b><u>30.40</u></b>

**3.14 301.5.5.1 Repairs of damages caused by rain/spillage of water**

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 three wheel 80-100 kN static roller, complete as per Technical Specification Clause 301.5.5.1.

Unit = sqm

Taking output = 3500 sqm

<b>a) Labour</b>						
		Mate	day	0.28	391.00	109.48
		Mazdoor (Unskilled)	day	6.00	391.00	2,346.00
		Mazdoor skilled	day	1.00	475.00	475.00
<b>b) Machinery</b>						
		Three wheel static roller 80-100 kN	hour	3.00	439.00	1,317.00
		Water tanker 6 kl, one trip per hour	hour	2.00	224.00	448.00
<b>c) Material</b>						
		Water	kl	12.00	133.00	1,596.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				
						<b>1,338.20</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				
						<b>1,144.45</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				
						<b>87.74</b>
		Cost for 3500 sqm = a+b+c+d+e+f				
						8,861.87
		<b>Rate per sqm = (a+b+c+d+e+f)/3500</b>				
						<b>2.53</b>
					<b>say</b>	<b><u>2.50</u></b>

**3.15 307 (i) Surface Drains in Soil**

**Chapter 3**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Construction of unlined surface drains of average cross-sectional area 0.40 sqm in ordinary soil to specified lines, grades, levels and dimensions. Excavated material to be used in embankment with a lift upto 3 m and lead of 50 m (average lead 25 m) as per MoRD Technical Specification Clause 307.

Unit = m

Taking output = 10 m

**(A) Manual Means**

**a) Labour**

Mate	day	0.08	391.00	31.28
Mazdoor (Unskilled)	day	2.00	391.00	782.00

**b) Add GST (multiplying factor) @ 0.2127 on (a) 172.98**

**c) Contractor's profit @ 15 % on (a+b) 147.94**

**d) Add Cess @ 1.00 % on (a+b+c) 11.34**

Cost for 10 m = a+b+c+d 1,145.55

**Rate per m = (a+b+c+d)/10 114.55**

**say 114.60**

*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.*

**(B) Mechanical Means**

**a) Labour**

Mate	day	0.01	391.00	3.91
Mazdoor (Unskilled)	day	0.25	391.00	97.75

**b) Machinery**

Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour	hour	0.04	1,344.00	53.76
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 33.06**

**d) Contractor's profit @ 15 % on (a+b+c) 28.27**

**e) Add Cess @ 1.00 % on (a+b+c+d) 2.17**

Cost for 10 m = a+b+c+d+e 218.92

**Rate per m = (a+b+c+d+e)/10 21.89**

**say 21.90**

**(ii) Surface Drains in Ordinary Rock**

Construction of unlined surface drain of average cross-sectional area 0.40 sqm in ordinary rock to specified lines, grades, levels and dimensions as per approved design and MoRD Technical Specification Clause 307. Excavated material to be used in embankment at site.

Unit = m

Taking output = 10 m

**(A) Manual Means**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour</b>				
		Mate	day	0.12	391.00	46.92
		Mazdoor (Unskilled)	day	3.00	391.00	1,173.00
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>259.48</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>221.91</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>17.01</b>
		Cost for 10 m = a+b+c+e				1,718.32
		<b>Rate per m = (a+b+c+e)/10</b>				<b>171.83</b>
					<b>say</b>	<b><u>171.80</u></b>
		<b>(B) Mechanical Means</b>				
		<b>a) Labour</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Machinery</b>				
		Hydraulic excavator 0.9 cum bucket capacity @ 40 m per hour	hour	0.10	1,344.00	134.40
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>71.83</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>61.43</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>4.71</b>
		Cost for 10 m = a+b+c+d+e				475.70
		<b>Rate per m = (a+b+c+d+e)/10</b>				<b>47.57</b>
					<b>say</b>	<b><u>47.60</u></b>

**Chapter 3**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**Chapter 3  
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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE ( i.e. LOCALLY AVAILABLE MATERIALS)**

**3.16 307 & (i) Road side Pucca Drains  
1606**

Construction of road side pucca drain with M10 (1:3:6 with jhama brick aggregate) to specified lines, grades, levels and dimensions as per approved design and MoRD Technical Specification Clause 307, 1606. Excavated material to be used in embankment at site. (including centering, shuttering, etc. but excluding reinforcement)

**(A) Kerb & Channel drain (top clear width 600 mm, bottom clear width 150 mm and clear depth of 200 mm)**

**I. In Ordinary Soil**

Unit = per metre

Taking output = 1.00 m

**1** Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil.

(As per item No.11.1.A.I(i) of Chapter 11) cum 0.26 458.20 119.13

**2** Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification.

(As per item No.11.9.I(i) of Chapter 11) cum 0.19 9,099.90 1,728.98

**Cost per m = (1+2) 1,848.11**

**say 1848.10**

**II. In Ordinary rock (not requiring blasting)**

Unit = per metre

Taking output = 1.00 m

**1** Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil.

(As per item No.11.1.A.II(i) of Chapter 11) cum 0.26 572.80 148.93

**2** Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification.

(As per item No.11.9.I(i) of Chapter 11) cum 0.19 9,099.90 1,728.98

**Cost per m = (1+2) 1,877.91**

**say 1877.90**

**III. In Hard rock (blasting prohibited)**

Unit = per metre

Taking output = 1.00 m



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		1 Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil. (As per item No.11.1.A.III of Chapter 11)	cum	0.26	617.40	160.52
		2 Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification. (As per item No.11.9.I(i) of Chapter 11)	cum	0.19	9,099.90	1,728.98
		<b>Cost per m = (1+2)</b>				<b>1,889.51</b>
						<b>say <u>1889.50</u></b>
		<b>(B) Trapezoidal drain (top clear width 600 mm, bottom clear width 300 mm and clear depth of 400 mm)</b>				
		<b>I. In Ordinary Soil</b>				
		Unit = per metre				
		Taking output = 1.00 m				
		1 Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil. (As per item No.11.1.A.I(i) of Chapter 11)	cum	0.52	458.20	238.26
		2 Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification. (As per item No.11.9.I(i) of Chapter 11)	cum	0.31	9,099.90	2,820.97
		1.00 x {(2 x 0.427m x 0.20m) + (0.68 x 0.20m)}				
		3 12 mm cement plaster 1:4 with neat cement punning (Rate as per item no. 12.16 of chapter 12)	sqm	1.564	224.60	351.27
		(0.205 m + 0.427 m + 0.3 m + 0.427 m + 0.205 m)				
		<b>Cost per m = (1+2+3)</b>				<b>3,410.51</b>
						<b>say <u>3410.50</u></b>
		<b>II. In Ordinary rock (not requiring blasting)</b>				
		Unit = per metre				
		Taking output = 1.00 m				
		1 Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil. (As per item No.11.1.A.II(i) of Chapter 11)	cum	0.52	572.80	297.86
		2 Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification. (As per item No.11.9.I(i) of Chapter 11)	cum	0.31	9,099.90	2,820.97
		1.00 x {(2 x 0.427m x 0.20m) + (0.68 x 0.20m)}				

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		3 12 mm cement plaster 1:4 with neat cement punning (Rate as per item no. 12.16 of chapter 12) (0.205 m + 0.427 m + 0.3 m + 0.427 m +0.205 m)	sqm	1.564	224.60	351.27
<b>Cost per m = (1+2+3)</b>						<b>3,470.10</b>
						<b>say <u>3470.10</u></b>

**III. In Hard rock (blasting prohibited)**

Unit = per metre

Taking output = 1.00 m

1	Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil. (As per item No.11.1.A.III of Chapter 11)	cum	0.52	617.40	321.05	
2	Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification.  (As per item No.11.9.I(i) of Chapter 11) 1.00 x {(2 x 0.427m x 0.20m) + (0.68 x 0.20m)}	cum	0.31	9,099.90	2,820.97	
3	12 mm cement plaster 1:4 with neat cement punning (Rate as per item no. 12.16 of chapter 12) (0.205 m + 0.427 m + 0.3 m + 0.427 m +0.205 m)	sqm	1.564	224.60	351.27	
<b>Cost per m = (1+2+3)</b>						<b>3,493.29</b>
						<b>say <u>3493.30</u></b>

**(C) Trapezoidal drain (top clear width 600 mm, bottom clear width 300 mm and clear depth of 600 mm)**

**I. In Ordinary Soil**

Unit = per metre

Taking output = 1.00 m

1	Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil. (As per item No.11.1.A.I(i) of Chapter 11)	cum	0.69	458.20	316.16	
2	Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification.  (As per item No.11.9.I(i) of Chapter 11) 1.00 x {(2 x 0.618m x 0.20m) + (0.68 x 0.20m)}	cum	0.38	9,099.90	3,457.96	
3	12 mm cement plaster 1:4 with neat cement punning (Rate as per item no. 12.16 of chapter 12) (0.205 m + 0.618 m + 0.3 m + 0.618 m +0.205 m)	sqm	1.964	224.60	441.11	
<b>Cost per m = (1+2+3)</b>						<b>4,215.23</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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say 4215.20

**II. In Ordinary rock (not requiring blasting)**

Unit = per metre

Taking output = 1.00 m

<p><b>1</b> Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil. (As per item No.11.1.A.II(i) of Chapter 11)</p>	cum	0.69	572.80	395.23
<p><b>2</b> Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification. (As per item No.11.9.I(i) of Chapter 11) 1.00 x {(2 x 0.618m x 0.20m) + (0.68 x 0.20m)}</p>	cum	0.38	9,099.90	3,457.96
<p><b>3</b> 12 mm cement plaster 1:4 with neat cement punning (Rate as per item no. 12.16 of chapter 12) (0.205 m + 0.618 m + 0.3 m + 0.618 m +0.205 m)</p>	sqm	1.964	224.60	441.11

**Cost per m = (1+2+3) 4,294.31**

say 4294.30

**III. In Hard rock (blasting prohibited)**

Unit = per metre

Taking output = 1.00 m

<p><b>1</b> Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil. (As per item No.11.1.A.III of Chapter 11)</p>	cum	0.69	617.40	426.01
<p><b>2</b> Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification. (As per item No.11.9.I(i) of Chapter 11) 1.00 x {(2 x 0.618m x 0.20m) + (0.68 x 0.20m)}</p>	cum	0.38	9,099.90	3,457.96
<p><b>3</b> 12 mm cement plaster 1:4 with neat cement punning (Rate as per item no. 12.16 of chapter 12) (0.205 m + 0.618 m + 0.3 m + 0.618 m +0.205 m)</p>	sqm	1.964	224.60	441.11

**Cost per m = (1+2+3) 4,325.08**

say 4325.10

**(D) U shaped drain (top clear width 600 mm, bottom clear width 600 mm and clear depth of 600 mm)**

**I. In Ordinary Soil**

Unit = per metre

Taking output = 1.00 m

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<p>1 Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil.</p> <p>(As per item No.11.1.A.I(i) of Chapter 11)</p>	cum	0.80	458.20	366.56
		<p>2 Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification.</p> <p>(As per item No.11.9.I(i) of Chapter 11)</p> <p>1.00x[(2 x 0.60m x 0.20m)+{(0.20m+0.60m+ 0.20m)x0.20}]</p>	cum	0.44	9,099.90	4,003.96
		<p>3 12 mm cement plaster 1:4 with neat cement punning</p> <p>(Rate as per item no. 12.16 of chapter 12)</p> <p>(0.205 m + 0.600 m + 0.3 m + 0.600 m +0.205 m)</p>	sqm	2.210	224.60	496.37
		<b>Cost per m = (1+2+3)</b>				<b>4,866.88</b>
					<b>say</b>	<b><u>4866.90</u></b>
<b>II. In Ordinary rock (not requiring blasting)</b>						
Unit = per metre						
Taking output = 1.00 m						
		<p>1 Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil.</p> <p>(As per item No.11.1.A.II(i) of Chapter 11)</p>	cum	0.80	572.80	458.24
		<p>2 Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification.</p> <p>(As per item No.11.9.I(i) of Chapter 11)</p> <p>1.00x[(2 x 0.60m x 0.20m)+{(0.20m+0.60m+ 0.20m)x0.20}]</p>	cum	0.44	9,099.90	4,003.96
		<p>3 12 mm cement plaster 1:4 with neat cement punning</p> <p>(Rate as per item no. 12.16 of chapter 12)</p> <p>(0.205 m + 0.600 m + 0.3 m + 0.600 m +0.205 m)</p>	sqm	2.210	224.60	496.37
		<b>Cost per m = (1+2+3)</b>				<b>4,958.56</b>
					<b>say</b>	<b><u>4958.60</u></b>
<b>III. In Hard rock (blasting prohibited)</b>						
Unit = per metre						
Taking output = 1.00 m						
		<p>1 Excavation for structure earth work in excavation for foundations as per drawing and technical specification including dressing of sides and bottom and backfilling in ordinary soil.</p> <p>(As per item No.11.1.A.III of Chapter 11)</p>	cum	0.80	617.40	493.92
		<p>2 Plain cement concrete M10 (1:3:6) nominal mix concrete mixture as per technical specification.</p> <p>(As per item No.11.9.I(i) of Chapter 11)</p>	cum	0.44	9,099.90	4,003.96

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		1.00x[(2 x 0.60m x 0.20m)+{(0.20m+0.60m+ 0.20m)x0.20}]				
		<b>3</b> 12 mm cement plaster 1:4 with neat cement punning (Rate as per item no. 12.16 of chapter 12) (0.205 m + 0.600 m + 0.3 m + 0.600 m +0.205 m)	sqm	2.210	224.60	496.37
		<b>Cost per m = (1+2+3)</b>				<b>4,994.24</b>
					<b>say</b>	<b><u>4994.20</u></b>

**3.17 307 Chute Drains**

**A. Providing chute drains across embankment slopes in approaches of bridges and on horizontal curves as per drawings.**

Unit = 1 m

- (a) Earthwork in excavation for foundation of structures as per drawings and MoRD Technical Specifications Clause 307 including setting out construction of shoring and bracing deleterious matter, dressings of sides and bottom and backfilling with approved material (By manual means).

Rate as per item No.11.1 of Chapter 11. cum

- (b) Providing and laying plain cement concrete M15 grade.

Rate as per item No.12.14.I of Chapter 12. cum

- (c) Brick Masonry in cement mortar 1:5.

Rate as per item No. 12.1(III) of Chapter 12. cum

- (d) Plastering with cement mortar 1:4.

Rate as per item No. 12.3 of Chapter 12. sqm

- (e) Providing P.C.C. M.20 coping on the top of chute walls.

As per item No. 12.15 of Chapter 12. m

**Rate per m = a+b+c+d+e**

**Note: Quantities are to be taken as per the designs and drawings.**

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**EARTHWORK, EROSION CONTROL AND DRAINAGE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
3.18	307 & 1606	<b>Road side 'V' shaped Pucca Drains</b>				
		Construction of 'V' shaped road side pucca drain with 1st class brick work in cement Mortar 1 : 4 (1 cement : 4 river sand) laid brick on edge to specified lines, grades, levels and dimensions as per approved design and MoRD Technical Specification Clause 307, 1606. (Excluding the cost of excavation which would be paid separately)				
		Unit = sqm				
		Taking output = 8.00 sqm				
		<b>a) Material</b>				
		Brick	Nos.	413.00	12.20	5,038.60
		Cement mortar (1:4), Rates as per sub-analysis	cum	0.24	3,758.68	902.08
		<b>b) Labour</b>				
		Mate	day	0.07	391.00	27.37
		Mason (1st Class)	day	0.80	512.00	409.60
		Mazdoor (Unskilled)	day	1.60	391.00	625.60
		Bhisti	day	0.20	391.00	<b>78.20</b>
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,506.23</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,288.15</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>98.76</b>
		Cost for 8 sqm = a+b+c+d				9,974.59
		<b>Rate per cum = (a+b+c+d)/ 8</b>				<b>1,246.82</b>
						<b>say <u>1246.80</u></b>
		<b>Sub-analysis</b>				
		<b>Cement mortar 1:4 (1 cement : 4 sand)</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.38	6,797.00	2,582.86
		Sand	cum	1.05	740.00	777.00
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	0.90	391.00	351.90
		Bhisti	day	0.08	391.00	31.28
		<b>Total material and labour = (a+b)</b>				<b>3,758.68</b>
3.19	307 & 1606	<b>Dry brick pitching in road side drains</b>				
		Providing dry brick pitching in road side drain with 1st class brick laid on edge to specified lines, grades, levels and dimensions as per approved design and MoRD Technical Specification Clause 307, 1606. (Excluding the cost of excavation which would be paid separately)				
		Unit = sqm				
		Taking output = 80.00 sqm				

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Material</b>				
		Brick	Nos.	4,128.00	12.20	50,361.60
		<b>b) Labour</b>				
		Mate	day	0.24	391.00	93.84
		Mazdoor (Unskilled)	day	6.00	391.00	2,346.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>11,230.87</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>9,604.85</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>736.37</b>
		Cost for 80 sqm = a+b+c+d+e				74,373.52
		<b>Rate per cum = (a+b+c+d+e)/ 80</b>				<b>929.67</b>
					<b>say</b>	<b><u>929.70</u></b>

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

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
4.1	401	<b>Granular Sub-base with Well Graded Material (Table 400.1)</b>				
		<b>(A) By Mix in Place Method</b>				
		Construction of granular sub-base by providing well 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 smooth wheel roller to achieve the desired density, complete as per MoRD Technical Specification Clause 401.				
		<b>(i) For Grading I Material</b>				
		Unit = cum				
		Taking output = 300 cum				
		<b>a) Labour</b>				
		Mate	day	0.48	391.00	187.68
		Mazdoor (Skilled)	day	2.00	475.00	950.00
		Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
		<b>b) Machinery</b>				
		Tractor mount grader @ 25 cum per hour	hour	12.00	358.00	4,296.00
		Three wheel 80-100 KN static roller @ 10 cum per hour	hour	30.00	439.00	13,170.00
		Tractor with Rotavator 25 cum per hour	hour	12.00	358.00	4,296.00
		Water tanker 6 kl capacity	hour	5.00	224.00	1,120.00
		<b>c) Material</b>				
		Well graded granular sub-base material as per Table 400.1				
		53 mm to 9.5 mm @ 50 per cent	cum	192.00	3,795.40	7,28,716.80
		9.5 mm to 2.36 mm @ 20 per cent	cum	77.00	4,413.70	3,39,854.90
		2.36 mm below @ 30 per cent	cum	115.00	2,281.10	2,62,326.50
		Water	kl	30.00	133.00	3,990.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,89,871.36</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>2,47,903.39</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>19,005.93</b>
		Cost for 300 cum = a+b+c+d+e+f				<b>19,19,598.56</b>
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				<b>6,398.66</b>
					<b>say</b>	<b><u>6398.70</u></b>
		<b>(ii) For Grading II Material</b>				
		Unit = cum				
		Taking output = 300 cum				
		<b>a) Labour</b>				
		Mate	day	0.48	391.00	187.68
		Mazdoor (Skilled)	day	2.00	475.00	950.00
		Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
		<b>b) Machinery</b>				



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Tractor mount grader @ 25 cum per hour	hour	12.00	358.00	4,296.00
		Three wheel 80-100 KN static roller @ 10 cum per hour	hour	30.00	439.00	13,170.00
		Tractor with Rotavator 25 cum per hour	hour	12.00	358.00	4,296.00
		Water tanker 6 kl capacity	hour	5.00	224.00	1,120.00
		<b>c) Material</b>				
		Well graded granular sub-base material as per Table 400.1				
		26.5 mm to 9.5 mm @ 35 per cent	cum	134.00	3,972.90	5,32,368.60
		9.5 mm to 2.36 mm @ 25 per cent	cum	96.00	4,413.70	4,23,715.20
		2.36 mm below @ 40 per cent	cum	153.00	2,274.50	3,47,998.50
		Water	kl	30.00	133.00	3,990.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,84,167.62</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>2,43,025.44</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>18,631.95</b>
		Cost for 300 cum = a+b+c+d+e+f				<b>18,81,826.99</b>
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				<b>6,272.76</b>
						<b>say <u>6272.80</u></b>
		<b>(iii) For Grading III Material</b>				
		Unit = cum				
		Taking output = 300 cum				
		<b>a) Labour</b>				
		Mate	day	0.48	391.00	187.68
		Mazdoor (Skilled)	day	2.00	475.00	950.00
		Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
		<b>b) Machinery</b>				
		Tractor mount grader @ 25 cum per hour	hour	12.00	358.00	4,296.00
		Three wheel 80-100 KN static roller @ 10 cum per hour	hour	30.00	439.00	13,170.00
		Tractor with Rotavator 25 cum per hour	hour	12.00	358.00	4,296.00
		Water tanker 6 kl capacity	hour	5.00	224.00	1,120.00
		<b>c) Material</b>				
		Well graded granular sub-base material as per Table 400.1				
		9.5 mm to 4.75 mm @ 35 per cent	cum	134.00	4,413.70	5,91,435.80
		4.75 mm to 2.36 mm @ 12.5 per cent	cum	48.00	4,501.80	2,16,086.40
		2.36 mm below @ 52.5 per cent	cum	201.60	2,274.50	4,58,539.20
		Water	kl	30.00	133.00	3,990.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,76,080.58</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>2,36,109.25</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>18,101.71</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Cost for 300 cum = a+b+c+d+e+f **18,28,272.61**

**Rate per cum = (a+b+c+d+e+f)/300** **6,094.24**

**say** **6094.20**

**401 (B) Plant Mix Method**

Construction of granular sub-base by providing well graded material, mixing in a mechanical mix plant at OMC, carriage of mixed material to work site upto lead of 1000 m spreading in uniform layers with motor grader on prepared surface and compacting with smooth wheel roller to achieve the desired density, complete as per MoRD Technical Specification Clause 401.

**(i) For Grading I Material**

Unit = cum

Taking output = 225 cum (450 t)

**a) Labour**

Mate	day	0.40	391.00	156.40
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	8.00	391.00	3,128.00

**b) Machinery**

Wet mix plant @ 60 t capacity per hour	hour	7.50	3,769.00	28,267.50
Water tanker 6 kl capacity 5 km lead with one trip per hour	hour	4.00	224.00	896.00
Front end loader 0.9 cum bucket capacity 25 cum per hour	hour	9.00	1,030.00	9,270.00
Tipper 5.5 cum @ 3 trips per hour	hour	13.60	374.00	5,086.40
Tractor with Rotavator	hour	9.00	358.00	3,222.00
Three wheel 80-100 KN static roller 10 cum per hour	hour	22.50	439.00	9,877.50

**c) Material**

Well graded granular sub-base material as per Table 400.1				
53 mm to 9.5 mm @ 50 per cent	cum	144.00	3,795.40	5,46,537.60
9.5 mm to 2.36 mm @ 20 per cent	cum	57.00	4,413.70	2,51,580.90
2.36 mm below @ 30 per cent	cum	86.40	2,281.10	1,97,087.04
Water	kl	24.00	133.00	3,192.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **2,25,302.76**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **1,92,683.12**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **14,772.37**

Cost for 225 cum = a+b+c+d+e+f 14,92,009.59

**Rate per cum = (a+b+c+d+e+f)/225** **6,631.15**

**say** **6631.20**

**(ii) For Grading II Material**

Unit = cum

Taking output = 225 cum (450 t)

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour</b>				
		Mate	day	0.40	391.00	156.40
		Mazdoor (Skilled)	day	2.00	475.00	950.00
		Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
		<b>b) Machinery</b>				
		Wet mix plant @ 60 t capacity per hour	hour	7.50	3,769.00	28,267.50
		Water tanker 6 kl capacity 5 km lead with one trip per hour	hour	4.00	224.00	896.00
		Front end loader 0.9 cum bucket capacity 25 cum per hour	hour	9.00	1,030.00	9,270.00
		Tipper 5.5 cum, 3 trips per hour	hour	13.60	374.00	5,086.40
		Tractor with Rotavator	hour	9.00	358.00	3,222.00
		Three wheel 80-100 KN static roller 10 cum per hour	hour	22.50	439.00	9,877.50
		<b>c) Material</b>				
		Well graded granular sub-base material as per Table 400.1				
		26.5 mm to 9.5 mm @ 35 per cent	cum	100.80	3,972.90	4,00,468.32
		9.5 mm to 2.36 mm @ 25 per cent	cum	72.00	4,413.70	3,17,786.40
		2.36 mm below @ 40 per cent	cum	115.20	2,274.50	2,62,022.40
		Water	kl	24.00	133.00	3,192.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,22,127.49</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,89,967.56</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>14,564.18</b>
		Cost for 225 cum = a+b+c+d+e+f				14,70,982.15
		<b>Rate per cum = (a+b+c+d+e+f)/225</b>				<b>6,537.70</b>
					<b>say</b>	<b><u>6537.70</u></b>
		<b>(iii) For Grading III Material</b>				
		Unit = cum				
		Taking output = 225 cum (450 t)				
		<b>a) Labour</b>				
		Mate	day	0.40	391.00	156.40
		Mazdoor (Skilled)	day	2.00	475.00	950.00
		Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
		<b>b) Machinery</b>				
		Wet mix plant @ 60 t capacity per hour	hour	7.50	3,769.00	28,267.50
		Water tanker 6 kl capacity 5 km lead with one trip per hour	hour	4.00	224.00	896.00
		Front end loader 0.9 cum bucket capacity 25 cum per hour	hour	9.00	1,030.00	9,270.00
		Tipper 5.5 cum, 3 trips per hour	hour	13.60	374.00	5,086.40
		Tractor with Rotavator	hour	9.00	358.00	3,222.00
		Three wheel 80-100 KN static roller 10 cum per hour	hour	22.50	439.00	9,877.50

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>c) Material</b>				
		Well graded granular sub-base material as per Table 400.1				
		9.5 mm to 4.75 mm @ 35 per cent	cum	100.80	4,413.70	4,44,900.96
		4.75 mm to 2.36 mm @ 12.5 per cent	cum	36.00	4,501.80	1,62,064.80
		2.36 mm below @ 52.5 per cent	cum	151.20	2,274.50	3,43,904.40
		Water	kl	24.00	133.00	3,192.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,15,872.62</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,84,618.29</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>14,154.07</b>
		Cost for 225 cum = a+b+c+d+e+f				14,29,560.94
		<b>Rate per cum = (a+b+c+d+e+f)/225</b>				<b>6,353.60</b>
					<b>say</b>	<b><u>6353.60</u></b>

**4.2 405 Water Bound Macadam Sub-base/base**

**1) WBM Grading 1**

Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickNess, hand packing, rolling with three wheel 80-100 KN static roller in stages to proper grade and camber, applying and brooming, stone screening / binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density 'Grading 1' as per MoRD Technical Specification Clause 404.

**(A) By Manual Means**

Unit = cum

Taking output = 360 cum

**a) Labour**

Mate	day	10.08	391.00	3,941.28
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	250.00	391.00	97,750.00

**b) Machinery**

Three wheel 80-100 KN static roller @ 10 cum per hour	hour	36.00	439.00	15,804.00
Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00

**c) Material (Refer Tables 400.7, 8, 9 and 10)**

**Aggregate**

<b>Grading 1 90 mm to 45 mm @ 1.21 cum per 10 sqm for compacted thickNess of 100 mm</b>	cum	435.60	3,354.60	14,61,263.76
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**Stone Screenings**

<b>Type A 13.2 mm for Grading-1 @ 0.27 cum per 10 sqm</b>	cum	97.20	4,061.00	3,94,729.20
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**Binding Material**

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

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Binding Material @ 0.08 cum per 10 sqm for grading 1 material	cum	28.80	17.10	492.48
		Water	kl	144.00	133.00	19,152.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>4,25,284.87</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>3,63,711.54</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>27,884.55</b>
		Cost for 360 cum = a+b+c+d+e+f				28,16,339.68
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				<b>7,823.17</b>
					<b>say</b>	<b><u>7823.20</u></b>
<b>(B) By Mechanical Means</b>						
		Unit = cum				
		Taking output = 360 cum				
		<b>a) Labour</b>				
		Mate	day	0.68	391.00	265.88
		Mazdoor (Skilled)	day	2.00	475.00	950.00
		Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
		<b>b) Machinery</b>				
		Tractor with Rotavator	hour	14.40	358.00	5,155.20
		Three wheel 80-100 KN static roller @ 10 cum per hour	hour	36.00	439.00	15,804.00
		Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00
		<b>c) Material (Refer Tables 400.7, 8, 9 and 10)</b>				
		<b>Aggregate</b>				
		<b>Grading 1 90 mm to 45 mm @ 1.21 cum per 10 sqm for compacted thickNess of 100 mm</b>	cum	435.60	3,354.60	14,61,263.76
		<b>Stone Screening</b>				
		<b>Type A 13.2 mm for Grading-1 @ 0.27 cum per 10 sqm</b>	cum	97.20	4,061.00	3,94,729.20
		<b>Binding Material</b>				
		Binding Material @ 0.08 cum per 10 sqm for Grading 2 material	cum	28.80	17.10	492.48
		Water	kl	144.00	133.00	19,152.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>4,06,055.68</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>3,47,266.38</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>26,623.76</b>
		Cost for 360 cum = a+b+c+d+e+f				26,88,999.34
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				<b>7,469.44</b>
					<b>say</b>	<b><u>7469.40</u></b>

**2) WBM Grading 2**

**Chapter 4**  
**GRANULAR SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickNess, hand packing, rolling with smooth wheel roller 80-100 KN in stages to proper grade and camber, applying and brooming, stone screening / binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density 'Grading 2' as per MoRD Technical Specification Clause 405.

**(A) By Manual Means**

Unit = cum

Taking output = 360 cum

**a) Labour**

Mate	day	10.08	391.00	3,941.28
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	250.00	391.00	97,750.00

**b) Machinery**

Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	439.00	19,755.00
Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00

**c) Material (Refer Tables 400.7, 8, 9 and 10)****Aggregate**

<b>Grading 2 63 mm to 45 mm @ 0.91 cum per 10 sqm for compacted thickNess of 75 mm</b>	cum	435.60	3,575.00	15,57,270.00
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**Stone Screening**

<b>Type B 11.2 mm for Grading 2 @ 0.20 cum per 10 sqm</b>	cum	96.01	4,389.30	4,21,416.69
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**Binding Material**

Binding Material @ 0.06 cum per 10 sqm for <b>Grading 2</b> material	cum	28.80	17.10	492.48
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Water	kl	144.00	133.00	19,152.00
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 4,52,222.20****e) Contractor's profit @ 15 % on (a+b+c+d) 3,86,748.85****f) Add Cess @ 1.00 % on (a+b+c+d+e) 29,650.75**

Cost for 360 cum = a+b+c+d+e+f 29,94,725.25

**Rate per cum = (a+b+c+d+e+f)/360 8,318.68****say 8318.70****(B) By Mechanical Means**

Unit = cum

Taking output = 360 cum

**a) Labour**

Mate	day	0.68	391.00	265.88
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	15.00	391.00	5,865.00

**Chapter 4**  
**GRANULAR SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Machinery</b>				
		Tractor with Rotavator	hour	14.40	358.00	5,155.20
		Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	439.00	19,755.00
		Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00
		<b>c) Material (Refer Tables 400.7, 8, 9 and 10)</b>				
		<b>Aggregate</b>				
		<b>Grading 2 63 mm to 45 mm @ 0.91 cum per 10 sqm for compacted thickNess of 75 mm</b>	cum	435.60	3,575.00	15,57,270.00
		<b>Stone Screening</b>				
		<b>Type B 11.2 mm for Grading 2 @ 0.20 cum per 10 sqm</b>	cum	96.01	4,389.30	4,21,416.69
		<b>Binding Material</b>				
		Binding Material @ 0.06 cum per 10 sqm for Grading 2 material	cum	28.80	17.10	492.48
		Water	kl	144.00	133.00	19,152.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>4,32,993.02</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>3,70,303.69</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>28,389.95</b>
		Cost for 360 cum = a+b+c+d+e+f				28,67,384.91
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				<b>7,964.96</b>
						<b>say <u>7965.00</u></b>

**Note:** Type A Screening can be used in Grading 2

**3) WBM Grading 3**

Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickNess, hand packing, rolling with smooth wheel roller 80-100 KN in stages to proper grade and camber, applying and brooming, stone screening to fill up the interstices of coarse aggregate, watering and compacting to the required density 'Grading 3' as per MoRD Technical Specification Clause 405.

**(A) By Manual Means**

Unit = cum

Taking output = 360 cum

**a) Labour**

Mate	day	10.08	391.00	3,941.28
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	250.00	391.00	97,750.00

**b) Machinery**

Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	439.00	19,755.00
Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00

**Chapter 4**  
**GRANULAR SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>c) Material (Refer Tables 400.7, 8, 9 and 10)</b>						
<b>Aggregate</b>						
		<b>Grading 3 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickNess of 75 mm</b>	cum	435.60	3,751.30	16,34,066.28
<b>Stone Screening</b>						
		<b>Type B 11.2 mm for Grading 3 @ 0.18 cum per 10 sqm</b>	cum	86.40	4,389.30	3,79,235.52
		Water	kl	144.00	133.00	19,152.00
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>4,59,480.09</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>3,92,955.93</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>30,126.62</b>
Cost for 360 cum = a+b+c+d+e+f						30,42,788.71
<b>Rate per cum = (a+b+c+d+e+f)/360</b>						<b>8,452.19</b>
						<b>say <u>8452.20</u></b>
<b>(B) By Mechanical Means</b>						
Unit = cum						
Taking output = 360 cum						
<b>a) Labour</b>						
		Mate	day	0.68	391.00	265.88
		Mazdoor (Skilled)	day	2.00	475.00	950.00
		Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
<b>b) Machinery</b>						
		Tractor with Rotavator	hour	14.40	358.00	5,155.20
		Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	439.00	19,755.00
		Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00
<b>c) Material (Refer Tables 400.7, 8, 9 and 10)</b>						
<b>Aggregate</b>						
		<b>Grading 3 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickNess of 75 mm</b>	cum	435.60	3,751.30	16,34,066.28
<b>Stone Screening</b>						
		<b>Type B 11.2 mm for Grading 3 @ 0.18 cum per 10 sqm</b>	cum	86.40	4,389.30	3,79,235.52
		Water	kl	144.00	133.00	19,152.00
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>4,40,250.90</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>3,76,510.77</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>28,865.83</b>
Cost for 360 cum = a+b+c+d+e+f						29,15,448.37
<b>Rate per cum = (a+b+c+d+e+f)/360</b>						<b>8,098.47</b>
						<b>say <u>8098.50</u></b>

**4.3 406 Wet Mix Macadam**



**Chapter 4**  
**GRANULAR SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Providing, laying, spreading and compacting stone aggregates to wet mix macadam specification including premixing the material with water at OMC in mechanical mixer (Pug Mill), carriage of mixed materials by tipper to site, laying in uniform layers in sub-base / base course on a well prepared sub-base and compacting with smooth wheel roller of three wheel 80-100 KN static roller to proper grade and camber, achieve the desired density including lighting, barricading and maintenance of diversion, etc as per Tables 400.11 & 400.12 and as per MoRD Technical Specification Clause 406.

**By Mechanical Means with 1.00 km lead**

Unit = cum

Taking output = 100 cum

**a) Labour**

Mate	day	0.40	391.00	156.40
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	8.00	391.00	3,128.00

**b) Machinery**

Front end loader 1 cum capacity	hour	4.00	1,030.00	4,120.00
Wet mix plant (Pug Mill)	hour	4.00	3,769.00	15,076.00
Tipper/Dumper (10 t) capacity	hour	5.00	374.00	1,870.00
Tractor with Rotavator	hour	6.00	358.00	2,148.00
Three wheel 80-100 KN static roller @ 16 cum per hour	hour	6.25	439.00	2,743.75
Water tanker 6 kl capacity	hour	1.33	224.00	297.92

**c) Material**

Coarse aggregate 45 mm to 22.4 mm @ 30.00 %	cum	39.90	4,024.10	1,60,561.59
Aggregates 22.4 mm to 2.36 mm @ 40.00 %	cum	53.20	3,839.50	2,04,261.40
Fine aggregate/Crushed stones 2.36 mm to 75 micron @ 30.00 %	cum	39.90	2,252.60	89,878.74
Water	kl	8.00	133.00	1,064.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **1,03,426.61**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **88,452.36**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **6,781.35**

Cost for 100 cum = a+b+c+d+e+f 6,84,916.12

**Rate per cum = (a+b+c+d+e+f)/100** **6,849.16**

**say 6849.20**

**4.4 407 Construction of Shoulders as per Technical Specification Clause 407.**

**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.

**Chapter 4**  
**GRANULAR SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**C. Paved Shoulders**

The rates may be adopted as applicable for different layers of pavement depending upon approved design of paved shoulders.

**4.5 412 Brick Soling**

**i) Brick on edge soling**

Providing and laying brick on edge soling layer on prepared subgrade according to lines, grades and cross-section shown on the drawing, filling joints with sand, watering and rolling the same with three wheeled road roller 80-100 KN as per MoRD Technical Specification Clause 412.

Unit = sqm

Taking output = 150 sqm

**(a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mason 1st Class	day	3.00	512.00	1,536.00

**(b) Machinery**

Three wheel 80-100 KN static roller @ 150 sqm per hour	hour	1.00	439.00	439.00
Water tanker 6 kl capacity	hour	1.00	224.00	224.00

**(c) Material**

Brick 1st Class	No.	7,800.00	12.20	95,160.00
Fine Sand (local)	cum	5.66	590.00	3,339.40
Water	kl	6.00	133.00	798.00

**(d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **22,463.19**

**(e) Contractor's profit @ 15 % on (a+b+c+d)** **19,210.94**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **1,472.84**

Cost for 150 sqm = a+b+c+d+e+f 1,48,756.68

**Rate per sqm = (a+b+c+d+e+f)/150** **991.71**

**say 991.70**

**ii) Flat Brick soling**

Providing and laying flat brick soling layer on prepared subgrade according to lines, grades and cross-section shown on the drawing, filling joints with Earth, free from clay with a Plasticity Index not exceeding 6, watering and rolling the same with three wheeled road roller 80-100 KN as per MoRD Technical Specification Clause 412.

Unit = sqm

Taking output = 198.75 sqm

**(a) Labour**

Mate	day	0.44	391.00	172.04
Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
Mason 1st Class	day	3.00	512.00	1,536.00

**Chapter 4**  
**GRANULAR SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>(b) Machinery</b>						
		Three wheel 80-100 KN static roller @ 150 sqm per hour	hour	1.00	439.00	439.00
		Water tanker 6 kl capacity	hour	1.00	224.00	224.00
<b>(c) Material</b>						
		Brick 1st Class	No.	6,161.00	12.20	75,164.20
		Earth, free from clay with a plasticity index not exceeding 6	cum	3.396	166.50	565.43
		Water	kl	3.60	133.00	478.80
<b>(d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>17,379.18</b>
<b>(e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>14,863.00</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>1,139.50</b>
Cost for 198.75 sqm = a+b+c+d+e+f						1,15,089.15
<b>Rate per sqm = (a+b+c+d+e+f)/198.75</b>						<b>579.06</b>
						<b>say <u>579.10</u></b>
<b>iii) Brick edging laid in full brick width</b>						
Providing and laying brick edging on prepared subgrade according to lines, grades and cross-section shown on the drawing, filling joints with Earth, free from clay with a Plasticity Index not exceeding 6, watering and rolling the same with three wheeled road roller 80-100 KN as per MoRD Technical Specification Clause 412.						
Unit = m						
Taking output = 10 m						
<b>(a) Labour</b>						
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.30	391.00	117.30
		Mason 1st Class	day	0.24	512.00	122.88
<b>(b) Machinery</b>						
		Three wheel 80-100 KN static roller @ 150 sqm per hour	hour	0.01	439.00	4.39
		Water tanker 6 kl capacity	hour	0.01	224.00	2.24
<b>(c) Material</b>						
		Brick 1st Class	No.	125.00	12.20	1,525.00
		Earth, free from clay with a plasticity index not exceeding 6	cum	0.04	166.50	6.66
		Water	kl	0.04	133.00	5.32
<b>(d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>381.08</b>
<b>(e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>325.90</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>24.99</b>
Cost for 10 m = a+b+c+d+e+f						2,523.57
<b>Rate per m = (a+b+c+d+e+f)/10</b>						<b>252.36</b>
						<b>say <u>252.40</u></b>
<b>iv) Brick edging laid length wise</b>						

**Chapter 4**  
**GRANULAR SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Providing and laying brick edging laid lengthwise on prepared subgrade according to lines, grades and cross-section shown on the drawing, filling joints with Earth, free from clay with a Plasticity Index not exceeding 6, watering and rolling the same with three wheeled road roller 80-100 KN as per MoRD Technical Specification Clause 412.

Unit = m

Taking output = 10 m

**(a) Labour**

Mate	day	0.01	391.00	3.91
Mazdoor (Unskilled)	day	0.15	391.00	58.65
Mason 1st Class	day	0.10	512.00	51.20

**(b) Machinery**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Three wheel 80-100 KN static roller @ 150 sqm per hour	hour	0.005	439.00	2.20
		Water tanker 6 kl capacity	hour	0.005	224.00	1.12
		<b>(c) Material</b>				
		Brick 1st Class	No.	40.00	12.20	488.00
		Earth, free from clay with a plasticity index not exceeding 6	cum	0.02	166.50	3.33
		Water	kl	0.02	133.00	2.66
		<b>(d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>129.97</b>
		<b>(e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>111.16</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>8.52</b>
		Cost for 10 m = a+b+c+d+e+f				860.72
		<b>Rate per m = (a+b+c+d+e+f)/10</b>				<b>86.07</b>
					<b>say</b>	<b><u>86.10</u></b>

**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE ( i.e. LOCALLY AVAILABLE MATERIALS)**

**4.6 401 Granular Sub-base with Well Graded Material (Table 400.1) using Jhama Brick Aggregate**

**(A) By Mix in Place Method**

Construction of granular sub-base by providing well graded material (Jhama Brick Aggregate, Grading-I, as per Table 400.1 , spreading in uniform layers with tractor with attachments on prepared surface, mixing by mix in place method with rotavator at OMC, applying and brooming sand to fill up the interstices of coarse aggregate, watering and compacting with smooth wheel roller to achieve the desired density, complete as per MoRD Technical Specification Clause 401.

**(i) For Grading I Material**

Unit = cum

Taking output = 300 cum

**a) Labour**

Mate	day	0.48	391.00	187.68
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00

**b) Machinery**

Tractor mount grader @ 25 cum per hour	hour	12.00	358.00	4,296.00
Three wheel 80-100 KN static roller @ 10 cum per hour	hour	30.00	439.00	13,170.00
Tractor with Rotavator 25 cum per hour	hour	12.00	358.00	4,296.00
Water tanker 6 kl capacity	hour	5.00	224.00	1,120.00

**c) Material**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Well graded granular sub-base material as per Table 400.1				
		53 mm to 0.075 mm @ 70 %	cum	268.80	3,369.30	9,05,667.84
		Fine Sand(local) @ 30 %	cum	115.00	590.00	67,850.00
		Water	kl	30.00	133.00	3,990.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,13,856.56</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,82,894.11</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>14,021.88</b>
		Cost for 300 cum = a+b+c+d+e+f				<b>14,16,210.07</b>
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				<b>4,720.70</b>
					<b>say</b>	<b><u>4720.70</u></b>

**4.7 405 Water Bound Macadam Sub-Base / Base using Jhama Brick Aggregate**

**1) WBM Grading 2**

Providing, laying, spreading and compacting jhama brick aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing rolling with three wheel roller 80-100 KN in stages to proper grade and camber, applying and brooming binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density Grading- 2 as per MoRD Technical Specification Clause 405.

**(A) By Manual Means**

Unit = cum

Taking output = 360 cum

**a) Labour**

Mate	day	10.08	391.00	3,941.28
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	250.00	391.00	97,750.00

**b) Machinery**

Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	439.00	19,755.00
Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00

**c) Material (Refer Tables 400.7, 8, 9 and 10)**

**Aggregate**

<b>Grading 2, 63 mm to 22.4 mm @ 1.11 cum per 10 sqm for compacted thickness of 75 mm</b>	cum	532.80	3,290.30	17,53,071.84
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**Binding Material**

Binding Material (earth) @ 0.06 cum per 10 sqm for <b>Grading 2</b> material	cum	28.80	17.10	492.48
Water	kl	144.00	133.00	19,152.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **4,04,233.93**

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

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		e) Contractor's profit @ 15 % on (a+b+c+d)				<b>3,45,708.38</b>
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				<b>26,504.31</b>
		Cost for 360 cum = a+b+c+d+e+f				26,76,935.21
		Rate per cum = (a+b+c+d+e+f)/360				<b>7,435.93</b>
					<b>say</b>	<b><u>7435.90</u></b>
		<b>(B) By Mechanical Means</b>				
		Unit = cum				
		Taking output = 360 cum				
		<b>a) Labour</b>				
		Mate	day	0.68	391.00	265.88
		Mazdoor (Skilled)	day	2.00	475.00	950.00
		Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
		<b>b) Machinery</b>				
		Tractor with Rotavator	hour	14.40	358.00	5,155.20
		Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	439.00	19,755.00
		Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00
		<b>c) Material (Refer Tables 400.7, 8, 9 and 10)</b>				
		<b>Aggregate</b>				
		Grading 2, 63 mm to 22.4 mm @ 1.11 cum per 10 sqm for compacted thickness of 75 mm	cum	532.80	3,290.30	17,53,071.84
		<b>Binding Material</b>				
		Binding Material(earth) @ 0.06 cum per 10 sqm for Grading 2 material	cum	28.80	17.10	492.48
		Water	kl	144.00	133.00	19,152.00
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				<b>3,85,004.74</b>
		e) Contractor's profit @ 15 % on (a+b+c+d)				<b>3,29,263.22</b>
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				<b>25,243.51</b>
		Cost for 360 cum = a+b+c+d+e+f				25,49,594.87
		Rate per cum = (a+b+c+d+e+f)/360				<b>7,082.21</b>
					<b>say</b>	<b><u>7082.20</u></b>

**Note:** Type A Screening can be used in Grading 2

**2) WBM Grading 3**

Providing, laying, spreading and compacting jhama brick aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing rolling with three wheel roller 80-100 KN in stages to proper grade and camber, applying and brooming binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density Grading- 3 as per MoRD Technical Specification Clause 405.

**(A) By Manual Means**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Unit = cum

Taking output = 360 cum

**a) Labour**

Mate	day	10.08	391.00	3,941.28
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	250.00	391.00	97,750.00

**b) Machinery**

Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	439.00	19,755.00
Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00

**c) Material (Refer Tables 400.7, 8, 9 and 10)****Aggregate**

<b>Grading 3, 53 mm to 11.2 mm @ 1.09 cum per 10 sqm for compacted thickness of 75 mm</b>	cum	523.20	3,369.30	17,62,817.76
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**Binding Material**

Binding Material(earth) @ 0.06 cum per 10 sqm for <b>Grading 3</b> material	cum	28.80	17.10	492.48
Water	kl	144.00	133.00	19,152.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)****4,06,306.88****e) Contractor's profit @ 15 % on (a+b+c+d)****3,47,481.21****f) Add Cess @ 1.00 % on (a+b+c+d+e)****26,640.23**

Cost for 360 cum = a+b+c+d+e+f

26,90,662.84

**Rate per cum = (a+b+c+d+e+f)/360****7,474.06****say 7474.10****(B) By Mechanical Means**

Unit = cum

Taking output = 360 cum

**a) Labour**

Mate	day	0.68	391.00	265.88
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	15.00	391.00	5,865.00

**b) Machinery**

Tractor with Rotavator	hour	14.40	358.00	5,155.20
Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	439.00	19,755.00
Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00

**c) Material (Refer Tables 400.7, 8, 9 and 10)****Aggregate**

<b>Grading 3, 53 mm to 11.2 mm @ 1.09 cum per 10 sqm for compacted thickness of 75 mm</b>	cum	523.20	3,369.30	17,62,817.76
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**Binding Material**



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Binding Material(earth) @ 0.06 cum per 10 sqm for <b>Grading 3</b> material	cum	28.80	17.10	492.48
		Water	kl	144.00	133.00	19,152.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>3,87,077.70</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>3,31,036.05</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>25,379.43</b>
		Cost for 360 cum = a+b+c+d+e+f				25,63,322.50
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				<b>7,120.34</b>
					<b>say</b>	<b><u>7120.30</u></b>

**4.8 406 Wet Mix Macadam**

Providing, laying, spreading and compacting 53 mm to 0.075 mm jhama brick aggregates to wet mix macadam specification including premixing the material with water at OMC in mechanical mixer (Pug Mill), carriage of mixed materials by tipper to site, laying in uniform layers in sub-base / base course on a well prepared sub-base and compacting with smooth wheel roller of three wheel 80-100 KN static roller to proper grade and camber, achieve the desired density including lighting, barricading and maintenance of diversion, etc as per Tables 400.11 & 400.12 and as per MoRD Technical Specification Clause 406.

**By Mechanical Means with 1.00 km lead**

Unit = cum

Taking output = 100 cum

**a) Labour**

Mate	day	0.40	391.00	156.40
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	8.00	391.00	3,128.00

**b) Machinery**

Front end loader 1 cum capacity	hour	4.00	1,030.00	4,120.00
Wet mix plant (Pug Mill)	hour	4.00	3,769.00	15,076.00
Tipper/Dumper (10 t) capacity	hour	5.00	374.00	1,870.00
Tractor with Rotavator	hour	6.00	358.00	2,148.00
Three wheel 80-100 KN static roller @ 16 cum per hour	hour	6.25	439.00	2,743.75
Water tanker 6 kl capacity	hour	1.33	224.00	297.92

**c) Material**

Jhama brick aggregates 45 mm to 22.4 mm @ 30 per cent	cum	39.90	3,329.80	1,32,859.02
Jhama brick aggregates 22.4 mm to 2.36 mm @ 40 per cent	cum	53.20	3,407.50	1,81,279.00
Fine aggregate/Crushed brick 2.36 mm to 75 micron @ 30 per cent	cum	39.90	2,544.90	1,01,541.51
Water	kl	8.00	133.00	1,064.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **95,126.59**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **81,354.03**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>6,237.14</b>
		Cost for 100 cum = a+b+c+d+e+f				6,29,951.36
		<b>Rate per cum = (a+b+c+d+e+f)/100</b>				<b>6,299.51</b>
					<b>say</b>	<b><u>6299.50</u></b>
<b>4.9</b>	<b>403</b>	<b>Lime Stabilisation for Improving Subgrade</b>				
		Laying and spreading available soil in the subgrade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 2 per cent slaked lime having minimum 70 per cent of contents of CaO, grading with motor grader and compacting with the smooth wheel road roller at OMC to the desired density to form a layer of improved Sub-grade as per MoRD Technical Specification Clause 403.				
		<b>(A) By Manual Means</b>				
		Unit = cum				
		Taking output = 150 cum (263 t)				
		<b>a) Labour</b>				
		Mate	day	1.44	391.00	563.04
		Mazdoor (Skilled)	day	1.00	475.00	475.00
		Mazdoor (Unskilled)	day	35.00	391.00	13,685.00
		<b>b) Machinery</b>				
		Three wheel 80-100 kN Static roller @ 70 cum per hour	hour	2.15	439.00	943.85
		Water tanker 6 kl capacity	hour	3.00	224.00	672.00
		<b>c) Material</b>				
		Lime	t	5.26	3,500.00	18,410.00
		Water	kl	18.00	133.00	2,394.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>7,900.29</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>6,756.48</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>518.00</b>
		Cost for 150 cum = a+b+c+d+e+f				52,317.66
		<b>Rate per cum = ( a+b+c+d+e+f)/150</b>				<b>348.78</b>
					<b>say</b>	<b><u>348.80</u></b>
		<b>(B) By Mechanical Means</b>				
		Unit = cum				
		Taking output = 300 cum (525 t)				
		<b>a) Labour</b>				
		Mate	day	0.36	391.00	140.76
		Mazdoor (Skilled)	day	1.00	475.00	475.00
		Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
		<b>b) Machinery</b>				
		Tractor with ripper and rotavator attachments @ 60 cum per hour for ripping and 25 cum per hour for mixing	hour	12.00	250.00	3,000.00
		Motor grader 110 HP @ 50 cum per hour	hour	6.00	2,940.00	17,640.00

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

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Three wheel 80-100 kN static roller @ 70 cum per hour	hour	4.30	439.00	1,887.70
		Water tanker 6 kl capacity	hour	5.00	224.00	1,120.00
		<b>c) Material</b>				
		Lime	t	10.50	3,500.00	36,750.00
		Water	kl	30.00	133.00	3,990.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>14,491.56</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>12,393.45</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>950.16</b>
		Cost for 300 cum = a+b+c+d+e+f				95,966.64
		<b>Rate per cum = (a+b+c+d+e+f)/300</b>				<b>319.89</b>
					<b>say</b>	<b><u>319.90</u></b>

**Note:** The exact quantity of lime shall be as per design.

**4.10 403 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 4 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 atleast 98 per cent of the max dry density to form a layer of sub-base as per MoRD Technical Specification Clause 403.

Unit = cum

Taking output = 300 cum (525 t)

**a) Labour**

Mate	day	0.48	391.00	187.68
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00

**b) Machinery**

Hydraulic Excavator 0.90 cum bucket capacity	hour	5.00	1,344.00	6,720.00
Tipper 5.5 cum 4 trips per hour	hour	14.00	374.00	5,236.00
Motor grader 110 HP @ 50 cum per hour	hour	6.00	2,940.00	17,640.00
Three wheel 80-100 kN Static roller @ 70 cum per ho	hour	4.30	439.00	1,887.70
Tractor with rotavator and blade @ 25 cum per hour	hour	12.00	358.00	4,296.00
Water tanker 6 kl capacity	hour	5.00	224.00	1,120.00

**c) Material**

Lime	t	21.00	3,500.00	73,500.00
Water	kl	30.00	133.00	3,990.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **25,404.33**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **21,726.26**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **1,665.68**

Cost for 300 cum = a+b+c+d+e+f 1,68,233.65

**Rate per cum = (a+b+c+d+e+f)/300** **560.78**

**say** **560.80**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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*Note: The exact quantity of lime shall be as per design.*

**4.11 404 Cement Treated Soil Sub-Base/Base**

Providing, laying and spreading soil on a prepared sub-grade, pulverising, adding the designed quantity of cement to the spread soil, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base as per MoRD Technical Specification Clause 404.

Unit = cum

Taking output = 300 cum (525 t)

**For 4 per cent quantity of cement by weight of soil**

**a) Labour**

Mate	day	0.48	391.00	187.68
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00

**b) Machinery**

Hydraulic Excavator 0.90 cum bucket capacity	hour	5.00	1,344.00	6,720.00
Tipper 5.5 cum	hour	14.00	374.00	5,236.00
Motor grader 110 HP @ 50 cum per hour	hour	6.00	2,940.00	17,640.00
Three wheel 80-100 kN static roller @ 70 cum per hour	hour	4.30	439.00	1,887.70
Tractor with rotavator and blade @ 25 cum per hour	hour	12.00	358.00	4,296.00
Water tanker 6 kl capacity	hour	5.00	224.00	1,120.00

**c) Material**

Cement at site @ 4% (of 525 t)	t	21.00	6,797.00	1,42,737.00
Water	kl	30.00	133.00	3,990.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 40,131.04**

**e) Contractor's profit and overheads @ 15 % on (a+b+c+d) 34,320.81**

**f) Add Cess @ 1.00 % on (a+b+c+d+e) 2,631.26**

Cost for 300 cum = a+b+c+d+e+f 2,65,757.50

**Rate per cum =(a+b+c+d+e+f)/300 885.86**

**say 885.90**

*Note: The exact quantity of cement shall be as per design.*

**4.12 405 Water Bound Macadam Sub-Base / Base using Jhama Brick Aggregate**

**1) WBM Grading 1**

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

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Providing, laying, spreading and compacting jhama brick aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing rolling with three wheel roller 80-100 KN in stages to proper grade and camber, applying and brooming binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density Grading- 1 as per MoRD Technical Specification Clause 405.

**(A) By Manual Means**

Unit = cum

Taking output = 360 cum

**a) Labour**

Mate	day	10.08	391.00	3,941.28
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	250.00	391.00	97,750.00

**b) Machinery**

Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	439.00	19,755.00
Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00

**c) Material (Refer Tables 400.7, 8, 9 and 10)****Aggregate**

Grading 1, 90 mm to 22.4 mm @ 1.48 cum per 10 sqm for compacted thickness of 100 mm	cum	532.80	3,191.60	17,00,484.48
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**Binding Material**

Binding Material (earth) @ 0.06 cum per 10 sqm for Grading 1 material	cum	28.80	17.10	492.48
Water	kl	144.00	133.00	19,152.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 3,93,048.59****e) Contractor's profit @ 15 % on (a+b+c+d) 3,36,142.48****f) Add Cess @ 1.00 % on (a+b+c+d+e) 25,770.92**

Cost for 360 cum = a+b+c+d+e+f 26,02,863.23

**Rate per cum = (a+b+c+d+e+f)/360 7,230.18****say 7230.20****(B) By Mechanical Means**

Unit = cum

Taking output = 360 cum

**a) Labour**

Mate	day	0.68	391.00	265.88
Mazdoor (Skilled)	day	2.00	475.00	950.00
Mazdoor (Unskilled)	day	15.00	391.00	5,865.00

**b) Machinery**

Tractor with Rotavator	hour	14.40	358.00	5,155.20
Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	439.00	19,755.00

**Chapter 4**  
**GRANULAR SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Water tanker 6 kl capacity	hour	24.00	224.00	5,376.00
		<b>c) Material (Refer Tables 400.7, 8, 9 and 10)</b>				
		<b>Aggregate</b>				
		<b>Grading 1, 90 mm to 22.4 mm @ 1.48 cum per 10 sqm for compacted thickness of 100 mm</b>	cum	532.80	3,191.60	17,00,484.48
		<b>Binding Material</b>				
		Binding Material(earth) @ 0.06 cum per 10 sqm for <b>Grading 1</b> material	cum	28.80	17.10	492.48
		Water	kl	144.00	133.00	19,152.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>3,73,819.41</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>3,19,697.32</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>24,510.13</b>
		Cost for 360 cum = a+b+c+d+e+f				24,75,522.89
		<b>Rate per cum = (a+b+c+d+e+f)/360</b>				<b>6,876.45</b>
					<b>say</b>	<b><u>6876.50</u></b>

**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
5.1	502	<b>Prime Coat</b>				
		<b>(i) Low porosity</b>				
		Providing and applying primer coat with bitumen emulsion (SS-1) on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.70- 1.00 kg/sqm using mechanical means as per MoRD Technical Specification Clause 502.				
		Unit = sqm				
		Taking output = 1750 sqm				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Hydraulic broom @ 1250 sqm per hour	hour	1.40	386.00	540.40
		Air compressor 210 cfm	hour	1.40	235.00	329.00
		Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	226.00	226.00
		Water tanker 6 kl capacity 1 trip per hour	hour	0.50	224.00	112.00
		<b>c) Material</b>				
		Bitumen emulsion (SS-1) @ 0.85 kg per sqm	t	1.48	60,228.00	89,137.44
		Water	kl	3.00	133.00	399.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>19,387.71</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>16,580.73</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,271.19</b>
		Cost of 1750 sqm = a+b+c+d+e+f				1,28,390.10
		<b>Rate per sqm = (a+b+c+d+e+f)/1750</b>				<b>73.37</b>
					<b>say</b>	<b><u>73.40</u></b>
		<b>(ii) Medium porosity</b>				
		Providing and applying primer coat with bitumen emulsion (SS-1) on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.90- 1.20 kg/sqm using mechanical means as per MoRD Technical Specification Clause 502.				
		Unit = sqm				
		Taking output = 1750 sqm				
		<b>a) Labour</b>				
		Mate	day	0.10	391.00	39.10
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		<b>b) Machinery</b>				
		Hydraulic broom @ 1250 sqm per hour	hour	1.40	386.00	540.40
		Air compressor 210 cfm	hour	1.40	235.00	329.00
		Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	226.00	226.00

**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Water tanker 6 kl capacity 1 trip per hour	hour	0.50	224.00	112.00
		<b>c) Material</b>				
		Bitumen emulsion (SS-1) @ 1.05 kg per sqm	t	1.83	60,228.00	1,10,217.24
		Water	kl	3.00	133.00	399.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>23,959.54</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>20,490.64</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,570.95</b>
		Cost of 1750 sqm = a+b+c+d+e+f				1,58,665.87
		<b>Rate per sqm = (a+b+c+d+e+f)/1750</b>				<b>90.67</b>
					<b>say</b>	<b><u>90.70</u></b>
		<b>(iii) High porosity</b>				
		Providing and applying primer coat with bitumen emulsion (SS-1) on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 1.20- 1.50 kg/sqm using mechanical means as per MoRD Technical Specification Clause 502.				
		Unit = sqm				
		Taking output = 1750 sqm				
		<b>a) Labour</b>				
		Mate	day	0.12	391.00	46.92
		Mazdoor (Unskilled)	day	3.00	391.00	1,173.00
		<b>b) Machinery</b>				
		Hydraulic broom @ 1250 sqm per hour	hour	1.40	386.00	540.40
		Air compressor 210 cfm	hour	1.40	235.00	329.00
		Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	226.00	226.00
		Water tanker 6 kl capacity 1 trip per hour	hour	0.50	224.00	112.00
		<b>c) Material</b>				
		Bitumen emulsion (SS-1) @ 1.35 kg per sqm	t	2.36	60,228.00	1,42,138.08
		Water	kl	3.00	133.00	399.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>30,833.93</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>26,369.75</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>2,021.68</b>
		Cost of 1750 sqm = (a+b+c+d+e+f)				2,04,189.76
		<b>Rate per sqm = a+b+c+d+e+f/1750</b>				<b>116.68</b>
					<b>say</b>	<b><u>116.70</u></b>

**5.2 503 Tack Coat**

- (i) Providing and applying tack coat with bitumen emulsion (RS-1) using emulsion distributor at the rate of 0.20 to 0.25 kg per sqm on the prepared bituminous surface cleaned with Hydraulic broom as per MoRD Technical Specification Clause 503.



**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit = sqm				
		Taking output = 1750 sqm				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Hydraulic broom @ 1250 sqm per hour	hour	1.40	386.00	540.40
		Air compressor 210 cfm	hour	1.40	235.00	329.00
		Emulsion pressure distributor @1750 sqm per hour	hour	1.00	226.00	226.00
		<b>c) Material</b>				
		Bitumen emulsion (RS-1) @ 0.225 kg per sqm	t	0.39	57,286.00	22,341.54
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>5,071.53</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>4,337.27</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>332.52</b>
		Cost of 1750 sqm = a+b+c+d+e+f				33,584.90
		<b>Rate per sqm = (a+b+c+d+e+f)/1750</b>				<b>19.19</b>
					<b>say</b>	<b><u>19.20</u></b>
		(ii) Providing and applying tack coat with bitumen emulsion (RS-1) using emulsion distributor at the rate of 0.25 to 0.30 kg per sqm on the prepared dry and hungry bituminous surface cleaned with Hydraulic broom as per MoRD Technical Specification Clause 503.				
		Unit = sqm				
		Taking output = 1750 sqm				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Hydraulic broom @ 1250 sqm per hour	hour	1.40	386.00	540.40
		Air compressor 210 cfm	hour	1.40	235.00	329.00
		Emulsion pressure distributor @1750 sqm per hour	hour	1.00	226.00	226.00
		<b>c) Material</b>				
		Bitumen emulsion (RS-1) @ 0.275 kg per sqm	t	0.48	57,286.00	27,497.28
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>6,168.16</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>5,275.12</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>404.43</b>
		Cost of 1750 sqm = a+b+c+d+e+f				40,847.02
		<b>Rate per sqm = (a+b+c+d+e+f)/1750</b>				<b>23.34</b>
					<b>say</b>	<b><u>23.30</u></b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(iii) Providing and applying tack coat with bitumen emulsion (RS-1) using emulsion distributor at the rate of 0.25 to 0.30 kg per sqm on the prepared granular surface treated with primer & cleaned with Hydraulic broom as per MoRD Technical Specification Clause 503.				
		Unit = sqm				
		Taking output = 1750 sqm				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Hydraulic broom @ 1250 sqm per hour	hour	1.40	386.00	540.40
		Air compressor 210 cfm	hour	1.40	235.00	329.00
		Emulsion pressure distributor @1750 sqm per hour	hour	1.00	226.00	226.00
		<b>c) Material</b>				
		Bitumen emulsion (RS-1) @ 0.275 kg per sqm	t	0.48	57,286.00	27,497.28
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>6,168.16</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>5,275.12</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>404.43</b>
		Cost of 1750 sqm = a+b+c+d+e+f				40,847.02
		<b>Rate per sqm = (a+b+c+d+e+f)/1750</b>				<b>23.34</b>
					<b>say</b>	<b><u>23.30</u></b>
		(iv) Providing and applying tack coat with bitumen emulsion (RS-1) using emulsion distributor at the rate of 0.30 to 0.35 kg per sqm on the prepared non-bituminous surfaces (cement concrete pavement) cleaned with Hydraulic broom as per MoRD Technical Specification Clause 503.				
		Unit = sqm				
		Taking output = 1750 sqm				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Machinery</b>				
		Hydraulic broom @ 1250 sqm per hour	hour	1.40	386.00	540.40
		Air compressor 210 cfm	hour	1.40	235.00	329.00
		Emulsion pressure distributor @1750 sqm per hour	hour	1.00	226.00	226.00
		<b>c) Material</b>				
		Bitumen emulsion (RS-1) @ 0.325 kg per sqm	t	0.57	57,286.00	32,653.02
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>7,264.78</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>6,212.98</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>476.33</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Cost of 1750 sqm = a+b+c+d+e+f				48,109.15
		<b>Rate per sqm = (a+b+c+d+e+f) / 1750</b>				<b>27.49</b>
					<b>say</b>	<b><u>27.50</u></b>

**Note:** (i) An output of 1750 sqm has been considered in case of tack coat which can be covered by bituminous courses on the same day.

(ii) The use of cutback bitumen (Medium Curing grade) as per IS:217 shall be restricted only for sites at sub-zero temperature or for emergency applications as directed by the Engineer.

**5.3 504 Bituminous Macadam**

Providing and laying bituminous macadam with hot mix plant using crushed aggregates of grading as per Table 500.4 premixed with bituminous binder, transported to site upto a lead of 1000 m laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction as per MoRD Technical Specification Clause 504.

**i. With Viscosity Graded Bitumen of VG-30.**

Unit = cum

Taking output = 102.5 cum (225 t)

**a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor (Skilled)	day	3.00	475.00	1,425.00

**b) Machinery**

Batch mix HMP 40-60 THP @ 40 t per hour actual output	hour	6.00	13,552.00	81,312.00
Hydraulic broom @ 1250 sqm per hour	hour	1.10	386.00	424.60
Air compressor 210 cfm	hour	1.10	235.00	258.50
Paver finisher	hour	6.00	1,176.00	7,056.00
Generator 125 KVA	hour	6.00	498.00	2,988.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Tipper 5.5 cum, 10 t capacity	hour	6.21	374.00	2,322.54
Three wheel 80-100 kN static roller for initial break down rolling, final and finishing rolling	hour	12.00	439.00	5,268.00
Vibratory roller 80-100 kN for intermediate rolling	hour	6.00	1,562.00	9,372.00

**c) Material**

<b>i) Bitumen (VG-30) @ 3.3 per cent of mix</b> (Weight of mix = 102.5 x 2.2 = 225 t)	t	7.425	61,186.00	4,54,306.05
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**ii) Aggregate**

Total weight of mix = 225 t

Weight of bitumen = 7.425 t

Weight of aggregate = 225 – 7.425 = 217.575 t

Taking density of aggregate = 1.5 t/cum

Volume of aggregate = 145.05 cum

**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>(19 mm nominal size) as per Table 500.4</b>	cum	145.05	4,237.30	6,14,620.37
		25 -10 mm - 40.00 %	58.02	cum		
		10- 5 mm - 40.00%	58.02	cum		
		5 mm and below - 20.00 %	29.01	cum		
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,53,037.78</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>2,16,402.62</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>16,590.87</b>
		Cost of 102.5 cum = a+b+c+d+e+f				16,75,677.65
		<b>Rate per cum = a+b+c+d+e+f/102.5</b>				<b>16,348.07</b>
					<b>say</b>	<b><u>16348.10</u></b>

**ii. With Viscosity Graded Bitumen of VG-10.**

Unit = cum

Taking output = 102.5 cum (225 t)

**a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor (Skilled)	day	3.00	475.00	1,425.00

**b) Machinery**

Batch mix HMP 40-60 THP @ 40 t per hour actual output	hour	6.00	13,552.00	81,312.00
Hydraulic broom @ 1250 sqm per hour	hour	1.10	386.00	424.60
Air compressor 210 cfm	hour	1.10	235.00	258.50
Paver finisher	hour	6.00	1,176.00	7,056.00
Generator 125 KVA	hour	6.00	498.00	2,988.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Tipper 5.5 cum, 10 t capacity	hour	6.21	374.00	2,322.54
Three wheel 80-100 kN static roller for initial break down rolling, final and finishing rolling	hour	12.00	439.00	5,268.00
Vibratory roller 80-100 kN for intermediate rolling	hour	6.00	1,562.00	9,372.00

**c) Material**

<b>i) Bitumen (VG-10) @ 3.3 per cent of mix (Weight of mix = 102.5 x 2.2 = 225 t)</b>	t	7.425	60,386.00	4,48,366.05
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**ii) Aggregate**

Total weight of mix = 225 t

Weight of bitumen = 7.425 t

Weight of aggregate = 225 – 7.425 = 217.575 t

Taking density of aggregate = 1.5 t/cum

Volume of aggregate = 145.05 cum

<b>(19 mm nominal size) as per Table 500.4</b>	cum	145.05	4,237.30	6,14,620.37
25 -10 mm - 40.00 %	58.02	cum		
10- 5 mm - 40.00%	58.02	cum		
5 mm and below - 20.00 %	29.01	cum		

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Sr. No.	Ref. to MORO Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				2,51,774.35
		e) Contractor's profit @ 15 % on (a+b+c+d)				2,15,322.11
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				16,508.03
		Cost of 102.5 cum = a+b+c+d+e+f				16,67,310.86
		<b>Rate per cum = a+b+c+d+e+f/102.5</b>				<b>16,266.45</b>
					<b>say</b>	<b><u>16266.40</u></b>

**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 225 t considered in these analysis. To cater for the idle period of these rollers, their usage rates may be multiplied by a factor of 0.65.

2 Quantity of bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.

3 Labour for traffic control, watch and ward and other miscellaneous duties at site, including sundries have been included in administrative overheads of the contractor.

4 In case BM is laid over freshly laid tack coat, provision of Hydraulic broom and 2 mazdoor for the same shall be detected as the same has been included in the cost of tack coat.

5 Analysis is based on 1000 m lead of mixed material. Cost of additional cartage may be added as per site requirements.

#### 5.4 505 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 crushed coarse aggregates using motor grader for aggregates. Key stone chips spreader may be used with application of bituminous binder (Bitumen of VG-30) after each layer. and with key aggregates placed on top of the second layer to serve as a base, conforming to line, grades and cross section specified, the compacted layer thickness being 75 mm as per MoRD Technical Specification Clause 505.

##### (A) By Manual Means

Unit = sqm

Taking output = 800 sqm (60 cum)

##### a) Labour

Mate	day	5.50	391.00	2,150.50
Mazdoor (Unskilled)	day	100.50	391.00	39,295.50
Chips spreader	day	10.00	391.00	3,910.00
Bitumen Sprayer	day	2.50	447.00	1,117.50
Mazdoor (Semi-Skilled)	day	25.50	447.00	11,398.50

##### b) Machinery

Bitumen boiler oil fired, capacity 1000 litre fitted with spray set	hour	6.00	222.00	1,332.00
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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Three wheel 80-100 kN static Roller	hour	6.00	439.00	2,634.00
<b>c) Material</b>						
		Bitumen of VG-30 @ 30 kg per 10 sqm @ 15 kg per 10 sqm for each layer	t	2.40	61,186.00	1,46,846.40
		Crushed stone coarse aggregate passing 53 mm and retained on 2.8 mm sieve @ 1.00 cum per 10 sqm for each layer	cum	80.00	3,707.30	2,96,584.00
		Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.13 cum per 10 sqm	cum	10.40	3,981.00	41,402.40
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>1,16,276.88</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>99,442.15</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>7,623.90</b>
Cost of 800 sqm = a+b+c+d+e+f						7,70,013.73
<b>Rate per sqm = (a+b+c+d+e+f)/800</b>						<b>962.52</b>
						<b>say <u>962.50</u></b>
<b>(B) By Mechanical Means</b>						
Unit = sqm						
Taking output = 3000 sqm (225 cum)						
<b>a) Labour</b>						
		Mate	day	0.40	391.00	156.40
		Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
		Mazdoor (Skilled)	day	2.00	475.00	950.00
<b>b) Machinery</b>						
		Hydraulic self propelled chip spreader both for aggregates and key aggregates @ 1500 sqm per hour for 3000 x 3 sqm	hour	6.00	4,064.00	24,384.00
		Bitumen pressure distributor for 3000x 2 sqm @ 1750 sqm per hour	hour	3.43	226.00	775.18
		Tipper 5.5 cum capacity	hour	10.00	374.00	3,740.00
		Three wheel 80-100 kN Static Roller @ 10 cum per hour	hour	22.50	439.00	9,877.50
		Front end loader 1 cum bucket capacity	hour	5.00	1,030.00	5,150.00
<b>c) Material</b>						
		Bitumen (VG-30) @ 30 kg per 10 sqm @ 15 kg per 10 sqm for each layer	t	9.00	61,186.00	5,50,674.00
		Crushed stone coarse aggregate passing 53 mm and retained on 2.8 mm sieve @ 1.00 cum per 10 sqm for each layer	cum	300.00	3,707.30	11,12,190.00
		Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.13 cum per 10 sqm	cum	39.00	3,981.00	1,55,259.00
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>3,96,958.62</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>3,39,486.41</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>26,027.29</b>
Cost of 3000 sqm = a+b+c+d+e+f						26,28,756.40
<b>Rate per sqm = (a+b+c+d+e+f)/3000</b>						<b>876.25</b>

**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**say**      **876.30**

**5.5    507    Surface Dressing using Bituminous (viscosity grade) Binder**

Providing and laying surface dressing as wearing course consisting of a layer of bituminous binder laid on the prepared surface, followed by a cover of crushed stone aggregates of specified size and rolling with three wheel 80-100 kN static roller including cleaning the road surface as per MoRD Technical Specification Clause 507.

**(A) By Manual Means**

**Case – I: Nominal chipping size 13.2 mm**

**(I) Bitumen of VG-30**

Unit = sqm

Taking output = 900 sqm

**a) Labour**

Mate	day	2.60	391.00	1,016.60
Bitumen Sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	58.00	391.00	22,678.00
Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00
Add: 0.50 % of (a) Labour for sundries				134.12

**b) Machinery**

Bitumen boiler oil fired, capacity 1000 litre fitted with spray set	hour	2.25	222.00	499.50
Three wheel 80-100 kN static roller	hour	2.25	439.00	987.75

**c) Material**

Bitumen (VG-30) @ 1.00 kg per sqm	t	0.90	61,186.00	55,067.40
Crushed stone chipping, 13.2 mm nominal size @ 0.010 cum per sqm	cum	9.00	4,325.50	38,929.50

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**      **26,043.39**

**e) Contractor's profit @ 15 % on (a+b+c+d)**      **22,272.79**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**      **1,707.58**

Cost of 900 sqm = a+b+c+d+e+f      1,72,465.62

**Rate per sqm = (a+b+c+d+e+f)/900**      **191.63**

**say**      **191.60**

**(II) Bitumen of VG-10**

Unit = sqm

Taking output = 900 sqm

**a) Labour**

Mate	day	2.60	391.00	1,016.60
Bitumen Sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	58.00	391.00	22,678.00
Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00
Add: 0.50 % of (a) Labour for sundries				134.12

**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>b) Machinery</b>						
		Bitumen boiler oil fired, capacity 1000 litre fitted with spray set	hour	2.25	222.00	499.50
		Three wheel 80-100 kN static roller	hour	2.25	439.00	987.75
<b>c) Material</b>						
		Bitumen (VG-10) @ 1.00 kg per sqm	t	0.90	60,386.00	54,347.40
		Crushed stone chipping, 13.2 mm nominal size @ 0.010 cum per sqm	cum	9.00	4,325.50	38,929.50
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>						<b>25,890.24</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>22,141.82</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>1,697.54</b>
Cost of 900 sqm = a+b+c+d+e+f						1,71,451.46
<b>Rate per sqm = (a+b+c+d+e+f)/900</b>						<b>190.50</b>
						<b>say</b>
						<b><u>190.50</u></b>

**Case – II: Nominal chipping size 9.5 mm****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 1000 sqm

**a) Labour**

Mate	day	2.60	391.00	1,016.60
Bitumen Sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	58.00	391.00	22,678.00
Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00
Add: 0.50 % of (a) Labour for sundries				134.12

**b) Machinery**

Bitumen boiler oil fired, capacity 1000 litre fitted with spray set	hour	2.00	222.00	444.00
Three wheel 80-100 kN static roller	hour	2.00	439.00	878.00

**c) Material**

Bitumen (VG-30) @ 0.90 kg per sqm	t	0.90	61,186.00	55,067.40
Crushed stone chipping, 9.5 mm nominal size @ 0.008 cum per sqm	cum	8.00	4,237.30	33,898.40

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **24,938.12****e) Contractor's profit @ 15 % on (a+b+c+d)** **21,327.55****f) Add Cess @ 1.00 % on (a+b+c+d+e)** **1,635.11**

Cost of 1000 sqm = a+b+c+d+e+f 1,65,146.30

**Rate per sqm = (a+b+c+d+e+f)/1000** **165.15****say** **165.10****(II) Bitumen of VG-10**

Unit = sqm

Taking output = 1000 sqm



**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>a) Labour</b>						
		Mate	day	2.60	391.00	1,016.60
		Bitumen Sprayer	day	1.00	447.00	447.00
		Mazdoor (Unskilled)	day	58.00	391.00	22,678.00
		Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00
		Add: 0.50 % of (a) Labour for sundries				134.12
<b>b) Machinery</b>						
		Bitumen boiler oil fired, capacity 1000 litre fitted with spray set	hour	2.00	222.00	444.00
		Three wheel 80-100 kN static roller	hour	2.00	439.00	878.00
<b>c) Material</b>						
		Bitumen (VG-10) @ 0.90 kg per sqm	t	0.90	60,386.00	54,347.40
		Crushed stone chipping, 9.5 mm nominal size @ 0.008 cum per sqm	cum	8.00	4,237.30	33,898.40
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>24,784.98</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>21,196.57</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,625.07</b>
		Cost of 1000 sqm = a+b+c+d+e+f				1,64,132.14
		<b>Rate per sqm = (a+b+c+d+e+f)/1000</b>				<b>164.13</b>
					<b>say</b>	<b><u>164.10</u></b>

**(B) By Mechanical Means****Case – I: Nominal chipping size 13.2 mm****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 7500 sqm

**a) Labour**

Mate	day	0.44	391.00	172.04
Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
Mazdoor (Skilled)	day	2.00	475.00	950.00

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	6.00	386.00	2,316.00
Air compressor 210 cfm	hour	6.00	235.00	1,410.00
Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.00	4,064.00	24,384.00
Tipper 5.5 10 t capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.00	374.00	2,244.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Bitumen pressure distributor	hour	6.00	226.00	1,356.00
Three wheel 80-100 kN static roller weight	hour	18.75	439.00	8,231.25

**c) Material**

Bitumen (VG-30) @ 1.00 kg per sqm	t	7.50	61,186.00	4,58,895.00
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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Crushed stone chipping, 13.2 mm nominal size @ 0.010 cum per sqm	cum	75.00	4,325.50	3,24,412.50
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,77,406.64</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,51,721.47</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>11,631.98</b>
		Cost of 7500 sqm = a+b+c+d+e+f				11,74,829.88
		<b>Rate per sqm = (a+b+c+d+e+f)/7500</b>				<b>156.64</b>
					<b>say</b>	<b><u>156.60</u></b>
<b>(II) Bitumen of VG-10</b>						
		Unit = sqm				
		Taking output = 7500 sqm				
		<b>a) Labour</b>				
		Mate	day	0.44	391.00	172.04
		Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
		Mazdoor (Skilled)	day	2.00	475.00	950.00
		<b>b) Machinery</b>				
		Hydraulic broom @ 1250 sqm per hour	hour	6.00	386.00	2,316.00
		Air compressor 210 cfm	hour	6.00	235.00	1,410.00
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.00	4,064.00	24,384.00
		Tipper 5.5 10 t capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.00	374.00	2,244.00
		Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
		Bitumen pressure distributor	hour	6.00	226.00	1,356.00
		Three wheel 80-100 kN static roller weight	hour	18.75	439.00	8,231.25
		<b>c) Material</b>				
		Bitumen (VG-10) @ 1.00 kg per sqm	t	7.50	60,386.00	4,52,895.00
		Crushed stone chipping, 13.2 mm nominal size @ 0.010 cum per sqm	cum	75.00	4,325.50	3,24,412.50
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,76,130.44</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,50,630.04</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>11,548.30</b>
		Cost of 7500 sqm = a+b+c+d+e+f				11,66,378.57
		<b>Rate per sqm = (a+b+c+d+e+f)/7500</b>				<b>155.52</b>
					<b>say</b>	<b><u>155.50</u></b>

**Case – II: Nominal chipping size 9.5 mm****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 7500 sqm

**a) Labour**

Mate	day	0.44	391.00	172.04
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**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
		Mazdoor (Skilled)	day	2.00	475.00	950.00
<b>b) Machinery</b>						
		Hydraulic broom @ 1250 sqm per hour	hour	6.00	386.00	2,316.00
		Air compressor 210 cfm	hour	6.00	235.00	1,410.00
		Hydraulic self propelled chips spreader @ 1500 sqm per hour	hour	6.00	4,064.00	24,384.00
		Tipper 5.5 10 t capacity for carriage of stone chips from stockpile on road side to chips spreader	hour	6.00	374.00	2,244.00
		Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.00	226.00	1,356.00
		Three wheel 80-100 kN static roller weight	hour	15.00	439.00	6,585.00
<b>c) Material</b>						
		Bitumen (VG-30) @ 0.90 kg per sqm	t	6.75	61,186.00	4,13,005.50
		Crushed stone chipping, 9.5 mm nominal size @ 0.008 cum per sqm	cum	60.00	4,237.30	2,54,238.00
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>1,52,369.67</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>1,30,309.38</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>9,990.39</b>
Cost of 7500 sqm = a+b+c+d+e+f						10,09,028.98
<b>Rate per sqm = (a+b+c+d+e+f)/7500</b>						<b>134.54</b>
						<b>say</b> <b><u>134.50</u></b>

**(II) Bitumen of VG-10**

Unit = sqm

Taking output = 7500 sqm

**a) Labour**

Mate	day	0.44	391.00	172.04
Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
Mazdoor (Skilled)	day	2.00	475.00	950.00

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	6.00	386.00	2,316.00
Air compressor 210 cfm	hour	6.00	235.00	1,410.00
Hydraulic self propelled chips spreader @ 1500 sqm per hour	hour	6.00	4,064.00	24,384.00
Tipper 5.5 10 t capacity for carriage of stone chips from stockpile on road side to chips spreader	hour	6.00	374.00	2,244.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Bitumen pressure distributor @ 1750 sqm per hour	hour	6.00	226.00	1,356.00
Three wheel 80-100 kN static roller weight	hour	15.00	439.00	6,585.00

**c) Material**

**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Bitumen (VG-10) @ 0.90 kg per sqm	t	6.75	60,386.00	4,07,605.50
		Crushed stone chipping, 9.5 mm nominal size @ 0.008 cum per sqm	cum	60.00	4,237.30	2,54,238.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,51,221.09</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,29,327.10</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>9,913.36</b>
		Cost of 7500 sqm = a+b+c+d+e+f				10,01,421.09
		<b>Rate per sqm = (a+b+c+d+e+f)/7500</b>				<b>133.52</b>
					<b>say</b>	<b><u>133.50</u></b>

**5.6 507 Surface Dressing using Bitumen Emulsion**

Providing and laying surface dressing as wearing course consisting of a layer of bitumen emulsion laid on the prepared surface, followed by a cover of crushed stone chippings of specified size and rolling with three wheel 80-100 kN static roller including cleaning the road surface as per MoRD Technical Specification Clause 507.

**(A) By Manual Means**

**Case – I: Nominal aggregate size 13.2 mm**

Unit = sqm

Taking output = 900 sqm

**a) Labour**

Mate	day	2.36	391.00	922.76
Bitumen Emulsion Sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	58.00	391.00	22,678.00
Add: 0.50 % of (a) Labour for sundries				120.24

**b) Machinery**

Bitumen emulsion sprayer, capacity 1000 litre fitted with spray set	hour	2.25	226.00	508.50
Three wheel 80-100 kN static roller	hour	2.25	439.00	987.75

**c) Material**

Bitumen Emulsion (RS-1) @ 1.50 kg per sqm	t	1.35	57,286.00	77,336.10
Crushed stone chipping, 13.2 mm nominal size @ 0.010 cum per sqm	cum	9.00	4,325.50	38,929.50

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **30,188.48**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **25,817.75**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **1,979.36**

Cost of 900 sqm = a+b+c+d+e+f 1,99,915.44

**Rate per sqm = (a+b+c+d+e+f)/900** **222.13**

**say** **222.10**

**Case – II: Nominal chipping size 9.5 mm**

Unit = sqm

Taking output = 1000 sqm

**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>a) Labour</b>						
		Mate	day	2.36	391.00	922.76
		Bitumen Sprayer	day	1.00	447.00	447.00
		Mazdoor (Unskilled)	day	58.00	391.00	22,678.00
		Add: 0.50 % of (a) Labour for sundries				120.24
<b>b) Machinery</b>						
		Emulsion sprayer, capacity 1000 litre fitted with spray set	hour	2.00	226.00	452.00
		Three wheel 80-100 kN static roller	hour	2.00	439.00	878.00
<b>c) Material</b>						
		Bitumen Emulsion (RS-1) @ 1.40 kg per sqm	t	1.40	57,286.00	80,200.40
		Crushed stone chipping, 9.5 mm nominal size @ 0.008 cum per sqm	cum	8.00	4,237.30	33,898.40
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>						<b>29,692.24</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>25,393.36</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>1,946.82</b>
Cost of 1000 sqm = a+b+c+d+e+f						1,96,629.22
<b>Rate per sqm = (a+b+c+d+e+f)/1000</b>						<b>196.63</b>
						<b>say</b>
						<b><u>196.60</u></b>

**(B) By Mechanical Means****Case – I: Nominal chipping size 13.2 mm**

Unit = sqm

Taking output = 7500 sqm

**a) Labour**

Mate	day	0.44	391.00	172.04
Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
Mazdoor (Skilled)	day	2.00	475.00	950.00

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	6.00	386.00	2,316.00
Air compressor 210 cfm	hour	6.00	235.00	1,410.00
Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.00	4,064.00	24,384.00
Tipper 5.5 10 t capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.00	374.00	2,244.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Bitumen Emulsion pressure distributor	hour	6.00	226.00	1,356.00
Three wheel 80-100 kN static roller	hour	18.75	439.00	8,231.25

**c) Material**

Bitumen Emulsion (RS-1) @ 1.50 kg per sqm	t	11.25	57,286.00	6,44,467.50
Crushed stone chipping, 13.2 mm nominal size @ 0.010 cum per sqm	cum	75.00	4,237.30	3,17,797.50

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				2,15,470.90
		e) Contractor's profit @ 15 % on (a+b+c+d)				1,84,274.73
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				14,127.73
		Cost of 7500 sqm = a+b+c+d+e+f				14,26,900.65
		<b>Rate per sqm = (a+b+c+d+e+f)/7500</b>				<b>190.25</b>
					<b>say</b>	<b><u>190.30</u></b>

**Case – II: Nominal chipping size 9.5 mm**

Unit = sqm

Taking output = 7500 sqm

**a) Labour**

Mate	day	0.44	391.00	172.04
Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
Mazdoor (Skilled)	day	2.00	475.00	950.00

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	6.00	386.00	2,316.00
Air compressor 210 cfm	hour	6.00	235.00	1,410.00
Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.00	4,064.00	24,384.00
Tipper 5.5 10 t capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.00	374.00	2,244.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	6.00	226.00	1,356.00
Three wheel 80-100 kN static roller	hour	15.00	439.00	6,585.00

**c) Material**

Bitumen Emulsion (RS-1) @ 1.40 kg per sqm	t	10.50	57,286.00	6,01,503.00
Crushed stone chipping, 9.5 mm nominal size @ 0.008 cum per sqm	cum	60.00	4,237.30	2,54,238.00

d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 1,92,463.09

e) Contractor's profit @ 15 % on (a+b+c+d) 1,64,598.02

f) Add Cess @ 1.00 % on (a+b+c+d+e) 12,619.18

Cost of 7500 sqm = a+b+c+d+e+f 12,74,537.33

**Rate per sqm = (a+b+c+d+e+f)/7500** **169.94**

**say** **169.90**

**5.7 507.2.5 Pre-coating Chips**

Pre-coating chips with 1 percent of paving bitumen by weight of chips in a suitable mixer duly heated to 160° C as per Technical Specification Clause 507.2.5.

Unit = cum

Taking output = 30 cum

**a) Labour**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	0.60	391.00	234.60
		Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
		<b>b) Machinery</b>				
		Bitumen boiler oil fired, capacity 1000 litre itre	hour	6.00	222.00	1,332.00
		Mixall 6-10 t capacity	hour	6.00	857.00	5,142.00
		<b>c) Material</b>				
		Bitumen (VG-30) @1.00% by weight of chips (30x1.6)/100	t	0.48	61,186.00	29,369.28
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>8,921.25</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>7,629.62</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>584.94</b>
		Cost of 30 cum = a+b+c+d+e+f				59,078.69
		<b>Rate per cum = (a+b+c+d+e+f)/30</b>				<b>1,969.29</b>
					<b>say</b>	<b><u>1969.30</u></b>

**5.8 508 20 mm thick Open-Graded Premix Carpet using Bituminous (viscosity grade/ modified bitumen) Binder**

Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using viscosity grade bitumen 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 three wheel 80 - 100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C or Type D as per MoRD Technical Specification Clause 508.

**Case - I: By Manual Means**

**(I) Bitumen of VG-30**

Unit = sqm

Taking output = 500 sqm (10 cum)

**a) Labour**

Mate	day	1.08	391.00	422.28
Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00

**b) Machinery**

Mixall 6/10 t capacity	hour	4.00	857.00	3,428.00
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	4.00	222.00	888.00
Three wheel 80-100 kN static roller	hour	2.00	439.00	878.00

**c) Material**

Bitumen (VG-30) @ 14.60 kg per 10 sqm	t	0.73	61,186.00	44,665.78
Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	13.50	4,325.50	58,394.25

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **25,432.39**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		e) Contractor's profit @ 15 % on (a+b+c+d)				21,750.26
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				1,667.52
		Cost of 500 sqm = a+b+c+d+e+f				1,68,419.48
		<b>Rate per sqm = (a+b+c+d+e+f)/500</b>				<b>336.84</b>
					<b>say</b>	<b><u>336.80</u></b>
 (II) Bitumen of VG-10						
		Unit = sqm				
		Taking output = 500 sqm (10 cum)				
		<b>a) Labour</b>				
		Mate	day	1.08	391.00	422.28
		Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
		Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00
		<b>b) Machinery</b>				
		Mixall 6/10 t capacity	hour	4.00	857.00	3,428.00
		Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	4.00	222.00	888.00
		Three wheel 80-100 kN static roller	hour	2.00	439.00	878.00
		<b>c) Material</b>				
		Bitumen (VG-10) @ 14.60 kg per 10 sqm	t	0.73	60,386.00	44,081.78
		Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	13.50	4,325.50	58,394.25
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>25,308.18</b>
		e) Contractor's profit @ 15 % on (a+b+c+d)				<b>21,644.02</b>
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				<b>1,659.38</b>
		Cost of 500 sqm = a+b+c+d+e+f				1,67,596.88
		<b>Rate per sqm = (a+b+c+d+e+f)/500</b>				<b>335.19</b>
					<b>say</b>	<b><u>335.20</u></b>

**Case - II: By Mechanical Means****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 4000 sqm (80 cum)

**a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor (Skilled)	day	3.00	475.00	1,425.00

**b) Machinery**

HMP 30/40 t per hour	hour	6.00	9,968.00	59,808.00
Electric generator set 125 KVA	hour	6.00	498.00	2,988.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Tipper 5.5 10 t capacity	hour	3.64	374.00	1,361.36



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Paver finisher	hour	6.00	1,176.00	7,056.00
		Three wheel 80-100 kN static roller	hour	16.00	439.00	7,024.00
		<b>c) Material</b>				
		Bitumen (VG-30) @ 14.60 kg per 10 sqm	t	5.84	61,186.00	3,57,326.24
		Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	108.00	4,325.50	4,67,154.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,94,500.52</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,66,340.47</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>12,752.77</b>
		Cost of 4000 sqm = a+b+c+d+e+f				12,88,029.68
		<b>Rate per sqm = (a+b+c+d+e+f)/4000</b>				<b>322.01</b>
					<b>say</b>	<b><u>322.00</u></b>
		<b>(II) Bitumen of VG-10</b>				
		Unit = sqm				
		Taking output = 4000 sqm (80 cum)				
		<b>a) Labour</b>				
		Mate	day	0.52	391.00	203.32
		Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
		Mazdoor (Skilled)	day	3.00	475.00	1,425.00
		<b>b) Machinery</b>				
		HMP 30/40 t per hour	hour	6.00	9,968.00	59,808.00
		Electric generator set 125 KVA	hour	6.00	498.00	2,988.00
		Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
		Tipper 5.5 10 t capacity	hour	3.64	374.00	1,361.36
		Paver finisher	hour	6.00	1,176.00	7,056.00
		Three wheel 80-100 kN static roller	hour	16.00	439.00	7,024.00
		<b>c) Material</b>				
		Bitumen (VG-10) @ 14.60 kg per 10 sqm	t	5.84	60,386.00	3,52,654.24
		Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	108.00	4,325.50	4,67,154.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,93,506.79</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,65,490.61</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>12,687.61</b>
		Cost of 4000 sqm = a+b+c+d+e+f				12,81,448.92
		<b>Rate per sqm = (a+b+c+d+e+f)/4000</b>				<b>320.36</b>
					<b>say</b>	<b><u>320.40</u></b>
<b>5.9</b>	<b>508.2</b>	<b>20 mm thick Open Graded Premix Carpet using Bitumen Emulsion as per MoRD Technical Specification Clause 508.2.</b>				

**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Providing , laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates using bitumen 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 three wheel 80 - 100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C or Type D as per MoRD Technical Specification Clause 508.2.

Unit = sqm

Taking output = 900 sqm (24.3 cum)

**a) Labour**

Mate	day	0.80	391.00	312.80
Mazdoor (Unskilled)	day	18.00	391.00	7,038.00
Mazdoor (Skilled)	day	2.00	475.00	950.00

**b) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	6.00	215.00	1,290.00
Three wheel 80-100 kN static roller	hour	3.60	439.00	1,580.40

**c) Material**

Bitumen emulsion (RS-1) @ 21.50 kg per 10 sqm	t	1.94	57,286.00	1,11,134.84
Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.30	4,325.50	1,05,109.65

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d) 48,371.32**

**e) Contractor's profit @ 15 % on (a+b+c+d) 41,368.05**

**f) Add Cess @ 1.00 % on (a+b+c+d+e) 3,171.55**

Cost of 900 sqm = a+b+c+d+e+f 3,20,326.61

**Rate per sqm = (a+b+c+d+e+f)/900 355.92**

**say 355.90**

**5.10 509 Mix Seal Surfacing**

Providing , laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.9 mm (Type-A) or 13.2 mm to 0.9 mm (Type-B) aggregates using viscosity grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base , including mixing in a suitable plant, laying and rolling with a three wheel 80 - 100 kN static roller , finishing to required level and grades as per MoRD Technical Specification Clause 509.

**(A) By Manual Means**

**i) Type A**

**(I) Bitumen of VG-30**

Unit = sqm

Taking output = 500 sqm

**a) Labour**

Mate	day	1.40	391.00	547.40
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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
		Mazdoor (Semi-Skilled)	day	7.00	447.00	3,129.00
		<b>b) Machinery</b>				
		Mixall 6-10 t capacity	hour	6.00	857.00	5,142.00
		Oil fired bitumen boiler 1000 litre capacity fitted with spray set	hour	6.00	222.00	1,332.00
		Three wheel 80-100 kN static roller	hour	6.00	439.00	2,634.00
		<b>c) Material</b>				
		Bitumen (VG-30) @ 22.00 kg per 10 sqm	t	1.10	61,186.00	67,304.60
		Stone crushed aggregates 11.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	13.50	4,501.80	60,774.30
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>31,708.10</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>27,117.36</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>2,079.00</b>
		Cost of 500 sqm = a+b+c+d+e+f				2,09,978.76
		<b>Rate per sqm = (a+b+c+d+e+f)/500</b>				<b>419.96</b>
					<b>say</b>	<b><u>420.00</u></b>

**(II) Bitumen of VG-10**

Unit = sqm

Taking output = 500 sqm

**a) Labour**

Mate	day	1.40	391.00	547.40
Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
Mazdoor (Semi-Skilled)	day	7.00	447.00	3,129.00

**b) Machinery**

Mixall 6-10 t capacity	hour	6.00	857.00	5,142.00
Oil fired bitumen boiler 1000 litre capacity fitted with spray set	hour	6.00	222.00	1,332.00
Three wheel 80-100 kN static roller	hour	6.00	439.00	2,634.00

**c) Material**

Bitumen (VG-10) @ 22.00 kg per 10 sqm	t	1.10	60,386.00	66,424.60
Stone crushed aggregates 11.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	13.50	4,501.80	60,774.30

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)****31,520.93****e) Contractor's profit @ 15 % on (a+b+c+d)****26,957.28****f) Add Cess @ 1.00 % on (a+b+c+d+e)****2,066.73**

Cost of 500 sqm = a+b+c+d+e+f

2,08,739.24

**Rate per sqm = (a+b+c+d+e+f)/500****417.48****say****417.50****ii) Type B**

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>(I) Bitumen of VG-30</b>						
Unit = sqm						
Taking output = 500 sqm						
<b>a) Labour</b>						
		Mate	day	1.40	391.00	547.40
		Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
		Mazdoor (Semi-Skilled)	day	7.00	447.00	3,129.00
<b>b) Machinery</b>						
		Mixall 6-10 t capacity	hour	6.00	857.00	5,142.00
		Oil fired bitumen boiler 1000 litre capacity fitted with spray set	hour	6.00	222.00	1,332.00
		Three wheel 80-100 kN static roller	hour	6.00	439.00	2,634.00
<b>c) Material</b>						
		Bitumen (VG-30) @ 19.00 kg per 10 sqm	t	0.95	61,186.00	58,126.70
		Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27cum per 10 sqm	cum	13.50	4,501.80	60,774.30
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>29,755.96</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>25,447.85</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,951.00</b>
		Cost of 500 sqm = a+b+c+d+e+f				1,97,051.22
		<b>Rate per sqm = (a+b+c+d+e+f)/500</b>				<b>394.10</b>
					<b>say</b>	<b><u>394.10</u></b>
<b>(II) Bitumen of VG-10</b>						
Unit = sqm						
Taking output = 500 sqm						
<b>a) Labour</b>						
		Mate	day	1.40	391.00	547.40
		Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
		Mazdoor (Semi-Skilled)	day	7.00	447.00	3,129.00
<b>b) Machinery</b>						
		Mixall 6-10 t capacity	hour	6.00	857.00	5,142.00
		Oil fired bitumen boiler 1000 litre capacity fitted with spray set	hour	6.00	222.00	1,332.00
		Three wheel 80-100 kN static roller	hour	6.00	439.00	2,634.00
<b>c) Material</b>						
		Bitumen (VG-10) @ 19.00 kg per 10 sqm	t	0.95	60,386.00	57,366.70
		Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27cum per 10 sqm	cum	13.50	4,501.80	60,774.30
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>29,594.31</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>25,309.61</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,940.40</b>
		Cost of 500 sqm = a+b+c+d+e+f				1,95,980.72

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>Rate per sqm = (a+b+c+d+e+f)/500</b>				<b>391.96</b>
					<b>say</b>	<b><u>392.00</u></b>

**B. By Mechanical Means****i) Type A****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 4000 sqm (80 cum)

**a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor (Skilled)	day	3.00	475.00	1,425.00

**b) Machinery**

HMP of appropriate capacity	hour	6.00	9,968.00	59,808.00
Electric generator set 125 KVA	hour	6.00	498.00	2,988.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Tipper 5.5 10 t capacity	hour	3.60	374.00	1,346.40
Paver finisher	hour	6.00	1,176.00	7,056.00
Three wheel 80-100 kN static roller	hour	18.00	439.00	7,902.00

**c) Material**

Bitumen (VG-30) @ 22.00 kg per 10 sqm	t	8.80	61,186.00	5,38,436.80
Stone crushed aggregates 11.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	108.00	4,501.80	4,86,194.40

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 2,37,256.20****e) Contractor's profit @ 15 % on (a+b+c+d) 2,02,905.92****f) Add Cess @ 1.00 % on (a+b+c+d+e) 15,556.12**Cost of 4000 sqm = a+b+c+d+e+f 15,71,168.16**Rate per sqm = (a+b+c+d+e+f)/4000 392.79****say 392.80****(II) Bitumen of VG-10**

Unit = sqm

Taking output = 4000 sqm (80 cum)

**a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor (Skilled)	day	3.00	475.00	1,425.00

**b) Machinery**

HMP of appropriate capacity	hour	6.00	9,968.00	59,808.00
Electric generator set 125 KVA	hour	6.00	498.00	2,988.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Tipper 5.5 10 t capacity	hour	3.60	374.00	1,346.40

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Paver finisher	hour	6.00	1,176.00	7,056.00
		Three wheel 80-100 kN static roller	hour	18.00	439.00	7,902.00
		<b>c) Material</b>				
		Bitumen (VG-10) @ 22.00 kg per 10 sqm	t	8.80	60,386.00	5,31,396.80
		Stone crushed aggregates 11.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	108.00	4,501.80	4,86,194.40
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,35,758.79</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>2,01,625.31</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>15,457.94</b>
		Cost of 4000 sqm = a+b+c+d+e+f				15,61,251.96
		<b>Rate per sqm = (a+b+c+d+e+f)/4000</b>				<b>390.31</b>
					<b>say</b>	<b><u>390.30</u></b>

**ii) Type B****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 4000 sqm (80 cum)

**a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor (Skilled)	day	3.00	475.00	1,425.00

**b) Machinery**

HMP 30/40 t per hour	hour	6.00	9,968.00	59,808.00
Electric generator set 125 KVA	hour	6.00	498.00	2,988.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Tipper 5.5 10 t capacity	hour	3.60	374.00	1,346.40
Paver finisher	hour	6.00	1,176.00	7,056.00
Three wheel 80-100 kN static roller	hour	18.00	439.00	7,902.00

**c) Material**

Bitumen (VG-30) @ 19.00 kg per 10 sqm	t	7.60	61,186.00	4,65,013.60
Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	108.00	4,501.80	4,86,194.40

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **2,21,639.08****e) Contractor's profit @ 15 % on (a+b+c+d)** **1,89,549.87****f) Add Cess @ 1.00 % on (a+b+c+d+e)** **14,532.16**

Cost of 4000 sqm = a+b+c+d+e+f 14,67,747.83

**Rate per sqm = (a+b+c+d+e+f)/4000** **366.94****say** **366.90****(II) Bitumen of VG-10**

Unit = sqm

Taking output = 4000 sqm (80 cum)

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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour</b>				
		Mate	day	0.52	391.00	203.32
		Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
		Mazdoor (Skilled)	day	3.00	475.00	1,425.00
		<b>b) Machinery</b>				
		HMP 30/40 t per hour	hour	6.00	9,968.00	59,808.00
		Electric generator set 125 KVA	hour	6.00	498.00	2,988.00
		Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
		Tipper 5.5 10 t capacity	hour	3.60	374.00	1,346.40
		Paver finisher	hour	6.00	1,176.00	7,056.00
		Three wheel 80-100 kN static roller	hour	18.00	439.00	7,902.00
		<b>c) Material</b>				
		Bitumen (VG-10) @ 19.00 kg per 10 sqm	t	7.60	60,386.00	4,58,933.60
		Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	108.00	4,501.80	4,86,194.40
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,20,345.87</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,88,443.89</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>14,447.36</b>
		Cost of 4000 sqm = a+b+c+d+e+f				14,59,183.84
		<b>Rate per sqm = (a+b+c+d+e+f)/4000</b>				<b>364.80</b>
					<b>say</b>	<b><u>364.80</u></b>

**5.11 510 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 or Type B or Type C or Type D as per MoRD Technical Specification Clause 510.

**A. By Manual Means**

**Case - I : Type A**

**(I) Bitumen of VG-30**

Unit = sqm

Taking output = 1100 sqm

**a) Labour**

Mate	day	1.15	391.00	449.65
Bitumen Sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	22.00	391.00	8,602.00
Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00

**b) Machinery**

Bitumen boiler oil fired, capacity 1000 litre fitted with spray set	hour	2.20	226.00	497.20
Three wheel 80-100 kN static roller	hour	2.20	439.00	965.80

**c) Material**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Bitumen (VG-30) @ 9.80 kg per 10 sqm	t	1.078	61,186.00	65,958.51
		Crushed stone chipping of 6.7 mm size 100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	9.90	3,972.90	39,331.71
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>25,297.23</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>21,634.67</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,658.66</b>
		Cost of 1100 sqm = a+b+c+d+e+f				1,67,524.42
		<b>Rate per sqm = (a+b+c+d+e+f)/1100</b>				<b>152.29</b>
					<b>say</b>	<b><u>152.30</u></b>

**(II) Bitumen of VG-10**

Unit = sqm

Taking output = 1100 sqm

**a) Labour**

Mate	day	1.15	391.00	449.65
Bitumen Sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	22.00	391.00	8,602.00
Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00

**b) Machinery**

Bitumen boiler oil fired, capacity 1000 litre fitted with spray set	hour	2.20	226.00	497.20
Three wheel 80-100 kN static roller	hour	2.20	439.00	965.80

**c) Material**

Bitumen (VG-10) @ 9.80 kg per 10 sqm	t	1.078	60,386.00	65,096.11
Crushed stone chipping of 6.7 mm size 100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	9.90	3,972.90	39,331.71

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **25,113.80****e) Contractor's profit @ 15 % on (a+b+c+d)** **21,477.79****f) Add Cess @ 1.00 % on (a+b+c+d+e)** **1,646.63**

Cost of 1100 sqm = a+b+c+d+e+f 1,66,309.69

**Rate per sqm = (a+b+c+d+e+f)/1100** **151.19****say** **151.20****Case - II : Type B****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 1250 sqm

**a) Labour**

Mate	day	0.85	391.00	332.35
Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
Mazdoor (Semi-Skilled)	day	2.00	447.00	894.00



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>b) Machinery</b>						
		Mixall 6/10 t capacity	hour	2.50	857.00	2,142.50
		Three wheel 80-100 kN static roller	hour	2.50	439.00	1,097.50
		Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.50	222.00	555.00
<b>c) Material</b>						
		Bitumen (VG-30) @ 6.80 kg per 10 sqm	t	0.85	61,186.00	52,008.10
		Crushed stone or grit as passing 2.36 mm sieve and retained on 180 micron sieve applied @ 0.06 cum per 10 sqm	cum	7.50	2,252.60	16,894.50
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>16,971.11</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>14,514.01</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>1,112.74</b>
Cost of 1250 sqm = a+b+c+d+e+f						1,12,386.81
<b>Rate per sqm = (a+b+c+d+e+f)/1250</b>						<b>89.91</b>
						<b>say</b>
						<b><u>89.90</u></b>
<b>(II) Bitumen of VG-10</b>						
Unit = sqm						
Taking output = 1250 sqm						
<b>a) Labour</b>						
		Mate	day	0.85	391.00	332.35
		Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
		Mazdoor (Semi-Skilled)	day	2.00	447.00	894.00
<b>b) Machinery</b>						
		Mixall 6/10 t capacity	hour	2.50	857.00	2,142.50
		Three wheel 80-100 kN static roller	hour	2.50	439.00	1,097.50
		Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.50	222.00	555.00
<b>c) Material</b>						
		Bitumen (VG-10) @ 6.80 kg per 10 sqm	t	0.85	60,386.00	51,328.10
		Crushed stone or grit as passing 2.36 mm sieve and retained on 180 micron sieve applied @ 0.06 cum per 10 sqm	cum	7.50	2,252.60	16,894.50
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>16,826.47</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>14,390.31</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>1,103.26</b>
Cost of 1250 sqm = a+b+c+d+e+f						1,11,428.99
<b>Rate per sqm = (a+b+c+d+e+f)/1250</b>						<b>89.14</b>
						<b>say</b>
						<b><u>89.10</u></b>
<b>Case - III : Type C</b>						
<b>(I) Bitumen of VG-30</b>						
Unit = sqm						
Taking output = 1100 sqm						

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>a) Labour</b>						
		Mate	day	1.15	391.00	449.65
		Bitumen Sprayer	day	1.00	447.00	447.00
		Mazdoor (Unskilled)	day	22.00	391.00	8,602.00
		Mazdoor (Semi-Skilled)	day	5.00	447.00	2,235.00
<b>b) Machinery</b>						
		Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.20	222.00	488.40
		Three wheel 80-100 kN static roller	hour	2.20	439.00	965.80
<b>c) Material</b>						
		Bitumen (VG-30) @ 6.50 kg per 10 sqm	t	0.715	61,186.00	43,747.99
		Crushed stone chipping of 6.7 mm size defined as 100% passing 9.5 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm.	cum	9.90	3,972.90	39,331.71
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>20,476.11</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>17,511.55</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,342.55</b>
		Cost of 1100 sqm = a+b+c+d+e+f				1,35,597.76
		<b>Rate per sqm = (a+b+c+d+e+f)/1100</b>				<b>123.27</b>
					<b>say</b>	<b><u>123.30</u></b>
<b>(II) Bitumen of VG-10</b>						
		Unit = sqm				
		Taking output = 1100 sqm				
<b>a) Labour</b>						
		Mate	day	1.15	391.00	449.65
		Bitumen Sprayer	day	1.00	447.00	447.00
		Mazdoor (Unskilled) for carrying of chips & spraying	day	22.00	391.00	8,602.00
		Mazdoor (Semi-Skilled)	day	5.00	447.00	2,235.00
<b>b) Machinery</b>						
		Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.20	222.00	488.40
		Three wheel 80-100 kN static roller	hour	2.20	439.00	965.80
<b>c) Material</b>						
		Bitumen (VG-10) @ 6.50 kg per 10 sqm	t	0.715	60,386.00	43,175.99
		Crushed stone chipping of 6.7 mm size defined as 100% passing 9.5 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm.	cum	9.90	3,972.90	39,331.71
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>20,354.44</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>17,407.50</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,334.57</b>
		Cost of 1100 sqm = a+b+c+d+e+f				1,34,792.07
		<b>Rate per sqm = (a+b+c+d+e+f)/1100</b>				<b>122.54</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
					<b>say</b>	<b><u>122.50</u></b>

**Case - IV : Type D (premix with fine sand)****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 1250 sqm

**a) Labour**

Mate	day	0.85	391.00	332.35
Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
Mazdoor (Semi-Skilled)	day	2.00	447.00	894.00

**b) Machinery**

Mixall 6/10 t capacity	hour	2.50	857.00	2,142.50
Three wheel 80-100 kN static roller	hour	2.50	439.00	1,097.50
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.50	222.00	555.00

**c) Material**

Bitumen (VG-30) @ 6.80 kg per 10 sqm	t	0.850	61,186.00	52,008.10
Sand (fine) applied @ 0.06 cum per 10 sqm	cum	7.50	740.00	5,550.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 14,558.13**

**e) Contractor's profit @ 15 % on (a+b+c+d) 12,450.39**

**f) Add Cess @ 1.00 % on (a+b+c+d+e) 954.53**

Cost of 1250 sqm = a+b+c+d+e+f 96,407.50

**Rate per sqm = (a+b+c+d+e+f)/1250 77.13**

**say 77.10**

**(II) Bitumen of VG-10**

Unit = sqm

Taking output = 1250 sqm

**a) Labour**

Mate	day	0.85	391.00	332.35
Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
Mazdoor (Semi-Skilled)	day	2.00	447.00	894.00

**b) Machinery**

Mixall 6/10 t capacity	hour	2.50	857.00	2,142.50
Three wheel 80-100 kN static roller	hour	2.50	439.00	1,097.50
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.50	222.00	555.00

**c) Material**

Bitumen (VG-10) @ 6.80 kg per 10 sqm	t	0.850	60,386.00	51,328.10
Sand (fine) applied @ 0.06 cum per 10 sqm	cum	7.50	740.00	5,550.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 14,413.50**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		e) Contractor's profit @ 15 % on (a+b+c+d)				<b>12,326.69</b>
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				<b>945.05</b>
		Cost of 1250 sqm = a+b+c+d+e+f				95,449.69
		<b>Rate per sqm = (a+b+c+d+e+f)/1250</b>				<b>76.36</b>
					<b>say</b>	<b><u>76.40</u></b>

**B. By Mechanical Means****Case - I : Type A****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 7500 sqm (67.5 cum)

**a) Labour**

Mate	day	0.24	391.00	93.84
Mazdoor (Unskilled)	day	6.00	391.00	2,346.00

**b) Machinery**

Hydraulic self propelled chips spreader	hour	6.00	4,064.00	24,384.00
Tipper 5.5 / 10 t capacity for carriage of stone chips from stockpile on the road to chip spreader	hour	6.00	374.00	2,244.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Bitumen pressure distributor	hour	6.00	226.00	1,356.00
Three wheel 80-100 kN static roller	hour	15.00	439.00	6,585.00

**c) Material**

Bitumen (VG-30) @ 9.80 kg per 10 sqm	t	7.35	61,186.00	4,49,717.10
Crushed stone chipping of 6.7 mm size 100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	67.50	3,972.90	2,68,170.75

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **1,61,881.01**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **1,38,443.66**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **10,614.01**

Cost of 7500 sqm = a+b+c+d+e+f 10,72,015.37

**Rate per sqm = (a+b+c+d+e+f)/7500** **142.94**

**say** **142.90**

**(II) Bitumen of VG-10**

Unit = sqm

Taking output = 7500 sqm (67.5 cum)

**a) Labour**

Mate	day	0.24	391.00	93.84
Mazdoor (Unskilled)	day	6.00	391.00	2,346.00

**b) Machinery**

Hydraulic self propelled chips spreader	hour	6.00	4,064.00	24,384.00
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**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Tipper 5.5 / 10 t capacity for carriage of stone chips from stockpile on the road to chip spreader	hour	6.00	374.00	2,244.00
		Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
		Bitumen pressure distributor	hour	6.00	226.00	1,356.00
		Three wheel 80-100 kN static roller	hour	15.00	439.00	6,585.00
<b>c) Material</b>						
		Bitumen (VG-10) @ 9.80 kg per 10 sqm	t	7.35	60,386.00	4,43,837.10
		Crushed stone chipping of 6.7 mm size 100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	67.50	3,972.90	2,68,170.75
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>1,60,630.34</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>1,37,374.05</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>10,532.01</b>
Cost of 7500 sqm = a+b+c+d+e+f						10,63,733.09
<b>Rate per sqm = (a+b+c+d+e+f)/7500</b>						<b>141.83</b>
						<b>say <u>141.80</u></b>

**Note:** Since seal coat is provided immediately over the bituminous layers, Hydraulic broom for cleaning has not been catered.

**510 Case - II : Type B**

**(I) Bitumen of VG-30**

Unit = sqm

Taking output = 5000 sqm (30 cum)

**a) Labour**

Mate	day	0.16	391.00	62.56
Mazdoor (Unskilled)	day	4.00	391.00	1,564.00

**b) Machinery**

HMP of 30/40 t per hour	hour	2.00	9,968.00	19,936.00
Electric generator set 125 KVA	hour	2.00	498.00	996.00
Front end loader 1 cum bucket capacity	hour	2.00	1,030.00	2,060.00
Tipper 5.5 /10 t capacity	hour	1.36	374.00	508.64
Paver finisher	hour	2.00	1,176.00	2,352.00
Three wheel 80-100 kN static roller	hour	10.00	439.00	4,390.00

**c) Material**

Bitumen (VG-30) @ 6.80 kg per 10 sqm	t	3.40	61,186.00	2,08,032.40
Crushed stone or grit passing 2.36 mm sieve and retained on 180 micron sieve applied @ 0.06 cum per 10 sqm	cum	30.00	2,252.60	67,578.00

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **65,400.91**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **55,932.08**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **4,288.13**

Cost of 5000 sqm = a+b+c+d+e+f **4,33,100.71**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>Rate per sqm = (a+b+c+d+e+f)/5000</b>				<b>86.62</b>
					<b>say</b>	<b><u>86.60</u></b>
 (II) <b>Bitumen of VG-10</b>						
Unit = sqm						
Taking output = 5000 sqm (30 cum)						
<b>a) Labour</b>						
		Mate	day	0.16	391.00	62.56
		Mazdoor (Unskilled)	day	4.00	391.00	1,564.00
<b>b) Machinery</b>						
		HMP of 30/40 t per hour	hour	2.00	9,968.00	19,936.00
		Electric generator set 125 KVA	hour	2.00	498.00	996.00
		Front end loader 1 cum bucket capacity	hour	2.00	1,030.00	2,060.00
		Tipper 5.5/ 10 t capacity	hour	1.36	374.00	508.64
		Paver finisher	hour	2.00	1,176.00	2,352.00
		Three wheel 80-100 kN static roller	hour	10.00	439.00	4,390.00
<b>c) Material</b>						
		Bitumen (VG-10) @ 6.80 kg per 10 sqm	t	3.40	60,386.00	2,05,312.40
		Crushed stone or grit passing 2.36 mm sieve and retained on 180 micron sieve applied @ 0.06 cum per 10 sqm	cum	30.00	2,252.60	67,578.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>64,822.37</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>55,437.30</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>4,250.19</b>
		Cost of 5000 sqm = a+b+c+d+e+f				4,29,269.45
		<b>Rate per sqm = (a+b+c+d+e+f)/5000</b>				<b>85.85</b>
					<b>say</b>	<b><u>85.90</u></b>

**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 have been considered for this case.

**Case - III : Type C**

(I) **Bitumen of VG-30**

Unit = sqm

Taking output = 7500 sqm (67.5 cum)

**a) Labour**

Mate	day	0.20	391.00	78.20
Mazdoor (Unskilled)	day	5.00	391.00	1,955.00

**b) Machinery**

Hydraulic self propelled chips spreader	hour	6.00	4,064.00	24,384.00
Tipper 5.5/ 10 t capacity	hour	6.00	374.00	2,244.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Bitumen pressure distributor	hour	6.00	226.00	1,356.00
		Three wheel 80-100 kN static roller	hour	15.00	439.00	6,585.00
		<b>c) Material</b>				
		Bitumen (VG-30) @ 6.50 kg per 10 sqm	t	4.88	61,186.00	2,98,587.68
		Crushed stone chipping of 6.7 mm size 100 per cent passing 9.5 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	67.50	3,972.90	2,68,170.75
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,29,649.29</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,10,878.49</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>8,500.68</b>
		Cost of 7500 sqm = a+b+c+d+e+f				8,58,569.09
		<b>Rate per sqm = (a+b+c+d+e+f)/7500</b>				<b>114.48</b>
					<b>say</b>	<b><u>114.50</u></b>
		<b>(II) Bitumen of VG-10</b>				
		Unit = sqm				
		Taking output = 7500 sqm (67.5 cum)				
		<b>a) Labour</b>				
		Mate	day	0.20	391.00	78.20
		Mazdoor (Unskilled)	day	5.00	391.00	1,955.00
		<b>b) Machinery</b>				
		Hydraulic self propelled chips spreader	hour	6.00	4,064.00	24,384.00
		Tipper 5.5/ 10 t capacity	hour	6.00	374.00	2,244.00
		Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
		Bitumen pressure distributor	hour	6.00	226.00	1,356.00
		Three wheel 80-100 kN static roller	hour	15.00	439.00	6,585.00
		<b>c) Material</b>				
		Bitumen (VG-10) @ 6.50 kg per 10 sqm	t	4.88	60,386.00	2,94,683.68
		Crushed stone chipping of 6.7 mm size 100 per cent passing 9.5 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	67.50	3,972.90	2,68,170.75
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,28,818.91</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,10,168.33</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>8,446.24</b>
		Cost of 7500 sqm = a+b+c+d+e+f				8,53,070.11
		<b>Rate per sqm = (a+b+c+d+e+f)/7500</b>				<b>113.74</b>
					<b>say</b>	<b><u>113.70</u></b>
5.12	508	<b>25 mm thick Open-Graded Premix Carpet using Bituminous (viscosity grade/ modified bitumen) Binder</b>				

**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Providing, laying and rolling of open-graded premix carpet of 25 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using viscosity grade bitumen 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 three wheel 80 - 100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C or Type D as per MoRD Technical Specification Clause 508.

**Case - I: By Manual Means****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 400 sqm (10 cum)

**a) Labour**

Mate	day	1.08	391.00	422.28
Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00

**b) Machinery**

Mixall 6/10 t capacity	hour	4.00	857.00	3,428.00
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	4.00	222.00	888.00
Three wheel 80-100 kN static roller	hour	2.00	439.00	878.00

**c) Material**

Bitumen (VG-30) @ 18.25 kg per 10 sqm	t	0.73	61,186.00	44,665.78
Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.34 cum per 10 sqm	cum	13.60	4,325.50	58,826.80

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **25,524.40****e) Contractor's profit @ 15 % on (a+b+c+d)** **21,828.94****f) Add Cess @ 1.00 % on (a+b+c+d+e)** **1,673.55**

Cost of 400 sqm = a+b+c+d+e+f 1,69,028.75

**Rate per sqm = (a+b+c+d+e+f)/400** **422.57****say** **422.60****(II) Bitumen of VG-10**

Unit = sqm

Taking output = 400 sqm (10 cum)

**a) Labour**

Mate	day	1.08	391.00	422.28
Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00

**b) Machinery**

Mixall 6/10 t capacity	hour	4.00	857.00	3,428.00
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	4.00	222.00	888.00



**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Three wheel 80-100 kN static roller	hour	2.00	439.00	878.00
		<b>c) Material</b>				
		Bitumen (VG-10) @ 18.25 kg per 10 sqm	t	0.73	60,386.00	44,081.78
		Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.34 cum per 10 sqm	cum	13.60	4,325.50	58,826.80
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>25,400.18</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>21,722.71</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,665.41</b>
		Cost of 400 sqm = a+b+c+d+e+f				1,68,206.15
		<b>Rate per sqm = (a+b+c+d+e+f)/400</b>				<b>420.52</b>
					<b>say</b>	<b><u>420.50</u></b>

**Case - II: By Mechanical Means****(I) Bitumen of VG-30**

Unit = sqm

Taking output = 3200 sqm (80 cum)

**a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor (Skilled)	day	3.00	475.00	1,425.00

**b) Machinery**

HMP 30/40 t per hour	hour	6.00	9,968.00	59,808.00
Electric generator set 125 KVA	hour	6.00	498.00	2,988.00
Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
Tipper 5.5/ 10 t capacity	hour	3.64	374.00	1,361.36
Paver finisher	hour	6.00	1,176.00	7,056.00
Three wheel 80-100 kN static roller	hour	16.00	439.00	7,024.00

**c) Material**

Bitumen (VG-30) @ 18.25 kg per 10 sqm	t	5.84	61,186.00	3,57,326.24
Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.34 cum per 10 sqm	cum	108.80	4,325.50	4,70,614.40

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **1,95,236.55****e) Contractor's profit @ 15 % on (a+b+c+d)** **1,66,969.93****f) Add Cess @ 1.00 % on (a+b+c+d+e)** **12,801.03**

Cost of 3200 sqm = a+b+c+d+e+f 12,92,903.83

**Rate per sqm = (a+b+c+d+e+f)/3200** **404.03****say** **404.00****(II) Bitumen of VG-10**

Unit = sqm

Taking output = 3200 sqm (80 cum)

**a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00

**Chapter 5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mazdoor (Skilled)	day	3.00	475.00	1,425.00
		<b>b) Machinery</b>				
		HMP 30/40 t per hour	hour	6.00	9,968.00	59,808.00
		Electric generator set 125 KVA	hour	6.00	498.00	2,988.00
		Front end loader 1 cum bucket capacity	hour	6.00	1,030.00	6,180.00
		Tipper 5.5/ 10 t capacity	hour	3.64	374.00	1,361.36
		Paver finisher	hour	6.00	1,176.00	7,056.00
		Three wheel 80-100 kN static roller	hour	16.00	439.00	7,024.00
		<b>c) Material</b>				
		Bitumen (VG-10) @ 18.25 kg per 10 sqm	t	5.84	60,386.00	3,52,654.24
		Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.34 cum per 10 sqm	cum	108.80	4,325.50	4,70,614.40
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,94,242.81</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,66,120.07</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>12,735.87</b>
		Cost of 3200 sqm = a+b+c+d+e+f				12,86,323.07
		<b>Rate per sqm = (a+b+c+d+e+f)/3200</b>				<b>401.98</b>
					<b>say</b>	<b><u>402.00</u></b>

**Chapter 6**  
**CEMENT CONCRETE PAVEMENT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
6.1	400	<b>Granual Sub-base</b> Rate as per item No.4.1 of Chapter 4				
6.2	1500 & 400	<b>Water Bound Macadam (WBM) - Sub-base</b> <b>(A) By Manual Means</b> As per item No.4.2 of Chapter 4 <b>(B) By Mechanical Means</b> As per item No.4.2 of Chapter 4				
6.3	1500	<b>Cement Concrete Pavement</b> Construction of un-reinforced, dowel jointed at expansion and construction joint only, plain cement concrete pavement, thickness as per design, over a prepared sub base, with 43 grade cement or any other type as per Clause 1501.2.2 M30 (Grade), coarse and fine aggregates conforming to IS:383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a concrete mixer of not less than 0.2 cum capacity and appropriate weigh batcher using approved mix design, laid in approved fixed side formwork (steel channel, laying and fixing of 125 micron thick polythene film, wedges, steel plates including levelling the formwork as per drawing), spreading the concrete with shovels, rakes, compacted using needle, screed and plate vibrators and finished in continuous operation including provision of contraction and expansion, construction joints, applying debonding strips, primer, sealant, dowel bars, near approaches to bridge/culvert and construction joints, admixtures as approved, curing of concrete slabs for 14-days, using curing compound (where specified) and water finishing to lines and grade as per drawing and MoRD Technical Specification Clause 1501.  Unit = cum Taking output = 75 cum (172.50 t) (100 m x 3.75 m x 0.200 m)				
		<b>a) Labour</b>				
		Mate	day	7.00	391.00	2,737.00
		Mason (1st class)	day	5.00	512.00	2,560.00
		Mason (2nd class)	day	5.00	475.00	2,375.00
		Mazdoor (Unskilled)	day	129.00	391.00	50,439.00
		Mazdoor (Skilled)	day	6.00	475.00	2,850.00
		Surveyor	day	2.00	640.00	1,280.00
		Mazdoor (Semi-Skilled)	day	6.00	447.00	2,682.00
		Bhisti	day	14.00	391.00	5,474.00
		Blacksmith for cutting of dowel bars including removal of burrs, fabrications & fixing of dowel bars.	day	1.00	480.00	480.00
		<b>b) Machinery</b>				
		Concrete mixer 0.28 / 0.4 cum capacity (6 mixers) with weigh batcher and suitable capacity calibrated water tank	hour	36.00	215.00	7,740.00
		Needle vibrator	hour	9.00	74.00	666.00
		Screed vibrator	hour	9.00	106.00	954.00
		Plate vibrator	hour	9.00	84.00	756.00
		Concrete joint cutting machine for initial & final cuts	hour	4.00	186.00	744.00
		Water tanker 6 kl capacity	hour	5.00	224.00	1,120.00
		Air Compressor (1 hour initial + 1 hour final)	hour	2.00	235.00	470.00

**Chapter 6**  
**CEMENT CONCRETE PAVEMENT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>c) Material</b>						
		(i) Crushed stone coarse aggregates, grading will be as per Clause 1501.2.4.1 (Table 1500.1) of specifications @ 0.90 cum/cum of concrete	cum	67.50	4,325.50	2,91,971.25
		(ii) Sand as per IS:383 and conforming to Clause 1500.2.4.2 @ 0.45 cum/cum of concrete	cum	33.75	740.00	24,975.00
		(iii) Cement @ 310 kg/cum of concrete	t	26.25	6,797.00	1,78,421.25
		(iv) Polythene sheet 125 micron	sqm	412.50	14.40	5,940.00
		(v) Mild steel dowel bar 25 mm dia of grade S 240. 500 mm long 20 Nos. at culvert/bridge slab and at construction joint including 5 per cent wastage.				
		(4 x 20 x 0.500) + 5 per cent wastage = 42 m @ 2.80 kg per m = 117.6 kg.	kg	117.60	57.00	6,703.20
		Bitumen primer @ 200 ml per joint for 23 joints	t	0.005	62.00	0.31
		Bituminous sealant 800 ml per joint for 23 joints	litre	19.00	79.50	1,510.50
		Jute rope 12 mm dia including 5 per cent wastage	m	90.00	5.90	531.00
		Debonding strips 3.75 m (length) x 10 mm (width) x 5 mm (thick) cut-out of rubber filler board or similar material including 5 per cent wastage	m	90.00	23.50	2,115.00
		Polythene sheathing, covering 2/3rd dowel bars (25 mm x 1.0 m) and tight fit including 5 per cent wastage	No.	483.00	11.70	5,651.10
		Plasticizer 0.5 per cent by weight of cement	litre	122.00	42.00	5,124.00
		Curing compound (if used) @ 0.33 litre per sqm	litre	131.25	62.80	8,242.50
		Water for curing	kl	18.00	133.00	2,394.00
		Joint filler board 20 mm thick as per IS:1838 (4 x 3.75 x 0.200 = 3 sqm)	sqm	3.00	816.20	2,448.60
		<b>d) Formwork @ 3% of (a+b+c)</b>				<b>18,580.64</b>
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,35,688.85</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,16,043.63</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>8,896.68</b>
		Cost for 75 cum = a+b+c+d+e+f+g				8,98,564.51
		<b>Rate per cum = (a+b+c+d+e+f+g)/75</b>				<b>11,980.86</b>
					<b>say</b>	<b><u>11980.90</u></b>
<b>6.4</b>	<b>1500</b>	<b>Roller Compacted Concrete Pavement</b>				
		Construction of Roller Compacted Concrete Pavement (RCCP) with coarse and fine aggregates conforming to IS:383, the size of coarse aggregate not exceeding 25 mm with minimum aggregate cement ratio of 5:1 and with minimum cement content of 310 kg per cum, aggregate gradation to be as per Table 602.2 after blending, mixing in concrete mixer at optimum moisture content, transporting to site, laying with wheel barrows or steel pans or with mechanical paver, compacting with 80 - 100 kN smooth wheel, tandem vibratory roller, to achieve, the designed flexural strength, finishing and curing as per drawing and MoRD technical specification Clause 1502.				
		Unit = cum				
		Taking output = 75 cum				
		<b>a) Labour</b>				
		(i) Mate	day	6.00	391.00	2,346.00

**Chapter 6**  
**CEMENT CONCRETE PAVEMENT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(ii) Mazdoor (Unskilled)	day	132.00	391.00	51,612.00
		(iii) Mason (1st class)	day	4.00	512.00	2,048.00
		(iv) Mason (2nd class)	day	4.00	475.00	1,900.00
		(v) Surveyor	day	2.00	640.00	1,280.00
		(vi) Bhisti	day	14.00	391.00	5,474.00
		<b>b) Machinery</b>				
		(i) Concrete mixer 0.28 / 0.4 cum capacity (6 mixers) with weigh batcher and suitable capacity calibrated water tank	hour	36.00	215.00	7,740.00
		(ii) Vibratory/80-100 kN Static Roller	hour	6.00	1,562.00	9,372.00
		(iii) Concrete joint cutting machine for day's end work and regular joint cutting.	hour	6.00	186.00	1,116.00
		(iv) Water tanker 6 kl capacity	hour	6.00	224.00	1,344.00
		(v) Air compressor (1 hour initial + 1 hour final)	hour	2.00	235.00	470.00
		<b>c) Material</b>				
		(i) Crushed stone coarse aggregates grading as per Clause 1501.2.4.1 (Table 1500.3) @ 0.90 cum/cum of concrete conforming to Clause 600.4.4	cum	67.50	4,325.50	2,91,971.25
		(ii) Sand as per IS:383 and conforming to Clause 1501.2.4.2 @ 0.45 cum/cum of concrete	cum	33.75	740.00	24,975.00
		(iii) Cement @ 310 kg/cum of concrete	t	23.25	6,797.00	1,58,030.25
		(iv) Bituminous primer @ 200 ml per joint for 21 joints	t	0.004	62.00	0.25
		(v) Jute rope 10 mm dia including 5 per cent wastage	m	90.00	5.90	531.00
		(vi) Bituminous sealant @ 800 ml per joint for 21 joints	kg	16.80	79.50	1,335.60
		(vii) Curing compound @ 0.33 litre per sqm	l	131.25	62.80	8,242.50
		(viii) Water for mixing and curing for 14-days	day	18.00	133.00	2,394.00
		<b>d) Formwork @ 2% of (a+b+c)</b>				<b>11,443.64</b>
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,24,137.14</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,06,164.39</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>8,139.27</b>
		Cost for 75 cum = a+b+c+d+e+f+g				8,22,066.29
		<b>Rate per cum = (a+b+c+d+e+f+g)/75</b>				<b>10,960.88</b>
						<b>say <u>10960.90</u></b>

**Note:** When curing compound is used 4-days water curing will be done

**6.5 1500 Rectangular Concrete Block Pavement**

Manufacturing, laying of cement concrete blocks of size 0.450 m x 0.300 m x 0.150 m of Cement Concrete (C.C) M30 grade and spreading 25 mm thick sand under neath and filling joints with sand on existing W.B.M. base as per MoRD Technical Specification Clause 1503.

Unit = sqm

Taking output = 112.5 sqm

Concrete M30 grade for block, 784 x (0.45 x 0.30 x 0.15) cum 15.88 8,115.23 1,28,869.85

Concrete M30 for edge block, 2 x 98 x (0.30 x 0.30 x 0.15) cum 2.65 8,115.23 21,505.36

**Chapter 6**  
**CEMENT CONCRETE PAVEMENT**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>TOTAL:-</b>			<b>cum</b>	<b>18.53</b>		
<b>a) Labour</b>						
<b>Labour for Manufacturing the Cement Concrete Block :</b>						
		(i) Mate	day	3.00	391.00	1,173.00
		(ii) Mazdoor (Unskilled)	day	80.00	391.00	31,280.00
		(iii) Mason (2nd class)	day	12.00	475.00	5,700.00
		(iv) Bhisti	day	3.00	391.00	1,173.00
<b>b) Machinery</b>						
		Concrete mixer 0.28 / 0.4 cum	hour	12.00	215.00	2,580.00
		Plate vibrator	hour	23.00	84.00	1,932.00
		Water tanker 6 kl capacity	hour	4.00	224.00	896.00
<b>c) Material</b>						
		(i) Coarse aggregates 26.5mm to 75 micron as per Table 1500.1 (18.53 x 0.89)	cum	16.49	4,325.50	71,327.50
		(ii) Fine Sand (18.53 x .42) (considering 20% void)	cum	9.73	740.00	7,200.20
		(iii) Cement	t	7.41	6,797.00	50,365.77
		(iv) Sand as per Table 1500.5	cum	5.760	590.00	3,398.40
		Bed = 30 m x 3.75 x 0.025 = 2.81 cum				
		Joints = (240x4mm + 367.5 x 4mm)x 0.15 = 1.80 cum				
		Total = 4.61 cum (considering 20% void)				
		(v) Cost of water	kl	12.00	133.00	1,596.00
<b>d) Formwork @ 3% of (a+b+c)</b>						<b>5,358.66</b>
<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>						<b>39,132.66</b>
<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>						<b>33,466.98</b>
<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>						<b>2,565.80</b>
Cost for 112.5 sqm = a+b+c+d+e+f+g						2,59,145.96
<b>Rate per sqm = (a+b+c+d+e+f+g)/112.5</b>						<b>2,303.52</b>
						<b>say <u>2303.50</u></b>

**Note:** i. In case curing compound is used in places where there is scarcity of water, the water curing will be used for 4-days and rate analysis will be amended accordingly

ii. Carriage of C.C. block to site of is payable seperately as per Chapter of carriage of material from manufacturing site to the site of work.

**Chapter 7**  
**CAUSEWAY AND SUBMERSIBLE BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
7.1	1400, 300, 600	<b>Construction of Cut-off Walls/Head Walls</b>				
		(i) Earthwork in excavation for structures as per drawing and technical specification Clause 305. Rate as per item No.11.1 of Chapter 11	cum			
		(ii) Plain cement concrete M15 grade Rate as per item No.11.4 (ii) of Chapter 11	cum			
		(iii) Brick masonry in cement mortar 1:4 Rate as per item No.11.5 (ii) of Chapter 11	cum			
		(iv) Providing P.C.C M20 architectural coping on top of wall Rate as per item No.12.11 of Chapter 12	m			
		<i>Note: Rate as appropriate for the type of soil/rock are to be taken in (i)</i>				
7.2	300	<b>Preparation of Subgrade</b> Rate as per item No.3.13 of Chapter 3	cum			
7.3	400	<b>Granular Sub-base</b> Rate as per item No.4.1 of Chapter 4	cum			
7.4	1500	<b>Cement Concrete Slab</b> Rate as per item No.6.3 of Chapter 6	cum			
7.5	1400 & 1300	(i) <b>Providing and Laying of Apron with Cement Concrete Blocks as per Drawing and Technical Specification Clause 1301</b> Rate as per item No.14.3 of Chapter 14	cum			
7.6	1400 & 1600	<b>Guide Posts</b> Construction of R.C.C. guide posts of 250 mm dia, M25 grade as per drawing and technical specification Clause 1401.6 Rate as per item No.8.8 of Chapter 8	cum			
7.7	1400, 1100 &	<b>Bedding for Causeway</b>				
		(i) Type A (concrete cradle) Bedding Clause 1402.5 As per item No.9.2 of Chapter 9	cum			
		(ii) Type B (first class) Bedding Clause 1402.5 As per item No.9.2 of Chapter 9	cum			
7.8	1400 & 1100	<b>Laying Reinforced Cement Concrete Pipe NP3 as per drawing and technical specification Clause 1402.6</b> As per item No.9.3 of Chapter 9	m			
		<b>Note :</b>				
		1 Rate as appropriate for the type of soil/rock are to be taken in (i) .				
		2 Appropriate items may also be taken from the relevant item of the relevant Chapters in case of using jhama brick aggregate.				

**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MORd Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
8.1	200	<b>Site Clearance</b> As per Chapter 2				
8.2	1600 & 300	<b>Earthwork in Hill Road</b>				
		<b>(i) Excavation in Hilly Areas in Ordinary Soil by manual means.</b>				
		<b>A) Excavation in ordinary soil in Hilly Areas by manual means including cutting and trimming of side slopes and disposing of excavated earth with a lift upto 1.50 m and a lead upto 20 m as per drawing and MoRD Technical Specification Clause 1603.1.</b>				
		Unit = cum				
		Taking output = 120 cum				
		<b>a) Labour</b>				
		Mate	day	2.40	391.00	938.40
		Mazdoor (Unskilled)	day	60.00	391.00	23,460.00
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>5,189.54</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>4,438.19</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>340.26</b>
		Cost for 120 cum = (a+b+c+d)				34,366.39
		<b>Rate per cum = (a+b+c+d)/120</b>				<b>286.39</b>
						<b>say <u>286.40</u></b>
		<b>B) Extra for Every Additional Lift of 1.5 m or Part thereof</b>				
		Excavation in Soil				
		Unit = cum				
		Taking output = 10 cum				
		<b>a) Labour</b>				
		Mazdoor (Unskilled)	day	0.55	391.00	215.05
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>45.74</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>39.12</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>3.00</b>
		Cost for 10 cum = (a+b+c+d)				302.91
		<b>Rate per cum = (a+b+c+d)/10</b>				<b>30.29</b>
						<b>say <u>30.30</u></b>
		<b>(ii) Excavation in Hilly Areas in Ordinary Soil by mechanical means.</b>				
		<b>A) Excavation in ordinary soil in Hilly Areas by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with a lift upto 1.50 m and a lead upto 20 m as per drawing and MoRD Technical Specification Clause 1603.1.</b>				
		Unit = cum				
		Taking output = 260 cum				



**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour</b>				
		Mate	day	0.80	391.00	312.80
		Mazdoor (Unskilled) for trimming slopes and helping in excavation, etc.	day	20.00	391.00	7,820.00
		<b>b) Machinery</b>				
		Dozer D-50 @ 43.28 cum per hour	hour	6.00	2,654.00	15,924.00
		<b>c) Overheads @ 10% on (a+b)</b>				<b>5,116.88</b>
		<b>d) Contractor's profit @ 10% on (a+b+c)</b>				<b>4,376.05</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>335.50</b>
		Cost for 260 cum = a+b+c+d+e				33,885.23
		<b>Rate per cum = (a+b+c+d+e)/260</b>				<b>130.33</b>
					<b>say</b>	<b><u>130.30</u></b>

**B) Extra for Every Additional Lift of 1.5 m or Part thereof**

Excavation in Soil

Unit = cum

Taking output = 10 cum

**a) Labour**

Mazdoor (Unskilled)	day	0.55	391.00	215.05
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**b) Add GST (multiplying factor) @ 0.2127 on (a)** **45.74**

**c) Contractor's profit @ 15 % on (a+b)** **39.12**

**d) Add Cess @ 1.00 % on (a+b+c)** **3.00**

Cost for 10 cum = (a+b+c+d) 302.91

**Rate per cum = (a+b+c+d)/10** **30.29**

**say** **30.30**

**Note:** (i) *In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth shall be disposed off on the valley side.*

(ii) *For disposal of excavated surplus earth beyond 20 m, the relevant items of carriage be followed.*

(iii) *In case, alternative machine like hydraulic excavator 0.9 cum bucket capacity is necessitated because of site conditions, the same can be used.*

**(iii) 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 1.50 m and lead upto 20 m as per MoRD Clause 1603.2.

Unit = cum

Taking output = 120 cum

**a) Labour**

**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	5.28	391.00	2,064.48
		Mazdoor (Unskilled)	day	132.00	391.00	51,612.00
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>11,416.99</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>9,764.02</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>748.57</b>
		Cost for 120 cum = a+b+c+d				75,606.06
		<b>Rate per cum = (a+b+c+d)/120</b>				<b>630.05</b>
					<b>say</b>	<b><u>630.10</u></b>
		<b>B) Extra for Every Additional Lift of 1.5 m or Part thereof</b>				
		For Ordinary Rock				
		Unit = cum				
		Taking output = 10 cum				
		<b>a) Labour</b>				
		Mazdoor (Unskilled)	day	0.86	391.00	336.26
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>71.52</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>61.17</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>4.69</b>
		Cost for 10 cum = a+b+c+d				473.64
		<b>Rate per cum = (a+b+c+d)/10</b>				<b>47.36</b>
					<b>say</b>	<b><u>47.40</u></b>
		<b>(iv) Excavation in Hilly Areas in Ordinary Rock by mechanical means not requiring blasting</b>				
		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 a lift upto 1.50 m and lead upto 20 m as per MoRD Technical specification Clause 1603.2.				
		Unit = cum				
		Taking output = 170 cum				
		<b>a) Labour</b>				
		Mate	day	0.68	391.00	265.88
		Mazdoor (Unskilled)	day	17.00	391.00	6,647.00
		Mazdoor for disposing of earth upto 20 m	day	9.00	391.00	3,519.00
		<b>b) Machinery</b>				
		Dozer D-50 @ 28.32 cum per hour	hour	6.00	2,654.00	15,924.00
		Hydraulic Excavator 0.9 cum bucket capacity @ 40 cum per hour	hour	4.25	1,344.00	5,712.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>6,820.84</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>5,833.31</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>447.22</b>
		Cost for 170 cum = a+b+c+d+e				45,169.25
		<b>Rate per cum = (a+b+c+d)/170</b>				<b>265.70</b>
					<b>say</b>	<b><u>265.70</u></b>

**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**Note:** (i) In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth shall be disposed off on the valley side.

(ii) In case, alternative machine like hydraulic excavator 0.9 cum bucket capacity is necessitated because of site conditions, the same can be used.

- 8.3 1400, 1700 & 800** Construction of RCC guide posts of 250 mm dia and total 600 mm long, (300 mm below GL) M15 grade cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical RCC posts not to exceed 1 in 500 as per drawing and MoRD Technical Specification Clause 1401.6.

Unit = Each

Taking Output = 1 No.

**A. In Ordinary Soil**

**(i) Earth work in excavation for structures**

Unit = cum

Rates as per item No.11.1.A.I(i) of Chapter 11

cum	0.08	458.20	36.66
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**(ii) RCC M15 grade**

Unit = cum

As per item No. 11.4.II(i) of Chapter 11

cum	0.03	10,234.20	307.03
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**(iii) Steel bars**

Unit = t

Steel @ 80 kg/ cum

As per item No. 11.6 of Chapter 11

t	0.002	91,240.90	182.48
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**(iv) Painting two coats including prime coat on new concrete surface**

Unit = sqm

As per item No.10.5 of Chapter 10

sqm	0.25	130.70	32.68
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**Cost for 1 No. of RCC Guide Post = (i + ii + iii + iv)**

**558.84**

**say 558.80**

**Note:** Quantities are to be taken as per drawing.

**B. In Ordinary Rock (not requiring blasting)**

**(i) Earth work in excavation for structures**

Unit = cum

As per item No.11.1.A.II(i) of Chapter 11

cum	0.08	572.80	45.82
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**(ii) RCC M15 grade**

Unit = cum

As per item No. 11.4.II(i) of Chapter 11

cum	0.03	10,234.20	307.03
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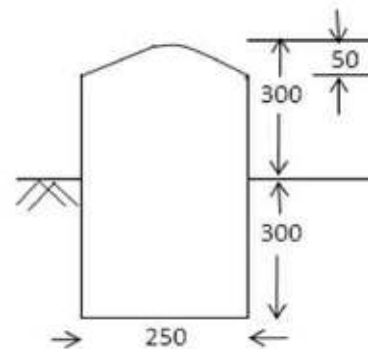
**(iii) Steel bars**

Unit = t

Steel @ 80 kg/ cum

As per item No. 11.6 of Chapter 11

t	0.002	91,240.90	182.48
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**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MOR D Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>(iv) Painting two coats including prime coat on new concrete surface</b>				
		Unit = sqm				
		As per item No.10.5 of Chapter 10	sqm	0.25	130.70	32.68
		<b>Cost for 1 No. of RCC Guide Post = (i + ii + iii + iv)</b>				<b>568.01</b>
					<b>say</b>	<b><u>568.00</u></b>
		<i>Note: Quantities are to be taken as per drawing.</i>				
		<b>C. In Hard Rock (blasting prohibited)</b>				
		<b>(i) Earth work in excavation for structures</b>				
		Unit = cum				
		Rates as per item No.11.1.A.III of Chapter 11	cum	0.08	617.40	49.39
		<b>(ii) RCC M15 grade</b>				
		Unit = cum				
		As per item No. 11.4.II(i) of Chapter 11	cum	0.03	10,234.20	307.03
		<b>(iii) Steel bars</b>				
		Unit = t				
		Steel @ 80 kg/ cum				
		As per item No. 11.6 of Chapter 11	t	0.002	91,240.90	182.48
		<b>(iv) Painting two coats including prime coat on new concrete surface</b>				
		Unit = sqm				
		As per item No.10.5 of Chapter 10	sqm	0.25	130.70	32.68
		<b>Cost for 1 No. of RCC Guide Post = (i + ii + iii + iv)</b>				<b>571.57</b>
					<b>say</b>	<b><u>571.60</u></b>
		<i>Note: Quantities are to be taken as per drawing.</i>				
<b>8.4</b>	<b>1600</b>	Providing edge stones on valley side of formation as per drawing and Technical Specification Clause 1608.2.6.				
		Unit = 1 m				
		Same as Item No. 8.3 of this chapter.				
<b>8.5</b>	<b>1600 &amp; 309</b>	<b>Turfing with Sods in hilly areas</b>				
		Furnishing and laying of the live sods of perennial turf forming grass on embankment slope of hill roads, verges or other locations shown on the drawing or as directed by the Engineer including preparation of ground, stacking the sods and watering as per MoRD Technical specification Clause 309.				
		Unit = sqm				
		Taking output = 100 sqm				
		<b>a) Labour</b>				
		Mate	day	0.16	391.00	62.56
		Mazdoor (Unskilled)	day	4.00	391.00	1,564.00
		<b>b) Machinery</b>				
		Water tanker including watering for 3 months	hour	4.00	224.00	896.00
		Tractor with Trolley	hour	1.00	265.00	265.00

**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MOR D Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>c) Materials</b>				
		Farmyard manure @ 0.18 cum per 100 sqm at site of work	cum	0.18	541.00	97.38
		Water	kl	24.00	133.00	3,192.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,292.57</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,105.43</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>84.75</b>
		Cost for 100 sqm = a+b+c+d+e				8,559.68
		<b>Rate per sqm = (a+b+c+d+e)/100</b>				<b>85.60</b>
					<b>say</b>	<b><u>85.60</u></b>

**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE ( i.e. LOCALLY AVAILABLE MATERIALS)**

- 8.6 1600, 600 & 700 Retaining Walls / Breast Walls**
- Construction of retaining walls/breast walls in Plain cement concrete with M10 (with jhama brick aggregate) as per drawing and MoRD technical specifications Clause 1604 (including centering, shuttering, staging etc. but excluding reinforcement).
- (i) Earthwork in excavation for structures**
- Rate as per item No.11.1 of Chapter 11 cum
- (ii) Plain cement concrete M 10 grade**
- Rate as per item No.11.9.1.(i) of Chapter 11 cum
- (iii) Providing P.C.C. M 20 architectural coping on top of retaining wall/breast wall**
- Rate as per item No.12.15 of Chapter 12 m
- (iv) Filter material behind retaining wall / breast wall as per Specification 1204.3.8 in a width of 600 m**
- Rate as per item No. 12.13 of Chapter 12 cum
- (v) Back filling behind retaining wall/breast wall**
- Rate as per item No. 12.8.1 of Chapter 12 cum
- Note:** 1 Quantities of material/work shall be as per design and drawings.  
2 Earth work in excavation may be taken as per site conditions. It may comprise of a number of sub-items depending upon the type of soil/rock encountered.
- 8.7 1600, 700, 300 & 800 Construction of Hill Side Drain**
- Construction of hill side drain in accordance with the requirement of specifications true to lines and grades. Dimensions and other particulars as per drawing and MoRD Technical Specification Clause 1606.1.
- Unit = 1 m
- As per item No.3.16 of Chapter 3
- Note:** 1 Quantities of material/work shall be as per design and drawings.

**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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2 Earth work in excavation may be taken as per site conditions. It may comprise of a number of sub-items depending upon the type of soil/rock encountered.

- 8.8 1400, 1700 & 800** Construction of RCC guide posts of 250 mm dia and total 600 mm long, (300 mm below GL) M15 grade (with jhama brick aggregate) cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical RCC posts not to exceed 1 in 500 as per drawing and MoRD Technical Specification Clause 1401.6.

Unit = Each

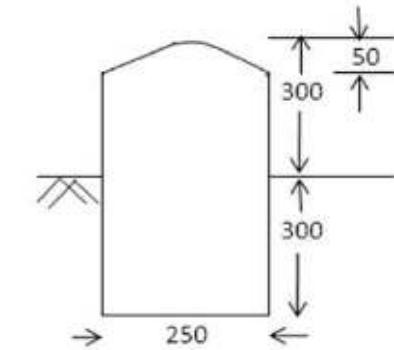
Taking Output = 1 No.

**A. In Ordinary Soil**

**(i) Earth work in excavation for structures**

Unit = cum

As per item No.11.1.A.I(i) of Chapter 11



	cum	0.08	458.20		36.66
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**(ii) RCC M15 grade**

Unit = cum

As per item No. 11.9.II(i) of Chapter 11

	cum	0.03	9,441.60		283.25
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**(iii) Steel bars**

Steel @ 80 kg/ cum

As per item No. 11.6 of Chapter 11

	t	0.002	91,240.90		182.48
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**(iv) Painting two coats including prime coat on new concrete surface**

Unit = sqm

As per item No.10.5 of Chapter 10

	sqm	0.25	130.70		32.68
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**Cost for 1 No. of RCC Guide Post = (i + ii + iii + iv)**

**535.06**

**say 535.10**

Note: Quantities are to be taken as per drawing.

**B. In Ordinary Rock (not requiring blasting)**

**(i) Earth work in excavation for structures**

Unit = cum

As per item No.11.1.A.II(i) of Chapter 11

	cum	0.08	572.80		45.82
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**(ii) RCC M15 grade**

Unit = cum

As per item No. 11.9.II(i) of Chapter 11

	cum	0.03	9,441.60		283.25
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**(iii) Steel bars**

Unit = t

Steel @ 80 kg/ cum

As per item No. 11.6 of Chapter 11

	t	0.002	91,240.90		182.48
--	---	-------	-----------	--	--------

**(iv) Painting two coats including prime coat on new concrete surface**

Unit = sqm

As per item No.10.5 of Chapter 10

	sqm	0.25	130.70		32.68
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**Cost for 1 No. of RCC Guide Post = (i + ii + iii + iv)**

**544.23**

**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**say**      **544.20**

*Note: Quantities are to be taken as per drawing.*

**C. In Hard Rock (blasting prohibited)**

**(i) Earth work in excavation for structures**

Unit = cum

Rates as per item No.11.1.A.III of Chapter 11      cum      0.08      617.40      49.39

**(ii) RCC M15 grade**

Unit = cum

As per item No. 11.9.II(i) of Chapter 11      cum      0.03      9,441.60      283.25

**(iii) Steel bars**

Steel @ 80 kg/ cum

As per item No. 11.6 of Chapter 11      t      0.002      91,240.90      182.48

**(iv) Painting two coats including prime coat on new concrete surface**

Unit = sqm

As per item No.10.5 of Chapter 10      sqm      0.25      130.70      32.68

**Cost for 1 No. of RCC Guide Post = (i + ii + iii + iv)**

**547.80**

**say**      **547.80**

*Note: Quantities are to be taken as per drawing.*

**8.9      1600** Providing edge stones with PCC using jhama brick aggregate on valley side of formation as per drawing and MoRD Technical Specification Clause 1608.2.6.

Unit = 1 m

Same as Item No. 8.8 of this chapter.

**8.10      1600** **Setting Out (using PCC with jhama brick aggregate)**

Unit = Each

The analysis of rate per km shall account for the following:

(1) Construction of reference pillars (burjee) @ 20 m on both sides as per Fig. 1600.1 (b) and @ 8.33 m interval on curves

(2) Construction of back pillars in front of each reference pillar as per Fig. 1600.1 (c)

(3) Construction of job pillars as per Fig. 1600.1 (d)

**A. In Ordinary Soil**

(1) Construction of reference pillars as per Fig. 1600.1 (b) as per drawing and MoRD Technical Specification Clause 1602.1.

(a) Earthwork in excavation for foundation as per drawing and MoRD Technical Specifications.

As per item No.11.1.A.I(i) of Chapter 11      cum      0.014      458.20      6.41

(b) Plain cement concrete work in M10 (with jhama brick aggregate) in foundation complete as per drawing and MoRD Technical Specifications

As per item No.11.9.I.(ii) of Chapter 11      cum      0.012      9,191.60      110.30

**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(c) Plaster with cement mortar 1:4 as per MoRD Technical Specifications				
		As per item No.12.3 of Chapter 12	sqm	0.28	223.20	62.50
		Add 5% on (a+b+c) for white washing, lettering and painting, etc.				8.96
		<b>Total Cost for each Reference Pillar</b>				<b>188.17</b>
					<b>say</b>	<b><u>188.20</u></b>
		(2) Construction of back pillar as per Fig. 1600.1 (c) as per drawing and MoRD Technical Specification Clause 1602.3.				
		(a) Earthwork in excavation for foundation as per drawing and MoRD Technical Specifications.				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.043	458.20	19.70
		(b) Plain cement concrete work in M10 (with jhama brick aggregate) in foundation complete as per drawing and MoRD Technical Specifications				
		As per item No.11.9.1.(ii) of Chapter 11	cum	0.036	9,191.60	330.90
		(c) Plaster with cement mortar 1:4 as per MoRD Technical Specifications				
		As per item No.12.3 of Chapter 12	sqm	0.57	223.20	127.22
		Add 5% on (a+b+c) for white washing, lettering and painting, etc.				23.89
		<b>Total Cost for Back Pillar</b>				<b>477.82</b>
					<b>say</b>	<b><u>477.80</u></b>
		(3) Construction of job pillars as per Fig. 1600.1(d) and MoRD Technical Specification Clause 1602.4.				
		(a) Earthwork in excavation for foundation as per drawing and MoRD Technical Specifications.				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.115	458.20	52.69
		(b) Plain cement concrete work in M10 (with jhama brick aggregate) in foundation complete as per drawing and MoRD Technical Specifications				
		As per item No.11.9.1.(ii) of Chapter 11	cum	0.096	9,191.60	882.39
		(c) Plaster with cement mortar 1:4 as per MoRD Technical Specifications				
		As per item No.12.3 of Chapter 12	sqm	1.12	223.20	249.98
		Add 5% on (a+b+c) for white washing, lettering and painting, etc.				59.25
		<b>Total Cost for each Job Pillar</b>				<b>1,244.32</b>
					<b>say</b>	<b><u>1244.30</u></b>

**B. In Ordinary Rock (not requiring blasting)**

- (1) Construction of reference pillars as per Fig. 1600.1 (b) as per drawing and MoRD Technical Specification Clause 1602.1.



**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(a) Earthwork in excavation for foundation as per drawing and MoRD Technical Specifications. As per item No.11.1.A.II(i) of Chapter 11	cum	0.014	572.80	8.02
		(b) Plain cement concrete work in M10 (with jhama brick aggregate) in foundation complete as per drawing and MoRD Technical Specifications As per item No.11.9.1.(ii) of Chapter 11	cum	0.012	9,191.60	110.30
		(c) Plaster with cement mortar 1:4 as per MoRD Technical Specifications As per item No.12.3 of Chapter 12	sqm	0.28	223.20	62.50
		Add 5% on (a+b+c) for white washing, lettering and painting, etc.				9.04
		<b>Total Cost for each Reference Pillar</b>				<b>189.86</b>
					<b>say</b>	<b><u>189.90</u></b>
		(2) Construction of back pillar as per Fig. 1600.1 (c) as per drawing and MoRD Technical Specification Clause 1602.3.				
		(a) Earthwork in excavation for foundation as per drawing and MoRD Technical Specifications. As per item No.11.1.A.II(i) of Chapter 11	cum	0.043	572.80	24.63
		(b) Plain cement concrete work in M10 (with jhama brick aggregate) in foundation complete as per drawing and MoRD Technical Specifications As per item No.11.9.1.(ii) of Chapter 11	cum	0.036	9,191.60	330.90
		(c) Plaster with cement mortar 1:4 as per MoRD Technical Specifications As per item No.12.3 of Chapter 12	sqm	0.57	223.20	127.22
		Add 5% on (a+b+c) for white washing, lettering and painting, etc.				24.14
		<b>Total Cost for Back Pillar</b>				<b>482.75</b>
					<b>say</b>	<b><u>482.80</u></b>
		(3) Construction of job pillars as per Fig. 1600.1(d) and MoRD Technical Specification Clause 1602.4.				
		(a) Earthwork in excavation for foundation as per drawing and MoRD Technical Specifications. As per item No.11.1.A.II(i) of Chapter 11	cum	0.115	572.80	65.87
		(b) Plain cement concrete work in M10 (with jhama brick aggregate) in foundation complete as per drawing and MoRD Technical Specifications As per item No.11.9.1.(ii) of Chapter 11	cum	0.096	9,191.60	882.39
		(c) Plaster with cement mortar 1:4 as per MoRD Technical Specifications As per item No.12.3 of Chapter 12	sqm	1.12	223.20	249.98

**Chapter 8**  
**HILL ROADS**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Add 5% on (a+b+c) for white washing, lettering and painting, etc.				59.91
		<b>Total Cost for each Job Pillar</b>				<b>1,258.16</b>
					<b>say</b>	<b><u>1258.20</u></b>
<b>C. In Hard Rock (blasting prohibited)</b>						
		(1) Construction of reference pillars as per Fig. 1600.1 (b) as per drawing and MoRD Technical Specification Clause 1602.1.				
		(a) Earthwork in excavation for foundation as per drawing and MoRD Technical Specifications.				
		Rates as per item No.11.1.A.III of Chapter 11	cum	0.014	617.40	8.64
		(b) Plain cement concrete work in M10 (with jhama brick aggregate) in foundation complete as per drawing and MoRD Technical Specifications				
		As per item No.11.9.1.(ii) of Chapter 11	cum	0.012	9,191.60	110.30
		(c) Plaster with cement mortar 1:4 as per MoRD Technical Specifications				
		As per item No.12.3 of Chapter 12	sqm	0.28	223.20	62.50
		Add 5% on (a+b+c) for white washing, lettering and painting, etc.				9.07
		<b>Total Cost for each Reference Pillar</b>				<b>190.51</b>
					<b>say</b>	<b><u>190.50</u></b>
		(2) Construction of back pillar as per Fig. 1600.1 (c) as per drawing and MoRD Technical Specification Clause 1602.3.				
		(a) Earthwork in excavation for foundation as per drawing and MoRD Technical Specifications.				
		Rates as per item No.11.1.A.III of Chapter 11	cum	0.043	617.40	26.55
		(b) Plain cement concrete work in M10 (with jhama brick aggregate) in foundation complete as per drawing and MoRD				
		As per item No.11.9.1.(ii) of Chapter 11	cum	0.036	9,191.60	330.90
		(c) Plaster with cement mortar 1:4 as per MoRD Technical Specifications				
		As per item No.12.3 of Chapter 12	sqm	0.57	223.20	127.22
		Add 5% on (a+b+c) for white washing, lettering and painting, etc.				24.23
		<b>Total Cost for Back Pillar</b>				<b>484.67</b>
					<b>say</b>	<b><u>484.70</u></b>
		(3) Construction of job pillars as per Fig. 1600.1(d) and MoRD Technical Specification Clause 1602.4.				
		(a) Earthwork in excavation for foundation as per drawing and MoRD Technical Specifications.				
		Rates as per item No.11.1.A.III of Chapter 11	cum	0.115	617.40	71.00
		(b) Plain cement concrete work in M10 (with jhama brick aggregate) in foundation complete as per drawing and MoRD				

**Chapter 8  
HILL ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		As per item No.11.9.1.(ii) of Chapter 11	cum	0.096	9,191.60	882.39
		(c) Plaster with cement mortar 1:4 as per MoRD Technical Specifications				
		As per item No.12.3 of Chapter 12	sqm	1.12	223.20	249.98
		Add 5% on (a+b+c) for white washing, lettering and painting, etc.				60.17
		<b>Total Cost for each Job Pillar</b>				<b>1,263.55</b>
					<b>say</b>	<b><u>1263.50</u></b>

- Note:** (i) *The dimensions of reference pillars, back pillars and job pillars are as per figure/site conditions. The above items are covered under different Chapters of MoRD Specifications for payment.*
- (ii) *The marking of centre line, setting out, curves, recording of levels, etc. by the surveyor will be incidental to work and no extra payment shall be made for the same.*

**Chapter 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
9.1	1100 & 300	<b>Excavation for Structures</b>  Earthwork in excavation for foundation of structures upto 3 m depth as per drawing and MoRD technical specification Clause 1104, 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.  Unit = cum				
		<b>A. Ordinary Soil</b> Rate as per item No.11.1.A(i) of Chapter 11		cum	458.20	
		<b>B. Ordinary Rock (not requiring blasting)</b> Rate as per item No.11.II of Chapter 11		cum	572.80	
		<b>C. Hard Rock (blasting prohibited)</b> Rate as per item No.11.1.III of Chapter 11		cum	617.40	
		<b>D. Marshy Soil</b> Rate as per item No.11.1.IV of Chapter 11		cum	859.20	
		<b>Note:</b> Rate as applicable for the type of soil / rock are to be taken from Chapter 11				
9.2	1100 & 800	<b>Bedding for Pipe</b>  <b>(i) Type A (Concrete Cradle) Bedding</b>  Laying concrete cradle bedding with M15 Grade Cement Concrete as per MoRD Technical specification Clause 1105(i).  Unit = cum				
		Rate as per Item No.11.4 of Chapter 11		cum	9,983.70	
		<b>Note:</b> Rate as applicable for the type mixing are taken from Chapter 11				
		<b>(ii) Type B (First Class) Bedding</b>  Laying (First Class) bedding on well compacted sand, moorum or approved granular material as per MoRD Technical specification Clause 1105(i).  Unit = cum				
		Rate as per Item No.11.2.I of Chapter 11		cum	1,168.00	
9.3	1100	<b>Providing and Laying Reinforced Cement Concrete Pipe NP3 as per design in Single Row</b>  Providing and Laying reinforced cement concrete pipe NP3 with collar 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 as per MoRD Technical specification Clause 1106.  Unit = m  Taking output = 7.5 m  (3 pipes of 2.5 m length each)				

**Chapter 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>(A) 1200 mm dia</b>						
<b>a) Labour</b>						
		Mate	day	0.14	391.00	54.74
		Mason (1st Class)	day	0.50	512.00	256.00
		Mazdoor (Unskilled)	day	3.00	391.00	1,173.00
<b>b) Material</b>						
		Sand	cum	0.05	740.00	37.00
		Cement	t	0.07	6,797.00	475.79
		RCC pipe NP3 pipe including collar	m	7.50	12,200.00	91,500.00
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						<b>19,886.71</b>
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						<b>17,007.49</b>
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						<b>1,303.91</b>
Cost for 7.5 m = a+b+c+d+e						1,31,694.64
<b>Rate per m = (a+b+c+d+e)/7.5</b>						<b>17,559.28</b>
						<b>say <u>17559.30</u></b>
<b>(B) 1000 mm dia</b>						
<b>a) Labour</b>						
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.25	512.00	128.00
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
<b>b) Material</b>						
		Sand	cum	0.04	740.00	29.60
		Cement	t	0.03	6,797.00	203.91
		RCC pipe NP3 pipe including collar	m	7.50	9,380.00	70,350.00
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						<b>15,214.15</b>
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						<b>13,011.43</b>
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						<b>997.54</b>
Cost for 7.5 m = a+b+c+d+e						1,00,751.83
<b>Rate per m = (a+b+c+d+e)/7.5</b>						<b>13,433.58</b>
						<b>say <u>13433.60</u></b>
<b>(C) 750 mm dia</b>						
<b>a) Labour</b>						
		Mate	day	0.05	391.00	19.55
		Mason (1st Class)	day	0.15	512.00	76.80
		Mazdoor (Unskilled)	day	1.20	391.00	469.20
<b>b) Material</b>						
		Sand	cum	0.024	740.00	17.76
		Cement	t	0.018	6,797.00	122.35
		RCC pipe NP3 pipe including collar	m	7.50	6,250.00	46,875.00

**Chapter 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				10,120.41
		d) Contractor's profit @ 15 % on (a+b+c)				8,655.16
		e) Add Cess @ 1.00 % on (a+b+c+d)				663.56
		Cost for 7.5 m = a+b+c+d+e				67,019.78
		Rate per m = (a+b+c+d+e)/7.5				8,935.97
					<b>say</b>	<b><u>8936.00</u></b>
		<b>(D) 600 mm dia</b>				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	0.96	391.00	375.36
		<b>b) Material</b>				
		Sand	cum	0.0192	740.00	14.21
		Cement	t	0.014	6,797.00	95.16
		RCC pipe NP3 pipe including collar	m	7.50	4,490.00	33,675.00
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				7,282.17
		d) Contractor's profit @ 15 % on (a+b+c)				6,227.85
		e) Add Cess @ 1.00 % on (a+b+c+d)				477.47
		Cost for 7.5 m = a+b+c+d+e				48,224.29
		Rate per m = (a+b+c+d+e)/7.5				6,429.91
					<b>say</b>	<b><u>6429.90</u></b>

**9.4 1100 Providing and Laying Reinforced Cement Concrete Pipe NP3 as per Design in Double Row**

Providing and Laying reinforced cement concrete pipe NP3 with collar 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 as per MoRD Technical specification Clause 1106.

Unit = m

Taking output = 7.5 m

(6 pipes of 2.5 m length each in two rows)

**(A) 1200 mm dia**

**a) Labour**

Mate	day	0.34	391.00	132.94
Mason (1st Class)	day	1.20	512.00	614.40
Mazdoor (Unskilled)	day	7.20	391.00	2,815.20

**b) Material**

Sand	cum	0.11	740.00	81.40
Cement	t	0.14	6,797.00	951.58
RCC pipe NP3 pipe including collar	m	15.00	12,200.00	1,83,000.00

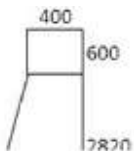
c) Add GST (multiplying factor) @ 0.2127 on (a+b) 39,901.57

**Chapter 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Contractor's profit @ 15 % on (a+b+c)				<b>34,124.56</b>
		e) Add Cess @ 1.00 % on (a+b+c+d)				<b>2,616.22</b>
		Cost for 7.5 m = a+b+c+d+e				2,64,237.87
		Rate per m = (a+b+c+d+e)/7.5				<b>35,231.72</b>
					<b>say</b>	<b><u>35231.70</u></b>
		<b>(B) 1000 mm dia</b>				
		<b>a) Labour</b>				
		Mate	day	0.22	391.00	86.02
		Mason 1st Class	day	0.60	512.00	307.20
		Mazdoor (Unskilled)	day	4.80	391.00	1,876.80
		<b>b) Material</b>				
		Sand	cum	0.08	740.00	59.20
		Cement	t	0.06	6,797.00	407.82
		RCC pipe NP3 pipe including collar	m	15.00	9,380.00	1,40,700.00
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				<b>30,509.06</b>
		d) Contractor's profit @ 15 % on (a+b+c)				<b>26,091.91</b>
		e) Add Cess @ 1.00 % on (a+b+c+d)				<b>2,000.38</b>
		Cost for 7.5 m = a+b+c+d+e				2,02,038.39
		Rate per m = (a+b+c+d+e)/7.5				<b>26,938.45</b>
					<b>say</b>	<b><u>26938.50</u></b>
		<b>(C) 750 mm dia</b>				
		<b>a) Labour</b>				
		Mate	day	0.11	391.00	43.01
		Mason 1st Class	day	0.30	512.00	153.60
		Mazdoor (Unskilled)	day	4.80	391.00	1,876.80
		<b>b) Material</b>				
		Sand	cum	0.08	740.00	59.20
		Cement	t	0.060	6,797.00	407.82
		RCC pipe NP3 pipe including collar	m	15.00	6,250.00	93,750.00
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				<b>20,480.97</b>
		d) Contractor's profit @ 15 % on (a+b+c)				<b>17,515.71</b>
		e) Add Cess @ 1.00 % on (a+b+c+d)				<b>1,342.87</b>
		Cost for 7.5 m = a+b+c+d+e				1,35,629.99
		Rate per m = (a+b+c+d+e)/7.5				<b>18,084.00</b>
					<b>say</b>	<b><u>18084.00</u></b>
		<b>(D) 600 mm dia</b>				
		<b>a) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason 1st Class	day	0.24	512.00	122.88
		Mazdoor (Unskilled)	day	3.84	391.00	1,501.44

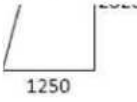
**Chapter 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Material</b>				
		Sand	cum	0.06	740.00	44.40
		Cement	t	0.050	6,797.00	339.85
		RCC pipe NP3 pipe including collar	m	12.00	4,490.00	53,880.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>11,894.98</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>10,172.81</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>779.92</b>
		Cost for 7.5 m = a+b+c+d+e				78,771.47
		<b>Rate per m = (a+b+c+d+e)/7.5</b>				<b>10,502.86</b>
					<b>say</b>	<b><u>10502.90</u></b>
9.5	1100 & 800	<b>Plain Cement Concrete M10(1:3:6 nominal mix) in levelling course below open foundation of Head walls as per drawings &amp; MoRD Technical Specification Clause 800 &amp; 1109.</b>				
		Rate as per item No.11.4.I.(i) of Chapter 11	cum			9,983.70
9.6	1100 & 600	<b>Brick Masonry Work in cement mortar in foundation of Head walls complete excluding pointing and plastering as per drawing and MoRD technical specification Clause 1109.</b>				
		<b>(A) Brick Masonry in 1:4 cement mortar</b>				
		Rate as per item No.11.5 (ii) Chapter 11	cum			9,418.50
9.7	1100 & 600	<b>Pointing with Cement Mortar (1 : 3) on brickwork as per MoRD Technical Specification Clause 613.3.</b>				
		Rate as per item No.12.2 of Chapter 12	sqm			96.40
9.8	1100 & 600	<b>Plastering with Cement Mortar (1 : 4), 15 mm thick on brickwork in substructure as per MoRD technical specification Clause 613.4.</b>				
		Rate as per item No.12.3 of Chapter 12	sqm			223.20
9.9	1100 & 300	<b>Backfilling in Foundation Trenches as per drawing and MoRD technical specification Clause 1108.</b>				
		i) Sand Filling				
		Rate as per Item No.11.2.I of Chapter 11	cum			1,168.00
		i) Earth Filling (for Masrshy Soil)				
		Rate as per Item No.11.2.II of Chapter 11	cum			293.70
9.10	1100, 600, 700 & 1200	<b>Providing PCC M20 Architecture Coping on the top of wing wall, return wall etc. complete as per drawing and MoRD Technical Specification Clause 615.</b>				
		Rate as per Item No.12.11 of Chapter 12	m			739.60
9.11	1109 & 800	<b>Cement Concrete M10 (1:3:6 nominal mix) in Head Walls with skin reinforcement (8 mm dia @ 200 mm c/c on exposed surface as per drawings &amp; MoRD Technical Specification 1109 (including centering, shuttering, staging etc.)</b>				
		Unit = cum				
		Taking output = 2.60 cum				
		Area of skin reinforcement = 13.16 cum				





**Chapter 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		 <p><b>500 mm dia</b></p>				
		a) <b>For concrete</b>				
		Rate as per Item No.11.4.I(ii) of Chapter 11	Cum	2.57	10,075.40	25,893.78
		b) <b>Steel for skin reinforcement @ 4.50 kg/sqm (Twisted steel/ deformed bars)</b>	t	0.059	58,000.00	3,422.00
		c) <b>Add GST (multiplying factor) @ 0.2127 on (b)</b>				<b>727.86</b>
		d) <b>Contractor's profit @ 15 % on (b+c)</b>				<b>622.48</b>
		e) <b>Add Cess @ 1.00 % on (b+c+d)</b>				<b>47.72</b>
		Cost for 2.57 cum = a+b+c+d+e				30,713.84
		<b>Rate per cum = (a+b+c+d+e)/2.57</b>				<b>11,950.91</b>
					<b>say</b>	<b><u>11950.90</u></b>

**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE (i.e. LOCALLY AVAILABLE MATERIALS)**

**9.12 1100 & Bedding for Pipe**  
**800**

(i) **Type A (Concrete Cradle) Bedding**

Laying concrete cradle bedding with M15 Grade Cement Concrete( with jhama brick aggregate as per MoRD Technical soecification Clause 1105(i).

Unit = cum

Rate as per Item No.11.9.II(i) of Chapter 11 cum 9,350.00

**9.13 1100 & Plain Cement Concrete M10(1:3:6 nominal mix with**  
**800** jhama brick aggregate) in levelling course below open foundation of Head walls as per drawings & MoRD Technical Specification Clause 1109 (including centering, shuttering, staging etc. but excluding reinforcement).

Rate as per item No. 11.11.I.(i) of Chapter 11. cum 9,099.90

**9.14 1100, 600, 700 & 1200** Providing PCC M20 (jhama brick aggregate) Architecture Coping on the top of wing wall, return wall etc. complete as per drawing and MoRD Technical Specification Clause 615 (including centering, shuttering, staging etc. but excluding reinforcement).

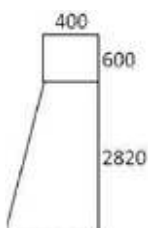
Rate as per Item No.12.15 of Chapter 12 m 685.70

**9.15 1109 & 800** Cement Concrete M10 (1:3:6 nominal mix with jhama brick aggregate) in Head Walls with skin reinforcement (8 mm dia @ 200 mm c/c on exposed surface as per drawings & MoRD Technical Specification 1109 (including centering, shuttering, staging etc.)

Unit = cum

Taking output = 2.60 cum

Area of skin reinforcement = 13.02 cum



a) **For concrete**

**Chapter 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
1250		Rate as per Item No.11.11.1(i) of Chapter 11	Cum	2.57	9,099.90	23,386.74
		b) Steel for skin reinforcement @ 4.50 kg/sqm (Twisted steel/ deformed bars)	t	0.059	58,000.00	3,422.00
		c) Add GST (multiplying factor) @ 0.2127 on (b)				<b>727.86</b>
		d) Contractor's profit @ 15 % on (b+c)				<b>622.48</b>
		e) Add Cess @ 1.00 % on (b+c+d)				<b>47.72</b>
		Cost for 2.57 cum = a+b+c+d+e				28,206.80
		<b>Rate per cum = (a+b+c+d+e)/2.57</b>				<b>10,975.41</b>
					<b>say</b>	<b><u>10975.40</u></b>

**9.16 1100 Providing and laying Reinforced Cement Concrete Pipe NP2 as per design in single Row**

Providing and Laying reinforced cement concrete pipe NP2 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 as per MoRD Technical specification Clause 1106.

Unit = m

Taking output = 7.5 m

(3 pipes of 2.5 m length each)

**(A) 1200 mm dia**

**a) Labour**

Mate	day	0.14	391.00	54.74
Mason (1st Class)	day	0.50	512.00	256.00
Mazdoor (Unskilled)	day	3.00	391.00	1,173.00

**b) Material**

Sand	cum	0.05	740.00	37.00
Cement	t	0.07	6,797.00	475.79
RCC pipe NP2 pipe of 1200 mm dia	m	7.50	6,246.00	46,845.00
Collar of 1200 mm dia	no	2	1,348.00	2,696.00

c) Add GST (multiplying factor) @ 0.2127 on (a+b) **10,962.03**

d) Contractor's profit @ 15 % on (a+b+c) **9,374.93**

e) Add Cess @ 1.00 % on (a+b+c+d) **718.20**

Cost for 7.5 m = a+b+c+d+e 72,592.69

**Rate per m = (a+b+c+d+e)/7.5 9,679.03**

**say 9679.00**

**(B) 900 mm dia**

**a) Labour**

Mate	day	0.09	391.00	35.19
Mason (1st Class)	day	0.25	512.00	128.00
Mazdoor (Unskilled)	day	2.00	391.00	782.00

**b) Material**

**Chapter 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Sand	cum	0.04	740.00	29.60
		Cement	t	0.03	6,797.00	203.91
		RCC pipe NP2 pipe of 900 mm dia	m	7.50	3,969.00	29,767.50
		Collar of 900 mm dia	no	2	1,019.00	2,038.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>7,015.74</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>5,999.99</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>459.65</b>
		Cost for 7.5 m = a+b+c+d+e				46,459.58
		<b>Rate per m = (a+b+c+d+e)/7.5</b>				<b>6,194.61</b>
					<b>say</b>	<b><u>6194.60</u></b>
		<b>(C) 600 mm dia</b>				
		<b>a) Labour</b>				
		Mate	day	0.05	391.00	19.55
		Mason (1st Class)	day	0.15	512.00	76.80
		Mazdoor (Unskilled)	day	1.20	391.00	469.20
		<b>b) Material</b>				
		Sand	cum	0.02	740.00	14.80
		Cement	t	0.02	6,797.00	135.94
		RCC pipe NP2 pipe of 600 mm dia	m	7.50	2,467.00	18,502.50
		Collar of 600 mm dia	no	2	556.00	1,112.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>4,324.36</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>3,698.27</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>283.34</b>
		Cost for 7.5 m = a+b+c+d+e				28,636.76
		<b>Rate per m = (a+b+c+d+e)/7.5</b>				<b>3,818.23</b>
					<b>say</b>	<b><u>3818.20</u></b>
		<b>(D) 450 mm dia</b>				
		<b>a) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	0.96	391.00	375.36
		<b>b) Material</b>				
		Sand	cum	0.0192	740.00	14.21
		Cement	t	0.014	6,797.00	95.16
		RCC pipe NP2 pipe of 450 mm dia	m	7.50	1,588.00	11,910.00
		Collar of 450 mm dia	no	2	378.00	756.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>2,813.55</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>2,406.20</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>184.32</b>

**Chapter 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Cost for 7.5 m = a+b+c+d+e				18,631.88
		<b>Rate per m = (a+b+c+d+e)/7.5</b>				<b>2,484.25</b>
					<b>say</b>	<b><u>2484.30</u></b>
		<b>(E) 300 mm dia</b>				
		<b>a) Labour</b>				
		Mate	day	0.03	391.00	11.73
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	0.77	391.00	301.07
		<b>b) Material</b>				
		Sand	cum	0.0154	740.00	11.40
		Cement	t	0.012	6,797.00	81.56
		RCC pipe NP2 pipe of 300 mm dia	m	7.50	746.00	5,595.00
		Collar of 300 mm dia	no	2	153.00	306.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,352.34</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,156.54</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>88.55</b>
		Cost for 7.5 m = a+b+c+d+e				8,955.39
		<b>Rate per m = (a+b+c+d+e)/7.5</b>				<b>1,194.05</b>
					<b>say</b>	<b><u>1194.10</u></b>

**9.17 1100 Providing and laying Reinforced Cement Concrete Pipe NP2 as per design in Double Row**

Providing and Laying reinforced cement concrete pipe NP2 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 as per MoRD Technical specification Clause 1106.

Unit = m

Taking output = 7.5 m

(6 pipes of 2.5 m length each in two rows)

**(A) 1200 mm dia**

**a) Labour**

Mate	day	0.34	391.00	132.94
Mason (1st Class)	day	1.20	512.00	614.40
Mazdoor (Unskilled)	day	7.20	391.00	2,815.20

**b) Material**

Sand	cum	0.11	740.00	81.40
Cement	t	0.14	6,797.00	951.58
RCC pipe NP2 pipe of 1200 mm dia	m	15.00	6,246.00	93,690.00
Collar of 1200 mm dia	no	4	1,348.00	5,392.00

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** **22,052.21**

**Chapter 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>18,859.46</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>1,444.56</b>
		Cost for 7.5 m = a+b+c+d+e				1,46,033.75
		<b>Rate per m = (a+b+c+d+e)/7.5</b>				<b>19,471.17</b>
					<b>say</b>	<b><u>19471.20</u></b>
		<b>(B) 900 mm dia</b>				
		<b>a) Labour</b>				
		Mate	day	0.22	391.00	86.02
		Mason (1st Class)	day	0.60	512.00	307.20
		Mazdoor (Unskilled)	day	4.80	391.00	1,876.80
		<b>b) Material</b>				
		Sand	cum	0.08	740.00	59.20
		Cement	t	0.06	6,797.00	407.82
		RCC pipe NP2 pipe of 900 mm dia	m	15.00	3,969.00	59,535.00
		Collar of 900 mm dia	no	4	1,019.00	4,076.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>14,112.23</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>12,069.04</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>925.29</b>
		Cost for 7.5 m = a+b+c+d+e				93,454.60
		<b>Rate per m = (a+b+c+d+e)/7.5</b>				<b>12,460.61</b>
					<b>say</b>	<b><u>12460.60</u></b>
		<b>(C) 600 mm dia</b>				
		<b>a) Labour</b>				
		Mate	day	0.11	391.00	43.01
		Mason (1st Class)	day	0.30	512.00	153.60
		Mazdoor (Unskilled)	day	4.80	391.00	1,876.80
		<b>b) Material</b>				
		Sand	cum	0.08	740.00	59.20
		Cement	t	0.06	6,797.00	407.82
		RCC pipe NP2 pipe of 600 mm dia	m	15.00	2,467.00	37,005.00
		Collar of 600 mm dia	no	4	556.00	2,224.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>8,884.36</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>7,598.07</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>582.09</b>
		Cost for 7.5 m = a+b+c+d+e				58,833.94
		<b>Rate per m = (a+b+c+d+e)/7.5</b>				<b>7,844.53</b>
					<b>say</b>	<b><u>7844.50</u></b>
		<b>(D) 450 mm dia</b>				
		<b>a) Labour</b>				

**Chapter 9  
PIPE CULVERTS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.24	512.00	122.88
		Mazdoor (Unskilled)	day	3.84	391.00	1,501.44
		<b>b) Material</b>				
		Sand	cum	0.06	740.00	44.40
		Cement	t	0.05	6,797.00	339.85
		RCC pipe NP2 pipe of 450 mm dia	m	15.00	1,588.00	23,820.00
		Collar of 450 mm dia	no	4	378.00	1,512.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>5,822.82</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>4,979.79</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>381.43</b>
		Cost for 7.5 m = a+b+c+d+e				38,559.80
		<b>Rate per m = (a+b+c+d+e)/7.5</b>				<b>5,141.31</b>
					<b>say</b>	<b><u>5141.30</u></b>
		<b>(E) 300 mm dia</b>				
		<b>a) Labour</b>				
		Mate	day	0.07	391.00	27.37
		Mason (1st Class)	day	0.19	512.00	97.28
		Mazdoor (Unskilled)	day	3.07	391.00	1,200.37
		<b>b) Material</b>				
		Sand	cum	0.05	740.00	37.00
		Cement	t	0.04	6,797.00	271.88
		RCC pipe NP2 pipe of 300 mm dia	m	15.00	746.00	11,190.00
		Collar of 300 mm dia	no	4	153.00	612.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>2,857.82</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>2,444.06</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>187.10</b>
		Cost for 7.5 m = a+b+c+d+e				18,924.88
		<b>Rate per m = (a+b+c+d+e)/7.5</b>				<b>2,523.32</b>
					<b>say</b>	<b><u>2523.30</u></b>

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
10.1	1700	<b>Printing New Letters and Figures of any Shade</b>				
		Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade as per drawings and MoRD Technical Specification Clause 1701.				
		<b>i) Hindi (Matras commas and the like not to be measured and paid for. Half letters shall be counted as half only)</b>				
		Details for 100 letters of 160 mm height, i.e., 1600 cm				
		Unit = per cm height per letter				
		<b>a) Labour</b>				
		Mate	day	0.12	391.00	46.92
		Painter 1st Class	day	2.00	475.00	950.00
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>b) Material</b>				
		Paint	litre	0.70	201.00	140.70
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>325.14</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>278.06</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>21.32</b>
		Cost for 1600 cm = a+b+c+d+e				2,153.14
		<b>Rate per cm height per letter = (a+b+c+d+e)/1600</b>				<b>1.35</b>
					<b>say</b>	<b><u>1.30</u></b>
		<b>ii) English and Roman</b>				
		Hyphens, commas and the like not to be measured and paid for. Detail for 100 letters of 160 mm height, i.e., 1.6 m				
		Unit = per cm height per letter				
		<b>a) Labour</b>				
		Mate	day	0.07	391.00	27.37
		Painter 1st class	day	1.25	475.00	593.75
		Mazdoor	day	0.50	391.00	195.50
		<b>b) Material</b>				
		Paint	litre	0.50	201.00	100.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>195.07</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>166.83</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>12.79</b>
		Cost for 1600 cm = a+b+c+d+e				1,291.81
		<b>Rate per cm height per letter = (a+b+c+d+e)/1600</b>				<b>0.81</b>
					<b>say</b>	<b><u>0.80</u></b>
10.2	1700, 300, 800	<b>Traffic Signs</b>				
		<b>A. Retro-reflectorised Traffic Signs</b>				

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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(1) Providing and fixing of retro-reflectorised cautionary, mandatory and informative sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per drawings and MoRD Technical Specification Clause 801.

**i) with 900 mm equilateral triangle aluminium sheeting**

Unit = each

Taking output = one traffic sign

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
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**ii) Cement concrete M15 grade**

As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
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**iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications**

As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
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**a) labour (For fixing at site)**

Mate	day	0.01	391.00	3.91
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Mazdoor (Unskilled)	day	0.25	391.00	97.75
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**b) Material**

Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
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Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
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Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint

900 mm equilateral triangle	sqm	0.35	891.00	311.85
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**c) Machinery**

Tractor with trolley	hour	0.08	265.00	21.20
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<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>353.17</b>
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<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>302.04</b>
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<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>23.16</b>
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<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,820.41</b>
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**say 3820.40**

**ii) with 600 mm equilateral triangle aluminium sheeting**

Unit = each

Taking output = one traffic sign

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
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**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 mm equilateral triangle	sqm	0.156	891.00	139.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>316.40</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>270.59</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>20.75</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,576.93</b>
					<b>say</b>	<b><u>3576.90</u></b>
		<b>iii) with 600 mm circular aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 mm circular	sqm	0.283	891.00	252.15
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>340.47</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>291.18</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>22.32</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,736.32</b>
					<b>say</b>	<b><u>3736.30</u></b>
		<b>iv) with 800 x 600 mm rectangular aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 800 x 600 mm rectangular	sqm	0.48	891.00	427.68
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>377.81</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>323.11</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>24.77</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,983.56</b>
					<b>say</b>	<b><u>3983.60</u></b>
		<b>v) with 600 x 450 mm rectangular aluminium sheeting</b>				

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 x 450 mm rectangular	sqm	0.27	891.00	240.57
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>338.01</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>289.07</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>22.16</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,720.00</b>
					<b>say</b>	<b><u>3720.00</u></b>

**vi) with 600 x 600 mm square aluminium sheeting**

Unit = each

Taking output = one traffic sign

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11

cum 0.126 458.20 57.73

**ii) Cement concrete M15 grade**

As per item No.11.4.II(ii) of Chapter 11

cum 0.126 10,325.80 1,301.05

**iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications**

As per item No.10.7 of this Chapter

sqm 0.887 138.50 122.85

**a) labour (For fixing at site)**

Mate day 0.01 391.00 3.91

Mazdoor (Unskilled) day 0.25 391.00 97.75

**b) Material**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 x 600 mm square	sqm	0.36	891.00	320.76
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>355.06</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>303.66</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>23.28</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,832.96</b>
					<b>say</b>	<b><u>3833.00</u></b>

**vii) with 900 mm side octagon aluminium sheeting**

Unit = each

Taking output = one traffic sign

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11

	cum	0.126	458.20	57.73
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**ii) Cement concrete M15 grade**

As per item No.11.4.II(ii) of Chapter 11

	cum	0.126	10,325.80	1,301.05
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**iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications**

As per item No.10.7 of this Chapter

	sqm	0.887	138.50	122.85
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**a) labour (For fixing at site)**

Mate	day	0.01	391.00	3.91
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Mazdoor (Unskilled)	day	0.25	391.00	97.75
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**b) Material**

Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
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Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
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Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint

with 900 mm side octagon	sqm	0.672	891.00	598.75
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**c) Machinery**

Tractor with trolley	hour	0.08	265.00	21.20
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **414.19**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **354.23**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **27.16**

**Chapter 10  
TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f) 4,224.52**

**say 4224.50**

(2) Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 1.5 mm thick supported on GI pipe 50 mm dia firmly fixed to the ground by means of properly designed foundation with M-15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per drawings and MoRD Technical Specification Clause 1701.

Unit = each

Taking output = one traffic sign

**i) with 900 mm equilateral triangle aluminium sheeting**

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
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**ii) Cement concrete M15 grade**

As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
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**a) Labour (For fixing at site)**

Mate	day	0.01	391.00	3.91
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Mazdoor (Unskilled)	day	0.25	391.00	97.75
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**b) Material**

50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
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Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
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Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint

900 mm equilateral triangle	sqm	0.35	891.00	311.85
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**c) Machinery**

Tractor with trolley	hour	0.08	265.00	21.20
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 333.01**

**e) Contractor's profit @ 15 % on (a+b+c+d) 284.80**

**f) Add Cess @ 1.00 % on (a+b+c+d+e) 21.83**

**Rate per traffic sign = (i+ii+a+b+c+d+e+f) 3,564.08**

**say 3564.10**

**ii) with 600 mm equilateral triangle aluminium sheeting**

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
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**ii) Cement concrete M15 grade**

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**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		600 mm equilateral triangle	sqm	0.156	891.00	139.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>296.25</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>253.36</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>19.42</b>
		<b>Rate per traffic sign = (i+ii+a+b+c+d+e+f)</b>				<b>3,320.61</b>
					<b>say</b>	<b><u>3320.60</u></b>
		<b>iii) with 600 mm circular aluminium sheeting</b>				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		600 mm circular	sqm	0.283	891.00	252.15
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>320.32</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		e) Contractor's profit @ 15 % on (a+b+c+d)				<b>273.94</b>
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				<b>21.00</b>
		Rate per traffic sign = (i+ii+a+b+c+d+e+f)				<b>3,480.00</b>
					<b>say</b>	<b><u>3480.00</u></b>
		<b>iv) with 800 x 600 mm rectangular aluminium sheeting</b>				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		800 mm x 600 mm rectangular	sqm	0.48	891.00	427.68
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>357.65</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>305.87</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>23.45</b>
		Rate per traffic sign = (i+ii+a+b+c+d+e+f)				<b>3,727.23</b>
					<b>say</b>	<b><u>3727.20</u></b>
		<b>v) with 600 x 450 mm rectangular aluminium sheeting</b>				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		600 mm x 450 mm rectangular	sqm	0.27	891.00	240.57
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>317.85</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>271.83</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>20.84</b>
		<b>Rate per traffic sign = (i+ii+a+b+c+d+e+f)</b>				<b>3,463.68</b>
					<b>say</b>	<b><u>3463.70</u></b>
		<b>vi) with 600 mm x 600 mm square aluminium sheeting</b>				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		600 mm x 600 mm square	sqm	0.36	891.00	320.76
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>334.91</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>286.42</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>21.96</b>
		<b>Rate per traffic sign = (i+ii+a+b+c+d+e+f)</b>				<b>3,576.63</b>
					<b>say</b>	<b><u>3576.60</u></b>
		<b>vii) with 900 mm side octagon aluminium sheeting</b>				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		900 mm sides octagon	sqm	0.672	891.00	598.75
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>394.04</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>336.99</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>25.84</b>
		<b>Rate per traffic sign = (i+ii+a+b+c+d+e+f)</b>				<b>3,968.20</b>
					<b>say</b>	<b><u>3968.20</u></b>
		<b>(3) Providing and fixing of retro-reflectorised cautionary, mandatory and informative sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 1.5 mm thick supported on RCC post 100 mm x 100 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per drawings and MoRD Technical Specification Clause 1701.</b>				
		<b>i) with 900 mm equilateral triangle aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		i. RCC M15 Grade in Sub-structure				
		As per item No.12.4.II of Chapter 12	cum	0.0285	10,921.60	311.27
		ii. Steel reinforcement Twisted steel/ deformed bar				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				30.47
		iv. Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		900 mm equilateral triangle	sqm	0.35	891.00	311.85
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>				<b>98.94</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>84.62</b>
		<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>				<b>6.49</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,154.35</b>
					<b>say</b>	<b><u>3154.40</u></b>

**ii) with 600 mm equilateral triangle aluminium sheeting**

Unit = each

Taking output = one traffic sign

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11

cum 0.126 458.20 57.73

**ii) Cement concrete M15 grade**

As per item No.11.4.II(ii) of Chapter 11

cum 0.126 10,325.80 1,301.05

**iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications**

As per item No.10.7 of this Chapter

sqm 0.90 138.50 124.65

**a) labour (For fixing at site)**

Mate day 0.01 391.00 3.91

Mazdoor (Unskilled) day 0.25 391.00 97.75

**b) Material**

i. RCC M15 Grade in Sub-structure

As per item No.12.4.II of Chapter 12 cum 0.0285 10,921.60 311.27

ii. Steel reinforcement Twisted steel/ deformed bars

As per item No.12.5 of Chapter 12 t 0.0077 91,483.20 704.42

iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.

30.47

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		iv. Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 mm equilateral triangle	sqm	0.156	891.00	139.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ on (a+b.iii.iv+c)</b>				<b>62.18</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>53.18</b>
		<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>				<b>4.08</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>2,910.88</b>
					<b>say</b>	<b><u>2910.90</u></b>
		<b>iii) with 600 mm circular aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		i. RCC M15 Grade in Sub-structure				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.0285	10,921.60	311.27
		ii. Steel reinforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				30.47
		iv. Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 mm circular	sqm	0.283	891.00	252.15
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>				<b>86.25</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>73.76</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)				5.65
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)				3,070.26
					<b>say</b>	<b><u>3070.30</u></b>
		<b>iv) with 800 x 600 mm rectangular aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		i. RCC M15 Grade in Sub-structure				
		As per item No.12.4.II of Chapter 12	cum	0.0285	10,921.60	311.27
		ii. Steel reinforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				30.47
		iv. Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 800 x 600 mm rectangular	sqm	0.48	891.00	427.68
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>				<b>123.58</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>105.69</b>
		<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>				<b>8.10</b>
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)				<b>3,317.50</b>
					<b>say</b>	<b><u>3317.50</u></b>
		<b>v) with 600 x 450 mm rectangular aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		i. RCC M15 Grade in Sub-structure				
		As per item No.12.4.II of Chapter 12	cum	0.0285	10,921.60	311.27
		ii. Steel reinforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				30.47
		iv. Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 x 450 mm rectangular	sqm	0.27	891.00	240.57
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c+d)</b>				<b>83.78</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>71.65</b>
		<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>				<b>5.49</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,053.95</b>
					<b>say</b>	<b><u>3053.90</u></b>
		<b>vi) with 600 x 600 mm square aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Material</b>				
		i. RCC M15 Grade in Sub-structure				
		As per item No.12.4.II of Chapter 12	cum	0.0285	10,921.60	311.27
		ii. Steel reinforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				30.47
		iv. Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 x 600 mm square	sqm	0.35	891.00	311.85
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c+d)</b>				<b>98.94</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>84.62</b>
		<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>				<b>6.49</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,154.35</b>
					<b>say</b>	<b><u>3154.40</u></b>
		<b>vii) with 900 mm side octagon aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		i. RCC M15 Grade in Sub-structure				
		As per item No.12.4.II of Chapter 12	cum	0.0285	10,921.60	311.27
		ii. Steel reinforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				30.47

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		iv. Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 900 mm side octagon	sqm	0.672	891.00	598.75
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c+d)</b>				<b>159.97</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>136.81</b>
		<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>				<b>10.49</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,558.47</b>
					<b>say</b>	<b><u>3558.50</u></b>

- Note:**
- Any one area of aluminium sheeting given at (i) to (vii) may be adopted as per site requirement and in accordance with IRC:67.
  - The rate for excavation, cement concrete M-15, RCC M-15 in Sub-structure, steel re-inforcement and painting may be taken from respective Chapters.
  - The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.

**B. Semi Reflective Traffic Signs**

Providing and fixing of semi reflective cautionary, mandatory and informatory sign board as per IRC:67 made of 1.5 mm thick MS sheet duly stove white colour in front and gray colour on back with red reflective border of 65 mm width and required letters and figures with reflective tape engineering grade as per Clause 1701.3.9 of MORD for Rural Roads of required shade and colour supported and welded on 47 mm x 47 mm x 12 SWG sheet tube firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm bellow ground level as per approved drawings and as per MoRD Technical specification Clause 1701.2.2.

Unit = Each

Taking output = one traffic sign

**i) with 900 mm equilateral triangle MS sheeting**

**(i) Excavation foundations**

As per Item No. 1 to 11.1 of Chapter 11

	cum	0.126	458.20	57.73
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**(ii) Cement concrete M-15 Grade**

As per item no. 11.4.II(ii) of Chapter 11

	cum	0.126	10,325.80	1,301.05
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**(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications**

As per item no 10.7 of Chapter 11

	sqm	0.46	138.50	63.71
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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.	kg	1.06	59.50	63.07
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications  900 mm equilateral & triangle	sqm	0.35	700.80	245.28
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>288.80</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>246.99</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>18.94</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,335.02</b>
					<b>say</b>	<b><u>3335.00</u></b>
		<b>ii) with 600 mm equilateral triangle MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M-15 Grade</b>				
		As per item no. 11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	59.50	63.07



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications	sqm			
		600 mm equilateral & triangle	sqm	0.156	700.80	0.00
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>236.63</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>202.37</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>15.52</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>2,989.53</b>
					<b>say</b>	<b><u>2989.50</u></b>
		<b>iii) with 600 mm circular MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M-15 Grade</b>				
		As per item no. 11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	59.50	63.07
		Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications	sqm			
		600 mm circular	sqm	0.283	700.80	198.33
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				278.82
		e) Contractor's profit @ 15 % on (a+b+c+d)				238.45
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				18.28
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,268.88</b>
					<b>say</b>	<b><u>3268.90</u></b>
		<b>iv) with 800 x 600 mm rectangular MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M-15 Grade</b>				
		As per item no. 11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.	kg	1.06	59.50	63.07 28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications  800 mm x 600 mm rectangular	sqm	0.48	700.80	336.38
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				308.18
		e) Contractor's profit @ 15 % on (a+b+c+d)				263.56
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				20.21
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,463.34</b>
					<b>say</b>	<b><u>3463.30</u></b>
		<b>v) with 600 x 450 mm rectangular MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M-15 Grade</b>				

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		As per item no. 11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	59.50	63.07
		Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications	sqm			
		600 mm x 450 mm rectangular	sqm	0.27	700.80	189.22
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>276.88</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>236.79</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>18.15</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,256.05</b>
					<b>say</b>	<b><u>3256.00</u></b>
		<b>vi) with 600 x 600 mm square MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M-15 Grade</b>				
		As per item no. 11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet	kg	12.40	72.40	897.76

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		3050 mm long				
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	59.50	63.07
		Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications				
		600 mm x 600 mm	sqm	0.36	700.80	252.29
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>290.29</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>248.26</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>19.03</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,344.89</b>
					<b>say</b>	<b><u>3344.90</u></b>
		<b>vii) with 900 mm side octagon MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M-15 Grade</b>				
		As per item no. 11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet	kg	12.40	72.40	897.76
		3050 mm long				
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	59.50	63.07
		Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications				

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		900 mm side octagon	sqm	0.672	700.80	470.94
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>336.80</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>288.04</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>22.08</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,652.87</b>
					<b>say</b>	<b><u>3652.90</u></b>

- Note:**
- 1 Any one area of M.S. Sheet given at (i) to (viii) may be adopted as per site requirement and in accordance with IRC-67.
  - 2 The rate for excavation, cement concrete M-15, and painting may be taken from respective Chapters.
  - 3 The depth of foundation and quantity of cement in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal area. This is applicable to all road signs and direction boards.

**10.3** 1700, 800 & 300 **Direction and Place Identification signs upto 0.9 sqm size board**

**A. Retro-reflectorised Traffic Signs**

- (i) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.

Unit = sqm

Taking output = 0.9 sqm

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11 cum 0.126 458.20 57.73

**ii) Cement concrete M-15 grade**

As per item No.11.4.II(ii) of Chapter 11 cum 0.126 10,325.80 1,301.05

**iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications**

Rate as per item No.10.7 of this Chapter sqm 0.887 138.50 122.85

**a) Labour (For fixing at site)**

Mate day 0.01 391.00 3.91

Mazdoor (Unskilled) day 0.25 391.00 97.75

**b) Material**

Mild steel angle iron 75 x 75 x 6 mm kg 20.00 59.50 1,190.00

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 2.0 mm thick fixed with encapsulated lens type reflective sheeting of size 0.90 sqm including lettering and signs as applicable background with epoxy paint	sqm	0.90	1,188.00	1,069.20
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>514.26</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>439.80</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>33.72</b>
		Cost for 0.9 sqm = (i+ii+iii+a+b+c+d+e+f)				4,887.17
		<b>Rate per sqm (for sign having area upto 0.9 sqm)</b> <b>= (i+ii+iii+a+b+c+d+e+f)/0.90</b>				<b>5,430.19</b>
					<b>say</b>	<b><u>5430.20</u></b>
		(ii) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on 2 inch dia GI Pipe firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.				
		Unit = sqm				
		Taking output = 0.9 sqm				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M-15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 2.0 mm thick fixed with encapsulated lens type reflective sheeting of size 0.90 sqm including lettering and signs as applicable background with epoxy paint	sqm	0.90	1,188.00	1,069.20
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>494.10</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>422.57</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>32.40</b>
		Cost for 0.9 sqm = (i+ii+iii+a+b+c+d+e+f)				4,630.85
		<b>Rate per sqm (for sign having area upto 0.9 sqm)</b> <b>= (i+ii+iii+a+b+c+d+e+f)/0.90</b>				<b>5,145.39</b>
					<b>say</b>	<b><u>5145.40</u></b>
		(iii) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on RCC post 100 mm x 100 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.				
		Unit = sqm				
		Taking output = 0.9 sqm				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M-15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.126	10,325.80	1,301.05
		<b>iii) Painting two coats including prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of Chapter 10	sqm	0.90	138.50	124.65
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		i. RCC M-15 Grade in Sub-structure				
		As per item No.12.4.II of Chapter 12	cum	0.0285	10,921.60	311.27
		ii. Steel re-inforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts etc.				30.47
		iv. Aluminium sheeting 2.0 mm thick fixed with encapsulated lens type reflective sheeting of size 0.90 sqm including lettering and signs as applicable background with epoxy paint	sqm	0.90	1,188.00	1,069.20
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii, iv+c)</b>				<b>260.03</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii, iv+c)</b>				<b>222.38</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>17.05</b>
		Cost for 0.9 sqm = (i+ii+iii+a+b+c+d+e+f)				4,221.12
		<b>Rate per sqm (for sign having area upto 0.9 sqm)</b> <b>= (i+ii+iii+a+b+c+d+e+f)/0.90</b>				<b>4,690.13</b>
					<b>say</b>	<b><u>4690.10</u></b>

- Note:**
- 1 Lettering and arrow markings on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately.
  - 2 The rate for excavation, cement concret M15, RCC M15 in Sub-structure, steel re-inforcement and painting may be taken from respective Chapters.
  - 3 The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.

**B. Semi-Reflective Traffic signs**

**Direction and place identification signs up to 0.9 sqm size board**

Providing and erecting and place identifications of semi reflective sign boards as per IRC:67 made of 2 mm thick M.S. sheet duly stove enameled paint in white colour in front and gray colour on back with red reflective border of 70 mm width and required message, letters and figures with reflective engineering grade tape as per MORD specifications of required shade and colour. Supported and welded on 47 mm x 47 mm x 12 SWG square tube of 3050 mm height duly strengthened by 25 mm x 5 mm MS flat iron on edges on back firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.

Unit = each

Take Output = 0.9 sqm

**(i) Excavation for foundations**

As per item No.11.1.A.I(i) of Chapter 11

	cum	0.126	458.20	57.73
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**(ii) Cement concrete M-15 grade**

As per item No.11.4.II(ii) of Chapter 11

	cum	0.126	10,325.80	1,301.05
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**(iii) Painting on M.S. tube post with primer and two coat of epoxy paint as per specifications**

As per item No.10.7 of Chapter 10

	sqm	0.59	138.50	81.72
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**a) Labour (For fixing at site)**

Mate	day	0.01	391.00	3.91
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Mazdoor (Unskilled)	day	0.25	391.00	97.75
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**b) Materials**

- i) Support of MS sheet tube



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		47 mm x 47 mm of 12 SWG sheet 3050 mm long	kg	12.40	72.40	897.76
		ii) Angle iron 50 x 50 x 6 mm for lugs including 5% wastage	kg	1.06	59.50	63.07
		iii) 2 mm thick MS sheet strengthened by 25 mm x 5 mm MS flat iron & painted with stove enameled paint including lettering, signs, message, border with reflective tape of engineering grade of required shade and colour as per Technical Specifications.	sqm	0.90	934.80	841.32
		Add 3% cost of MS sheet angle iron towards the cost of fabrications, drilling, holes, nuts, bolts, etc.				54.06
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>420.95</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>360.00</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>27.60</b>
		Cost for 0.9 sqm = (i+ii+iii+a+b+c+d+e+f)				4,228.13
		<b>Rate per sqm = (i+ii+iii+a+b+c+d+e+f) / 0.9</b>				<b>4,697.92</b>
					<b>say</b>	<b><u>4697.90</u></b>

**Note:** Rate for excavation, cement concrete M15 and painting may be taken from respective Chapters.

**10.4** 1700, 800 & 300 **Direction and Place Identification signs with size more than 0.9 sqm size board**

**A. Retro-reflectorised Traffic Signs**

- (i) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 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 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.

Unit = sqm

Taking output = 1.50 sqm

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11 cum 0.252 458.20 115.47

**ii) Cement concrete M-15 grade**

As per item No.11.4.II(ii) of Chapter 11 cum 0.252 10,325.80 2,602.10

**iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint specifications**

As per item No.10.7 of Chapter 10 sqm 1.774 138.50 245.70

**a) Labour (For fixing at site)**

Mate day 0.02 391.00 7.82

Mazdoor (Unskilled) day 0.50 391.00 195.50

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Material</b>				
		Mild steel angle iron 75 mm x 75 mm x 6 mm, 2.85 m long, 2 nos. with 5 per cent wastage	kg	40.00	59.50	2,380.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				71.40
		Aluminium sheeting 2 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint	sqm	1.50	1,188.00	1,782.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.12	265.00	31.80
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>950.45</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>812.85</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>62.32</b>
		Cost for 1.5 sqm = i+ii+iii+a+b+c+d+e+f				9,257.41
		<b>Rate per sqm (for sign having area more than 0.9 sqm) = (i+ii+iii+a+b+c+d+e+f)/1.50</b>				<b>6,171.60</b>
					<b>say</b>	<b><u>6171.60</u></b>
		(ii) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on 50 mm dia GI Pipe, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.				
		Unit = sqm				
		Taking output = 1.50 sqm				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.252	458.20	115.47
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.252	10,325.80	2,602.10
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	6.00	366.00	2,196.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts, etc.				65.88
		Aluminium sheeting 2 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint		1.50	1,188.00	1,782.00

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.12	265.00	31.80
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>910.14</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>778.37</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>59.68</b>
		Cost for 1.50 sqm = i+ii+a+b+c+d+e+f				8,744.76
		<b>Rate per sqm ( for sign having area more than 0.9 sqm) = (i+ii+a+b+c+d+e+f)/1.50</b>				<b>5,829.84</b>
					<b>say</b>	<b><u>5829.80</u></b>
		(iii) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on RCC post 100 mm x 100 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.				
		Unit = sqm				
		Taking output = 1.50 sqm				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.252	458.20	115.47
		<b>ii) Cement concrete M15 grade</b>				
		As per item No.11.4.II(ii) of Chapter 11	cum	0.252	10,325.80	2,602.10
		<b>iii) Painting two coats including prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of Chapter 10	sqm	1.84	138.50	254.84
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Material</b>				
		i. RCC M-15 Grade in Sub-structure				
		As per item No.12.4.II of Chapter 12	cum	0.057	10,921.60	622.53
		ii. Steel re-inforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0154	91,483.20	1,408.84
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				60.94
		iv. Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint	sqm	1.50	1,188.00	1,782.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.12	265.00	31.80

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii, iv+c)				442.00
		e) Contractor's profit @ 15 % on (a+b.iii, iv+c)				378.01
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				28.98
		Cost for 1.5 sqm = a+b+c+d+e+f				7,930.84
		<b>Rate per sqm (for sign having area more than 0.9 sqm) = (a+b+c+d+e+f)/1.50</b>				<b>5,287.22</b>
					<b>say</b>	<b><u>5287.20</u></b>

- Note:**
- 1 Lettering and arrow markings on sign boards to be provided separately as per actual requirement. Rates for these items have been analysed separately.
  - 2 The rate for excavation, cement concrete M15, RCC M15 in Sub-structure, steel re-inforcement and painting may be taken from respective Chapters.
  - 3 The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.

**B. Semi-Reflective Traffic signs**

**Direction and place identification signs more than 0.90 sqm sign board**

Providing and erecting direction and place identifications of semi reflective sign boards as per IRC:67 made of 2 mm thick M.S. sheet duly stove enameled paint in white colour in front and gray colour on back with reflective border of 70 mm width and required message, letters and figures with reflective engineering grade tape as per MORD specifications of required shade and colour. Supported and welded on 2 Nos. 47 mm x 47 mm x 12 SWG square tube of 3050 mm height duly strengthened by 25 mm x 5 mm MS flat iron on edges on back firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.

Unit = each

Taking output = 1.5 sqm

**(i) Excavation for foundations as**

As per item No.11.1.A.I(i) of Chapter 11	cum	0.252	458.20	115.47
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**(ii) Cement concrete M15 grade**

As per item No.11.4.II(ii) of Chapter 11	cum	0.252	10,325.80	2,602.10
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**(iii) Painting M.S. tube posts with primer and two coats of epoxy paint as per specification**

As per item No. 10.7 of chapter 10	sqm	0.92	138.50	127.42
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**a) Labour (for fixing at site)**

Mate	day	0.02	391.00	7.82
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Mazdoor (Unskilled)	day	0.50	391.00	195.50
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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>b) Material</b>						
		i) Support of MS Sheet tubes 47 mm x 47 mm x 12 SWG sheet 3050 mm long	kg	24.80	72.40	1,795.52
		ii) Angle iron 50 mm x 50 mm x 6 mm for lugs	kg	2.12	59.50	126.14
		iii) 2 mm thick MS Sheet strengthened by 25 mm x 5 mm M.S. flat iron and painted with stove enameled paint including lettering, signs, messages, border with reflective tape of engineering grade of required size, shade and colour as per MORD specifications	sqm	1.50	934.80	1,402.20
		Add 3% cost of MS sheet and angle iron towards the cost of fabrications, drilling, holes, nuts, bolts etc.				99.72
<b>c) Machinery</b>						
		Tractor with trolley	hour	0.16	265.00	42.40
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>780.46</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>667.46</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>51.17</b>
Cost for 1.5 sqm board = (i+ii+iii+a+b+c+d+e+f)						8,013.38
<b>Rate per sqm = (i+ii+iii+a+b+c+d+e+f) / 1.5</b>						<b>5,342.25</b>
<b>say</b>						<b><u>5342.30</u></b>

**Note:** Rate for excavation cement concrete M15 and painting may be taken from respective chapter

**10.5 1700 Painting Two Coats on New Concrete Surfaces**

Painting two coats including primer coat after filling the surface with synthetic enamel paint in all shades on new, plastered / concrete surfaces as per drawing and MoRD Technical Specification clause 1701.

Unit = sqm

Taking output = 40 sqm

**a) Labour**

Mate	day	0.20	391.00	78.20
Painter (1st Class)	day	3.00	475.00	1,425.00
Mazdoor (Unskilled)	day	2.00	391.00	782.00

**b) Material**

Cement Primer as per specifications	litre	3.00	66.00	198.00
Paint conforming to requirement of Clause 1701.3.8	litre	6.00	201.00	1,206.00
Add for scaffolding @ 1 per cent of labour cost where required				22.85

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** **789.55**

**d) Contractor's profit @ 15 % on (a+b+c)** **675.24**

**e) Add Cess @ 1.00 % on (a+b+c+d)** **51.77**

Cost for 40 sqm = a+b+c+d+e 5,228.61

**Rate per sqm = (a+b+c+d+e)/40** **130.72**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
					<b>say</b>	<b><u>130.70</u></b>

**10.6 1700 Painting on Steel Surfaces**

Providing and applying two coats of ready mix paint including primer coat of approved brand on steel surface after through cleaning of surface to give an even shade as per drawing and MoRD Technical Specification Clause 1701.

Unit = sqm

Taking output = 10 sqm

**a) Labour**

Mate	day	0.25	391.00	97.75
Painter (1st Class)	day	0.60	475.00	285.00
Mazdoor (Unskilled)	day	0.40	391.00	156.40

**b) Material**

Red-oxide Primer as per specifications	litre	0.60	134.20	80.52
Paint ready mixed approved brand	litre	1.25	201.00	251.25
Add @ 1 per cent on cost of material for scaffolding wherever required				3.32

**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 185.95**

**d) Contractor's profit @ 15 % on (a+b+c) 159.03**

**e) Add Cess @ 1.00 % on (a+b+c+d) 12.19**

Cost for 10 sqm = a+b+c+d+e 1,231.41

**Rate per sqm = (a+b+c+d+e)/10 123.14**

**say 123.10**

**10.7 1700 Painting on Concrete/Steel Surfaces with Epoxy**

Painting two coats including prime coat with epoxy paint of approved brand on concrete/steel surfaces after through cleaning of surface to give an even shade as per drawing and MoRD Technical Specification Clause 1701.

Unit = sqm

Taking output = 10 sqm

**a) Labour**

Mate	day	0.25	391.00	97.75
Painter (1st Class)	day	0.60	475.00	285.00
Mazdoor (Unskilled)	day	0.40	391.00	156.40

**b) Material**

Epoxy primer	litre	0.60	175.00	105.00
Epoxy paint	litre	1.25	268.00	335.00
Add @ 1 per cent on cost of material for scaffolding wherever required				4.40

**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 209.20**

**d) Contractor's profit @ 15 % on (a+b+c) 178.91**

**e) Add Cess @ 1.00 % on (a+b+c+d) 13.72**

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Sr. No.	Ref. to MORO Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Cost for 10 sqm = (a+b+c+d+e)				1,385.38
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				<b>138.54</b>
					<b>say</b>	<b><u>138.50</u></b>
<b>10.8</b>	<b>1700</b>	<b>Painting lines, Dashes, Arrows, etc. on Road in Two Coats on New Work</b>				
		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/concrete surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control as per drawing and MoRD Technical Specification Clause 1702.				
		Assuming 100 mm width				
		Unit = sqm				
		Taking output = 10 sqm				
		<b>a) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Painter 1st Class	day	0.55	475.00	261.25
		Mazdoor (Unskilled)	day	1.55	391.00	606.05
		<b>b) Material</b>				
		Road marking paint as per IS:164	litre	1.48	149.00	220.52
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>238.86</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>204.28</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>15.66</b>
		Cost for 10 sqm = a+b+c+d+e				1,581.82
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				<b>158.18</b>
					<b>say</b>	<b><u>158.20</u></b>
<b>10.9</b>	<b>1700</b>	<b>Painting lines, Dashes, Arrows, etc. on Roads in Two Coats on Old Work</b>				
		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 / concrete surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control as per drawing and MoRD Technical Specification Clause 1702.				
		Assuming 100 cm width				
		Unit = sqm				
		Taking output = 10 sqm				
		<b>a) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Painter (1st class)	day	0.30	475.00	142.50
		Mazdoor (Unskilled)	day	1.25	391.00	488.75
		<b>b) Material</b>				
		Road marking paint	litre	0.90	149.00	134.10
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>167.78</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Contractor's profit @ 15 % on (a+b+c)				143.49
		e) Add Cess @ 1.00 % on (a+b+c+d)				11.00
		Cost for 10 sqm = a+b+c+d+e				1,111.08
		Rate per sqm = (a+b+c+d+e)/10				111.11
					<b>say</b>	<b><u>111.10</u></b>

**10.10 1700 Kilometre Stone**

Reinforced cement concrete M15 grade kilometre stone / local stone of standard design as per IRC:8 fixing in position including painting and printing, etc. as per drawing and MoRD Technical Specification Clause 1703.

**i) 5th Kilometre Stone (precast)**

Unit = each

Taking output = 6 Nos.

**a) M-15 grade of concrete**

As per item No.12.4.II of Chapter 12

	cum	2.35	10,921.60	25,665.76
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**b) Steel reinforcement @ 5 kg per sqm**

As per item No.12.5 of Chapter 12

	t	0.0221	91,483.20	2,021.78
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**c) Excavation in soil for foundation**

As per item No.11.1.A.I(i) of Chapter 11

	cum	1.68	458.20	769.78
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**d) Painting two coats on concrete surface**

As per item No.10.5 of Chapter 10

	sqm	9.85	130.70	1,287.40
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**e) lettering on km post (average 30 letters of 10 cm height each)**

As per item No.10.1 of Chapter 10 (Englisg & Ro

	per cm high per letter	1,800.00	0.80	1,440.00
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**Transportation and fixing****f) Labour**

Mate	day	0.26	391.00	101.66
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Mason (1st Class)	day	0.60	512.00	307.20
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Mazdoor (Unskilled)	day	6.00	391.00	2,346.00
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**g) Machinery**

50 HP Tractor with trolley	hour	6.00	265.00	1,590.00
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**h) Add GST (multiplying factor) @ 0.2127 on (f+g) 924.15**

**i) Contractor's profit @ 15 % on (f+g+h) 790.35**

**j) Add Cess @ 1.00 % on (f+g+h+i) 60.59**

Cost for 6 Nos. 5th km stone = a+b+c+d+e+f+g+h+i+j 37,304.67

**Rate for each 5th km stone = (a+b+c+d+e+f+g+h+i+j)/6 6,217.44**

**say 6217.40**

**ii) Ordinary Kilometer Stone (Precast)**

Unit = each

Taking output = 14 Nos.



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		a) M15 grade of concrete				
		As per item No.12.4.II of Chapter 12	cum	3.77	10,921.60	41,174.43
		b) Steel reinforcement @ 5 kg per sqm				
		As per item No.12.5 of Chapter 12	t	0.0263	91,483.20	2,406.01
		c) Excavation in soil for foundation				
		As per item No.11.1.A.I(i) of Chapter 11	cum	2.77	458.20	1,269.21
		d) Painting two coats on concrete surface				
		As per item No.10.5 of Chapter 10	sqm	11.41	130.70	1,491.29
		e) lettering on km post (average 30 letters of 10 cm height each)				
		As per item No.10.1 of Chapter 10 (Englisg & Roman)	per cm high per	1,680.00	0.80	1,344.00
		<b>Transportation and fixing</b>				
		<b>f) Labour</b>				
		Mate	day	0.32	391.00	125.12
		Mason (1st Class)	day	1.00	512.00	512.00
		Mazdoor (Unskilled)	day	7.00	391.00	2,737.00
		<b>g) Machinery</b>				
		50 HP Tractor with trolley	hour	6.00	265.00	1,590.00
		<b>h) Add GST (multiplying factor) @ 0.2127 on (f+g)</b>				<b>1,055.87</b>
		<b>i) Contractor's profit @ 15 % on (f+g+h)</b>				<b>903.00</b>
		<b>j) Add Cess @ 1.00 % on (f+g+h+i)</b>				<b>69.23</b>
		<b>Rate for each ordinary km stone = (a+b+c+d+e+f+g+h+i+j)/14</b>				<b>3,905.51</b>
					<b>say</b>	<b><u>3905.50</u></b>
		<b>iii) 200 m stone (precast)</b>				
		Unit = each				
		Taking output = 33 Nos.				
		a) M15 grade of concrete				
		As per item No.12.4.II of Chapter 12	cum	1.58	10,921.60	17,256.13
		b) Steel reinforcement @ 5 kg per sqm				
		As per item No.12.5 of Chapter 12	t	0.066	91,483.20	6,037.89
		c) Excavation in soil for foundation				
		As per item No.11.1.A.I(i) of Chapter 11	cum	1.39	458.20	636.90
		d) Painting two coats on concrete surface				
		As per item No.10.5 of Chapter 10	sqm	6.27	130.70	819.49
		e) lettering on km post (average 30 letters of 10 cm height each)				
		As per item No.10.1 of Chapter 10 (Englisg & Roman)	per cm per letter	330.00	0.80	264.00
		<b>Transportation and fixing</b>				
		<b>f) Labour</b>				

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	0.34	391.00	132.94
		Mason (1st Class)	day	1.50	512.00	768.00
		Mazdoor (Unskilled)	day	7.00	391.00	2,737.00
		<b>g) Machinery</b>				
		50 HP Tractor with trolley	hour	6.00	265.00	1,590.00
		<b>h) Add GST (multiplying factor) @ 0.2127 on (f+g)</b>				<b>1,111.98</b>
		<b>i) Contractor's profit @ 15 % on (f+g+h)</b>				<b>950.99</b>
		<b>j) Add Cess @ 1.00 % on (f+g+h+i)</b>				<b>72.91</b>
		Cost for 33 Nos. 200 m stone = (a+b+c+d+e+f+g+h+i+j)				32,378.23
		<b>Rate for each 200 m stone = (a+b+c+d+e+f+g+h+i+j)/33</b>				<b>981.16</b>
					<b>say</b>	<b>981.20</b>

- Note:** 1 The rate for excavation, cement concrete, steel reinforcement, painting and lettering may be taken from respective Chapters.
- 2 In case local stone is to be used in place of precast RCC stones, then rate of cement concrete and steel reinforcement may be deleted.

**10.11**    1700, 800 & 300    **G.I Barbed Wire Fencing 1.2 m high**

Providing and fixing 1.2 m high GI barbed wire fencing with 1.8 m RCC posts 150 mm x 150 mm placed every 3 m centre-to-centre founded in M-15 grade cement concrete, 0.6 m 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 MoRD technical specification Clause 1705.

Unit = per running m

Taking output = 30 m

**a) Labour**

Mate	day	0.09	391.00	35.19
Blacksmith	day	0.25	480.00	120.00
Mazdoor (Unskilled)	day	2.00	391.00	782.00

**b) Material**

i. Barbed wire 335 m length @ 9.38 kg per 100 m	kg	31.42	82.40	2,589.01
R.C.C. Post 150 mm x 150 mm x 1.80 m				
M15 Grade concrete				
13 x 150 mm x 150 mm x 1.8 m				
ii. Rate As per item No.12.4.II of Chapter 12	cum	0.526	10,921.60	5,744.76
iii. Add 5 per cent extra cost for formwork of M-15				287.24

Supply of Twisted steel/ deformed bars including cutting, bending, tying & placing in position.

10 mm dia bars for posts

13 x 4 x 1.8 = 93.6 m @ 0.62 kg/mt = 43.60 kg

8 mm dia bars for rings

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		13 x 10 x 0.6 = 78 m @ 0.39 kg/mt =		30.42 kg		
		<b>Total</b>		<b>74.02 kg</b>		
		iv. As per item No.12.5 of Chapter 12	t	0.074	91,483.20	6,769.76
		v. Add for GI staple binding wire, drilling holes, etc. @ 2 per cent of the cost of material				135.40
		<b>c) Painting</b>				
		Applying two coats of painting including primer coat on exposed surface of RCC posts				
		As per item No.10.5 of this Chapter	sqm	8.14	130.70	1,063.90
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b{i,iii &amp; v})</b>				<b>839.92</b>
		<b>e) Contractor's profit @ 15 % on (a+b{i,iii &amp; v}+d)</b>				<b>718.31</b>
		<b>f) Add Cess @ 1.00 % on (a+b{i,iii &amp; v}+d+e)</b>				<b>55.07</b>
		Cost for 30 m fencing = a+b+c+d+e+f				19,085.48
		<b>Rate per m = (a+b+c+d+e+f)/30</b>				<b>636.18</b>
					<b>say</b>	<b>636.20</b>
		<i>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.</i>				
<b>10.12</b>	<b>1700, 800 &amp; 300</b>	<b>G.I Barbed Wire Fencing 1.8 m high</b>				
		Providing and fixing 1.8 m high GI barbed wire fencing with 2.4 m RCC M15 grade 150 mm x 150 mm concrete post placed every 3 m centre-to-centre founded in M15 grade cement concrete, 0.6 m 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 MoRD technical specification Clause 1705.				
		Unit = per running m				
		Taking output = 30 m				
		<b>a) Labour</b>				
		Mate	day	0.12	391.00	46.92
		Blacksmith	day	0.40	480.00	192.00
		Mazdoor (Unskilled)	day	2.50	391.00	977.50
		<b>b) Material</b>				
		i. Barbed wire 428 m length @ 9.38 kg per 100 m	kg	40.15	82.40	3,308.36
		R.C.C. Post 150 mm x 150 mm x 2.4 m				
		M-15 Grade				
		13 x 150 mm x 150 mm x 2.4 m				
		ii. As per item No.12.4.II of Chapter 12	cum	0.702	10,921.60	7,666.96
		iii. Add 5 per cent extra cost of C.C. for formwork of M-15				383.35
		Supply of Twisted steel/ deformed bars including cutting, bending, tying & placing in position.				
		10 mm dia steel bars for posts				

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		13 x 4 x 2.4 =		124.80 m		
		@ 0.62 kg/mt =		77.38 kg		
		8 mm dia bars for rings				
		13 x 11 x 0.6 =		85.80 m		
		@ 0.39 kg/m =		33.46 kg		
		<b>Total</b>		<b>110.84 kg</b>		
		iv. As per item No.12.5 of Chapter 12	t	0.111	91,483.20	10,154.64
		v. Add for GI staple, binding wire, drilling holes etc. @ 2 per cent of the cost of material				203.09
		<b>c) Painting</b>				
		Applying two coats of painting including prime coat on exposed surface of RCC posts				
		As per item No.10.5 of this Chapter	sqm	12.10	130.70	1,581.47
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b{i,iii &amp; v})</b>				<b>1,087.16</b>
		<b>e) Contractor's profit @ 15 % on (a+b{i,iii &amp; v}+d)</b>				<b>929.76</b>
		<b>f) Add Cess @ 1.00 % on (a+b{i,iii &amp; v}+d+e)</b>				<b>139.56</b>
		Cost for 30 m fencing = a+b+c+d+e				26,531.20
		<b>Rate per m fencing = (a+b+c+d+e)/30</b>				<b>884.37</b>
					<b>say</b>	<b><u>884.40</u></b>
		<b>Note:</b> 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.				
<b>10.13</b>	1700, 800 & 300	<b>Tubular Steel Railing on Medium Weight Steel Channel (ISMC series) 100 mm x 50 mm</b>				
		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 m high above ground, 2 m centre-to-centre, complete as per approved drawings MoRD technical specification Clause 1706.				
		Unit = Running m				
		Taking output = 10 m				
		<b>i) Excavation for foundation (6 Nos.) 6 x 0.6 x 0.6 x 0.6</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	1.296	458.200	593.83
		<b>ii) Foundation concrete M-15 grade PCC 6 x 0.6 x 0.6 x 0.3</b>				
		As per item No. 11.4.II(ii) of Chapter 11	cum	0.648	10,325.800	6,691.12
		<b>iii) Painting of pipe</b>				
		As per item No.10.6 of this Chapter	sqm	4.71	123.100	579.80
		<b>iv) Painting of channel section (6 nos.) 1.8 m each 0.2 x 1.8 x 1.6 = 2.16</b>				
		As per item No.10.6 of this Chapter	sqm	2.16	123.100	265.90
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Plumber	day	0.01	475.00	4.75
		<b>b) Material</b>				
		Steel pipe 50 mm external dia as per IS:1239	m	30.00	366.00	10,980.00
		Medium weight steel channel (ISMC series) 100 mm x 50 mm, 10.8 m length @ 9.2 kg per m including 5 per cent wastage	kg	104.33	59.50	6,207.64
		Add for drilling holes @ 3 per cent of cost of channels				186.23
		<b>c) Machinery</b>				
		50 HP Tractor with trolley	hour	0.06	265.00	15.90
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>3,721.44</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>3,182.64</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>244.00</b>
		Cost for 10 m = a+b+c+d+e+f				32,774.90
		<b>Rate per m = (a+b+c+d+e+f)/10</b>				<b>3,277.49</b>
					<b>say</b>	<b><u>3277.50</u></b>
<b>10.14</b>	<b>1700, 800 &amp; 300</b>	<b>Tubular Steel Railing on Precast RCC posts, 1.2 m high above Ground Level</b>				
		Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M-20 grade RCC vertical posts 175 mm x 175 mm x 1.8 m high (1.2 m above GL) with 3 holes 50 mm dia for pipe, fixed 2 m centre-to-centre complete as per approved drawings MoRD technical specification Clause 1706.				
		Unit = Running m				
		Taking output = 10 m				
		<b>i) Excavation for foundation (6 Nos.) 6 x 0.6 x 0.6 x 0.6</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	1.296	458.200	593.83
		<b>ii) Foundation concrete M15 grade PCC 6 x 0.6 x 0.6 x 0.3</b>				
		As per item No. 11.4.II.ii of Chapter 11	cum	0.648	10,325.800	6,691.12
		<b>iii) RCC M20 for precast posts (6 nos.) of 1.8 m each</b>				
		As per item No.12.4.V.i of Chapter 12	sqm	0.33	11,731.300	3,871.33
		<b>iv) Painting of pipe</b>				
		As per item No.10.6 of this Chapter	sqm	4.71	123.100	579.80
		<b>a) Labour</b>				
		Mate	day	0.014	391.00	5.47
		Mazdoor (Unskilled)	day	0.35	391.00	136.85
		Plumber	day	0.01	475.00	4.75
		<b>b) Material</b>				
		i. Steel pipe 50 mm dia as per IS:1239	m	30.00	366.00	10,980.00
		ii. Twisted steel/ deformed bars As per item No.12.5 of Chapter 12	t	0.032	91,483.20	2,927.46
		<b>c) Machinery</b>				
		50 HP Tractor with trolley	hour	0.25	265.00	66.25

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Add GST (multiplying factor) @ 0.2127 on (a+b.i+c)				2,380.82
		e) Contractor's profit @ 15 % on (a+b.i+c+d)				2,036.12
		f) Add Cess @ 1.00 % on (a+b.i+c+d+e)				156.10
		Cost for 10 m = a+b+c+d+e+f				30,429.91
		<b>Rate per m = (a+b+c+d+e+f)/10</b>				<b>3,042.99</b>
					<b>say</b>	<b><u>3043.00</u></b>

**10.15 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 = Each

Taking output = 68 Nos.

**a) Labour**

Mate	day	0.02	391.00	7.82
Mazdoor (Unskilled)	day	0.50	391.00	195.50

**b) Material**

Traffic cones with 150 mm reflective sleeve	Nos.	68.00	410.00	27,880.00
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**c) Machinery**

50 HP Tractor with trolley	Hour	0.10	265.00	26.50
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **5,978.96**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **5,113.32**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **392.02**

Cost for 68 Nos. = a+b+c+d+e+f 39,594.12

**Rate for each cone = (a+b+c+d+e+f)/68** **582.27**

**say** **582.30**

**10.16 Suggestive Rumble Strips**

Provision of 15 nos. rumble strips covered with premix bituminous carpet, 15-20 mm high at centre, 250 mm wide placed at 1 m centre-to-centre at approved locations to control speed, marked with white strips of road marking paint.

Unit = sqm

Taking output = 57.188 sqm (including gaps)

(15.25 m long and 3.75 m wide area)

<b>i) Tack coat with bitumen emulsion 0.20 to 0.25 kg per sqm</b>				
As per item No.5.2(i) of Chapter 5	sqm	14.06	19.20	269.95
<b>ii) 20 mm thick open graded premix carpet using bituminous binder</b>				
As per item No.5.8. Case-I.(II) of Chapter 5	cum	14.06	336.80	4,735.41
<b>iii) Painting with road marking paint</b>				
As per item No.10.8 of Chapter 10	sqm	7.03	158.20	1,112.15
Add 2.00 % extra involvement of labour for peacemeal work				122.35

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Cost for 57.188 sqm =				6,239.86
		<b>Rate per sqm =</b>				<b>109.11</b>
					<b>say</b>	<b>109.10</b>

*Note: The rate per sqm of premix carpet and road marking may be adopted from Chapters 5 & 10 respectively for the quantities calculated from approved drawings.*

**10.17** Suggestive **Road Markers/Road Stud with Lens Reflector**

Providing and fixing of road stud 100 x 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 holes 30 mm upto a depth of 600 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS:873(Part 4) 1973.

Unit = each

Taking output = 50 Nos.

**(a) Labour**

Mate	day	0.04	391.00	15.64
Mazdoor (Unskilled)	day	1.00	391.00	391.00

**(b) Material**

Aluminium studs 100x100 mm fitted with lense reflectors	Nos.	50.00	118.50	5,925.00
Add 10 per cent of cost of material for fixing and installation.				592.50

**(c) Add GST (multiplying factor) @ 0.2127 on (a+b)** **1,472.76**

**(d) Contractor's profit @ 15 % on (a+b+c)** **1,259.54**

**e) Add Cess @ 1.00 % on (a+b+c+d)** **96.56**

Cost for 50 studs = a+b+c+d+e 9,753.00

**Rate per stud = (a+b+c+d+e)/50** **195.06**

**say** **195.10**

**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE ( i.e. LOCALLY AVAILABLE MATERIALS)**

**10.18** 1700, 300, 800 **Traffic Signs (using jhama brick aggregate in CC/ PCC)**

**A. Retro-reflectorised Traffic Signs**

**(1)** Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete (using jhama brick aggregate ) 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 801.

**i) with 900 mm equilateral triangle aluminium sheeting**

Unit = each

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		900 mm equilateral triangle	sqm	0.35	891.00	311.85
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				
						<b>353.17</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				
						<b>302.04</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				
						<b>23.16</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				
						<b>3,709.00</b>
					<b>say</b>	<b><u>3709.00</u></b>

**ii) with 600 mm equilateral triangle aluminium sheeting**

Unit = each

Taking output = one traffic sign

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11

cum 0.126 458.20 57.73

**ii) Cement concrete M15 grade (using jhama brick aggregate)**

As per item No.11.9.II(ii) of Chapter 11

cum 0.126 9,441.60 1,189.64

**iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications**

As per item No.10.7 of this Chapter

sqm 0.887 138.50 122.85

**a) labour (For fixing at site)**

Mate day 0.01 391.00 3.91

Mazdoor (Unskilled) day 0.25 391.00 97.75

**b) Material**



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 mm equilateral triangle	sqm	0.156	891.00	139.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>316.40</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>270.59</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>20.75</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,465.52</b>
					<b>say</b>	<b><u>3465.50</u></b>
		<b>iii) with 600 mm circular aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 mm circular	sqm	0.283	891.00	252.15
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>340.47</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>291.18</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				22.32
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)				3,624.91
					<b>say</b>	<b><u>3624.90</u></b>
		<b>iv) with 800 x 600 mm rectangular aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 800 x 600 mm rectangular	sqm	0.48	891.00	427.68
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>377.81</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>323.11</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>24.77</b>
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)				3,872.15
					<b>say</b>	<b><u>3872.10</u></b>
		<b>v) with 600 x 450 mm rectangular aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 x 450 mm rectangular	sqm	0.27	891.00	240.57
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>338.01</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>289.07</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>22.16</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,608.60</b>
					<b>say</b>	<b><u>3608.60</u></b>
		<b>vi) with 600 x 600 mm square aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 x 600 mm square	sqm	0.36	891.00	320.76
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>355.06</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>303.66</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>23.28</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,721.55</b>
					<b>say</b>	<b><u>3721.50</u></b>
		<b>vii) with 900 mm side octagon aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 900 mm side octagon	sqm	0.672	891.00	598.75
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>414.19</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>354.23</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>27.16</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>4,113.11</b>
					<b>say</b>	<b><u>4113.10</u></b>



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		600 mm equilateral triangle	sqm	0.156	891.00	139.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>296.25</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>253.36</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>19.42</b>
		<b>Rate per traffic sign = (i+ii+a+b+c+d+e+f)</b>				<b>3,209.20</b>
					<b>say</b>	<b><u>3209.20</u></b>
		<b>iii) with 600 mm circular aluminium sheeting</b>				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		600 mm circular	sqm	0.283	891.00	252.15
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>320.32</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>273.94</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				21.00
		Rate per traffic sign = (i+ii+a+b+c+d+e+f)				3,368.59
					<b>say</b>	<b><u>3368.60</u></b>
		<b>iv) with 800 x 600 mm rectangular aluminium sheeting</b>				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		800 mm x 600 mm rectangular	sqm	0.48	891.00	427.68
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>357.65</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>305.87</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>23.45</b>
		Rate per traffic sign = (i+ii+a+b+c+d+e+f)				<b>3,615.83</b>
					<b>say</b>	<b><u>3615.80</u></b>
		<b>v) with 600 x 450 mm rectangular aluminium sheeting</b>				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		600 mm x 450 mm rectangular	sqm	0.27	891.00	240.57
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>317.85</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>271.83</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>20.84</b>
		<b>Rate per traffic sign = (i+ii+a+b+c+d+e+f)</b>				<b>3,352.27</b>
					<b>say</b>	<b><u>3352.30</u></b>
		<b>vi) with 600 mm x 600 mm square aluminium sheeting</b>				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		600 mm x 600 mm square	sqm	0.36	891.00	320.76
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>334.91</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>286.42</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>21.96</b>
		<b>Rate per traffic sign = (i+ii+a+b+c+d+e+f)</b>				<b>3,465.22</b>
					<b>say</b>	<b><u>3465.20</u></b>
		<b>vii) with 900 mm side octagon aluminium sheeting</b>				
		<b>i) Excavation for foundation</b>				



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		900 mm sides octagon	sqm	0.672	891.00	598.75
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>394.04</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>336.99</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>25.84</b>
		<b>Rate per traffic sign = (i+ii+a+b+c+d+e+f)</b>				<b>3,856.79</b>
					<b>say</b>	<b><u>3856.80</u></b>

(3) Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 1.5 mm thick supported on RCC post 100 mm x 100 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete (using jhama brick aggregate) 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.

**i) with 900 mm equilateral triangle aluminium sheeting**

Unit = each

Taking output = one traffic sign

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11

			cum	0.126	458.20	57.73
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**ii) Cement concrete M15 grade (using jhama brick aggregate)**

As per item No.11.9.II(ii) of Chapter 11

			cum	0.126	9,441.60	1,189.64
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**iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		i. PCC M15 Grade in Sub-structure (using jhama brick aggregate)				
		As per item No.12.14.II of Chapter 12	cum	0.0285	9,986.30	284.61
		ii. Twisted steel/ deformed bar				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				29.67
		iv. Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		900 mm equilateral triangle	sqm	0.35	891.00	311.85
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>				<b>98.77</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>84.47</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>6.48</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,015.16</b>
					<b>say</b>	<b><u>3015.20</u></b>
		<b>ii) with 600 mm equilateral triangle aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		i. PCC M15 Grade in Sub-structure (using jhama brick aggregate)				
		As per item No.12.14.II of Chapter 12	cum	0.0285	9,986.30	284.61

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		ii. Twisted steel/ deformed bar				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				29.67
		iv Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 mm equilateral triangle	sqm	0.156	891.00	139.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>				<b>62.01</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>53.03</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>4.07</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>2,771.69</b>
					<b>say</b>	<b><u>2771.70</u></b>

**iii) with 600 mm circular aluminium sheeting**

Unit = each

Taking output = one traffic sign

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11 cum 0.126 458.20 57.73

**ii) Cement concrete M15 grade (using jhama brick aggregate)**

As per item No.11.9.II(ii) of Chapter 11 cum 0.126 9,441.60 1,189.64

**iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications**

As per item No.10.7 of this Chapter sqm 0.90 138.50 124.65

**a) labour (For fixing at site)**

Mate day 0.01 391.00 3.91

Mazdoor (Unskilled) day 0.25 391.00 97.75

**b) Material**

i. PCC M15 Grade in Sub-structure (using jhama brick aggregate) cum 0.0285 9,986.30 284.61

As per item No.12.14.II of Chapter 12

ii. Twisted steel/ deformed bars  
As per item No.12.5 of Chapter 12 t 0.0077 91,483.20 704.42

iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc. 29.67

iv Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		with 600 mm circular	sqm	0.283	891.00	252.15
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>				<b>86.08</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>73.61</b>
		<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>				<b>5.64</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>2,931.07</b>
					<b>say</b>	<b><u>2931.10</u></b>
		<b>iv) with 800 x 600 mm rectangular aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		i. PCC M15 Grade in Sub-structure (using jhama brick aggregate)				
		As per item No.12.14.II of Chapter 12	cum	0.0285	9,986.30	284.61
		ii. Steel reinforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				29.67
		iv. Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 800 x 600 mm rectangular	sqm	0.48	891.00	427.68
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>				<b>123.41</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>105.54</b>
		<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>				<b>8.09</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,178.31</b>



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		i. PCC M15 Grade in Sub-structure (using jhama brick aggregate)				
		As per item No.12.14.II of Chapter 12	cum	0.0285	9,986.30	284.61
		ii. Steel reinforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				29.67
		iv. Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint				
		with 600 x 600 mm square	sqm	0.35	891.00	311.85
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>				<b>98.77</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>84.47</b>
		<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>				<b>6.44</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,015.12</b>
					<b>say</b>	<b><u>3015.10</u></b>
		<b>vii) with 900 mm side octagon aluminium sheeting</b>				
		Unit = each				
		Taking output = one traffic sign				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>iii) Painting two coats including Prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of this Chapter	sqm	0.90	138.50	124.65
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>b) Material</b>						
		i. PCC M15 Grade in Sub-structure (using jhama brick aggregate) As per item No.12.14.II of Chapter 12	cum	0.0285	9,986.30	284.61
		ii. Steel reinforcement Twisted steel/ deformed bars As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				29.67
		iv Aluminium sheeting 1.5 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint  with 900 mm side octagon	sqm	0.672	891.00	598.75
<b>c) Machinery</b>						
		Tractor with trolley	hour	0.08	265.00	21.20
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>						<b>159.80</b>
<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>						<b>136.66</b>
<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>						<b>10.48</b>
<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>						<b>3,419.28</b>
<b>say</b>						<b><u>3419.30</u></b>

- Note:**
- 1 Any one area of aluminium sheeting given at (i) to (vii) may be adopted as per site requirement and in accordance with IRC:67.
  - 2 The rate for excavation, cement concrete M-15, RCC M-15 in Sub-structure, steel re-inforcement and painting may be taken from respective Chapters.
  - 3 The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.

**B. Semi Reflective Traffic Signs**

Providing and fixing of semi reflective cautionary, mandatory and informatory sign board as per IRC:67 made of 1.5 mm thick MS sheet duly stove white colour in front and gray colour on back with red reflective border of 65 mm width and required letters and figures with reflective tape engineering grade as per Clause 1701.3.9 of MORD specification for Rural Roads of required shade and colour supported and welded on 47 mm x 47 mm x 12 SWG sheet tube firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete (using jhama brick aggregate ) 450 mm x 450 mm x 600 mm, 600 mm bellow ground level as per approved drawings and MoRD technical specification Clause 1701.2.2.

Unit = Each

Taking output = one traffic sign

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>i) with 900 mm equilateral triangle MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	59.50	63.07
		Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications				
		900 mm equilateral & triangle	sqm	0.35	700.80	245.28
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>288.80</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>246.99</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>18.94</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,223.61</b>
					<b>say</b>	<b><u>3223.60</u></b>
		<b>ii) with 600 mm equilateral triangle MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	59.50	63.07
		Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications	sqm			
		600 mm equilateral & triangle	sqm	0.156	700.80	0.00
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>236.63</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>202.37</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>14.50</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>2,877.10</b>
					<b>say</b>	<b><u>2877.10</u></b>
		<b>iii) with 600 mm circular MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	59.50	63.07

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications	sqm			
		600 mm circular	sqm	0.283	700.80	198.33
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>278.82</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>238.45</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>18.28</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,157.47</b>
					<b>say</b>	<b><u>3157.50</u></b>
		<b>iv) with 800 x 600 mm rectangular MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	59.50	63.07
		Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications	sqm			
		800 mm x 600 mm rectangular	sqm	0.48	700.80	336.38
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				308.18
		e) Contractor's profit @ 15 % on (a+b+c+d)				263.56
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				20.21
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,351.93</b>
					<b>say</b>	<b><u>3351.90</u></b>
		<b>v) with 600 x 450 mm rectangular MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.	kg	1.06	59.50	63.07 28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications	sqm			
		600 mm x 450 mm rectangular	sqm	0.27	700.80	189.22
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				276.88
		e) Contractor's profit @ 15 % on (a+b+c+d)				236.79
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				18.15
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,144.64</b>
					<b>say</b>	<b><u>3144.60</u></b>
		<b>vi) with 600 x 600 mm square MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>(ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.	kg	1.06	59.50	63.07
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications 600 mm x 600 mm	sqm	0.36	700.80	252.29
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>290.29</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>248.26</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>19.03</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,233.48</b>
					<b>say</b>	<b><u>3233.50</u></b>
		<b>vii) with 900 mm side octagon MS sheeting</b>				
		<b>(i) Excavation foundations</b>				
		As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications</b>				
		As per item no 10.7 of Chapter 11	sqm	0.46	138.50	63.71
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Support of M.S. Sheet tube				
		(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	72.40	897.76
		(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.	kg	1.06	59.50	63.07 28.82
		(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications 900 mm side octagon	sqm	0.672	700.80	470.94
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>336.80</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>288.04</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>22.08</b>
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e+f)</b>				<b>3,541.46</b>
					<b>say</b>	<b><u>3541.50</u></b>

- Note:**
- 1 Any one area of M.S. Sheet given at (i) to (viii) may be adopted as per site requirement and in accordance with IRC-67.
  - 2 The rate for excavation, cement concrete M-15, and painting may be taken from respective Chapters.
  - 3 The depth of foundation and quantity of cement in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal area. This is applicable to all road signs and direction boards.

**10.19** 1700, 800 & 300 **Direction and Place Identification signs upto 0.9 sqm size board (using jhama brick aggregate in CC / PCC)**

**A. Retro-reflectorised Traffic Signs**

- (i) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete (using jhama brick aggregate) 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.

Unit = sqm

Taking output = 0.9 sqm

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11		0.126	9,441.60	1,189.64
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications</b>				
		Rate as per item No.10.7 of this Chapter	sqm	0.887	138.50	122.85
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	59.50	1,190.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				35.70
		Aluminium sheeting 2.0 mm thick fixed with encapsulated lens type reflective sheeting of size 0.90 sqm including lettering and signs as applicable background with epoxy paint	sqm	0.90	1,188.00	1,069.20
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>514.26</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>439.80</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>33.72</b>
		Cost for 0.9 sqm = (i+ii+iii+a+b+c+d+e+f)				4,775.76
		<b>Rate per sqm (for sign having area upto 0.9 sqm)</b>				<b>5,306.40</b>
		<b>= (i+ii+iii+a+b+c+d+e+f)/0.90</b>				
					<b>say</b>	<b><u>5306.40</u></b>
		(ii) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on 50 mm dia GI Pipe firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete (using jhama brick aggregate) 450 mm x 450 mm x 600 mm, 600 mm bellow ground level as per approved drawings and MoRD Technical Specification Clause 1701.				
		Unit = sqm				
		Taking output = 0.9 sqm				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.126	458.20	57.73
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11		0.126	9,441.60	1,189.64

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	3.00	366.00	1,098.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts etc.				32.94
		Aluminium sheeting 2.0 mm thick fixed with encapsulated lens type reflective sheeting of size 0.90 sqm including lettering and signs as applicable background with epoxy paint	sqm	0.90	1,188.00	1,069.20
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>494.10</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>422.57</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>32.40</b>
		Cost for 0.9 sqm = (i+ii+iii+a+b+c+d+e+f)				4,519.44
		<b>Rate per sqm (for sign having area upto 0.9 sqm)</b>				<b>5,021.60</b>
		<b>= (i+ii+iii+a+b+c+d+e+f)/0.90</b>				
					<b>say</b>	<b><u>5021.60</u></b>

- (iii) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on RCC post 100 mm x 100 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete (using jhama brick aggregate) 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.

Unit = sqm

Taking output = 0.9 sqm

**i) Excavation for foundation**

As per item No.11.1.A.I(i) of Chapter 11

		cum	0.126	458.20	57.73
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**ii) Cement concrete M15 grade (using jhama brick aggregate)**

As per item No.11.9.II(ii) of Chapter 11

		cum	0.126	9,441.60	1,189.64
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**iii) Painting two coats including prime coat on concrete surface with Epoxy Paint as per specifications**

As per item No.10.7 of Chapter 10

		sqm	0.90	138.50	124.65
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**a) Labour (For fixing at site)**

Mate

		day	0.01	391.00	3.91
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Mazdoor (Unskilled)

		day	0.25	391.00	97.75
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**b) Material**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		i. PCC M-15 Grade in Sub-structure (using jhama brick aggregate)				
		As per item No.12.14.II of Chapter 12	cum	0.0285	9,986.30	284.61
		ii. Steel re-inforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0077	91,483.20	704.42
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts etc.				29.67
		iv. Aluminium sheeting 2.0 mm thick fixed with encapsulated lens type reflective sheeting of size 0.90 sqm including lettering and signs as applicable background with epoxy paint	sqm	0.90	1,188.00	1,069.20
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>				<b>259.86</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>222.24</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>17.04</b>
		Cost for 0.9 sqm = (i+ii+iii+a+b+c+d+e+f)				4,081.93
		<b>Rate per sqm (for sign having area upto 0.9 sqm)</b>				<b>4,535.47</b>
		<b>= (i+ii+iii+a+b+c+d+e+f)/0.90</b>				
					<b>say</b>	<b><u>4535.50</u></b>

- Note:**
- 1 Lettering and arrow markings on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately.
  - 2 The rate for excavation, cement concret M15, RCC M15 in Sub-structure, steel re-inforcement and painting may be taken from respective Chapters.
  - 3 The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.

**B. Semi-Reflective Traffic signs**

**Direction and place identification signs up to 0.9 sqm size board**

Providing and erecting and place identifications of semi reflective sign boards as per IRC:67 made of 2 mm thick M.S. sheet duly stove enameled paint in white colour in front and gray colour on back with red reflective border of 70 mm width and required message, letters and figures with reflective engineering grade tape as per MORD specifications of required shade and colour. Supported and welded on 47 mm x 47 mm x 12 SWG square tube of 3050 mm height duly strengthened by 25 mm x 5 mm MS flat iron on edges on back firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete (using jhama brick aggregate) 450 mm x 450 mm x 600 mm, 600 mm bellow ground level as per approved drawings and MoRD Technical Specification Clause 1701.



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit = each				
		Take Output = 0.9 sqm				
		<b>(i) Excavation for foundations</b>				
		As per Item No. 11.1 of Chapter 11	cum	0.126	458.20	57.73
		<b>(ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.126	9,441.60	1,189.64
		<b>(iii) Painting on M.S. tube post with primer and two coat of epoxy paint as per specifications</b>				
		As per item No.10.7 of Chapter 10	sqm	0.59	138.50	81.72
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>b) Materials</b>				
		i) Support of MS sheet tube				
		47 mm x 47 mm of 12 SWG sheet 3050 mm long	kg	12.40	72.40	897.76
		ii) Angle iron 50 x 50 x 6 mm for lugs including 5% wastage	kg	1.06	59.50	63.07
		iii) 2 mm thick MS sheet strengthened by 25 mm x 5 mm MS flat iron & painted with stove enameled paint including lettering, signs, message, border with reflective tape of engineering grade of required shade and colour as per Technical Specifications.	sqm	0.90	934.80	841.32
		Add 3% cost of MS sheet angle iron towards the cost of fabrications, drilling, holes, nuts, bolts, etc.				54.06
		<b>c) Machinery</b>				
		Tractor with Trolley	hour	0.08	265.00	21.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>420.95</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>360.00</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>27.60</b>
		Cost for 0.9 sqm = (i+ii+iii+a+b+c+d+e+f)				4,116.72
		<b>Rate per sqm = (i+ii+iii+a+b+c+d+e+f) / 0.9</b>				<b>4,574.13</b>
					<b>say</b>	<b><u>4574.10</u></b>

**Note:** Rate for excavation, cement concrete M15 and painting may be taken from respective Chapters.

10.20 1700, 800 & 300 Direction and place identification signs with size more than 0.9 sqm sign board (using jhama brick aggregate in CC /PCC)  
**A. Retro-reflectorised Traffic Signs**

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(i) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 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 (using jhama brick aggregate) 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.				
		Unit = sqm				
		Taking output = 1.50 sqm				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.252	458.20	115.47
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11		0.252	9,441.60	2,379.28
		<b>iii) Painting Angle Iron Post with Primer and two coats of Epoxy Paint specifications</b>				
		As per item No.10.7 of Chapter 10	sqm	1.774	138.50	245.70
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Material</b>				
		Mild steel angle iron 75 mm x 75 mm x 6 mm, 2.85 m long, 2 nos. with 5 per cent wastage	kg	40.00	59.50	2,380.00
		Add 3 per cent of cost of angle iron towards cost of fabrication, drilling holes, nuts, bolts, etc.				71.40
		Aluminium sheeting 2 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint	sqm	1.50	1,188.00	1,782.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.12	265.00	31.80
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>950.45</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>812.85</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>62.32</b>
		Cost for 1.5 sqm = i+ii+iii+a+b+c+d+e+f				9,034.59
		<b>Rate per sqm (for sign having area more than 0.9 sqm) = (i+ii+iii+a+b+c+d+e+f)/1.50</b>				<b>6,023.06</b>
					<b>say</b>	<b><u>6023.10</u></b>

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**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(ii) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on 50 mm dia GI Pipe 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete (using jhama brick aggregate) 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.				
		Unit = sqm				
		Taking output = 1.50 sqm				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.252	458.20	115.47
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.252	9,441.60	2,379.28
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Material</b>				
		50 mm dia GI Pipe 2.85 m long including 5 per cent wastage	m	6.00	366.00	2,196.00
		Add 3 per cent of cost of GI Pipe towards cost of fabrication, drilling holes, nuts, bolts, etc.				65.88
		Aluminium sheeting 2 mm thick fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint		1.50	1,188.00	1,782.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.12	265.00	31.80
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>910.14</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>778.37</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>59.68</b>
		Cost for 1.50 sqm = i+ii+a+b+c+d+e+f				8,521.94
		<b>Rate per sqm ( for sign having area more than 0.9 sqm) = (i+ii+a+b+c+d+e+f)/1.50</b>				<b>5,681.29</b>
					<b>say</b>	<b><u>5681.30</u></b>

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(iii) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide MoRD technical specification Clause 1701.2.3 fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on RCC post 100 mm x 100 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete (using jhama brick aggregate) 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.				
		Unit = sqm				
		Taking output = 1.50 sqm				
		<b>i) Excavation for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	0.252	458.20	115.47
		<b>ii) Cement concrete M15 grade (using jhama brick aggregate)</b>				
		As per item No.11.9.II(ii) of Chapter 11	cum	0.252	9,441.60	2,379.28
		<b>iii) Painting two coats including prime coat on concrete surface with Epoxy Paint as per specifications</b>				
		As per item No.10.7 of Chapter 10	sqm	1.84	138.50	254.84
		<b>a) Labour (For fixing at site)</b>				
		Mate	day	0.02	391.00	7.82
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		<b>b) Material</b>				
		i. PCC M-15 Grade in Sub-structure (using jhama brick aggregate)				
		As per item No.12.14.II of Chapter 12	cum	0.057	9,986.30	569.22
		ii. Steel re-inforcement Twisted steel/ deformed bars				
		As per item No.12.5 of Chapter 12	t	0.0154	91,483.20	1,408.84
		iii. Add 3 per cent of cost of RCC Post towards cost of drilling holes, nuts, bolts, etc.				59.34
		iv. Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint	sqm	1.50	1,188.00	1,782.00
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.12	265.00	31.80
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.iii.iv+c)</b>				<b>441.66</b>
		<b>e) Contractor's profit @ 15 % on (a+b.iii.iv+c+d)</b>				<b>377.72</b>
		<b>f) Add Cess @ 1.00 % on (a+b.iii.iv+c+d+e)</b>				<b>28.96</b>
		Cost for 1.5 sqm = a+b+c+d+e+f				7,652.45
		<b>Rate per sqm (for sign having area more than 0.9 sqm) = (a+b+c+d+e+f)/1.50</b>				<b>5,101.63</b>
					<b>say</b>	<b><u>5101.60</u></b>

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**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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- Note:**
- 1 Lettering and arrow markings on sign boards to be provided separately as per actual requirement. Rates for these items have been analysed separately.
  - 2 The rate for excavation, cement concrete M15, RCC M15 in Sub-structure, steel re-inforcement and painting may be taken from respective Chapters.
  - 3 The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.

**B. Semi-Reflective Traffic signs**

**Direction and place identification signs more than 0.90 sqm sign board**

Providing and erecting and place identifications of semi reflective sign boards as per IRC:67 made of 2 mm thick M.S. sheet duly stove enameled paint in white colour in front and gray colour on back with reflective border of 70 mm width and required message, letters and figures with reflective engineering grade tape as per MORD specifications of required shade and colour. Supported and welded on 47 mm x 47 mm x 12 SWG square tube of 3050 mm height duly strengthened by 25 mm x 5 mm MS flat iron on edges on back firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete (using jhama brick aggregate) 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawings and MoRD Technical Specification Clause 1701.

Unit = each

Taking output = 1.5 sqm

**(i) Excavation for foundations as**

As per item no. 11.1 Chapter 11	cum	0.252	458.20	115.47
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**(ii) Cement concrete M15 grade (using jhama brick aggregate)**

As per item No.11.9.II(ii) of Chapter 11	cum	0.252	9,441.60	2,379.28
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**(iii) Painting M.S. tube posts with primer and two coats of epoxy paint as per specification**

As per item No. 10.7 of chapter 10	sqm	0.92	138.50	127.42
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**a) Labour (fox fixing at site)**

Mate	day	0.02	391.00	7.82
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Mazdoor (Unskilled)	day	0.50	391.00	195.50
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**b) Material**

i) Support of MS Sheet tubes 47 mm x 47 mm x 12 SWG sheet 3050 mm long	kg	24.80	72.40	1,795.52
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ii) Angle iron 50 mm x 50 mm x 6 mm for lugs	kg	2.12	59.50	126.14
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**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		iii) 2 mm thick MS Sheet strengthened by 25 mm x 5 mm M.S. flat iron and painted with stove enameled paint including lettering, signs, messages, border with reflective tape of engineering grade of required size, shade and colour as per MORD specifications	sqm	1.50	934.80	1,402.20
		Add 3% cost of MS sheet and angle iron towards the cost of fabrications, drilling, holes, nuts, bolts etc.				99.72
		<b>c) Machinery</b>				
		Tractor with trolley	hour	0.16	265.00	42.40
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>780.46</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>667.46</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>51.17</b>
		Cost for 1.5 sqm board = (i+ii+iii+a+b+c+d+e+f)				7,790.56
		<b>Rate per sqm = (i+ii+iii+a+b+c+d+e+f) / 1.5</b>				<b>5,193.71</b>
					<b>say</b>	<b><u>5193.70</u></b>

**Note:** Rate for excavation cement concrete M15 and painting may be taken from respective chapter

**10.21 1700 Kilometre Stone (with RCC M15 grade using jhama brick aggregate)**

Reinforced cement concrete M15 grade (using jhama brick aggregate) kilometre stone/local stone of standard design as per IRC:8 fixing in position including painting and printing, etc. as per drawing and MoRD Technical Specification Clause 1703.

**i) 5th Kilometre Stone (precast)**

Unit = each

Taking output = 6 Nos.

**a) Cement concrete M-15 grade (using jhama brick aggregate)**

As per item No.12.14.II of Chapter 12

cum	2.35	9,986.30	23,467.81
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**b) Steel reinforcement @ 5 kg per sqm**

As per item No.12.5 of Chapter 12

t	0.0221	91,483.20	2,021.78
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**c) Excavation in soil for foundation**

As per item No.11.1.A.I(i) of Chapter 11

cum	1.68	458.20	769.78
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**d) Painting two coats on concrete surface**

As per item No.10.5 of Chapter 10

sqm	9.85	130.70	1,287.40
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**e) lettering on km post (average 30 letters of 10 cm height each)**

As per item No.10.1 of Chapter 10 (Englisg & Roman)

per cm high per	1,800.00	0.80	1,440.00
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**Transportation and fixing**

**f) Labour**

Mate

day	0.26	391.00	101.66
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Mason (1st Class)

day	0.60	512.00	307.20
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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mazdoor (Unskilled)	day	6.00	391.00	2,346.00
		<b>g) Machinery</b>				
		50 HP Tractor with trolley	hour	6.00	265.00	1,590.00
		<b>h) Add GST (multiplying factor) @ 0.2127 on (f+g)</b>				<b>924.15</b>
		<b>i) Contractor's profit @ 15 % on (f+g+h)</b>				<b>790.35</b>
		<b>j) Add Cess @ 1.00 % on (f+g+h+i)</b>				<b>60.59</b>
		Cost for 6 Nos. 5th km stone = a+b+c+d+e+f+g+h+i+j				35,106.71
		<b>Rate for each 5th km stone = (a+b+c+d+e+f+g+h+i+j)/6</b>				<b>5,851.12</b>
					<b>say</b>	<b><u>5851.10</u></b>
		<b>ii) Ordinary Kilometer Stone (Precast)</b>				
		Unit = each				
		Taking output = 14 Nos.				
		<b>a) Cement concrete M-15 grade (using jhama brick aggregate)</b>				
		As per item No.12.14.II of Chapter 12	cum	3.77	9,986.30	37,648.35
		<b>b) Steel reinforcement @ 5 kg per sqm</b>				
		As per item No.12.5 of Chapter 12	t	0.0263	91,483.20	2,406.01
		<b>c) Excavation in soil for foundation</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	2.77	458.20	1,269.21
		<b>d) Painting two coats on concrete surface</b>				
		As per item No.10.5 of Chapter 10	sqm	11.41	130.70	1,491.29
		<b>e) lettering on km post (average 30 letters of 10 cm height each)</b>				
		As per item No.10.1 of Chapter 10 (Englisg & Roman)	per cm high per	1,680.00	0.80	1,344.00
		<b>Transportation and fixing</b>				
		<b>f) Labour</b>				
		Mate	day	0.32	391.00	125.12
		Mason (1st Class)	day	1.00	512.00	512.00
		Mazdoor (Unskilled)	day	7.00	391.00	2,737.00
		<b>g) Machinery</b>				
		50 HP Tractor with trolley	hour	6.00	265.00	1,590.00
		<b>h) Add GST (multiplying factor) @ 0.2127 on (f+g)</b>				<b>1,055.87</b>
		<b>i) Contractor's profit @ 15 % on (f+g+h)</b>				<b>903.00</b>
		<b>j) Add Cess @ 1.00 % on (f+g+h+i)</b>				<b>69.23</b>
		Cost for 14 Nos. ordinary km stone = (a+b+c+d+e+f+g+h+i+j)				51,151.08
		<b>Rate for each ordinary km stone = (a+b+c+d+e+f+g+h+i+j)/14</b>				<b>3,653.65</b>
					<b>say</b>	<b><u>3653.60</u></b>
		<b>iii) 200 m stone (precast)</b>				
		Unit = each				

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Taking output = 33 Nos.				
		a) Cement concrete M-15 grade (using jhama brick aggregate)				
		As per item No.12.14.II of Chapter 12	cum	1.58	9,986.30	15,778.35
		b) Steel reinforcement @ 5 kg per sqm				
		As per item No.12.5 of Chapter 12	t	0.066	91,483.20	6,037.89
		c) Excavation in soil for foundation				
		As per item No.11.1.A.I(i) of Chapter 11	cum	1.39	458.20	636.90
		d) Painting two coats on concrete surface				
		As per item No.10.5 of Chapter 10	sqm	6.27	130.70	819.49
		e) lettering on km post (average 30 letters of 10 cm height each)				
		As per item No.10.1 of Chapter 10 (Englisg & Roman)	per cm per	330.00	0.80	264.00
		<b>Transportation and fixing</b>				
		<b>f) Labour</b>				
		Mate	day	0.34	391.00	132.94
		Mason (1st Class)	day	1.50	512.00	768.00
		Mazdoor (Unskilled)	day	7.00	391.00	2,737.00
		<b>g) Machinery</b>				
		50 HP Tractor with trolley	hour	6.00	265.00	1,590.00
		<b>h) Add GST (multiplying factor) @ 0.2127 on (f+g)</b>				<b>1,111.98</b>
		<b>i) Contractor's profit @ 15 % on (f+g+h)</b>				<b>950.99</b>
		<b>j) Add Cess @ 1.00 % on (f+g+h+i)</b>				<b>72.91</b>
		Cost for 33 Nos. 200 m stone = (a+b+c+d+e+f+g+h+i+j)				30,900.45
		<b>Rate for each 200 m stone = (a+b+c+d+e+f+g+h+i+j)/33</b>				<b>936.38</b>
					<b>say</b>	<b><u>936.40</u></b>

**Note:** 1 The rate for excavation, cement concrete, steel reinforcement, painting and lettering may be taken from respective Chapters.

2 In case local stone is to be used in place of precast RCC stones, then rate of cement concrete and steel reinforcement may be deleted.

**10.22 1700 Boundary Pillar (with PCC M15 grade using jhama brick aggregate and reinforcement)**

Plain cement concrete M15 grade (using jhama brick aggregate and reinforcement) boundary pillar / local stone of standard design as per IRC:25 fixed in position including finishing and lettering but excluding painting as per drawing and MoRD Technical Specification Clause 1704.

Unit = each

Taking output = 57 Nos.

a) Cement concrete M-15 grade (using jhama brick aggregate)					
As per item No.12.14.II of Chapter 12	cum	1.37	9,986.30	13,681.23	
b) Excavation in soil					



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		As per Item No. 11.1.A.I(i) of Chapter 11	cum	9.58	458.20	4,389.56
		c) lettering, each 10 cm high				
		As per Item No. 10.1 of Chapter 10	per letter per cm	2,280.00	0.80	1,824.00
		<b>Transportation and fixing</b>				
		<b>e) Labour</b>				
		Mate	day	0.57	391.00	222.87
		Mazdoor (Unskilled)	day	14.25	391.00	5,571.75
		<b>f) Machinery</b>				
		Tractor with trolley	hour	6.00	265.00	1,590.00
		<b>g) Material</b>				
		PCC M15 grade with jhama brick aggregate				
		As per item No.12.14.I of Chapter 12	cum	1.31	9,889.40	12,955.11
		M.S bar 6 mm dia				
		As per Item No. 12.6 of Chapter 12	t	0.076	90,004.20	6,840.32
		<b>h) Add GST (multiplying factor) @ 0.2127 on (e+f)</b>				<b>1,570.71</b>
		<b>i) Contractor's profit @ 15 % on (f+g+h)</b>				<b>1,343.30</b>
		<b>j) Add Cess @ 1.00 % on (f+g+h+i)</b>				<b>102.99</b>
		Cost for 57 Nos. boundary pillar = a+b+c+d+e+f+g+h+i+j				50,091.83
		<b>Rate for each boundary pillar = (a+b+c+d+e+f+g+h+i+j)/57</b>				<b>878.80</b>
					<b>say</b>	<b><u>878.80</u></b>
		<b>Note:</b>				
		1 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.				
		2 In case local stone is to be used in place of precast RCC stones, then rate of cement concrete and steel reinforcement may be deleted.				
10.23	1700, 800 & 300	<b>G.I Barbed Wire Fencing 1.2 m high (using jhama brick aggregate in CC/PCC/RCC)</b>				
		Providing and fixing 1.2 m high GI barbed wire fencing with 1.8 m RCC posts 150 mm x 150 mm placed every 3 m centre-to-centre founded in M15 grade cement concrete,(using jhama brick aggregate) 0.6 m 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 MoRD technical specification Clause 1705.				
		Unit = per running m				
		Taking output = 30 m				
		<b>a) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Blacksmith	day	0.25	480.00	120.00

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		<b>b) Material</b>				
		i. Barbed wire 335 m length @ 9.38 kg per 100 m	kg	31.42	82.40	2,589.01
		R.C.C. Post 150 mm x 150 mm x 1.80 m				
		M15 Grade concrete				
		13 x 150 mm x 150 mm x 1.8 m				
		ii. Rate as per item No.12.14.II of Chapter 12	cum	0.526	9,986.30	5,252.79
		iii. Add 5 per cent extra cost for formwork of M-15				262.64
		Supply of Twisted steel/ deformed bars including cutting, bending, tying & placing in position.				
		10 mm dia steel bars for posts				
		13 x 4 x 1.8 = 93.6 m @ 0.62 kg/mt = 43.60 kg				
		8 mm dia steel bars for rings				
		13 x 10 x 0.6 = 78 m @ 0.39 kg/mt = 30.42 kg				
		<b>Total</b>				<b>74.02 kg</b>
		iv. As per item No.12.5 of Chapter 12	t	0.074	91,483.20	6,769.76
		v. Add for GI staple binding wire, drilling holes, etc. @ 2 per cent of the cost of material				135.40
		<b>c) Painting</b>				
		Applying two coats of painting including primer coat on exposed surface of RCC posts				
		As per item No.10.5 of this Chapter	sqm	8.14	130.70	1,063.90
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b{i,iii &amp; v})</b>				<b>834.68</b>
		<b>e) Contractor's profit @ 15 % on (a+b{i,iii &amp; v}+d)</b>				<b>713.84</b>
		<b>f) Add Cess @ 1.00 % on (a+b{i,iii &amp; v}+d+e)</b>				<b>54.73</b>
		Cost for 30 m fencing = a+b+c+d+e+f				18,613.93
		<b>Rate per m = (a+b+c+d+e+f)/30</b>				<b>620.46</b>
					<b>say</b>	<b><u>620.50</u></b>

**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.

<b>10.24</b>	1700, 800 & 300	<b>G.I Barbed Wire Fencing 1.8 m high (using jhama brick aggregate in CC/PCC/RCC)</b>
		Providing and fixing 1.8 m high GI barbed wire fencing with 2.4 m RCC M15 grade (using jhama brick aggregate) 150 mm x 150 mm concrete post placed every 3 m centre-to-centre founded in M15 grade cement concrete, 0.6 m 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 MoRD technical specification Clause 1705.
		Unit = per running m
		Taking output = 30 m

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Labour</b>				
		Mate	day	0.12	391.00	46.92
		Blacksmith	day	0.40	480.00	192.00
		Mazdoor (Unskilled)	day	2.50	391.00	977.50
		<b>b) Material</b>				
		i. Barbed wire 428 m length @ 9.38 kg per 100 m	kg	40.15	82.40	3,308.36
		R.C.C. Post 150 mm x 150 mm x 2.4 m				
		M-15 Grade				
		13 x 150 mm x 150 mm x 2.4 m				
		ii. As per item No.12.14.II of Chapter 12	cum	0.702	9,986.30	7,010.38
		iii. Add 5 per cent extra cost of C.C. for formwork of M-15				350.52
		Supply of Twisted steel/ deformed Bars including cutting, bending, tying & placing in position.				
		10 mm dia steel bars for posts				
		13 x 4 x 2.4 = 124.80 m				
		@ 0.62 kg/mt = 77.38 kg				
		8 mm dia steel bars for rings				
		13 x 11 x 0.6 = 85.80 m				
		@ 0.39 kg/m = 33.46 kg				
		<b>Total 110.84 kg</b>				
		iv. As per item No.12.5 of Chapter 12	t	0.111	91,483.20	10,154.64
		v. Add for GI staple, binding wire, drilling holes etc. @ 2 per cent of the cost of material				203.09
		<b>c) Painting</b>				
		Applying two coats of painting including prime coat on exposed surface of RCC posts				
		As per item No.10.5 of this Chapter	sqm	12.10	130.70	1,581.47
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b{i,iii &amp; v})</b>				<b>1,080.17</b>
		<b>e) Contractor's profit @ 15 % on (a+b{i,iii &amp; v}+d)</b>				<b>923.78</b>
		<b>f) Add Cess @ 1.00 % on (a+b{i,iii &amp; v}+d+e)</b>				<b>70.82</b>
		Cost for 30 m fencing = a+b+c+d+e+f				25,899.66
		<b>Rate per m fencing = (a+b+c+d+e+f)/30</b>				<b>863.32</b>
					<b>say</b>	<b><u>863.30</u></b>

**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.

**10.25** 1700, 800 & 300 Tubular Steel Railing on Medium Weight Steel Channel (ISMC series) 100 mm x 50 mm

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		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 m high above ground, 2 m centre-to-centre, complete as per approved drawings as per MoRD technical specification Clause 1706. Unit = Running m Taking output = 10 m				
		<b>i) Excavation for foundation (6 Nos.) 6 x 0.6 x 0.6 x 0.6</b> As per item No.11.1.A.I(i) of Chapter 11	cum	1.296	458.200	593.83
		<b>ii) Foundation concrete M-15 grade PCC(using jhama brick aggregate) 6 x 0.6 x 0.6 x 0.3</b> As per item No. 11.9.II(ii) of Chapter 11	cum	0.648	9,441.600	6,118.16
		<b>iii) Painting of pipe</b> As per item No.10.6 of this Chapter	sqm	4.71	123.100	579.80
		<b>iv) Painting of channel section (6 nos.) 1.8 m each 0.2 x 1.8 x 1.6 = 2.16</b> As per item No.10.6 of this Chapter	sqm	2.16	123.100	265.90
		<b>a) labour (For fixing at site)</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		Plumber	day	0.01	475.00	4.75
		<b>b) Material</b>				
		Steel pipe 50 mm external dia as per IS:1239	m	30.00	366.00	10,980.00
		Medium weight steel channel (ISMC series) 100 mm x 50 mm, 10.8 m length @ 9.2 kg per m including 5 per cent wastage	kg	104.33	59.50	6,207.64
		Add for drilling holes @ 3 per cent of cost of channels				186.23
		<b>c) Machinery</b>				
		50 HP Tractor with trolley	hour	0.06	265.00	15.90
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>3,721.44</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>3,182.64</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>244.00</b>
		Cost for 10 m = a+b+c+d+e+f				32,201.94
		<b>Rate per m = (a+b+c+d+e+f)/10</b>				<b>3,220.19</b>
					<b>say</b>	<b><u>3220.20</u></b>
<b>10.26</b>	<b>1700, 800 &amp; 300</b>	<b>Tubular Steel Railing on Precast RCC posts, 1.2 m high above Ground Level</b> Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M-20 grade RCC(using jhama brick aggregate) vertical posts 175 mm x 175 mm x 1.8 m high (1.2 m above GI) with 3 holes 50 mm dia for pipe, fixed 2 m centre-to-centre complete as per approved drawings as per MoRD technical specification Clause 1706. Unit = Running m				

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Taking output = 10 m				
		<b>i) Excavation for foundation (6 Nos.) 6 x 0.6 x 0.6 x 0.6</b>				
		As per item No.11.1.A.I(i) of Chapter 11	cum	1.296	458.200	593.83
		<b>ii) Foundation concrete M15 grade PCC(using jhama brick aggregate) 6 x 0.6 x 0.6 x 0.3</b>				
		As per item No. 11.9.II.ii of Chapter 11	cum	0.648	9,441.600	6,118.16
		<b>iii) RCC M20(using jhama brick aggregate) for precast posts (6 nos.) of 1.8 m each</b>				
		As per item No.12.14.IV of Chapter 12	sqm	0.33	10,662.400	3,518.59
		<b>iv) Painting of pipe</b>				
		As per item No.10.6 of this Chapter	sqm	4.71	123.100	579.80
		<b>a) Labour</b>				
		Mate	day	0.014	391.00	5.47
		Mazdoor (Unskilled)	day	0.35	391.00	136.85
		Plumber	day	0.01	475.00	4.75
		<b>b) Material</b>				
		i. Steel pipe 50 mm dia as per IS:1239	m	30.00	366.00	10,980.00
		ii. Steel bars As per item No.12.5 of Chapter 12	t	0.032	91,483.20	2,927.46
		<b>c) Machinery</b>				
		50 HP Tractor with trolley	hour	0.25	265.00	66.25
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b.i+c)</b>				<b>2,380.82</b>
		<b>e) Contractor's profit @ 15 % on (a+b.i+c+d)</b>				<b>2,036.12</b>
		<b>f) Add Cess @ 1.00 % on (a+b.i+c+d+e)</b>				<b>156.10</b>
		Cost for 10 m = a+b+c+d+e+f				28,910.38
		<b>Rate per m = (a+b+c+d+e+f)/10</b>				<b>2,891.04</b>
						<b>say <u>2891.00</u></b>

**10.27 1700 Providing and Fixing 'Citizens' Information Board' of the Project(with CC structure)**

Providing and fixing of typical Citizens' Information board with Logo as per MORD specifications and drawing with CC structure made with M-15 of Size 1150 mm in length, 300 mm in thickness and 2450 mm in height all above G.L. with foundation with M-15 concrete of size 1150 mm x 600 mm x 750 mm, 750 mm below ground level with skin reinforcement with 8 mm dia TMT bars @ 200 cm C/C from bottom of the structure. Lettering and printing arrows, border etc. will be painted with ready mixed synthetic enamel paint of superior quality in required shade and colour. All sections of structure will be painted with primer and two coats of epoxy paint as per drawing and MoRD technical specification Clause 1701 and Annexure 1700.1

Unit = Each

Taking out put = one typical board

**A. Board 'A'**

**(i) Excavation for foundations**

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		As per item No. 11.1 of Chapter 11	cum	0.520	458.200	238.26
		<b>(ii) Cement Concrete M15 grade (using jhama brick aggregate)</b>				
		Below G.L. 1.15 x 0.60 x 0.75 = 0.520				
		Above G.L. 1.15 x 0.30 x 2.45 = 0.850				
		Total :- 1.37				
		As per item No. 11.11.II.II of Chapter 11	cum	1.370	9,441.600	12,934.99
		Steel for skin reinforcement, 8 mm steel bars @ 200 mm c/c	t	0.041	91,483.20	3,750.81
		<b>(iii) Painting on MS Steel tubes with primer and two coats of epoxy paint</b>				
		2 x 2.05 x 1.15 = 5.60				
		2 x 2.05 x 0.30 = 1.50				
		1 x 1.15 x 0.30 = 0.40				
		Total :- 7.50				
		As per item no. 10.7 of Chapter 10	sqm	7.46	138.50	1,033.21
		<b>iv) Printing new letters and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade.</b>				
		Heading Band 90 x 10 = 900				
		Logo 70 x 10 = 700				
		Lettering 50 x 2.5 = 125				
		Band 65 x 1.5 x 3 = 292.5				
		75 x 1.5 x 4 = 450				
		Information 200 x 1.7 x 80 = 340				
		21 x 2.5 = 52.5				
		700 x 1 = 700				
		25 x 1.7 = 42.5				
		1400 x 1.2 = 1680				
		Total :- 5282.50				
		4532.5 per cm height per letter				
		As per item No.10.1 of Chapter 10 (English & Roman)	per cm height per	5,282.50	0.80	4,226.00
		<b>a) Labour (for fixing at site)</b>				
		Mate	day	0.05	391.00	19.55
		Mazdoor (Unskilled)	day	1.25	391.00	488.75
		<b>b) Machinery</b>				
		Tractor with trolley	hour	0.30	265.00	79.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>125.03</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>106.92</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>8.20</b>
		Cost for one Board= (i+ii+iii+iv+a+b+c+d+e)				23,011.22

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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say 23011.20

**B. Board 'B'**

**(i) Excavation for foundations**

As per item No. 11.1 of Chapter 11 cum 0.520 458.200 238.26

**(ii) Cement Concrete M15 grade (using jhama brick aggregate)**

Below G.L  $1.15 \times 0.60 \times 0.75 = 0.520$

Above G.L  $1.15 \times 0.30 \times 2.45 = 0.850$

Total :- 1.37

As per item No. 11.11.II.ii of Chapter 11 cum 1.370 9,441.600 12,934.99

Steel for skin reinforcement, 8 mm steel bars @ 200 mm c/c t 0.041 91,483.20 3,750.81

**(iii) Painting on MS Steel tubes with primer and two coats of epoxy paint**

$2 \times 1.15 \times 0.30 = 0.70$

$2 \times 1.15 \times 2.45 = 5.60$

$1 \times 0.30 \times 2.45 = 0.70$

Total :- 7.1

As per item no. 10.7 of Chapter 10 sqm 7.10 138.50 983.35

**iv) Printing new letters and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade.**

Heading Band  $90 \times 10 = 900$

Logo  $70 \times 10 = 700$

Lettering  $50 \times 2.5 = 125$

Band  $65 \times 1.5 \times 3 = 292.5$

$75 \times 1.5 \times 4 = 450$

Information  $200 \times 1.7 \times 80 = 340$

$21 \times 2.5 = 52.5$

$500 \times 1 = 500$

$25 \times 1.7 = 42.5$

$800 \times 1.2 = 960$

Total :- 4362.50

4532.5 per cm height per letter

As per item No.10.1 of Chapter 10 (English & Roman) per cm height per letter 4,362.00 0.80 3,489.60

**a) Labour (for fixing at site)**

Mate day 0.05 391.00 19.55

Mazdoor (Unskilled) day 1.25 391.00 488.75

**b) Machinery**

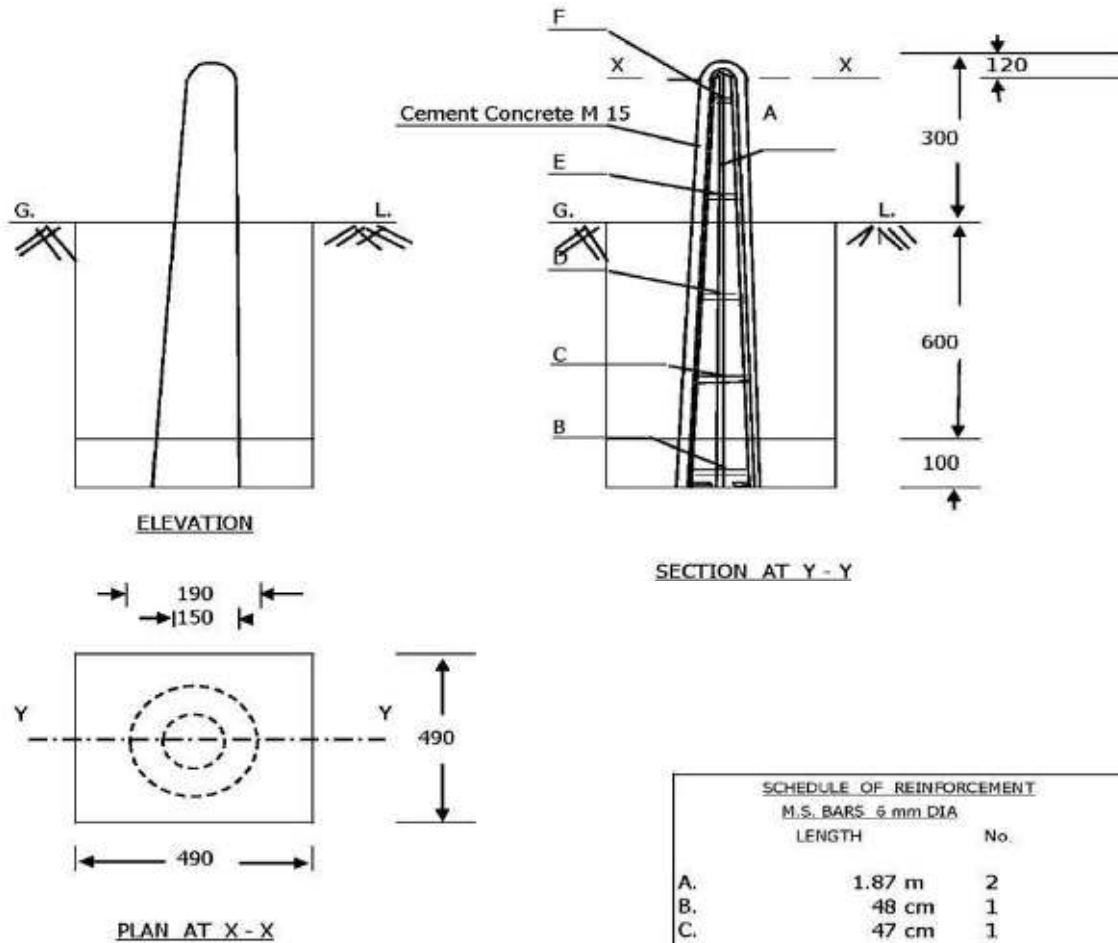
Tractor with trolley hour 0.30 265.00 79.50

**Chapter 10**  
**TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				125.03
		d) Contractor's profit @ 15 % on (a+b+c)				106.92
		e) Add Cess @ 1.00 % on (a+b+c+d)				8.20
		Cost for one Board= (i+ii+iii+iv+a+b+c+d+e)				22,224.96
					<b>say</b>	<b><u>22225.00</u></b>

**Note:** Printing and lettering for blank spaces on the lower plate will be written as required and paid separately.

**Boundary Pillar (with PCC M15 grade using jhama brick aggregate and reinforcement)**



- Note :**
- 1 Not to Scale
  - 2 Hand Sketch
  - 3 All Dimensions are in mm



**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORO Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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11.1 300 **Excavation for Structures**

**A. Without dewatering.**

Earthwork in excavation for structures as per drawing and MoRD technical specifications Clause 305.1 including setting out, construction of shoring & bracing, removal of stumps & other deleterious material and disposal upto a lead of 50 m, dressing of sides & bottom and backfilling in trenches with excavated suitable material.

**I. Ordinary soil**

**(i) Upto 3 m depth**

Unit = cum

Taking output = 10 cum

**a) Labour**

Mate	day	0.32	391.00	125.12
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Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
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**b) Add GST (multiplying factor) @ 0.2127 on (a) 691.94**

**c) Contractor's profit @ 15 % on (a+b) 591.76**

**d) Add Cess @ 1.00 % on (a+b+c) 45.37**

Cost for 10 cum = a+b+c+d 4,582.19

**Rate per cum = (a+b+c+d)/10 458.22**

**say 458.20**

**Note:** 1 *Cost of dewatering may be added, where required, up to 10 per cent of labour cost. Assessment for dewatering shall be made as per site conditions.*

2 *The cost of shoring and shuttering, where needed, may be added @ 3 per cent on cost of excavation for open foundation.*

3 *The excavated earth if found suitable, can be used partly for backfilling in trenches & partly for road work. Hence cost of disposal has not been added except for marshy soil. This note is common to all cases of item 11.1.*

**(ii) 3 m to 6 m depth**

Unit = cum

**a) Labour**

Mate	day	0.38	391.00	148.58
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Mazdoor (Unskilled)	day	9.50	391.00	3,714.50
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**b) Add GST (multiplying factor) @ 0.2127 on (a) 821.68**

**c) Contractor's profit @ 15 % on (a+b) 702.71**

**d) Add Cess @ 1.00 % on (a+b+c) 53.87**

Cost for 10 cum = a+b+c+d 5,441.35

**Rate per cum = (a+b+c+d)/10 544.13**

**say 544.10**

**Note:** 1 *Cost of dewatering may be added, when needed, up to 15 per cent of labour cost.*

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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- 2 *Cost of shoring and shuttering, where needed, may be added @ 10 per cent on cost of excavation for open foundation.*

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**II. Ordinary rock (not requiring blasting)**

**i) Upto 3 m depth**

Unit = cum

Taking output = 10 cum

**a) Labour**

Mate	day	0.40	391.00	156.40
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Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
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**b) Add GST (multiplying factor) @ 0.2127 on (a) 864.92**

**c) Contractor's profit @ 15 % on (a+b) 739.70**

**d) Add Cess @ 1.00 % on (a+b+c) 56.71**

Cost for 10 cum = a+b+c+d 5,727.73

**Rate per cum = (a+b+c+d)/10 572.77**

**say 572.80**

**Note:** Cost of dewatering upto 10 per cent of labour cost may be added, where required as per site condition.

**III. Hard rock (blasting prohibited)**

Upto 3 m depth including 1.5 m depth in hard rock

Unit = cum

Taking output = 10 cum

**a) Labour**

Mate	day	0.20	391.00	78.20
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Mazdoor (Unskilled)	day	5.00	391.00	1,955.00
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**b) Machinery**

Air compressor 210 cfm with 2 jack hammers of pneumatic breaker	hour	10.00	235.00	2,350.00
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 932.31**

**d) Contractor's profit @ 15 % on (a+b+c) 797.33**

**e) Add Cess @ 1.00 % on (a+b+c+d) 61.13**

Cost for 10 cum = a+b+c+d+e 6,173.96

**Rate per cum = a+b+c+d+e/10 617.40**

**say 617.40**

**Note:** Cost of dewatering up to 10 per cent of (a+b) may be added, where required as per site conditions.

**IV. Marshy soil**

Unit = cum

Taking output = 10 cum

**a) Labour**

Mate	day	0.60	391.00	234.60
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Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
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**b) Add GST (multiplying factor) @ 0.2127 on (a) 1,297.38**

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		c) Contractor's profit @ 15 % on (a+b)				1,109.55
		d) Add Cess @ 1.00 % on (a+b+c)				85.07
		Cost for 10 cum = a+b+c+d				8,591.60
		<b>Rate per cum = (a+b+c+d)/10</b>				<b>859.16</b>
					<i>say</i>	<b><u>859.20</u></b>

- Note:**
- 1 Cost of dewatering @ 30 per cent of (a) may be added.
  - 2 Shoring and shuttering @ 15 per cent of (a) may be added where required.
  - 3 Since marshy soil cannot be used in filling in trenches, it shall be removed and replaced by approved quality of soil. The labour cost includes labour input for disposal of marshy soil from excavated pit with a lead upto 50 m lead.
  - 4 Marshy soil is generally available upto 3 m depth. The rate has, therefore, been done upto 3 m depth of excavation. For deeper excavation refer analysis in item 11.1.

**A. With dewatering.**

Earthwork in excavation for structures as per drawing and technical specifications Clause 305.1 including setting out, dewatering, construction of shoring, shuttering & bracing, removal of stumps & other deleterious material and disposal upto a lead of 50 m, dressing of sides & bottom and backfilling in trenches with excavated suitable material.

**I. Ordinary soil**

**(i) Upto 3 m depth**

Unit = cum

Taking output = 10 cum

**a) Labour**

Mate	day	0.32	391.00	125.12
Mazdoor (Unskilled)	day	8.00	391.00	3,128.00

**b) Add 5.00 % for dewatering** **162.66**

**c) Add 3.00 % for shoring, shuttering & bracing** **102.47**

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **748.33**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **639.99**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **49.07**

Cost for 10 cum = a+b+c+d+e+f 4,955.63

**Rate per cum = (a+b+c+d+e+f)/10** **495.56**

*say* **495.60**

- Note:**
- 1 Cost of dewatering is added, where required, @ 5.00 per cent of labour cost. Assessment for dewatering shall be made as per site conditions.
  - 2 The cost of shoring and shuttering, is added @ 3 per cent on cost of excavation for open foundation.

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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- 3 The excavated earth if found suitable, can be used partly for backfilling in trenches & partly for road work. Hence cost of disposal has not been added except for marshy soil. This note is common to all cases of item 11.1.

**(ii) 3 m to 6 m depth**

Unit = cum

Taking output = 10 cum

**a) Labour**

Mate	day	0.38	391.00	148.58
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Mazdoor (Unskilled)	day	9.50	391.00	3,714.50
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**b) Add 10.00 % for dewatering** **386.31**

**c) Add 5.00 % for shoring, shuttering & bracing** **212.47**

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **949.04**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **811.63**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **62.23**

Cost for 10 cum = a+b+c+d+e+f 6,284.75

**Rate per cum = (a+b+c+d+e+f)/10** **628.48**

**say 628.50**

**Note:** 1 Cost of dewatering is added, where required, @ 10.00 per cent of labour cost.

2 The cost of shoring and shuttering, is added @ 5.00 per cent on cost of excavation for open foundation.

**11.2 300 & 1200 Filling in foundation trenches as per drawing & MoRD technical specification Clause 305.3.9, 1200.**

**I. Sand filling**

Unit = cum

**a) Labour**

Mate	day	0.01	391.00	3.91
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Mazdoor (Unskilled)	day	0.30	391.00	117.30
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**b) Material**

Sand (local quarry) (assuming 20% voids)	cum	1.20	590.00	708.00
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**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** **176.37**

**d) Contractor's profit @ 15 % on (a+b+c)** **150.84**

**e) Add Cess @ 1.00 % on (a+b+c+d)** **11.56**

**Rate per cum = a+b+c+d+e** **1,167.98**

**say 1168.00**

**II. Earth filling (For marshy soil)**

Unit = cum

Taking output = 6 cum

**a) Labour**

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	0.20	391.00	78.20
		Mazdoor (Unskilled)	day	3.00	391.00	1,173.00
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>266.13</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>227.60</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>17.45</b>
		Cost for 6 cum = a+b+c+d				1,762.38
		<b>Rate per cum = (a+b+c+d)/6</b>				<b>293.73</b>
						<b>say <u>293.70</u></b>

- Note:** 1 Cost of transportation of good quality earth has not been included. Only labour for carrying carted earth with a lead of 50 m to the foundation pits has been taken in the rate. The cost of carted earth may be worked out separately if the same is not available from the adjoining area.
- 2 Backfilling of foundation trenches shall normally be done with excavated earth. The cost of this operation is included in item 11.1. Only in case the excavated earth is not of suitable quality, sand filling or backfilling with carted earth may be resorted to.

**11.3 300 & 1200 Filling annular space around footing in rock as per MoRD technical specification Clause 300, 1203.4.3.**

Unit = cum

**P.C.C grade M 15**

**Nominal mix 1 : 2.5 : 5 (Hand mixing)**

Unit = cum

**a) Material**

Cement	t	0.275	6,797.00	1,869.18
Sand	cum	0.48	740.00	355.20
40 mm aggregate	cum	0.54	4,236.00	2,287.44
20 mm aggregate	cum	0.25	4,374.00	1,093.50
10 mm aggregate	cum	0.11	4,269.00	469.59

**b) Labour**

Mate	day	0.09	391.00	35.19
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	2.00	391.00	782.00
Bhisti	day	0.27	391.00	105.57

**c) Formwork @ 4% on (a+b) 281.95**

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 1,559.27**

**e) Contractor's profit @ 15 % on (a+b+c+d) 1,333.51**

**f) Add Cess @ 1.00 % on (a+b+c+d+e) 102.24**

**Rate per cum = a+b+c+d+e+f 10,325.83**

**say 10325.80**

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
11.4	800 & 1200	Providing concrete for plain/reinforced concrete in open foundations complete including formwork as per drawings & MoRD technical specifications Clauses 802, 803, 900, 1202 and 1203. (including centering, shuttering, staging etc. but excluding reinforcement).				
		<b>I. P.C.C grade M 10</b>				
		<b>(i) Nominal mix 1:3:6</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.250	6,797.00	1,699.25
		Sand	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.540	4,236.00	2,287.44
		20 mm aggregate	cum	0.240	4,374.00	1,049.76
		10 mm aggregate	cum	0.120	4,269.00	512.28
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	1.63	391.00	637.33
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Mechanical concrete mixer 0.4/0.28 cum capacity fitted with water measuring device and preferably also with load cell.	hour	0.40	215.00	86.00
		<b>d) Formwork @ 4% on cost of material, labour and machinery (a+b+c)</b>				<b>272.61</b>
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,507.60</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,289.33</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>98.85</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>9,983.70</b>
						<b>say <u>9983.70</u></b>
		<b>(ii) Nominal mix 1:3:6 (Hand mixing)</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.250	6,797.00	1,699.25
		Sand	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.540	4,236.00	2,287.44
		20 mm aggregate	cum	0.240	4,374.00	1,049.76
		10 mm aggregate	cum	0.120	4,269.00	512.28
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		c) Formwork @ 4% on cost of material (a) and labour (b)				275.12
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				1,521.44
		e) Contractor's profit @ 15 % on (a+b+c+d)				1,301.17
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				99.76
		Rate per cum = a+b+c+d+e+f				10,075.37
						<b><i>say 10075.40</i></b>

**II. P.C.C grade M 15**

**(i) Nominal mix (1:2.5:5)**

Unit = cum

**a) Material**

Cement	t	0.275	6,797.00	1,869.18
Sand	cum	0.48	740.00	355.20
40 mm aggregate	cum	0.54	4,236.00	2,287.44
20 mm aggregate	cum	0.25	4,374.00	1,093.50
10 mm aggregate	cum	0.11	4,269.00	469.59

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	1.63	391.00	637.33
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**d) Formwork @ 4% on cost of material, labour and machinery (a+b+c) 279.45**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d) 1,545.42**

**f) Contractor's profit @ 15 % on (a+b+c+d+e) 1,321.67**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f) 101.33**

**Rate per cum = a+b+c+d+e+f+g 10,234.16**

***say 10234.20***

**(ii) Nominal mix 1:2.5:5 (Hand mixing)**

Unit = cum

**a) Material**

Cement	t	0.275	6,797.00	1,869.18
Sand	cum	0.48	740.00	355.20
40 mm aggregate	cum	0.54	4,236.00	2,287.44
20 mm aggregate	cum	0.25	4,374.00	1,093.50
10 mm aggregate	cum	0.11	4,269.00	469.59

**b) Labour**

Mate	day	0.09	391.00	35.19
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**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) Formwork @ 4% on (a+b)</b>				<b>281.95</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,559.27</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,333.51</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>102.24</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>10,325.83</b>
						<b>say <u>10325.80</u></b>

**III. P.C.C. grade M 20**

**(i) Nominal mix (1:2:4)**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Sand	cum	0.45	740.00	333.00
40 mm aggregate	cum	0.36	4,236.00	1,524.96
20 mm aggregate	cum	0.36	4,374.00	1,574.64
10 mm aggregate	cum	0.18	4,269.00	768.42

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	1.63	391.00	637.33
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**d) Formwork @ 4% on (a+b+c)** **294.22**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)** **1,627.08**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)** **1,391.51**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)** **106.68**

**Rate per cum = a+b+c+d+e+f+g** **10,774.89**

**say 10774.90**

**(ii) Nominal mix 1:2:4 (Hand mixed)**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Sand	cum	0.45	740.00	333.00
40 mm aggregate	cum	0.36	4,236.00	1,524.96
20 mm aggregate	cum	0.36	4,374.00	1,574.64
10 mm aggregate	cum	0.18	4,269.00	768.42

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) Formwork @ 4% out of material and labour (a+b)</b>				<b>296.72</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,640.92</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,403.34</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>107.59</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>10,866.56</b>
						<b><i>say 10866.60</i></b>

**IV. R.C.C grade M 20**

Unit = cum

**a) Material**

Cement	t	0.35	6,797.00	2,378.95
Sand	cum	0.45	740.00	333.00
20 mm aggregate	cum	0.54	4,374.00	2,361.96
10 mm aggregate	cum	0.36	4,269.00	1,536.84

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.12	512.00	61.44
Mazdoor (Unskilled)	day	1.73	391.00	676.43
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**d) Formwork @ 4% on (a+b+c)****302.86****e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)****1,674.87****f) Contractor's profit @ 15 % on (a+b+c+d+e)****1,432.38****g) Add Cess @ 1.00 % on (a+b+c+d+e+f)****109.82****Rate per cum = (a+b+c+d+e+f+g)****11,091.39*****say 11091.40*****V. R.C.C. grade M 25**

Unit = cum

**a) Material**

Cement	t	0.404	6,797.00	2,745.99
Sand	cum	0.45	740.00	333.00
20 mm aggregate	cum	0.54	4,374.00	2,361.96
10 mm aggregate	cum	0.36	4,269.00	1,536.84

**b) Labour**

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) Formwork @ 4.00% on (a+b+c)</b>				<b>317.54</b>
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,756.06</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,501.82</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>115.14</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>11,629.07</b>
						<b><i>say 11629.10</i></b>

- 11.5 600 & 1200 Brick masonry work in cement mortar in foundation completed excluding pointing & plastering as per drawing & MoRD technical specifications Clauses 600, 1202 & 1203.**

Unit = cum

**I. Brick masonry in 1:3 cement mortar**

**a) Material**

Brick	Nos.	380.00	12.20	4,636.00
Cement mortar 1:3	cum	0.24	4,642.29	1,114.15
(Rate as per Sub-analysis)				

**b) Labour**

Mate	day	0.09	391.00	35.19
Mason (1st Class)	day	0.80	512.00	409.60
Mazdoor (Unskilled)	day	1.60	391.00	625.60
Bhisti	day	0.20	391.00	78.20

**c) Add GST (multiplying factor) @ 0.2127 on (a+b)** **1,467.36**

**d) Contractor's profit @ 15 % on (a+b+c)** **1,254.92**

**e) Add Cess @ 1.00 % on (a+b+c+d)** **96.21**

**Rate per cum = a+b+c+d+e** **9,717.23**

***say 9717.20***

**Sub-analysis**

**Cement mortar 1:3 (1 cement : 3 sand)**

Unit = cum

**a) Material**

Cement	t	0.51	6,797.00	3,466.47
Sand	cum	1.05	740.00	777.00

**b) Labour**

Mate	day	0.04	391.00	15.64
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**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mazdoor (Unskilled)	day	0.90	391.00	351.90
		Bhisti	day	0.08	391.00	31.28
		<b>Total material and labour = (a+b)</b>				<b><u>4642.29</u></b>
		<b>II. Brick masonry in 1:4 cement mortar</b>				
		Unit = cum				
		<b>a) Material</b>				
		Brick	Nos.	380.00	12.20	4,636.00
		Cement mortar 1:4	cum	0.24	3,758.68	902.08
		Rates as per sub-analysis				
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.80	512.00	409.60
		Mazdoor (Unskilled)	day	1.60	391.00	625.60
		Bhisti	day	0.20	391.00	78.20
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,422.26</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,216.34</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>93.25</b>
		<b>Rate per cum = a+b+c+e</b>				<b>9,418.52</b>
						<b>say <u>9418.50</u></b>
		<b>Sub-analysis</b>				
		<b>Cement mortar 1:4 (1 cement : 4 sand)</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.38	6,797.00	2,582.86
		Sand	cum	1.05	740.00	777.00
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	0.90	391.00	351.90
		Bhisti	day	0.08	391.00	31.28
		<b>Total material and labour = (a+b)</b>				<b><u>3,758.68</u></b>
<b>11.6</b>	<b>1000 &amp; 1200</b>	<b>Supplying, fitting &amp; placing Thermo-Mechanically treated bar/ Cold twisted deformed steel bar reinforcement in foundation complete as per drawings &amp; MoRD technical specifications Clauses 1000 &amp; 1202.</b>				
		Unit = t				
		<b>a) Material</b>				
		Twisted steel/ deformed bars including 5 per cent for overlaps and wastage	t	1.05	58,000.00	60,900.00
		Binding wire	kg	6.00	69.00	414.00
		<b>b) Labour for cutting, bending, shifting to site, tying and placing in position</b>				

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	0.40	391.00	156.40
		Blacksmith	day	2.00	480.00	960.00
		Mazdoor (Unskilled)	day	6.00	391.00	2,346.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>13,777.94</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>11,783.15</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>903.37</b>
		<b>Rate per t = a+b+c+d+e</b>				<b>91,240.87</b>
						<b><i>say 91240.90</i></b>
<b>11.7</b>	<b>1000 &amp; 1200</b>	<b>Supplying, fitting &amp; placing MS bar reinforcement in foundation complete as per drawings &amp; MoRD technical specifications Clauses 1000 &amp; 1202.</b>				
		Unit = t				
		<b>a) Material</b>				
		MS bars including 5 per cent for overlaps and wastag	t	1.05	57,000.00	59,850.00
		Binding wire	kg	6.00	69.00	414.00
		<b>b) Labour for cutting, bending, shifting to site, tying and placing in position</b>				
		Mate	day	0.40	391.00	156.40
		Blacksmith	day	2.00	480.00	960.00
		Mazdoor (Unskilled)	day	6.00	391.00	2,346.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>13,554.61</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>11,592.15</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>888.73</b>
		<b>Rate per t = a+b+c+d+e</b>				<b>89,761.89</b>
						<b><i>say 89761.90</i></b>

**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE (i.e. LOCALLY AVAILABLE MATERIALS)**

**11.8 300 & 1200 Filling annular space around footing in rock as per MoRD technical specification Clause 300, 1203.4.3.**

Unit = cum

**P.C.C grade M 15 (using jhama brick aggregate)**

**Nominal mix 1 : 2.5 : 5 (Hand mixing)**

Unit = cum

**a) Material**

Cement	t	0.275	6,797.00	1,869.18
Sand	cum	0.48	740.00	355.20
40 mm aggregate	cum	0.54	3,417.00	1,845.18
20 mm aggregate	cum	0.25	3,917.00	979.25
10 mm aggregate	cum	0.11	3,841.00	422.51

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) Formwork @ 4% on (a+b)</b>				<b>257.81</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,425.75</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,219.32</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>93.48</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>9,441.64</b>
						<b>say <u>9441.60</u></b>

**11.9 800, 900 & 1200** Providing concrete for plain concrete (using jhama brick aggregate) in open foundations complete including formwork as per drawings & MoRD technical specifications Clauses 802, 803, 900, 1202 and 1203. (including centering, shuttering, staging etc. but excluding reinforcement)

**I. P.C.C grade M 10 (using jhama brick aggregate)**

**(i) Nominal mix 1:3:6**

Unit = cum

**a) Material**

Cement	t	0.250	6,797.00	1,699.25
Sand	cum	0.48	740.00	355.20
40 mm aggregate	cum	0.540	3,417.00	1,845.18
20 mm aggregate	cum	0.240	3,917.00	940.08
10 mm aggregate	cum	0.120	3,841.00	460.92

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	1.63	391.00	637.33
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Mechanical concrete mixer 0.4/0.28 cum capacity fitted with water measuring device and preferably also with load cell.	hour	0.40	215.00	86.00
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**d) Formwork @ 4% on cost of material, labour and machinery (a+b+c)** **248.48**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)** **1,374.15**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)** **1,175.20**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)** **90.10**

**Rate per cum = a+b+c+d+e+f+g** **9,099.93**

**say 9099.90**

**(ii) Nominal mix 1:3:6 (Hand mixing)**

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.250	6,797.00	1,699.25
		Sand	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.540	3,417.00	1,845.18
		20 mm aggregate	cum	0.240	3,917.00	940.08
		10 mm aggregate	cum	0.120	3,841.00	460.92
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) Formwork @ 4% on cost of material (a) and labour (b)</b>				<b>250.98</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,387.99</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,187.03</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>91.01</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>9,191.60</b>
						<b>say <u>9191.60</u></b>

**II. P.C.C grade M 15 (using jhama brick aggregate)**

**(i) Nominal mix (1:2.5:5)**

Unit = cum

**a) Material**

Cement	t	0.275	6,797.00	1,869.18
Sand	cum	0.48	740.00	355.20
40 mm aggregate	cum	0.54	3,417.00	1,845.18
20 mm aggregate	cum	0.25	3,917.00	979.25
10 mm aggregate	cum	0.11	3,841.00	422.51

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	1.63	391.00	637.33
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**d) Formwork @ 4% on cost of material, labour and machinery (a+b+c)** **255.31**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)** **1,411.90**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)** **1,207.49**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)** **92.57**

**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Rate per cum = a+b+c+d+e+f+g

9,349.97

**say 9350.00**

**(ii) Nominal mix 1:2.5:5 (Hand mixing)**

Unit = cum

**a) Material**

Cement	t	0.275	6,797.00	1,869.18
Sand	cum	0.48	740.00	355.20
40 mm aggregate	cum	0.54	3,417.00	1,845.18
20 mm aggregate	cum	0.25	3,917.00	979.25
10 mm aggregate	cum	0.11	3,841.00	422.51

**b) Labour**

Mate	day	0.09	391.00	35.19
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	2.00	391.00	782.00
Bhisti	day	0.27	391.00	105.57

**c) Formwork @ 4% on (a+b)**

**257.81**

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

**1,425.75**

**e) Contractor's profit @ 15 % on (a+b+c+d)**

**1,219.32**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

**93.48**

Rate per cum = a+b+c+d+e+f

9,441.64

**say 9441.60**

**III. P.C.C. grade M 20 (using jhama brick aggregate)**

**(i) Nominal mix (1:2:4)**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Sand	cum	0.45	740.00	333.00
40 mm aggregate	cum	0.36	3,417.00	1,230.12
20 mm aggregate	cum	0.36	3,917.00	1,410.12
10 mm aggregate	cum	0.18	3,841.00	691.38

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	1.63	391.00	637.33
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**d) Formwork @ 4% on (a+b+c)**

**272.76**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)**

**1,508.42**



**Chapter 11**  
**FOUNDATION**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1,290.03
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				98.90
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>9,989.12</b>
						<b>say <u>9989.10</u></b>
		<b>(ii) Nominal mix 1:2:4 (Hand mixed)</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.33	6,797.00	2,243.01
		Sand	cum	0.45	740.00	333.00
		40 mm aggregate	cum	0.36	3,417.00	1,230.12
		20 mm aggregate	cum	0.36	3,917.00	1,410.12
		10 mm aggregate	cum	0.18	3,841.00	691.38
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) Formwork @ 4% out of material and labour (a+b)</b>				<b>275.26</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,522.26</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,301.87</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>99.81</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>10,080.79</b>
						<b>say <u>10080.80</u></b>

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MOR D Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
12.1	600, 1200	Brick masonry work in cement mortar in substructure complete excepting pointing & plastering, as per drawing & MoRD technical specification Clauses 602, 603, 604, 1202 and 1204.				
		<b>I. In 1:3 cement mortar</b>				
		Unit = cum				
		<b>a) Material</b>				
		Bricks	Nos.	380.00	12.20	4,636.00
		Cement mortar (Rate as in item 11.5.I)	cum	0.24	4,642.29	1,114.15
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason 1st Class	day	0.80	512.00	409.60
		Mazdoor (Unskilled)	day	1.60	391.00	625.60
		Bhisti	day	0.20	391.00	78.20
		Add for scaffolding @ 5 per cent of cost of materials and labour (a+b)				344.94
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,540.73</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,317.66</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>101.02</b>
		<b>Rate per cum = a+b+c+d+e</b>				<b>10,203.09</b>
					<b>say</b>	<b><u>10203.10</u></b>
		<b>II. In 1:4 Cement mortar</b>				
		Unit = cum				
		<b>a) Material</b>				
		Bricks	Nos.	380.00	12.20	4,636.00
		Cement mortar (Rate as in item 11.5.II)	cum	0.24	3,758.68	902.08
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason 1st Class	day	0.80	512.00	409.60
		Mazdoor (Unskilled)	day	1.60	391.00	625.60
		Bhisti	day	0.20	391.00	78.20
		Add for scaffolding @ 5 per cent of cost of materials and labour (a+b)				334.33
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,493.37</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,277.16</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>97.92</b>
		<b>Rate per cum = a+b+c+d+e</b>				<b>9,889.45</b>
					<b>say</b>	<b><u>9889.40</u></b>
		<b>III. In 1:5 cement mortar</b>				
		Unit = cum				
		<b>a) Material</b>				

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MOR D Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Bricks 1st class	Nos.	380.00	12.20	4,636.00
		Cement mortar (Rate as per sub-analysis)	cum	0.24	3,282.89	787.89
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason 1st Class	day	0.80	512.00	409.60
		Mazdoor (Unskilled)	day	1.60	391.00	625.60
		Bhisti	day	0.20	391.00	78.20
		Add for scaffolding @ 5 per cent of cost of materials and labour (a+b)				328.62
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,467.87</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,255.35</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>96.24</b>
		<b>Rate per cum = a+b+c+d+e</b>				<b>9,720.56</b>
					<b>say</b>	<b><u>9720.60</u></b>
		<b>Sub-analysis</b>				
		<b>Cement mortar 1:5 (1 cement, 5 sand)</b>				
		<b>a) Material</b>				
		Cement	t	0.31	6,797.00	2,107.07
		Sand	cum	1.05	740.00	777.00
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	0.90	391.00	351.90
		Bhisti	day	0.08	391.00	31.28
		<b>Total material and labour = (a+b)</b>				<b><u>3,282.89</u></b>
12.2	600, 1200	<b>Pointing with cement mortar (1:3) on brickwork as per drawing &amp; MoRD technical specification Clauses 613.3 &amp; 1204.</b>				
		Unit = 10 sqm				
		Taking output = 10 sqm				
		<b>a) Material</b>				
		Cement mortar 1.3 (Rate as in item 11.5.1)	cum	0.03	4,642.29	139.27
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mason 1st Class	day	0.50	512.00	256.00
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		Bhisti	day	0.20	391.00	78.20
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>145.62</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>124.53</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>9.55</b>
		<b>Rate per 10 sqm = (a+b+c+d+e)</b>				<b>964.31</b>
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				<b>96.43</b>

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**say**      **96.40**

*Note: Scaffolding is already included in item 12.1*

<b>12.3</b>	<b>600, 1200</b>	<b>Plastering with cement mortar (1:4) 15 mm thick on brickwork in substructure as per MoRD technical specification Clauses 613.4 &amp; 1204.</b> Unit = 10 sqm Taking output = 10 sqm				
		<b>a) Material</b>				
		Cement mortar 1:4 (Rate as in item 11.5.II )	cum	0.24	3,758.68	902.08
		<b>b) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Mason 1st Class	day	0.60	512.00	307.20
		Mazdoor (Unskilled)	day	0.60	391.00	234.60
		Bhisti	day	0.30	391.00	117.30
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>337.05</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>288.25</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>22.10</b>
		<b>Rate per 10 sqm = (a+b+c+d+e)</b>				<b>2,232.05</b>
		<b>Rate per sqm = (a+b+c+d+e)/10</b>				<b>223.21</b>
					<b>say</b>	<b><u>223.20</u></b>

*Note: 1 Scaffolding is already included in item 12.1*

*2 Though cement mortar of leaner mix has been included in item 12.1, for cement plaster mix of 1:4 has been proposed for better finishing*

*3 If cement plaster 12 mm or 18 mm thick is required elsewhere only the quantity of cement mortar may be changed on prorata basis without any change in the labour.*

<b>12.4</b>	<b>800,900 &amp; 1200</b>	<b>Plain/reinforced cement concrete in substructure &amp; complete including formwork as per drawings &amp; MoRD technical specification Clauses 802, 804, 805, 806, 807, 900, 1202 &amp; 1204. (including centering, shuttering, staging etc. but excluding reinforcement)</b>  Unit = cum				
		<b>I. P.C.C grade M 15</b>				
		Same as item 11.4.II(i) up to 5 m height except for formwork which shall be 10 percent instead of 4 percent of cost of material, labour & machinery.				
		<b>(i) Nominal mix (1:2.5:5)</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.275	6,797.00	1,869.18
		Sand	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.54	4,236.00	2,287.44

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		20 mm aggregate	cum	0.25	4,374.00	1,093.50
		10 mm aggregate	cum	0.11	4,269.00	469.59
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	1.63	391.00	637.33
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) Formwork @ 10% on cost of material, labour and machinery (a+b+c)</b>				<b>698.63</b>
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,634.58</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,397.92</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>107.17</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>10,824.59</b>
					<b>say</b>	<b><u>10824.60</u></b>

**II. P.C.C grade M 15**

Same as item 11.4.II(i) up to 5 m height except for formwork which shall be 10 percent instead of 4 percent of cost of material & labour.

**(ii) Nominal mix 1:2.5:5 (Hand mixing)**

Unit = cum

**a) Material**

Cement	t	0.275	6,797.00	1,869.18
Sand	cum	0.48	740.00	355.20
40 mm aggregate	cum	0.54	4,236.00	2,287.44
20 mm aggregate	cum	0.25	4,374.00	1,093.50
10 mm aggregate	cum	0.11	4,269.00	469.59

**b) Labour**

Mate	day	0.09	391.00	35.19
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	2.00	391.00	782.00
Bhisti	day	0.27	391.00	105.57

**c) Formwork @ 10% on (a+b)****704.89****d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)****1,649.22****e) Contractor's profit @ 15 % on (a+b+c+d)****1,410.45****f) Add Cess @ 1.00 % on (a+b+c+d+e)****108.13****Rate per cum = a+b+c+d+e+f****10,921.55****say 10921.60****III. P.C.C. grade M 20 (1:2:4) Nominal mix**

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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- i) Same as item 11.4.III(i) up to 5 m height except for formwork which shall be 10 percent instead of 4 percent of cost of material, labour & machinery.
- ii) For height above 5 m up to 10 m same as item no. 11.4.III with following changes:-
- a. Add 2 percent of cost of material, labour & machinery excluding formwork to cater for extra lift.
  - b. The provision of formwork shall be 12 percent instead of 4 percent of cost of material, labour and machinery.

**(i) Up to 5 m height**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Sand	cum	0.45	740.00	333.00
40 mm aggregate	cum	0.36	4,236.00	1,524.96
20 mm aggregate	cum	0.36	4,374.00	1,574.64
10 mm aggregate	cum	0.18	4,269.00	768.42

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	1.63	391.00	637.33
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**d) Formwork @ 10% on cost of material, labour and machinery (a+b+c) 735.54**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d) 1,720.95**

**f) Contractor's profit @ 15 % on (a+b+c+d+e) 1,471.78**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f) 112.84**

**Rate per cum = a+b+c+d+e+f+g 11,396.52**

**say 11396.50**

**(ii) For height above 5 m upto 10 m**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Sand	cum	0.45	740.00	333.00
40 mm aggregate	cum	0.36	4,236.00	1,524.96
20 mm aggregate	cum	0.36	4,374.00	1,574.64
10 mm aggregate	cum	0.18	4,269.00	768.42

**b) Labour**

Mate	day	0.08	391.00	31.28
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**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	1.63	391.00	637.33
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) Add 2% of the cost of material, labour and machinery i.e. on (a+b+c) to cater extra lift</b>				<b>147.11</b>
		<b>e) Formwork @ 12% on cost of material, labour &amp; machinery i.e. on (a+b+c)</b>				<b>900.30</b>
		<b>f) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d+e)</b>				<b>1,787.28</b>
		<b>g) Contractor's profit @ 15 % on (a+b+c+d+e+f)</b>				<b>1,528.52</b>
		<b>h) Add Cess @ 1.00 % on (a+b+c+d+e+f+g)</b>				<b>117.19</b>
		<b>Rate per cum = a+b+c+d+e+f+g+h</b>				<b>11,835.80</b>
					<b>say</b>	<b><u>11835.80</u></b>

**IV. P.C.C. grade M 20 (1:2:4) Hand mix**

i) Same as item 11.4.III(ii) up to 5 m height except for formwork which shall be 10 percent instead of 4 percent of cost of material & labour.

ii) Same III(ii) above.

**(i) Up to 5 m height**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Sand	cum	0.45	740.00	333.00
40 mm aggregate	cum	0.36	4,236.00	1,524.96
20 mm aggregate	cum	0.36	4,374.00	1,574.64
10 mm aggregate	cum	0.18	4,269.00	768.42

**b) Labour**

Mate	day	0.09	391.00	35.19
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	2.00	391.00	782.00
Bhisti	day	0.27	391.00	105.57

**c) Formwork @ 10% out of material and labour (a+b)** **741.80**

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **1,735.59**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **1,484.31**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **113.80**

**Rate per cum = a+b+c+d+e+f** **11,493.48**

**say** **11493.50**

**(ii) For height above 5 m upto 10 m**

Unit = cum

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Material</b>				
		Cement	t	0.33	6,797.00	2,243.01
		Sand	cum	0.45	740.00	333.00
		40 mm aggregate	cum	0.36	4,236.00	1,524.96
		20 mm aggregate	cum	0.36	4,374.00	1,574.64
		10 mm aggregate	cum	0.18	4,269.00	768.42
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) Add 2% of the cost of material, labour i.e. on (a+b) to cater extra lift</b>				<b>148.36</b>
		<b>d) Formwork @ 12% on cost of material &amp; labour i.e. on (a+b)</b>				<b>907.96</b>
		<b>e) Add GST (multiplying factor) @ on (a+b+c+d)</b>				<b>1,802.49</b>
		<b>f) Contractor's profit @ on (a+b+c+d+e)</b>				<b>1,541.52</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>118.18</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>11,936.50</b>
					<b>say</b>	<b><u>11936.50</u></b>

**V. R.C.C grade M 20**

- i) Same as item 11.4.IV up to 5 m height except for formwork which shall be 10 percent instead of 4 percent of cost of material, labour & machinery.
- ii) For height above 5 m up to 10 m same as above except that 2 percent of cost excluding formwork is to be added for extra lift. For cost of formwork add 12 percent of cost of material, labour and machinery instead of 4 percent.
- iii) For height above 10 m same as above with the following changes.
  - a. Add 4 percent of cost of material, labour & machinery excluding formwork to cater for extra lift.
  - b. The provision of formwork shall be 15 percent instead of 4 percent of cost of material, labour and machinery.

**(i) Up to 5 m height**

Unit = cum

**a) Material**

Cement	t	0.35	6,797.00	2,378.95
Sand	cum	0.45	740.00	333.00
20 mm aggregate	cum	0.54	4,374.00	2,361.96
10 mm aggregate	cum	0.36	4,269.00	1,536.84



**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) Formwork @ 10% on cost of material, labour and machinery (a+b+c)</b>				<b>757.15</b>
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,771.50</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,515.02</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>116.15</b>
		<b>Rate per cum = (a+b+c+d+e+f+g)</b>				<b>11,731.28</b>
					<b>say</b>	<b><u>11731.30</u></b>
		<b>(ii) For height above 5 m upto 10 m</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.35	6,797.00	2,378.95
		Sand	cum	0.45	740.00	333.00
		20 mm aggregate	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) Add 2% of the cost of material, labour and machinery i.e. on (a+b+c) to cater extra lift</b>				<b>151.43</b>
		<b>e) Formwork @ 12% on cost of material, labour &amp; machinery i.e. on (a+b+c)</b>				<b>926.75</b>
		<b>f) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d+e)</b>				<b>1,839.78</b>
		<b>g) Contractor's profit @ 15 % on (a+b+c+d+e+f)</b>				<b>1,573.41</b>
		<b>h) Add Cess @ 1.00 % on (a+b+c+d+e+f+g)</b>				<b>120.63</b>
		<b>Rate per cum = a+b+c+d+e+f+g+h</b>				<b>12,183.47</b>
					<b>say</b>	<b><u>12183.50</u></b>
		<b>(iii) For height above 10 m</b>				
		Unit = cum				

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Material</b>				
		Cement	t	0.35	6,797.00	2,378.95
		Sand	cum	0.45	740.00	333.00
		20 mm aggregate	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) Add 4% of the cost of material, labour and machinery i.e. on (a+b+c) to cater extra lift</b>				<b>302.86</b>
		<b>e) Formwork @ 15% on cost of material, labour &amp; machinery i.e. on (a+b+c)</b>				<b>1,181.15</b>
		<b>f) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d+e)</b>				<b>1,926.10</b>
		<b>g) Contractor's profit @ 15 % on (a+b+c+d+e+f)</b>				<b>1,647.24</b>
		<b>h) Add Cess @ 1.00 % on (a+b+c+d+e+f+g)</b>				<b>126.29</b>
		<b>Rate per cum = a+b+c+d+e+f+g+h</b>				<b>12,755.10</b>
					<b>say</b>	<b><u>12755.10</u></b>

**VI. R.C.C. grade M 25**

- i) Same as item 11.4.V up to 5 m height excluding formwork. For cost of formwork add 10 percent instead of 4.00 percent.
- ii) For height above 5 m up to 10 m same as above except that 2 percent of cost excluding formwork is to be added for extra lift. For cost of formwork add 12 percent of cost of material, labour and machinery instead of 4 %.
- iii) For height above 10 m add 4 percent of cost as above excluding formwork to cater for extra lift. For cost of formwork add 15 percent of cost of material, labour and machinery instead of 4% .

**(i) Up to 5 m height**

Unit = cum

**a) Material**

Cement	t	0.404	6,797.00	2,745.99
Sand	cum	0.45	740.00	333.00
20 mm aggregate	cum	0.54	4,374.00	2,361.96
10 mm aggregate	cum	0.36	4,269.00	1,536.84

**b) Labour**

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) Formwork @ 10% on cost of material, labour and machinery (a+b+c)</b>				<b>793.85</b>
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,857.37</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,588.46</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>121.78</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>12,299.97</b>
					<b>say</b>	<b><u>12300.00</u></b>
		<b>(ii) For height above 5 m upto 10 m</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.404	6,797.00	2,745.99
		Sand	cum	0.45	740.00	333.00
		20 mm aggregate	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) Add 2% of the cost of material, labour and machinery i.e. on (a+b+c) to cater extra lift</b>				<b>158.77</b>
		<b>e) Formwork @ 12% on cost of material, labour &amp; machinery i.e. on (a+b+c)</b>				<b>971.67</b>
		<b>f) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d+e)</b>				<b>1,928.97</b>
		<b>g) Contractor's profit @ 15 % on (a+b+c+d+e+f)</b>				<b>1,649.69</b>
		<b>h) Add Cess @ 1.00 % on (a+b+c+d+e+f+g)</b>				<b>126.48</b>
		<b>Rate per cum = a+b+c+d+e+f+g+h</b>				<b>12,774.08</b>
					<b>say</b>	<b><u>12774.10</u></b>
		<b>(iii) For height above 10 m</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.404	6,797.00	2,745.99

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**SUBSTRUCTURE**

Sr. No.	Ref. to MOR D Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Sand	cum	0.45	740.00	333.00
		20 mm aggregate	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) Add 4% of the cost of material, labour and machinery i.e. on (a+b+c) to cater extra lift</b>				<b>317.54</b>
		<b>e) Formwork @ 15% on cost of material, labour &amp; machinery i.e. on (a+b+c)</b>				<b>1,238.41</b>
		<b>f) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d+e)</b>				<b>2,019.47</b>
		<b>g) Contractor's profit @ 15 % on (a+b+c+d+e+f)</b>				<b>1,727.09</b>
		<b>h) Add Cess @ 1.00 % on (a+b+c+d+e+f+g)</b>				<b>132.41</b>
		<b>Rate per cum = a+b+c+d+e+f+g+h</b>				<b>13,373.43</b>
					<b>say</b>	<b><u>13373.40</u></b>
<b>12.5</b>	<b>1000 &amp; 1200</b>	<b>Supplying, fitting &amp; placing Thermo-Mechanically treated bar/ Cold twisted deformed steel bar reinforcement in substructure complete as per drawings &amp; MoRD technical specification Clauses 1002, 1005, 1010 and 1202.</b>				
		Unit = t				
		<b>a) Material</b>				
		Twisted steel/ deformed bars including 5 per cent overlaps and wastage	t	1.05	58,000.00	60,900.00
		Binding wire	kg	6.00	69.00	414.00
		<b>b) Labour for cutting, bending, shifting to site, tying, and placing in position</b>				
		Mate	day	0.34	391.00	132.94
		Blacksmith	day	2.00	480.00	960.00
		Mazdoor (Unskilled)	day	6.50	391.00	2,541.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>13,814.53</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>11,814.45</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>905.77</b>
		<b>Rate per t = a+b+c+d+e</b>				<b>91,483.19</b>
					<b>say</b>	<b><u>91483.20</u></b>
<b>12.6</b>	<b>1000 &amp; 1200</b>	<b>Supplying, fitting &amp; placing with MS bar reinforcement in substructure complete as per drawings &amp; MoRD technical specification Clauses 1002, 1005, 1010 and 1202.</b>				

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit = t				
		<b>a) Material</b>				
		MS bars including 5 per cent overlaps and wastage	t	1.05	57,000.00	59,850.00
		Binding wire	kg	6.00	69.00	414.00
		<b>b) Labour for cutting, bending, shifting to site, tying, and placing in position</b>				
		Mate	day	0.34	391.00	132.94
		Blacksmith	day	2.00	480.00	960.00
		Mazdoor (Unskilled)	day	6.50	391.00	2,541.50
		<b>c) Overheads @ 20% on (a+b)</b>				<b>13,591.20</b>
		<b>d) Contractor's profit @ 10% on (a+b+c)</b>				<b>11,623.45</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>891.13</b>
		<b>Rate per t = a+b+c+d+e</b>				<b>90,004.21</b>
					<b>say</b>	<b><u>90004.20</u></b>
<b>12.7</b>	<b>600,700 &amp; 1200</b>	<b>Providing weepholes in brick masonry / stone masonry, plain/ reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe or uPVC pipe (110 mm OD of 6.0 Kg/cm<sup>2</sup> pressure) extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and MoRD technical specification clauses 614, 709, 1204.3.7.</b>				
		Unit = Mtr				
		Taking output = 30 Mtr				
		<b>a) Material</b>				
		AC pipe / uPVC pipe (6.00 kg/cm <sup>2</sup> ) 100 mm dia including wastage @ 5 per cent. Average length of each weep hole is taken as one metre for the analysis.	m	31.50	198.50	6,252.75
		MS clamps (assume total 30 nos weep hole)	Nos.	30.00	51.60	1,548.00
		Cement mortar 1:4 (For rate refer to item 11.5 II)	cum	0.05	3,758.68	187.93
		<b>b) Labour</b>				
		Mate	day	0.03	391.00	11.73
		Mason 1st Class	day	0.50	512.00	256.00
		Mazdoor (Unskilled)	day	0.25	391.00	97.75
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,776.93</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,519.66</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>116.51</b>
		Cost for 30 Mtr = (a+b+c+d+e)				11,767.27
		<b>Rate per Mtr = (a+b+c+d+e)/30</b>				<b>392.24</b>
					<b>say</b>	<b><u>392.20</u></b>
<b>12.8</b>	<b>1200</b>	<b>Backfilling behind abutment, wing wall &amp; return wall complete as per drawings &amp; MoRD technical specification Clause 1204.3.8.</b>				
		Unit = cum				
		Taking output = 10 cum				

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MOR D Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>l) Sandy material</b>				
		Unit = cum				
		Taking output = 10 cum				
		<b>a) Material</b>				
		Sand (local quarry)	cum	12.00	590.00	7,080.00
		<b>b) Labour</b>				
		Mate	day	0.40	391.00	156.40
		Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
		Bhisti	day	0.40	391.00	156.40
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>2,404.11</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>2,056.04</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>157.63</b>
		Cost for 10 cum of sand backfill = a+b+c+d+e				15,920.57
		<b>Rate per cum = (a+b+c+d+e)/10</b>				<b>1,592.06</b>
					<b>say</b>	<b><u>1592.10</u></b>
<b>12.9</b>	<b>1200</b>	<b>Providing &amp; laying filter media with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil &amp; bigger size towards the wall &amp; providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and MoRD technical specification clause 1204.3.8.</b>				
		Unit = cum				
		Taking output = 10 cum				
		<b>a) Material</b>				
		Filter media as per specification	cum	12.00	2,496.30	29,955.60
		<b>b) Labour</b>				
		Mate	day	0.40	391.00	156.40
		Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
		Mazdoor (Skilled)	day	1.00	475.00	475.00
		Bhisti	day	0.50	391.00	195.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>7,295.93</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>6,239.61</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>478.37</b>
		Cost for 10 cum of filter media = a+b+c+d+e				48,315.41
		<b>Rate per cum = (a+b+c+d+e)/10</b>				<b>4,831.54</b>
					<b>say</b>	<b><u>4831.50</u></b>
<b>12.10</b>	<b>1200</b>	<b>Supplying, fitting &amp; fixing in position true to line &amp; level elastomeric bearing conforming to IRC:83 (Part-II) Section IX complete including all accessories as per drawings &amp; MoRD technical specification Clause 1207.1.</b>				

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORd Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Unit = 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 488x388x4 mm size reinforcing steel plates = 4545 cu.cm.

Hence volume of elastomer = 14655 cu. cm.

**a) Labour**

Mate	day	0.06	391.00	23.46
Mazdoor (Unskilled)	day	1.00	391.00	391.00
Mazdoor Skilled	day	0.50	475.00	237.50

**b) Material**

Elastomeric bearing assembly consisting of 7 cubic internal layers of elastomer bonded to 6 nos. internal centim reinforcing steel laminates by the process of etre vulcanisation, complete with all components as per drawing and technical specification		19,200	1.10	21,120.00
Add for anchorage bolts if required and consumables @ 1 per cent on (a+b)				<b>217.72</b>

**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 4,677.20**

**d) Contractor's profit @ 15 % on (a+b+c) 4,000.03**

**e) Add Cess @ 1.00 % on (a+b+c+d) 306.67**

Cost for 19200 cu.cm. of elastomeric bearing = a+b+c+d+e 30,973.59

**Rate per cu.cm of elastomeric bearing = (a+b+c+d+e)/19200 1.61**

**say 1.60**

**Note:** For such type of manufactured item, the overhead cost is taken as 30 per cent instead of 20 per cent.

**12.11 600, 700, 1200 Providing PCC M 20 architectural coping on the top of wing wall, return wall etc. complete including formwork as per drawing & MoRD technical specification Clauses 615, 710 & 1204.3.11.**

Unit = Running m

Taking output = 1 m

Assume wall thickness = 345 mm

Projection of the coping will be 25 mm wide on both side of the wall = 345 + 50 = 395 mm

Quantity = 1 x 0.395 x 0.150 = 0.059

**a) PCC M-20 Grade (1:2:4) Nominal Mix**

As per item No. 12.5 (III)(i)	cum	0.059	11,396.50	672.39
Add 10 per cent extra of cost of (a) being architectural coping				67.24

Cost of 1 m = a 739.63

**Rate per m = a 739.63**

**say 739.60**

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MOR D Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
12.12	1200	<b>Providing pressure relief pipes 100 mm dia in bottom slab of box cell on a filter media base of 500 mm x 500 mm as per drawing &amp; MoRD technical specification Clause 1205.5.7.</b>				
		Unit = Nos				
		<b>a) Material</b>				
		AC pipe 100 mm dia i/c wastage of 5 per cent 600 mm long upto the bottom of levelling course	m	0.63	198.50	125.06
		Filter media base with stone aggregate 0.5 m x 0.5 m area 1 m deep	cum	0.25	2,496.30	624.08
		<b>b) Labour</b>				
		Mate	day	0.031	391.00	12.12
		Mason 1st Class	day	0.016	512.00	8.19
		Mazdoor (Unskilled)	day	0.80	391.00	312.80
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>230.19</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>196.87</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>15.09</b>
		<b>Rate per No = (a+b+c+d+e)</b>				<b>1,524.39</b>
					<b>say</b>	<b><u>1524.40</u></b>

**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE (i.e. LOCALLY AVAILABLE MATERIALS)**

12.13	1200	<b>Providing &amp; laying filter media with jhama brick aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil &amp; bigger size towards the wall &amp; providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and MoRD technical specification clause 1204.3.8.</b>				
		Unit = cum				
		Taking output = 10 cum				
		<b>a) Material</b>				
		Filter media as per specification	cum	12.00	2,349.00	28,188.00
		<b>b) Labour</b>				
		Mate	day	0.40	391.00	156.40
		Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
		Mazdoor (Skilled)	day	1.00	475.00	475.00
		Bhisti	day	0.50	391.00	195.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>6,919.96</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>5,918.08</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>453.72</b>
		Cost for 10 cum of filter media = a+b+c+d+e				45,825.66
		<b>Rate per cum = (a+b+c+d+e)/10</b>				<b>4,582.57</b>
					<b>say</b>	<b><u>4582.60</u></b>



**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
12.14	800,900 & 1200	Plain cement concrete(using jhama brick aggregate) in substructure complete including formwork as per drawings & MoRD technical specification Clauses 802, 804, 805, 806, 807, 900, 1202 & 1204 (including centering, shuttering, staging etc. but excluding reinforcement) Unit = cum				
		<b>I. P.C.C grade M 15 (1:2.5:5 Nominal mix)</b>				
		Same as item 11.9.II(i) up to 5 m height except for formwork which shall be 10 percent instead of 4 percent of cost of material, labour & machinery.				
		<b>(i) Nominal mix (1:2.5:5)</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.275	6,797.00	1,869.18
		Sand	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.54	3,417.00	1,845.18
		20 mm aggregate	cum	0.25	3,917.00	979.25
		10 mm aggregate	cum	0.11	3,841.00	422.51
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	1.63	391.00	637.33
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) Formwork @ 10% on cost of material, labour and machinery (a+b+c)</b>				<b>638.27</b>
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,493.36</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,277.15</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>97.91</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>9,889.39</b>
					<b>say</b>	<b><u>9889.40</u></b>
		<b>II. P.C.C grade M 15</b>				
		Same as item 11.9.II(i) up to 5 m height except for formwork which shall be 10 percent instead of 4 percent of cost of material & labour.				
		<b>(ii) Nominal mix 1:2.5:5 (Hand mixing)</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.275	6,797.00	1,869.18
		Sand	cum	0.48	740.00	355.20

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		40 mm aggregate	cum	0.54	3,417.00	1,845.18
		20 mm aggregate	cum	0.25	3,917.00	979.25
		10 mm aggregate	cum	0.11	3,841.00	422.51
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) Formwork @ 10% on (a+b)</b>				<b>644.53</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,508.00</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,289.67</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>98.87</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>9,986.35</b>
					<b>say</b>	<b><u>9986.30</u></b>

**III. P.C.C. grade M 20 (1:2:4) Nominal mix**

- i) Same as item 11.9.III(i) up to 5 m height except for formwork which shall be 10 percent instead of 4 percent of cost of material, labour & machinery.
- ii) For height above 5 m up to 10 m same as item no. 11.9.III with following changes:-
- a. Add 2 percent of cost of material, labour & machinery excluding formwork to cater for extra lift.
  - b. The provision of formwork shall be 12 percent instead of 4 percent of cost of material, labour and machinery.

**(i) Up to 5 m height**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Sand	cum	0.45	740.00	333.00
40 mm aggregate	cum	0.36	3,417.00	1,230.12
20 mm aggregate	cum	0.36	3,917.00	1,410.12
10 mm aggregate	cum	0.18	3,841.00	691.38

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	1.63	391.00	637.33
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**d) Formwork @ 10% on cost of material, labour and machinery (a+b+c)** **681.90**

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)** **1,595.44**

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1,364.45
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				104.61
		Rate per cum = a+b+c+d+e+f+g				10,565.42
					<b>say</b>	<b><u>10565.40</u></b>

**(ii) For height above 5 m upto 10 m**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Sand	cum	0.45	740.00	333.00
40 mm aggregate	cum	0.36	3,417.00	1,230.12
20 mm aggregate	cum	0.36	3,917.00	1,410.12
10 mm aggregate	cum	0.18	3,841.00	691.38

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	1.63	391.00	637.33
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**d) Add 2% of the cost of material, labour and machinery i.e. on (a+b+c) to cater extra lift** **136.38**

**e) Formwork @ 12% on cost of material, labour & machinery i.e. on (a+b+c)** **834.65**

**f) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d+e)** **1,656.94**

**g) Contractor's profit @ 15 % on (a+b+c+d+e+f)** **1,417.05**

**h) Add Cess @ 1.00 % on (a+b+c+d+e+f+g)** **108.64**

**Rate per cum = a+b+c+d+e+f+g+h** **10,972.66**

**say** **10972.70**

**IV. P.C.C. grade M 20 (1:2:4) Hand mix**

i) Same as item 11.9.III(ii) up to 5 m height except for formwork which shall be 10 percent instead of 4 percent of cost of material & labour.

ii) Same III(ii) above.

**(i) Up to 5 m height**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Sand	cum	0.45	740.00	333.00
40 mm aggregate	cum	0.36	3,417.00	1,230.12
20 mm aggregate	cum	0.36	3,917.00	1,410.12

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		10 mm aggregate	cum	0.18	3,841.00	691.38
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) Formwork @ 10% out of material and labour (a+b)</b>				<b>688.16</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,610.09</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,376.98</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>105.57</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>10,662.38</b>
					<b>say</b>	<b><u>10662.40</u></b>

**(ii) For height above 5 m upto 10 m**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Sand	cum	0.45	740.00	333.00
40 mm aggregate	cum	0.36	3,417.00	1,230.12
20 mm aggregate	cum	0.36	3,917.00	1,410.12
10 mm aggregate	cum	0.18	3,841.00	691.38

**b) Labour**

Mate	day	0.09	391.00	35.19
Mason (1st Class)	day	0.10	512.00	51.20
Mazdoor (Unskilled)	day	2.00	391.00	782.00
Bhisti	day	0.27	391.00	105.57

**c) Add 2% of the cost of material, labour i.e. on (a+b) to cater extra lift** **137.63**

**d) Formwork @ 12% on cost of material & labour i.e. on (a+b)** **842.31**

**Chapter 12**  
**SUBSTRUCTURE**

Sr. No.	Ref. to MOR D Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		e) Add GST (multiplying factor) @ on (a+b+c+d)				1,672.15
		f) Contractor's profit @ on (a+b+c+d+e)				1,430.05
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				109.64
		Rate per cum = a+b+c+d+e+f+g				11,073.36
					<b>say</b>	<b><u>11073.40</u></b>
12.15	600, 700, 1200	Providing PCC M 20 (with jhama brick aggregate) architectural coping on the top of wing wall, return wall etc. complete including formwork as per drawing & MoRD technical specification Clauses 615, 710 & 1204.3.11.				
		Unit = Running m				
		Taking output = 1 m				
		Assume wall thickness = 345 mm				
		Projection of the coping will be 25 mm wide on both side of the wall = 345 + 50 = 395 mm				
		Quantity = 1 x 0.395 x 0.150 = 0.059				
		<b>a) PCC M-20 Grade (1:2:4) Nominal Mix</b>				
		As per item No. 12.14 (III)(i)	cum	0.059	10,565.40	623.36
		Add 10 per cent extra of cost of (a) being architectural coping				62.34
		Cost of 1 m = a				685.69
		<b>Rate per m = a</b>				<b>685.69</b>
					<b>say</b>	<b><u>685.70</u></b>
12.16	1600, 1200	Plastering with cement mortar (1:4) 12 mm thick on brickwork / C.C. work including a finishing coat of neat cement punning with 2.75 Kg of cement per sqm in substructure as per MoRD technical specification Clauses 613.4 & 1204.				
		Unit = sqm				
		Taking output = 10 sqm				
		<b>a) Material</b>				
		Cement mortar				
		(Rate as in sub-analysis of item 11.5 II)	cum	0.192	3,758.68	721.67
		Cement for neat cement punning	t	0.028	6,797.00	190.32
		<b>b) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Mason 1st Class	day	0.60	512.00	307.20
		Mazdoor (Unskilled)	day	0.60	391.00	234.60
		Bhisti	day	0.30	391.00	117.30
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				339.16
		d) Contractor's profit @ 15 % on (a+b+c)				290.06
		e) Add Cess @ 1.00 % on (a+b+c+d)				22.24
		Rate for 10 sqm = a+b+c+d+e				2,245.99
		Rate per sqm = (a+b+c+d+e)/ 10				224.60
					<b>say</b>	<b><u>224.60</u></b>

**Chapter 13**  
**SUPERSTRUCTURE**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
13.1	800, 900, 1200	Providing & laying reinforced cement concrete in superstructure as per drawings & MoRD technical specifications Clauses 800, 900, 1205.4 & 1205.5 (including centering, shuttering, staging etc. but excluding reinforcement).				
		<b>I. R.C.C grade M 20</b>				
		<b>(i) For nominal mix 1:2:4</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.35	6,797.00	2,378.95
		Fine sand	cum	0.45	740.00	333.00
		20 mm aggregate	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	40.00
		<b>d) Add for formwork and staging</b>				
		Height upto 5 m @ 20% of (a+b+c)				1,505.09
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,920.80</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,642.70</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>125.94</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>12,720.01</b>
						<b>say <u>12720.00</u></b>
		<b>(ii) For nominal mix 1:2:4 (Hand mixed)</b>				
		<b>1. For height up to 5 m</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.35	6,797.00	2,378.95
		Fine sand	cum	0.45	740.00	333.00
		20 cum aggregates	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) For formwork and staging add @ 20.00 % of (a+b)</b>				1,516.94

**Chapter 13**  
**SUPERSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				1,935.92
		e) Contractor's profit @ 15 % on (a+b+c+d)				1,655.64
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				126.93
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>12,820.14</b>
						<b>say <u>12820.10</u></b>
<b>2. For height from 5 m to 10 m</b>						
Unit = cum						
<b>a) Material</b>						
		Cement	t	0.35	6,797.00	2,378.95
		Fine sand	cum	0.45	740.00	333.00
		20 cum aggregates	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
<b>b) Labour</b>						
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		c) For formwork and staging add @ 25.00 % of (a+b)				1,896.18
		d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				2,016.58
		e) Contractor's profit @ 15 % on (a+b+c+d)				1,724.62
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				132.22
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>13,354.31</b>
						<b>say <u>13354.30</u></b>
<b>3. For height above 10 m</b>						
Unit = cum						
<b>a) Material</b>						
		Cement	t	0.35	6,797.00	2,378.95
		Fine sand	cum	0.45	740.00	333.00
		20 cum aggregates	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
<b>b) Labour</b>						
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		c) For formwork and staging add @ 30.00 % of (a+b)				2,275.41
		d) Add GST (multiplying factor) @ on (a+b+c)				2,097.25
		e) Contractor's profit @ on (a+b+c+d)				1,793.61
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				137.51

**Chapter 13**  
**SUPERSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Rate per cum = a+b+c+d+e+f

13,888.49

**say 13888.50**

**Note:** For formwork and staging add the following percentage on labour and material  
 Height up to 50 m @ 20 %  
 Height from 5 m to 10 m @ 25 %  
 Height above 10 m @ 30 %

**(iii) For design mix RCC M 20**

**1. For height up to 5 m**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Fine sand	cum	0.45	740.00	333.00
20 mm aggregate	cum	0.54	4,374.00	2,361.96
10 mm aggregate	cum	0.36	4,269.00	1,536.84

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.12	512.00	61.44
Mazdoor (Unskilled)	day	1.73	391.00	676.43
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**Sub-Total = 7435.53**

**d) For formwork and staging add @ 20.00 % of (a+b+c)** 1,487.11

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)** 1,897.84

**f) Contractor's profit @ 15 % on (a+b+c+d+e)** 1,623.07

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)** 124.44

**Rate per cum = a+b+c+d+e+f+g** 12,567.99

**say 12568.00**

**Sub-Analysis (Excluding formwork)**

**Sub-Total** 7435.53

**Add GST (multiplying factor) @ 0.2127 on sub-total** 1581.53723

**Contractor's profit @ 15 % on sub-total** 1352.56008

**Rate per cum = a+b+c+d+e+f** 10369.63

**2. For height from 5 m to 10 m**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Fine sand	cum	0.45	740.00	333.00
20 mm aggregate	cum	0.54	4,374.00	2,361.96
10 mm aggregate	cum	0.36	4,269.00	1,536.84



**Chapter 13**  
**SUPERSTRUCTURE**

Sr. No.	Ref. to MOR D Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) For formwork and staging add @ 25.00 % of (a+b+c)</b>				1,858.88
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,976.92</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,690.70</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>129.62</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>13,091.65</b>
						<b>say <u>13091.70</u></b>

**3. For height above 10 m**

Unit = cum

**a) Material**

Cement	t	0.33	6,797.00	2,243.01
Fine sand	cum	0.45	740.00	333.00
20 mm aggregate	cum	0.54	4,374.00	2,361.96
10 mm aggregate	cum	0.36	4,269.00	1,536.84

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.12	512.00	61.44
Mazdoor (Unskilled)	day	1.73	391.00	676.43
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**d) For formwork and staging add @ 30.00 % of (a+b+c)** 2,230.66

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)** **2,056.00**

**f) Contractor's profit @ 15 % on (a+b+c+d+e)** **1,758.33**

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)** **134.81**

**Rate per cum = a+b+c+d+e+f+g** **13,615.32**

**say 13615.30**

**Note:** For formwork and staging add the following percentage on labour and material  
 Height up to 50 m @ 20 %  
 Height from 5 m to 10 m @ 25 %  
 Height above 10 m @ 30 %

**II. R.C.C M 25**

**1. For height up to 5 m**

Unit =cum

**Chapter 13**  
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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Material</b>				
		Cement	t	0.40	6,797.00	2,718.80
		Fine sand	cum	0.45	740.00	333.00
		20 mm aggregate	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>Sub-Total =</b>			<b>7911.32</b>	
		<b>d) For formwork and staging add @ 20.00 % of (a+b+c)</b>				1,582.26
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>2,019.29</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,726.93</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>132.40</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>13,372.20</b>
						<b>say <u>13372.20</u></b>
		<b>Sub-Analysis (Excluding formwork)</b>				
		<b>Sub-Total</b>				<b>7911.32</b>
		<b>Add GST (multiplying factor) @ 0.2127 on sub-total</b>				<b>1682.73776</b>
		<b>Contractor's profit @ 15 % on sub-total</b>				<b>1439.10866</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>11033.17</b>
		<b>2. For height from 5 m to 10 m</b>				
		Unit =cum				
		<b>a) Material</b>				
		Cement	t	0.40	6,797.00	2,718.80
		Fine sand	cum	0.45	740.00	333.00
		20 mm aggregate	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) For formwork and staging add @ 25.00 % of (a+b+c)</b>				1,977.83

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**SUPERSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)				2,103.42
		f) Contractor's profit @ 15 % on (a+b+c+d+e)				1,798.89
		g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				137.91
		Rate per cum = a+b+c+d+e+f+g				13,929.37
						<b>say <u>13929.40</u></b>

**3. For height above 10 m**

Unit =cum

**a) Material**

Cement	t	0.40	6,797.00	2,718.80
Fine sand	cum	0.45	740.00	333.00
20 mm aggregate	cum	0.54	4,374.00	2,361.96
10 mm aggregate	cum	0.36	4,269.00	1,536.84

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.12	512.00	61.44
Mazdoor (Unskilled)	day	1.73	391.00	676.43
Bhisti	day	0.27	391.00	105.57

**c) Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
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**d) For formwork and staging add @ 30.00 % of (a+b+c)** 2,373.40

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)** 2,187.56

**f) Contractor's profit @ 15 % on (a+b+c+d+e)** 1,870.84

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)** 143.43

Rate per cum = a+b+c+d+e+f+g 14,486.55

**say 14486.50**

**Note:** For formwork and staging add the following percentage on labour and material

Height up to 50 m @ 20 %

Height from 5 m to 10 m @ 25 %

Height above 10 m @ 30 %

**III. R.C.C. Grade M 30**

**1. For height up to 5 m**

Unit =cum

**a) Material**

Cement	t	0.43	6,797.00	2,922.71
Fine sand	cum	0.45	740.00	333.00
20 mm aggregate	cum	0.54	4,374.00	2,361.96
10 mm aggregate	cum	0.36	4,269.00	1,536.84

**b) Labour**

Mate	day	0.08	391.00	31.28
Mason (1st Class)	day	0.12	512.00	61.44

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>Sub-Total =</b>			<b>8115.23</b>	
		<b>d) For formwork and staging add @ 20.00 % of (a+b+c)</b>				1,623.05
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>2,071.33</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,771.44</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>135.81</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>13,716.86</b>
						<b>say <u>13716.90</u></b>
		<b>Sub-Analysis (Excluding formwork)</b>				
		<b>Sub-Total</b>				<b>8115.23</b>
		<b>Add GST (multiplying factor) @ 0.2127 on sub-total</b>				<b>1726.10942</b>
		<b>Contractor's profit @ 15 % on sub-total</b>				<b>1476.20091</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>11317.54</b>
		<b>2. For height from 5 m to 10 m</b>				
		Unit =cum				
		<b>a) Material</b>				
		Cement	t	0.43	6,797.00	2,922.71
		Fine sand	cum	0.45	740.00	333.00
		20 mm aggregate	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) For formwork and staging add @ 25.00 % of (a+b+c)</b>				2,028.81
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>2,157.64</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,845.25</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>141.47</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>14,288.39</b>
						<b>say <u>14288.40</u></b>
		<b>3. For height above 10 m</b>				
		Unit =cum				
		<b>a) Material</b>				

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**SUPERSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Cement	t	0.43	6,797.00	2,922.71
		Fine sand	cum	0.45	740.00	333.00
		20 mm aggregate	cum	0.54	4,374.00	2,361.96
		10 mm aggregate	cum	0.36	4,269.00	1,536.84
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.12	512.00	61.44
		Mazdoor (Unskilled)	day	1.73	391.00	676.43
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
		<b>d) For formwork and staging add @ 30.00 % of (a+b+c)</b>				2,434.57
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>2,243.94</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,919.06</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>147.13</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>14,859.93</b>
						<b>say <u>14859.90</u></b>

**Note:** For formwork and staging add the following percentage on labour and material  
 Height up to 50 m @ 20 %  
 Height from 5 m to 10 m @ 25 %  
 Height above 10 m @ 30 %

- Note:**
- Quantity of cement provided for various components of the superstructure is for estimating purpose only. Actual quantity of cement will be as per approved mix design. Similarly quantity for coarse and fine aggregates is for estimating purpose and the exact quantity shall be as per the mix design. Use of design mix in place of nominal mix of concrete of M 20 and higher grades shall be prepared. Nominal mix of grades M 20 and M 25 is to be used with adequate supervision and quality control requirements as per technical specification Clause 803.
  - For higher grades like M 25 and M 30, if adopted, design mix is recommended.
  - Sand can be either coarse or fine as required/ available. Here, provision of fine sand is considered only due to non-availability of coarse sand in Tripura. However, design of concrete dictates for use of coarse sand, then separate analysis may be taken as per site condition.

**13.2 1000, Supplying, fitting, & placing Thermo-Mechanically treated bar/ Cold twisted deformed steel bar reinforcement in superstructure complete as per drawing & MoRD technical specifications Clauses 1002, 1010 & 1202.**

Unit = t

**Chapter 13**  
**SUPERSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Material</b>				
		Twisted steel/ deformed bars including 5 per cent for laps and wastage	t	1.05	58,000.00	60,900.00
		Binding wire	kg	8.00	69.00	552.00
		<b>b) Labour for cutting, bending, tying and placing in position</b>				
		Mate	day	0.44	391.00	172.04
		Blacksmith	day	3.00	480.00	1,440.00
		Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>14,079.05</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>12,040.66</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>923.12</b>
		<b>Rate per t = a+b+c+d+e</b>				<b>93,234.87</b>
						<b>say <u>93234.90</u></b>
<b>13.3</b>	<b>1000, 1200</b>	<b>Supplying, fitting, &amp; placing MS bar reinforcement in superstructure complete as per drawing &amp; MoRD technical specifications Clauses 1002, 1010 &amp; 1202.</b>				
		Unit = t				
		<b>a) Material</b>				
		MS bars including 5 per cent for laps and wastage	t	1.05	57,000.00	59,850.00
		Binding wire	kg	8.00	69.00	552.00
		<b>b) Labour for cutting, bending, tying and placing in position</b>				
		Mate	day	0.44	391.00	172.04
		Blacksmith	day	3.00	480.00	1,440.00
		Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>13,855.71</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>11,849.66</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>908.47</b>
		<b>Rate per t = a+b+c+d+e</b>				<b>91,755.89</b>
						<b>say <u>91755.90</u></b>
<b>13.4</b>	<b>800, 1200</b>	<b>Providing and laying cement concrete wearing course M 30 grade including reinforcement complete as per drawings &amp; MoRD technical specifications Clauses 800 &amp; 1206.3 (including centering, shuttering, staging etc. and reinforcement)</b>				
		Unit = cum				
		<b>a) Material</b>				
		i) Cement concrete M 30 grade (refer relevant item of concrete in item 13.1.III excluding forwork.	Cum	1.00	11,317.54	11,317.54
		ii) Steel reinforcement (rate as per item 13.2)	t	0.075	93,234.90	6,992.62
		<b>b) Formwork @ 3.00 % of cost of (a)</b>				<b>549.30</b>
		<b>c) Mazdoor (Unskilled) for clearing deck slab concrete surface</b>	day	0.15	391.00	58.65

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**SUPERSTRUCTURE**

Sr. No.	Ref. to MORO Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Add GST (multiplying factor) @ 0.2127 on (b+c)				129.31
		e) Contractor's profit @ 15 % on (b+c+d)				110.59
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				8.48
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>19,166.49</b>
						<b>say <u>19166.50</u></b>

- 13.5**    **800, 900, 1200**    **Construction of R.C.C railing of M 25 grade in cast-in-situ with 20 mm nominal size aggregate, true to line & grade, tolerance of vertical railing post not to exceed 1 in 500, centre-to-centre spacing between vertical posts not to exceed 2000 mm including reinforcement as per drawing and MoRD technical specifications Clauses 800, 900 and 1208.3 (including centering, shuttering, staging etc. and reinforcement).**

Unit = Running m  
Taking output = 4x12 m  
Span = 48 m

**a) Material**

**i) M 25 grade R.C.C.**

No. of vertical posts = (6+1) 4 = 28 nos

Cross-sectional area of vertical post =  
0.25x0.275 = 0.069 sqm

Concrete in vertical posts = 0.069 x28x1.00 =  
1.932 cum

Hand rail in 3 tiers = 3x48 = 144 m

Cross-sectional area = 0.17x0.175 = 0.03 sqm

Concrete in hand rails = 0.03 x 144 = 4.32 cum

Total concrete = 1.932+4.32 = 6.252 cum	cum	6.252	11,033.17	68,979.36
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(rate as per item 13.1(II) except cost of formwork)

Ad 12.00 % of above for cost of formwork				8,277.52
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<b>ii) Steel reinforcement (Rate as per item 13.2)</b>	t	1.36	93,234.90	1,26,799.46
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Cost for 48 m = (a)				2,04,056.34
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<b>Rate per m = (a)/48</b>				<b>4,251.17</b>
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**say 4251.20**

- Note:** 1 48 m length is the total linear length adding both sides of 2x12 m span  
2 Quantities of material have been adopted from standard plans of MORTH vide drawing No SD/202

- 13.6**    **1200**    **Providing, fitting & fixing mild steel railing complete as per drawing & MoRD technical specifications clause 1208.2.**

Unit = Running m  
Taking output = 100 m

**a) Material**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		1) IS MC 100=2.806x1.05=2.946 t	t	2.946	59,530.00	1,75,375.38
		2) MS Flats = 0.964x1.05 =1.012 t	t	1.012	59,530.00	60,244.36
		3) MS bars = 0.17x1.05=0.18 t	t	0.18	57,000.00	10,260.00
		4) MS bolts, nuts and washers	t	0.15	64,500.00	9,675.00
		<b>b) Labour</b>				
		Mate	day	2.80	391.00	1,094.80
		Blacksmith	day	30.00	480.00	14,400.00
		Mazdoor (Unskilled)	day	40.00	391.00	15,640.00
		<b>c) Add 5 per cent of (a) for painting one shop coat with red oxide primer and three coats of synthetic enamel paint and consumables</b>				<b>12,777.74</b>
		<b>d) Add for cost of concrete for fixing vertical post in the preformed recess @ 1 per cent of (a)</b>				<b>2,555.55</b>
		<b>e) Add for electricity charges, welding and drilling equipment, electrodes and other consumables @ 1 per cent of (a)</b>				<b>2,555.55</b>
		<b>f) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d+e)</b>				<b>64,783.82</b>
		<b>g) Contractor's profit @ 15 % on (a+b+c+d+e+f)</b>				<b>55,404.33</b>
		<b>h) Add Cess @ 1.00 % on (a+b+c+d+e+f+g)</b>				<b>4,247.67</b>
		<b>Rate per m = (a+b+c+d+e+f+g+h)/100</b>				<b>4,290.14</b>
					<b>say</b>	<b><u>4290.10</u></b>

**Note:** A typical drawing for MS railing has been followed for estimate purpose. Rate may be worked out as per design to be followed

**13.7 1200 Providing & fixing in position pipe railing consisting of IS Rolled steel joist posts designation IS MB 100 (100 x 75) at 2.5 m interval & three rows of 50 mm dia steel pipes (light) including fixing in position on bridge deck complete as per drawing and MoRD technical specifications Clause 1208.2.**

Unit = Running m

Taking output = 2 x 10 m = 20 m

**a) Material**

i) Steel posts IS MB 100 (100 x 75) 5 x 2 x 11.5 x 1.1 x 1.05 = 130 kg	t	0.13	59,530.00	7,738.90
ii) 50 mm dia steel pipes 20 x 3x 4.08 x 1.05 = 257.04 kg	t	0.257	66,500.00	17,093.16
iii) M.S Bolts, nuts and washers	t	0.05	64,500.00	3,225.00
Add @ 5 per cent of (a) for painting one shop coat with red oxide primer and three coats of synthetic enamel paint and consumables				1,402.85

Add for electricity charges, welding and drilling equipment, electrodes and other consumables @ 1 per cent of (a) 280.57

**b) Labour**

Mate	day	0.56	391.00	218.96
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**SUPERSTRUCTURE**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Blacksmith	day	6.00	480.00	2,880.00
		Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>7,650.28</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>6,542.66</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>501.60</b>
		Cost for 20 m steel railing = a+b+c+d+e				50,661.98
		<b>Rate per metre = (a+b+c+d+e)/20</b>				<b>2,533.10</b>
						<b>say <u>2533.10</u></b>
<b>13.8</b>	<b>600, 900, 1200</b>	<b>Brick masonry work in cement mortar 1:3 in parapet excluding pointing &amp; plastering as per drawing &amp; plastering as per drawing &amp; MoRD technical specifications Clauses 600, 900 &amp; 1208.4.</b>				
		Rate same as in item 12.1 (I)	cum	1.00	10,203.10	10,203.10
						<b>say <u>10203.10</u></b>
<b>13.9</b>	<b>1200</b>	<b>Providing and fixing in position Drainage spouts complete as per drawing &amp; MoRD technical specifications Clause 1209.</b>				
		Unit = 1 No				
		<b>a) Material</b>				
		i) Corrosion resistant structural steel grating including 5 per cent wastage	kg	4.00	75.30	301.20
		ii) G I pipe 100 mm dia (medium)	m	1.00	873.00	873.00
		<b>b) Labour</b>				
		<b>For fabrication</b>				
		Mate	day	0.02	391.00	7.82
		Blacksmith, Welder etc. (Skilled)	day	0.02	480.00	9.60
		Mazdoor (Unskilled)	day	0.20	391.00	78.20
		<b>For fixing in position</b>				
		Mate	day	0.01	391.00	3.91
		Mason (1st Class)	day	0.01	512.00	5.12
		Mazdoor (Unskilled)	day	0.20	391.00	78.20
		Add @ 5 per cent of cost of material and labour (a+b) for electrodes, gas cutting, sealant, anti-corrosive bituminous paint, mild steel grating etc.				67.85
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>303.08</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>259.20</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>19.87</b>
		<b>Rate per no = a+b+c+d+e</b>				<b>2,007.05</b>
						<b>say <u>2007.00</u></b>
<b>13.10</b>	<b>800, 1200</b>	<b>P.C.C. M 15 ordinary grade (1:2.5:5) levelling course below approach slab complete as per drawing &amp; MoRD technical specifications Clauses 800 and 1211 (including centering, shuttering, staging etc. but excuding reinforcement)</b>				

**Chapter 13**  
**SUPERSTRUCTURE**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>I P.C.C Grade M15</b>						
<b>(i) Nominal mix (1:2.5:5)</b>						
Unit = cum						
<b>a) Material</b>						
		Cement	t	0.275	6,797.00	1,869.18
		Fine sand	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.54	4,236.00	2,287.44
		20 mm aggregate	cum	0.24	4,374.00	1,049.76
		10 mm aggregate	cum	0.12	4,269.00	512.28
<b>b) Labour</b>						
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	1.63	391.00	637.33
		Bhisti	day	0.27	391.00	105.57
<b>c) Machinery</b>						
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	215.00	86.00
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>						<b>1,485.76</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>						<b>1,270.65</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>97.42</b>
<b>Rate per cum = a+b+c+d+e+f</b>						<b>9,839.06</b>
						<b>say <u>9839.10</u></b>
<b>(ii) Nominal mix 1:2.5:5 (Hand mixing)</b>						
Unit = cum						
<b>a) Material</b>						
		Cement	t	0.275	6,797.00	1,869.18
		Fine sand	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.54	4,236.00	2,287.44
		20 mm aggregate	cum	0.24	4,374.00	1,049.76
		10 mm aggregate	cum	0.12	4,269.00	512.28
<b>b) Labour</b>						
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						<b>1,499.07</b>
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						<b>1,282.03</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>						<b>98.29</b>
<b>Rate per cum = a+b+c+d+e+f</b>						<b>9,927.21</b>
						<b>say <u>9927.20</u></b>

**Chapter 13**  
**SUPERSTRUCTURE**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
13.11	800, 1200	Reinforced Cement Concrete M 25 grade approach slab including reinforcement & formwork complete as per drawing & MoRD technical specifications Clauses 800 & 1211 (including centering, shuttering, staging etc. and reinforcement)				
		Unit = cum				
		<b>a) Material</b>				
		Reinforced cement concrete M 25 grade				
		Rate as per Item 13.1 II	cum	1.00	13,372.20	13,372.20
		steel reinforcement				
		Rate as per item 13.2	t	0.05	93,234.90	4,661.75
		<b>Rate per cum = (a)</b>				<b>18,033.95</b>
						<b>say <u>18033.90</u></b>
13.12	1200, 500	Providing bituminous wearing coat comprising of 20 mm thick premix carpet with seal coat Type B for culverts as per drawing & MoRD technical specifications Clauses 1206.2 and 500.				
		i. Rate for wearing coat as per item No. 5.8 of Chapter 5	sqm	1.00	336.80	336.80
		ii. Rate for seal coat Type B as per item No. 5.11 of Chapter 5	sqm	1.00	89.90	89.90
		<b>Rate per sqm = (i+ ii)</b>				<b>426.70</b>
						<b>say <u>426.70</u></b>

**Note:** This type of wearing coat may be adopted where a cushion is provided over the culvert and the adjoining road pavement is continued over it.

**Chapter 14**  
**PROTECTION WORKS**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
14.1	1300	Providing and laying of apron with cement concrete blocks of size as per Table 1300.1 cast-in-situ and made with nominal mix of M-15 grade cement concrete as per drawing and MoRD technical specification Clause 1301(rate includes preparation of bed, nominal surface re-inforcement and filling of granular material in recesses between blocks).				
		Unit = cum				
		<b>a) Concrete grade M 15</b>				
		(Rate as per item No 11.4 II (i))	cum	1.00	10,234.20	10,234.20
		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				204.68
		<b>Rate per cum = (a)</b>				<b>10,438.88</b>
					<b>say</b>	<b><u>10438.90</u></b>
14.2	1300	Single bamboo palasiding/walling of whole 2 <sup>nd</sup> class bamboo (Jati or Bethua) 65 to 75 mm dia and closely packed & driven @ 150 mm c/c including fitting fixing with half bamboo kamis horizontally in three rows with cane or tying with wire complete and struts 1.5 m apart longitudinally and providing bitumen drum sheet walling fixed with nails as per drawing and MoRD technical specification Clause 1302.5.				
		A) Driven at least 900 mm below ground and 1200 mm above ground Unit = Running metre Taking Output = 3.00 metre				
		<b>a) Materials</b>				
		2nd Class Bamboo 65 mm to 75 mm dia, (1.2 m to 3.0 m)	m	52.80	16.50	871.20
		Bitumen drum sheet with nails	sqm	3.60	315.00	1,134.00
		Binding Wire (G.I 2mm)	kg	0.15	80.00	12.00
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>c) Sundries (LS) @ 1.00 % of (a+b)</b>	LS			<b>24.24</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>520.71</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>445.32</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>34.14</b>
		Cost for 3 metre = a+b+c+d+e+f				<b>3,448.24</b>
		<b>Rate per metre = (a+b+c+d+e+f) / 3.00</b>				<b>1,149.41</b>
					<b>say</b>	<b><u>1149.40</u></b>
		B) Driven at least 900 mm below ground and 900 mm above ground on average				
		<b>a) Materials</b>				
		2nd Class Bamboo 65 mm to 75 mm dia, (1.2 m to 3.0 m)	m	46.80	16.50	772.20

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**PROTECTION WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Bitumen drum sheet with nails	sqm	3.60	315.00	1,134.00
		Binding Wire (G.I 2mm)	kg	0.15	80.00	12.00
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>c) Sundries (LS) @ 1.00 % of (a+b)</b>	LS			<b>23.25</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>499.44</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>427.13</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>32.75</b>
		Cost for 3 m = a+b+c+d+e+f				<b>3,307.40</b>
		<b>Rate per m = (a+b+c+d+e+f) / 3.00</b>				<b>1,102.47</b>
					<b>say</b>	<b><u>1102.50</u></b>
<b>14.3</b>	<b>1300</b>	<b>Providing and laying flooring laid over cement concrete bedding complete as per drawing and MoRD technical specification Clause 1303.</b>				
		<b>I. Cement concrete blocks cast in situ grade M15 (size 400 mm x 400 mm x 150 mm) over cement concrete (with M10) bedding of 150 mm thick</b>				
		Unit = Sqm				
		Taking Output = 21.00 sqm				
		a) Cement concrete blocks grade M 15	cum	3.12	10,234.20	31,930.70
		Rate as per item 11.4 (II) (i)				
		using 400 mm x 400 mm x 150 mm blocks				
		Add for cement concrete bedding M10	cum	3.15	9,983.70	31,448.66
		Rate as per item 11.4 (I) (i)				
		Add 1 per cent of cost to account for excavation for preparation of bed.				633.79
		Cost for 21 sqm =				<b>64,013.15</b>
		<b>Rate per sqm = (a) / 21</b>				<b>3,048.25</b>
					<b>say</b>	<b><u>3048.20</u></b>
		<b>II. Brick on edge laid in cement mortar (1:3)</b>				
		Unit=cum				
		<b>a) Material</b>				
		Bricks	Nos	380.00	12.20	4,636.00
		Cement mortar (1:3) [(Rate as in item 11.5 (i))]	cum	0.15	4,642.29	696.34
		Cement mortar bedding (1:5) [(Rate as in item 12.	cum	0.25	3,282.89	820.72
		<b>b. Labour</b>				
		Mate	day	0.10	391.00	39.10
		Mason 1st Class	day	0.80	512.00	409.60
		Mazdoor (Unskilled)	day	1.60	391.00	625.60
		Bhisti	day	0.20	391.00	78.20
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,553.89</b>

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**PROTECTION WORKS**

Sr. No.	Ref. to MoRD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Contractor's profit @ 15 % on (a+b+c)				1,328.92
		e) Add Cess @ 1.00 % on (a+b+c+d)				101.88
		<b>Rate per cum = a+b+c+d+e</b>				<b>10,290.26</b>
					<b>say</b>	<b><u>10290.30</u></b>
		<i>Note: Labour cost includes labour required for trimming of slope to proper profile and preparation of bed.</i>				
14.4	1300	<b>Providing and laying curtain walls complete as per drawing and MoRD technical specification Clause 1304.</b>				
		Unit = cum				
		I. Brick masonry in cement mortar (1:4)				
		(Rate same as per item 12.1 (II))	cum	1.00	9,889.40	9,889.40
		II. Cement concrete grade M 10				
		(Rate same as per item 11.4 I (i))	cum	1.00	9,983.70	9,983.70
		<i>Note: 1 Other items like excavation for foundation, filling behind wall, filter media, weep holes, etc. shall be added separately as per approved design.</i>				
14.5	1300	<b>Construction of toe walls for protection of slopes as per Drawing and MoRD technical specifications Clause 1302.5 (including centering, shuttering staging etc. but excluding reinforcement)</b>				
		I. <b>Brick masonry in cement mortar 1:4 in case of brick pitching</b>				
		Unit = cum				
		<b>a) Material</b>				
		Brick	Nos.	380.00	12.20	4,636.00
		Cement mortar 1:4	cum	0.24	3,758.68	902.08
		Rates as per sub-analysis below				
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.80	512.00	409.60
		Mazdoor (Unskilled)	day	1.60	391.00	625.60
		Bhisti	day	0.20	391.00	78.20
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>1,422.26</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>1,216.34</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>93.25</b>
		<b>Rate per cum = a+b+c+d+e</b>				<b>9,418.52</b>
					<b>say</b>	<b><u>9418.50</u></b>
		<b>Sub-analysis</b>				
		<b>Cement mortar 1:4 (1 cement : 4 sand)</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.38	6,797.00	2,582.86
		Sand	cum	1.05	740.00	777.00
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	0.90	391.00	351.90
		Bhisti	day	0.08	391.00	31.28
		<b>Total material and labour = (a+b)</b>				<b>3,758.68</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>II. Cement concrete grade M 10 in case of concrete block pitching</b>				
		Unit = cum				
		<b>I. P.C.C grade M 20</b>				
		<b>(i) Nominal mix 1:3:6</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.250	6,797.00	1,699.25
		Fine sand	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.576	4,236.00	2,439.94
		20 mm aggregate	cum	0.288	4,374.00	1,259.71
		10 mm aggregate	cum	0.096	4,269.00	409.82
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	1.63	391.00	637.33
		Bhisti	day	0.27	391.00	105.57
		<b>c) Machinery</b>				
		Mechanical concrete mixer 0.4/0.28 cum capacity fitted with water measuring device and preferably also with load cell.	hour	0.40	215.00	86.00
		<b>d) Formwork @ 4% on cost of material, labour and machinery (a+b+c)</b>				<b>283.01</b>
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				<b>1,565.11</b>
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>1,338.51</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>102.62</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>10,364.56</b>
					<b>say</b>	<b><u>10364.60</u></b>
		<b>(ii) Nominal mix 1:3:6 (Hand mixing)</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.250	6,797.00	1,699.25
		Fine sand	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.576	4,236.00	2,439.94
		20 mm aggregate	cum	0.288	4,374.00	1,259.71
		10 mm aggregate	cum	0.096	4,269.00	409.82
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19

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**PROTECTION WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) Formwork @ 4% on cost of material, labour and machinery (a+b)</b>				<b>285.52</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,578.96</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,350.35</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>103.53</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>10,456.23</b>
					<b>say</b>	<b><u>10456.20</u></b>
<b>14.6</b>	<b>1300</b>	<b>Single bamboo spur and palasiding of whole 2nd class bamboo (Jati or Bethua) 65 mm to 75 mm dia @ 150 mm c/c and closely packed &amp; driven including fitting fixing with half bamboo kamis horizontally in three rows with cane or tying wire complete and struts 1500 mm apart longitudinally and providing brush wood as per drawing and technical specification Clause 1302.5.</b>				
		A) Driven at least 900 mm below ground and 1800 mm above ground on average Unit = Running metre Taking output = 3.00 metre				
		<b>a) Materials</b>				
		2nd class bamboo (65 mm to 75 mm dia 3 m long)	m	64.80	16.50	1,069.20
		Binding wire	Kg.	0.15	80.00	12.00
		Brush Wood (LS) @ 1.50 %				16.22
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>c) Sundries (LS) @ 1.00 % of (a)</b>				10.97
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>322.25</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>275.59</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>21.13</b>
		Cost for 3 metre = a+b+c+d+e+f				<b>2,134.00</b>
		<b>Rate per metre = (a+b+c+d+e+f)/3</b>				<b>711.33</b>
					<b>say</b>	<b><u>711.30</u></b>
		B) Driven at least 900 mm below ground and 900 mm above ground on average Unit = Running metre Taking output = 3.00 metre				
		<b>a) Materials</b>				
		2nd class bamboo (65 mm to 75 mm dia 3 m long)	m	46.80	16.50	772.20
		Binding wire	Kg.	0.15	80.00	12.00



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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Brush Wood (LS) @ 0.75 %				5.88
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>c) Sundries (LS) @ 1.50 % of (a)</b>				11.85
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>257.06</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>219.85</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>16.85</b>
		Cost for 3.00 metre = a+b+c+d+e+f				1,702.34
		<b>Rate per metre = (a+b+c+d+e+f)/3</b>				<b>567.45</b>
					<b>say</b>	<b><u>567.40</u></b>

**14.7** Suggestive **Single bamboo spur and palasiding of whole 1st class bamboo (Bholuka or Barua or barak) 85 mm to 100 mm dia and closely packed & driven @ 150 mm c/c including fitting, fixing with half 2nd class bamboo (Jati or Bethua) horizontally in three rows with cane or tying wire complete and struts 1500 mm apart longitudinally and providing brush wood as per drawings and technical specifications.**

A) Driven at least 900 mm below ground and 1800 mm above ground  
Unit = Running metre  
Taking output = 3.00 metre

**a) Materials**

1st class bamboo (85 mm - 100 mm dia)	m	60.30	24.00	1,447.20
2nd class bamboo	m	4.50	16.50	74.25
Binding Wire (G.I 2mm)	Kg.	0.15	80.00	12.00
Brush Wood (LS) @ 1.00 %				15.33

**b) Labour**

Mate	day	0.05	391.00	19.55
Mazdoor (Unskilled)	day	1.20	391.00	469.20

**c) Sundries (LS) @ 1.00 % of (a)**

15.49

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)**

**436.68**

**e) Contractor's profit @ 15 % on (a+b+c+d)**

**373.46**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)**

**28.63**

Cost for 3 metre = a+b+c+d+e+f

2,891.79

**Rate per metre = (a+b+c+d+e+f)/3**

**963.93**

**say**

**963.90**

B) Driven at least 900 mm below ground and 900 mm above ground on average  
Unit = Running metre  
Taking output = 3.00 metre

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a) Materials</b>				
		1st class bamboo (85 mm - 100 mm dia)	m	42.30	24.00	1,015.20
		2nd class bamboo	m	4.50	16.50	74.25
		Binding Wire (G.I 2mm)	Kg.	0.15	80.00	12.00
		Brush Wood (LS) @ 1.50 %				16.52
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>c) Sundries (LS) @ 1.50 % of (a)</b>				16.77
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>327.85</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>280.38</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>21.50</b>
		Cost for 3.00 metre = a+b+c+d+e+f				2,171.11
		<b>Rate per metre = (a+b+c+d+e+f)/3.00</b>				<b>723.70</b>
					<b>say</b>	<b><u>723.70</u></b>
		<b>C) Driven at least 600 mm below ground and 1200 mm above ground on average.</b>				
		Unit = Running metre				
		Taking output = 3.00 metre				
		<b>a) Materials</b>				
		1st class bamboo (85 mm - 100 mm dia)	m	42.30	24.00	1,015.20
		2nd class bamboo	m	4.50	16.50	74.25
		Binding Wire (G.I 2mm)	Kg.	0.15	80.00	12.00
		Brush Wood (LS) @ 1.50 %				16.52
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>c) Sundries (LS) @ 1.50 % of (a)</b>				16.77
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>327.85</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>280.38</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>21.50</b>
		Cost for 3.00 metre = a+b+c+d+e+f				2,171.11
		<b>Rate per metre = (a+b+c+d+e+f)/3.00</b>				<b>723.70</b>
					<b>say</b>	<b><u>723.70</u></b>
<b>14.8</b>	<b>Suggestive</b>	<b>Bamboo spur 'A' type with whole bamboo placed 230 mm centre to centre driven 900 mm below ground and 1200 mm to 1500 mm above ground tied with 2nd class bamboo (Jati or Bethua) on either side at 450 mm apart horizontally with galvanised wire etc. complete as per drawings and technical specifications.</b>				
		A) 2nd class bamboo (jati or Bethua) 65 mm to 75 mm dia				

**Chapter 14**  
**PROTECTION WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit= Running metre				
		Taking output = 3.00 metre				
		<b>a) Materials</b>				
		2nd class bamboo (65 mm to 75 mm dia)	m	43.50	16.50	717.75
		Binding Wire (G.I 2mm)	Kg.	0.75	80.00	60.00
		<b>b) Labour</b>				
		Mate	day	0.04	391.00	15.64
		Mazdoor (Unskilled)	day	1.00	391.00	391.00
		<b>c) Sundries (LS) @ 2.50 % of (a)</b>				19.44
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>256.06</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>218.98</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>16.79</b>
		Cost for 3 m = a+b+c+d+e+f				1,695.66
		<b>Rate per metre = (a+b+c+d+e+f)/3</b>				<b>565.22</b>
					<b>say</b>	<b><u>565.20</u></b>
		B) 1st class bamboo (Bholuka or Barua ) 85 mm to 100 mm dia				
		Unit = Running metre				
		Taking output = 3.00 metre				
		<b>a) Materials</b>				
		1st class bamboo (85-100 mm dia)	m	31.50	24.00	756.00
		2nd class bamboo (65-75 mm dia)	m	12.00	16.50	198.00
		Binding Wire (G.I 2mm)	Kg.	1.00	80.00	80.00
		Brush Wood (LS) @ 2.00 %				20.68
		<b>b) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Mazdoor (Unskilled)	day	1.40	391.00	547.40
		<b>c) Sundries (LS) @ 2.00 % of (a)</b>				21.09
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>350.24</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>299.53</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>22.96</b>
		Cost for 3 m = a+b+c+d+e+f				2,319.37
		<b>Rate per metre = (a+b+c+d+e+f)/3</b>				<b>773.12</b>
					<b>say</b>	<b><u>773.10</u></b>
14.9	Suggestive	Providing 'A' type single spur with 1st class bamboo (Bholuka or Barua) 85 mm to 100 mm dia closely placed 230 mm centre to centre, driven 1200 mm to 1500 mm below ground and 3 m to 4 m above ground and tied with cane or coir string, half 2nd class bamboo (Jati or Bethua) horizontally on both face placed not more than one metre apart and 2 nos. of purlin at top and bottom fitted with vertical struts at 1500 mm apart and filling with brushwood or jungle wood inside the spur complete as per drawing and technical specifications.				

**Chapter 14**  
**PROTECTION WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit= Running metre				
		Taking output = 3.00 metre				
		<b>a) Materials</b>				
		1st class bamboo (85-100 mm dia)	m	87.00	24.00	2,088.00
		2nd class bamboo (65-75 mm dia)	m	18.00	16.50	297.00
		Binding wire (GI 2 mm)	Kg.	2.00	80.00	160.00
		Coir Rope (LS) @ 1.00 % of (a)				25.45
		Brush wood (LS) @ 1.00 % of (a)				25.45
		<b>b) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Mazdoor (Unskilled)	day	1.50	391.00	586.50
		<b>c) Sundries (LS) @ 1.00 % of (a)</b>				25.96
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>687.41</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>587.88</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>45.07</b>
		Cost for 3 metre = a+b+c+d+e				4,552.18
		<b>Rate per metre = (a+b+c+d+e)/3</b>				<b>1,517.39</b>
					<b>say</b>	<b><u>1517.40</u></b>
14.10	1300	<b>Providing close bamboo toe walling consisting of 65 mm to 75 mm diameter bamboos driven 900 mm below ground and 900 mm above ground at 150 mm C/C and provided with three horizontal split bamboo runner fixed with nails. All bamboos to be duly protected by coal tar painting.</b>				
		Unit = Running Metre				
		Taking output = 10.00 running metre				
		<b>a) Materials</b>				
		2nd class bamboo (65mm-75mm dia)	m	120.60	16.50	1,989.90
		2nd class bamboo (65mm-75mm dia)	m	15.00	16.50	247.50
		Coal tar	kg	10.00	37.00	370.00
		<b>b) Labour</b>				
		Mate	day	0.06	391.00	23.46
		Mazdoor (Unskilled)	day	1.50	391.00	586.50
		<b>c) Sundries (LS) @ 1.00 % of (a)</b>				26.07
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>689.88</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>590.00</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>45.23</b>
		Cost for 10 Running Metre = a+b+c+d+e+f				4,568.54
		<b>Rate per Sqm = (a+b+c+d+e+f)/10</b>				<b>456.85</b>
					<b>say</b>	<b><u>456.90</u></b>

**Chapter 14**  
**PROTECTION WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
14.11	Suggestive	Double timber spur with two rows at 800 mm c/c apart of 1 <sup>st</sup> class local wood piles with timber of Sal/ Nahar/ Nageswar wood piles of 150 mm dia placed at 400 mm centre to centre, driven 2000 mm minimum below ground and 3600 mm above ground average and placing and fixing bracings etc. of 100 mm x 75 mm size 1 <sup>st</sup> class local wood longitudinally & crosswise at 800 mm apart, at ends fitted with 10 mm dia bolts and nuts etc. including coaltarring of timber members and cost of necessary bamboo staging etc. as directed by the Engineer as per drawing and technical specifications.				
		Unit =RM				
		Taking output = 4.00 RM				
		<b>a) Material</b>				
		1st class local wood piles 150-200 mm dia, 6m long	m	123.20	650.00	80,080.00
		2nd class local wood (100 mm x 75 mm) for collar, bracing and belt	cum	2.04	31,000.00	63,240.00
		Nuts and Bolts	Kg	10.00	64.50	645.00
		1st Class Bamboo	m	30.00	24.00	720.00
		2nd class bamboo	m	25.00	16.50	412.50
		Coir Rope (LS) @ 0.20 % of (a)				304.70
		Coal tar	Kg	40.00	37.00	1,480.00
		<b>b) Labour</b>				
		Carpenter 1st Class	Nos	1.20	512.00	614.40
		Mate	Nos	1.20	391.00	469.20
		Mazdoor (Unskilled)	Nos	30.00	391.00	11,730.00
		<b>c) Sundries (LS) @ 0.40 % of (a)</b>				587.53
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>34,092.27</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>29,156.34</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>2,235.32</b>
		Cost for 4 RM = (a+b+c+d+e+f)				2,25,767.26
		<b>Rate per metre = (a+b+c+d+e+f)/4</b>				<b>56,441.81</b>
						<b>say</b> <u><b>56441.80</b></u>
14.12	Suggestive	Supplying and filling up hollows of the timber spur to an average height of 3600 mm above ground with jungle wood branches as per drawing and technical specifications as directed by the Engineer.				
		Unit = RM				
		Taking output = 20.00 RM				
		<b>a) Labour</b>				
		Mate	day	0.20	391.00	78.20
		Mazdoor (Unskilled)	day	5.00	391.00	1,955.00
		<b>b) Sundries (LS) @ 3.00 % of (a)</b>				61.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>445.44</b>

**Chapter 14**  
**PROTECTION WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Contractor's profit @ 15 % on (a+b+c)				<b>380.94</b>
		e) Add Cess @ 1.00 % on (a+b+c+d)				<b>29.21</b>
		Cost for 20 RM = (a+b+c+d+e)				2,949.78
		Rate per metre = (a+b+c+d+e)/20				<b>147.49</b>
					<i>say</i>	<b><u>147.50</u></b>

**Chapter 14**  
**PROTECTION WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**ADDITIONAL ITEMS BY USING JHAMA BRICK AGGREGATE ( i.e. LOCALLY AVAILABLE MATERIALS)**

14.13	1300	Providing and laying of apron with cement concrete blocks of size as per Table 1300.1 cast-in-situ and made with nominal mix of M-15 grade cement concrete (using jhama brick aggregate) as per drawing and MoRD technical specification Clause 1301 (rate includes preparation of bed, nominal surface reinforcement and filling of granular material in recesses between blocks).				
		Unit = cum				
		<b>a) Concrete grade M 15</b>				
		Rate as per item No 11.9. II (i)	cum	1.00	9,350.00	9,350.00
		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.				187.00
		<b>Rate per cum = (a)</b>				<b>9,537.00</b>
					<b>say</b>	<b><u>9537.00</u></b>
14.14	1300	Providing and laying flooring laid over cement concrete bedding complete as per drawing and MoRD technical specification Clause 1303.				
		<b>I. Cement concrete blocks cast in situ grade M15 (size 400 mm x 400 mm x 150 mm) over cement concrete (with M10, using jhama brick aggregate) bedding of 150 mm thick</b>				
		Unit = Sqm				
		Taking Output = 21.00 sqm				
		<b>a) Cement concrete blocks grade M 15</b>				
		Rate as per item 11.9 (II) (i)	cum	3.12	9,350.00	29,172.00
		using 400 mm x 400 mm x 150 mm blocks				
		Add for cement concrete bedding M10	cum	3.15	9,099.90	28,664.69
		Rate as per item 11.9 (I) (i)				
		Add 1 per cent of cost to account for excavation for preparation of bed.				578.37
		Cost for 21 sqm =				<b>58,415.05</b>
		<b>Rate per sqm = (a) / 21</b>				<b>2,781.67</b>
					<b>say</b>	<b><u>2781.70</u></b>
14.15	1300	Providing and laying curtain walls complete as per drawing and MoRD technical specification Clause 1304.				
		Unit = cum				
		Taking Output = 1.00 m				
		<b>I. Brick masonry in cement mortar (1:4)</b>				
		<b>a) Excavation in soil for foundation</b>				
		Rate as per item No.11.1.A.I(i) of Chapter 11	cum	2.34	458.20	1,072.19

**Chapter 14**  
**PROTECTION WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		b) PCC M10 grade (using jhama brick aggregate) (Rate same per item No.11.9.I(ii) of Chapter 11)	cum	0.18	9,191.60	1,654.49
		c) Brick masonry in cement mortar (1:4) (Rate same as per item 11.5 (II) of chapter 11)	cum	0.69	9,418.50	6,498.77
		<b>Rate per m =</b>				<b>9,225.44</b>
					<b>say</b>	<b><u>9225.40</u></b>
		<b>II. PCC grade M10 with jhama brick aggregate (including centering, shuttering staging etc. and reinforcement)</b>				
		a) Excavation in soil for foundation Rate as per item No.11.1.A.I(i) of Chapter 11	cum	4.68	458.20	2,144.38
		b) PCC M10 grade (using jhama brick aggregate) (Rate same per item No.11.9.I(ii) of Chapter 11)	cum	0.72	9,191.60	6,617.95
		c) Twisted steel/ deformed bar (Rate same as per item 11.6 of chapter 11)	t	0.054	91,240.90	4,927.01
		<b>Rate per m =</b>				<b>13,689.34</b>
					<b>say</b>	<b><u>13689.30</u></b>
<b>14.16</b>	<b>1300</b>	<b>Construction of toe walls for protection of slopes as per Drawing and MoRD technical specifications Clause 1302.5 (including centering, shuttering staging etc. but excluding reinforcement)</b>				
		<b>I. Cement concrete grade M 10 (using jhama brick aggregate) in case of concrete block pitching</b>				
		Unit = cum				
		<b>I. P.C.C grade M 20</b>				
		<b>(i) Nominal mix 1:3:6</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.250	6,797.00	1,699.25
		Sand (Fine)	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.576	3,417.00	1,968.19
		20 mm aggregate	cum	0.288	3,917.00	1,128.10
		10 mm aggregate	cum	0.096	3,841.00	368.74
		<b>b) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	1.63	391.00	637.33
		Bhisti	day	0.27	391.00	105.57



**Chapter 14**  
**PROTECTION WORKS**

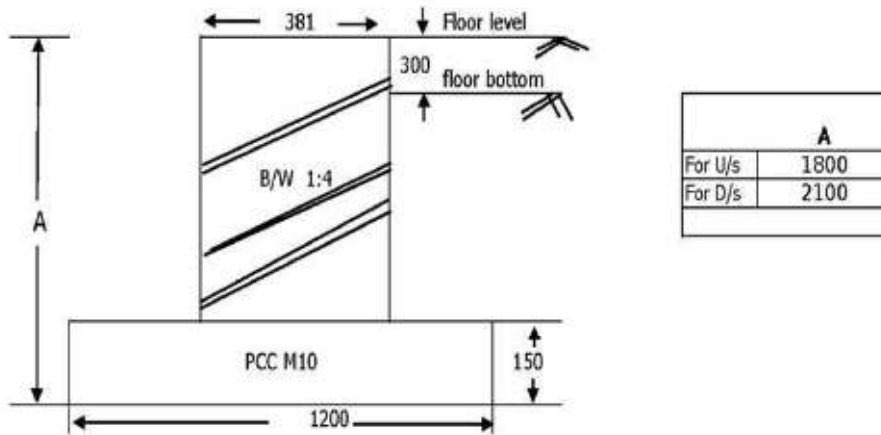
Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>c) Machinery</b>				
		Mechanical concrete mixer 0.4/0.28 cum capacity fitted with water measuring device and preferably also with load cell.	hour	0.40	215.00	86.00
		<b>d) Formwork @ 4% on cost of material, labour and machinery (a+b+c)</b>				<b>257.23</b>
		<b>e) Add GST (multiplying factor) @ on (a+b+c+d)</b>				<b>1,422.56</b>
		<b>f) Contractor's profit @ on (a+b+c+d+e)</b>				<b>1,216.60</b>
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>93.27</b>
		<b>Rate per cum = a+b+c+d+e+f+g</b>				<b>9,420.51</b>
					<b>say</b>	<b><u>9420.50</u></b>
		<b>(ii) Nominal mix 1:3:6 (Hand mixing)</b>				
		Unit = cum				
		<b>a) Material</b>				
		Cement	t	0.250	6,797.00	1,699.25
		Sand (Fine)	cum	0.48	740.00	355.20
		40 mm aggregate	cum	0.576	3,417.00	1,968.19
		20 mm aggregate	cum	0.288	3,917.00	1,128.10
		10 mm aggregate	cum	0.096	3,841.00	368.74
		<b>b) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mason (1st Class)	day	0.10	512.00	51.20
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Bhisti	day	0.27	391.00	105.57
		<b>c) Formwork @ 4% on cost of material, labour and machinery (a+b)</b>				<b>259.74</b>
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,436.40</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,228.44</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>94.18</b>
		<b>Rate per cum = a+b+c+d+e+f</b>				<b>9,512.19</b>
					<b>say</b>	<b><u>9512.20</u></b>

**Chapter 14  
PROTECTION WORKS**

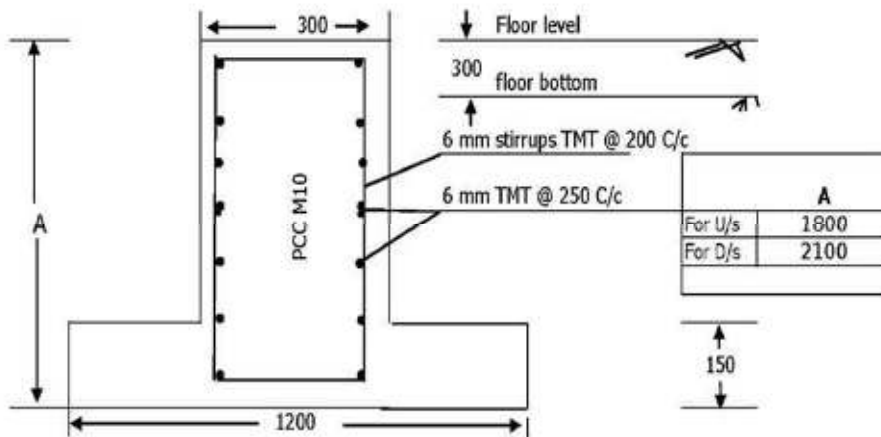
Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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For ODRs and Rural Roads

Chapter - 14 : Protection Works



Drawing of Curtain Wall for Item No. 14.15.I of Chapter - 14



Drawing of Curtain Wall for Item No. 14.15.II of Chapter - 14

- Note :
- 1 All Dimensions are in mm
  - 2 Not to scale.

**Chapter 15**  
**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**15.1 1900 Restoration of Rain Cuts**

- i) 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 compaction with plate compactor or power rammer to restore the original alignment, level and slopes as per drawings and MoRD technical specification Clause 1902.

**A. Manual Means**

Unit = cum

Taking output = 10 cum

**a) Labour**

Mate	day	0.24	391.00	93.84
Mazdoor (Unskilled)	day	6.00	391.00	2,346.00

**b) Machinery**

Plate compactor	hour	3.00	84.00	252.00
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**c) Materials**

Compensation for earth Taken from private la	cum	7.50	18.00	135.00
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c) 601.27**

**e) Contractor's profit @ 15 % on (a+b+c+d) 514.22**

**f) Add Cess @ 1.00 % on (a+b+c+d+e) 39.42**

Cost for 10 cum = a+b+c+d+e+f 3,981.75

**Rate per cum = a+b+c+d+e+f/10 398.17**

**say 398.20**

**B. Mechanical Means**

Unit = cum

Taking output = 50 cum

**a) Labour**

Mate	day	0.40	391.00	156.40
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00

**b. Machinery**

Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum/h	hour	0.83	1,344.00	1,115.52
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Tipper 5.5 cum, 10 t capacity	hour	2.27	374.00	848.98
Add 10% cost of carriage towards loading and unloading charges				84.90

Plate compactor	hour	15.00	84.00	1,260.00
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**c. Materials**

Compensation for earth taken from private la	cum	37.50	18.00	675.00
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**d. Add GST (multiplying factor) @ 0.2127 on (a+b+c) 1,712.40**

**e. Contractor's profit @ 15 % on (a+b+c+d) 1,464.48**

**f. Add Cess @ 1.00 % on (a+b+c+d+e) 112.28**

Cost for 50 cum = a+b+c+d+e+f 11,339.96

**Chapter 15**  
**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**Rate per cum a+b+c+d+e+f/50** **226.80**

**say** **226.80**

**Note:** Only 75% of fresh material has been provided as 25% can be retrieved from site from earth i.e. flown down the slop in the form of slurry and deposited at the foot of rain cuts.

**15.2    1900    1.    Maintenance of Earthen shoulder (filling with fresh selected soil)**

Making up loss of material / irregularities on shoulders to the design level by adding fresh approved selected soil and compacting it with appropriate equipment at OMC upto a lead of 1000 m as per MoRD technical specification Clause 1903.

Unit = sqm

Taking output = 100 sqm

Assuming average thickness of filling to be 150 mm

Quality of fresh material = 15 cum

**a. Labour**

Mate	day	0.20	391.00	78.20
Mazdoor (Unskilled)	day	5.00	391.00	1,955.00

**b. Machinery**

Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	0.25	1,344.00	336.00
Tipper 5.5 cum	hour	0.68	374.00	254.32
Add 10% cost of transportation to cover cost of loading and unloading				59.03
Plate compactor @ 25 sqm per hour	hour	4.00	84.00	336.00

**c. Material**

Compensation of earth	cum	15.00	18.00	270.00
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**d. Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **699.48**

**e. Contractor's profit @ 15 % on (a+b+c+d)** **598.20**

**f. Add Cess @ 1.00 % on (a+b+c+d+e)** **45.86**

Cost for 100 sqm = a+b+c+d+e+f 4,632.09

**Rate per sqm = (a+b+c+d+e+f)/100** **46.32**

**say** **46.30**

**2. Maintenance of Earthen shoulder (stripping of excess soil)**

Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor at OMC as per drawing and MoRD technical specification Clause 1903.

Unit = sqm

Taking output = 100 sqm

Assuming height of stripping as 75 mm

Quantity of earth cutting involved = 7.5 cum

**Chapter 15**  
**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>a. Labour</b>				
		Mate	day	0.10	391.00	39.10
		Mazdoor (Unskilled)	day	2.50	391.00	977.50
		<b>b. Machinery</b>				
		Plate compactor	hour	4.00	84.00	336.00
		<b>c. Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>287.70</b>
		<b>d. Contractor's profit @ 15 % on (a+b+c)</b>				<b>246.04</b>
		<b>e. Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>18.86</b>
		Cost for 100 sqm = a+b+c+d+e				1,905.21
		<b>Rate per sqm = a+b+c+d+e/100</b>				<b>19.05</b>
					<b>say</b>	<b><u>19.10</u></b>

**15.3**     **500, 1900**     **Maintenace of bituminous surface road**

- I Repair to pot holes by removal of failed material, trimming the sides to vertical and levelling the bottom, cleaning the same with compressed air or any appropriate method, filled with 75 mm B.M, after applying bitumen emulsion prime coat at the bottom and bitumen emulsion tack coat on sides and on bottom as per MoRD technical specification Clauses 1900, 502, 503 and 504.

Unit = cum

Taking output =  $187.5 \times 0.075 = 14.06$  cum = (30.94 Tonne)

(5% area of one km)

**a) Labour**

Mate	day	0.80	391.00	312.80
Mazdoor (Unskilled)	day	20.00	391.00	7,820.00

**b) Machinery**

Jack hammer 25 kg with tractor	hour	4.00	419.00	1,676.00
Compressor 210 cfm with tractor	hour	2.00	235.00	470.00
Emulsion pressure distributor	hour	4.00	226.00	904.00
Mixall 6/10 t capacity	hour	4.00	857.00	3,428.00
Three wheeled 80-100 kN Static Roller	hour	4.00	439.00	1,756.00

**c) Material**

Primer with bitumen emulsion (SS-1) @ 9 kg/10 sqm  $187.5 \times 9 = 168.75$  kg.     Tonne     0.1688     60,228.00     10,166.49

Tack coat with bitumen emulsion (RS-1) @ 3.0 kg/ 10 sqm)

Bottom = 187.5

Sides = 28.27     Tonne     0.0647     57,286.00     3,706.40

Total = 215.77

Bitumen (VG-30) for BM @ 3.5% by weight of mix     Tonne     1.082     61,186.00     66,203.25

=  $30.94 \times 3.5 / 100 = 1.082$

Weight of mix (BM) 14.06 cum = (30.94 tonne)

**Chapter 15**  
**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Weight of Bitumen = 1.082				
		Weight of aggregate 30.94 - 1.082 = 29.86				
		Taking density of aggregate 1.5 t per cum				
		Volume of aggregate 29.86 / 1.5 = 19.90 cum				
		Grading (1) (40 mm nominal size)				
		37.5 - 25 mm 15%	cum	2.985	3,663.20	10,934.65
		25 - 10 mm 45%	cum	8.96	4,017.00	35,972.24
		10 - 5 mm 25%	cum	4.975	4,355.60	21,669.11
		5 mm and below 15%	cum	2.99	4,450.50	13,284.74
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>37,925.19</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>32,434.33</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>2,486.63</b>
		Cost of 14.06 cum = a+b+c+d+e+f				2,51,149.84
		<b>Rate per cum = a+b+c+d+e+f/14.06</b>				<b>17,862.72</b>
					<b>say</b>	<b><u>17862.70</u></b>

- II. Patch repair on already filled pot holes with 75 mm BM with 20 mm premix carpet and seal coat type A as per drawing and MoRD technical specification Clauses 1904.2, 508 and 510.

Unit = sqm

Takign output = 200 sqm

**a) Labour**

Mate	day	0.64	391.00	548.48
Mazdoor (Unskilled)	day	16.00	391.00	6,256.00

**b) Machinery**

Mixall 6/10 tonne	hour	2.00	857.00	1,714.00
Bitumen pressure distributior	hour	2.00	226.00	452.00
Three wheeled 80-100 kN Static Roller	hour	4.00	439.00	1,756.00

**c) Material**

Bitumen (VG-30) for pre-mix carpet @ 14.60 kg/10 sqm 200x14.60/10 =292 kg	tonne	0.292	61,186.00	17,866.31
Bitumen (RS-1) for tack coat @ 2 kg per 10 sqm 200 x 2 / 10 = 40 kg	tonne	0.04	57,286.00	2,291.44
Bitumen (VG-30) for seal coat @ 6.8 kg per 10 sqm	tonne	0.136	61,186.00	8,321.30
Crushed stone aggregate 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm = 200 x 0.27 / 10 = 5.4 cum	cum	5.40	4,389.30	23,702.22
Crushed stone passing 2.36 mm sieve and retained on 180 micron sieve @ 0.06 cum per 10 sqm 200 x 0.06 / 10 = 1.20 cum	cum	1.20	2,252.60	2,703.12

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **13,955.43**

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>11,934.94</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>915.01</b>
		Cost of 200 sqm = a+b+c+d+e+f				92,416.26
		<b>Rate/sqm = a+b+c+d+e+f/200</b>				<b>462.08</b>
					<b>say</b>	<b><u>462.10</u></b>
<b>III. Repair to pot holes and removal of loose material, trimming of sides, cleaning of surface, providing tack coat, 20 mm thick premix carpet and seal coat type B as per drawing and MoRD technical specification clauses 1904.2, 503 and 508.1.</b>						
Unit = sqm						
Taking output = 200 sqm						
<b>a) Labour</b>						
		Mate	day	0.80	391.00	312.80
		Mazdoor (Unskilled)	day	20.00	391.00	7,820.00
<b>b) Machinery</b>						
		Air compressor 210 cfm with tractor	hour	2.00	235.00	470.00
		Bitumen pressure distributor	hour	2.00	226.00	452.00
		Mixall 6/10t capacity	hour	2.00	857.00	1,714.00
		Three wheeled 80-100 kN Static Roller	hour	4.00	439.00	1,756.00
<b>c) Material</b>						
		Bitumen (RS-1) for tack coat @ 3kg per 10 sqm 200 x 3 / 10 = 60 kg	tonne	0.064	57,286.00	3,666.30
		Bitumen (VG-30) for pre-mix carpet @ 14.60 kg per 10 sqm = 200 x 14.6 / 10 = 292 kg	tonne	0.292	61,186.00	17,866.31
		Bitumen (VG-30) for seal coat @ 6.8 kg per 10 sqm = 200 x 6.8 / 10 = 136 kg	tonne	0.136	61,186.00	8,321.30
		Crushed stone aggregate 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm = 200 x 0.27 / 10 = 5.4 cum	cum	5.40	4,389.30	23,702.22
		Sand @ 0.06 cum per 10 sqm 200 x 0.06 / 10 = 1.20 cum	cum	1.20	740.00	888.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				14,244.29
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				12,181.98
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				933.95
		Cost for 200 sqm = a+b+c+d+e+f				94,329.16
		<b>Rate per sqm = a+b+c+d+e+f/200</b>				<b>471.65</b>
					<b>say</b>	<b><u>471.60</u></b>
<b>IV. Repair to pot holes and removal of loose material, trimming of sides, cleaning of surface, providing tack coat with bitumen emulsion, 20 mm thick premix carpet using cationic bitumen emulsion and seal coat type B with bitumen emulsion as per MoRD technical specification clauses 1904.2, 503 and 508.2.</b>						

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit = sqm Taking output = 200 sqm				
		<b>a) Labour</b>				
		Mate	day	0.64	391.00	250.24
		Mazdoor (Unskilled)	day	16.00	391.00	6,256.00
		<b>b) Machinery</b>				
		Concrete mixer 0.4 / 0.28 cum capacity	hour	2.50	215.00	537.50
		Air compressor 210 CFM with tractor	hour	2.00	235.00	470.00
		Emulsion pressur distributor	hour	2.00	226.00	452.00
		Three wheeled 80-100 kN Static Roller	hour	4.00	439.00	1,756.00
		<b>c) Materials</b>				
		Bitumen Emulsion (RS-1) for tack coat @ 3 kg per 10 sqm 200 x 3 / 10 = 60 kg	tonne	0.06	57,286.00	3,437.16
		Bitumen Emulsion (SS-1) for premix carpet @ 21.50 kg per 10 sqm 200 x 21.50 / 10 = 430 kg	tonn	0.43	60,228.00	25,898.04
		Bitumen Emulsion (SS-1) for seal coat @ 10 kg per 10 sqm = 200 x 10 / 10 = 200 kg	tonn	0.20	60,228.00	12,045.60
		Crushed stone aggregate 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm = 200 x 0.27 / 10 = 5.4 cum	cum	5.40	4,389.30	23,702.22
		Sand @ 0.06 cum per 10 sqm 200 x 0.06 / 10 = 1.20 cum	cum	1.20	740.00	888.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>16,099.85</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>13,768.89</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,055.62</b>
		Cost for 200 sqm = a+b+c+d+e+f				1,06,617.12
		<b>Rate per sqm = a+b+c+d+e+f/200</b>				<b>533.09</b>
					<b>say</b>	<b><u>533.10</u></b>

**15.4 1900 Maintenance of Drains**

The maintenance of drains include erosion, repair, clearing, cleaning, reshaping, regrading, deepening of side drains as well as catch water drains as per MoRD technical specification Clause 1907.

Unit - Per Metre

Taking output one km = 1000 metre

**a) Labour**

Mate	day	0.32	391.00	125.12
Mazdoor (Unskilled)	day	8.00	391.00	3,128.00

**b) Add GST (multiplying factor) @ 0.2127 on (a)** **691.94**

**c) Contractor's profit @ 15 % on (a+b)** **591.76**

**d) Add Cess @ 1.00 % on (a+b+c)** **45.37**

Cost for 1000 metre = a+b+c+d **4,582.19**



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**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**Rate per Metre = a+b+c+d/1000**

**4.58**

**say 4.60**

**15.5    1900    (I)    Maintenance of Culverts Hume Pipe type**

Maintenance of Hume pipe Culvert by way of clearing, cleaning, erosion repair, repairs to cracks, parapet wall and protection work as per drawing and MoRD technical specification Clause 1908.

Unit = One No. Hume pipe (1000 mm dia)

Taking output = One No.H.P. Culvert

**a) Labour**

Mate	day	0.10	391.00	39.10
Mazdoor (Unskilled)	day	1.00	391.00	391.00
Mason 2nd Class	day	1.40	475.00	665.00

**b) Material**

Cement, Sand, Brick, Boulder etc. @ 100.00 % c L.S 1,095.10

**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 465.86**

**d) Contractor's profit @ 15 % on (a+b+c) 398.41**

**e) Add Cess @ 1.00 % on (a+b+c+d) 30.54**

Cost for one No. Hume pipe culvert = a+b+c+d+e 3,085.01

**Rate per hume pipe Culvert = a+b+c+d+e 3,085.01**

**say 3085.00**

**(II) Maintenance of Culverts Slab type**

Maintenance of Slab Type Culverts by way of clearing, cleaning, erosion repair, repairs to cracks, parapet wall and protection work as per drawing and MoRD technical specification 1908.

Unit = One No. Culvert (2 m span)

Taking output = one No. Slab Culvert

**a) Labour**

Mate	day	0.20	391.00	78.20
Mazdoor (Unskilled)	day	4.00	391.00	1,564.00
Mason 2nd Class	day	1.00	475.00	475.00

**b) Material**

Cement, Sand, Brick, Boulder etc. @ 80.00 % of L.S 1,693.76

**c) Add GST (multiplying factor) @ 0.2127 on (a+b) 810.59**

**d) Contractor's profit @ 15 % on (a+b+c) 693.23**

**e) Add Cess @ 1.00 % on (a+b+c+d) 53.15**

Cost for One Slab Culverts =a+b+c+d+e 5,367.93

**Rate per Culvert = a+b+c+d+e 5,367.93**

**say 5367.90**

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Sr. No.	Ref. to MORd Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>15.6</b>	<b>1900</b>	<b>Maintenance of Road Signs</b>				
		Maintenance of road signs by way of cleaning and repainting of mandatory/ regulatory / cautionary / informatory and place identification sign board as per drawings and MoRD technical specification Clause 1910.				
		Unit = 1 km				
		Taking output = one km				
		All types of signs in one Km				
		<b>a) Labour</b>				
		Mate	day	0.09	391.00	35.19
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Painter 1st Class	day	0.125	475.00	59.38
		<b>b) Material</b>				
		Synthetic Enamel Paint, Engineering grade tape, welding machine etc. @ 150.00 % on (a)	LS			1,314.85
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>466.11</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>398.63</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>30.56</b>
		Cost for one Km = a+b+c+d+e				3,086.72
		<b>Rate per km = a+b+c+d+e</b>				<b>3,086.72</b>
					<b>say</b>	<b><u>3086.70</u></b>
<b>15.7</b>	<b>1900</b>	<b>Maintenance of steel and RCC Railing</b>				
		(i) Repair of steel railing to bring it to original shape, cleaning and repainting as per drawing and MoRD technical specification Clause 1911.				
		<b>Steel Railing</b>				
		Unit = Running metre				
		Taking output = 10 metre				
		It is assumed that damage is to the extent of 10%				
		<b>a) Labour</b>				
		Mate	day	0.024	391.00	9.38
		Mazdoor (Unskilled)	day	0.30	391.00	117.30
		Painter 1st Class	day	0.10	475.00	47.50
		Blacksmith	day	0.20	480.00	96.00
		<b>b) Materials</b>				
		Mild steel (structural steel)				
		ISMC = 0.039T	t	0.039	59,530.00	2,321.67
		MS Flat = 0.01	t	0.010	59,530.00	595.30
		Nuts and bolts	t	0.001	64,500.00	64.50
		<b>c) Machinery</b>				
		Welding set @ 10.00 % on (a+b)	LS			325.17
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>760.79</b>

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>650.64</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>49.88</b>
		Cost for 10 metre = a+b+c+d+e+f				5,038.13
		<b>Rate per metre = a+b+c+d+e+f/10</b>				<b>503.81</b>
					<b>say</b>	<b><u>503.80</u></b>
		<b>(ii) Repair of RCC railing to bring it to the original shape, cleaning and repainting as per drawings and MoRD technical Specification Clause 1911.</b>				
		<b>RCC Railing</b>				
		Unit = running metre				
		Taking output = 1 metre				
		It is assumed that damage is to the extent of 10%				
		<b>a) Labour</b>				
		Mate	day	0.012	391.00	4.69
		Mazdoor (Unskilled)	day	0.20	391.00	78.20
		Mason 1st Class	day	0.10	512.00	51.20
		<b>b) Materials</b>				
		M 30 grade cement concrete				
		Rate as per item no. 13.1 (III) of Chapter 13	cum	0.10	13,716.90	1,371.69
		Steel bars reinforcement				
		Rate as per item no.13.2 of Chapter 13	t	0.013	93,234.90	1,212.05
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>28.52</b>
		<b>d) Contractor's profit @ 15 % on (a+c)</b>				<b>24.39</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>1.87</b>
		<b>Rate per metre = a+b+c+d+e</b>				<b>2,772.62</b>
					<b>say</b>	<b><u>2772.60</u></b>
<b>15.8</b>	<b>1900</b>	<b>Maintenance of 200 metre and km stones</b>				
		Maintenance of 200 metre and Km stone by way of refixing of tilted stones repairing with cement mortar, cleaning, repairing and lettering on 200 metre, km stone and 5 <sup>th</sup> km stone as per drawing and MoRD technical specification Clause 1912.				
		Unit = 1 km				
		Assuming 1 km stone, 4 nos 200 metre stone and 1/5th 5km stone				
		<b>(i) Painting two coats with synthetic enamel paint</b>				
		200 m stone 4 nos = 0.760 sqm.				
		One km stone = 0.815 sqm.				
		5th km stone 1x1/5 = 0.320 sqm.				
		Total = 1.895 sqm.				
		As per item No. 10.5 of chapter 10	sqm	1.895	130.70	247.68

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		(ii) Printing letters and figures of any shade with synthetic enamel paint of any approved colour to give an even shade 200 m stone 4 Nos. = 40 per cm height per letter One no km stone = 120 per cm height per letter 5th km stones 1/5 <sup>th</sup> = 60 per cm height per letter Total = 220 per cm height per letter Rate as per item no 10.1 of chapter 10	per cm height per	220.00	0.80	176.00
		<b>a) Labour</b>				
		Mate	day	0.024	391.00	9.38
		Mazdoor	day	0.50	391.00	195.50
		Mason 1st Class	day	0.10	512.00	51.20
		<b>b) Materials</b>				
		Cement, sand, aggregates etc. @ 200.00 % of (ε LS (LS = Rs.100.00)	LS			512.17
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>163.41</b>
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				<b>139.75</b>
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>10.71</b>
		Cost for one km = (i+ii+a+b+c+d+e)				1,505.80
		<b>Rate per/km = (i+ii+a+b+c+d+e)</b>				<b>1,505.80</b>
					<b>say</b>	<b><u>1505.80</u></b>
<b>15.9</b>	<b>1900</b>	<b>Cutting of branches of trees shrubs and trimming of grass and weeds</b>				
		(i) Cutting of branches of trees and shrubs from the roadway or within R.O.W including disposal of wood and leaves to suitable location as per MoRD technical specification Clause 1914. Unit = one tree Taking output = 10 trees of 900 mm average girth				
		<b>a) Labour</b>				
		Mate	day	0.12	391.00	46.92
		Mazdoor (Skilled)	day	1.00	475.00	475.00
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>277.34</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>237.19</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>18.18</b>
		Cost for 10 trees = (a+b+c+d)				1,836.64
		<b>Rate per tree = (a+b+c+d)/10</b>				<b>183.66</b>
					<b>say</b>	<b><u>183.70</u></b>
		(ii) Cutting of shrubs from the roadway or within R.O.W and disposal of shrubs to suitable locations as per MoRD technical specification Clause 1914.				

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Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Unit=Each				
		Taking output = 100 nos shrubs				
		<b>a) Labour</b>				
		Mate	day	0.08	391.00	31.28
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>172.98</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>147.94</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>11.34</b>
		Cost for 100 shrubs = a+b+c+d				<b>1,145.55</b>
		<b>Rate per shrub = a+b+c+d/100</b>				<b>11.46</b>
					<b>say</b>	<b><u>11.50</u></b>
		<b>(iii) Trimming of grass and weeds from the shoulders/berms and disposing off the same to suitable location as per MoRD technical specification Clause 1914.</b>				
		Unit = sqm				
		Taking output = 1500 sqm				
		<b>a) Labour</b>				
		Mate	day	0.40	391.00	156.40
		Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				<b>864.92</b>
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				<b>739.70</b>
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				<b>56.71</b>
		Cost for 1500 sqm = a+b+c+d				5,727.73
		<b>Rate per sqm = a+b+c+d/1500</b>				<b>3.82</b>
					<b>say</b>	<b><u>3.80</u></b>
<b>15.10</b>	<b>1900</b>	<b>White washing of parapet walls of CD work and tree trunks</b>				
		White washing two coats on parapet walls and tree trunks including preparation of surface by cleaning scraping etc. as per MoRD technical specification Clause 1915.				
		Unit = sqm				
		Taking output = 9 sqm				
		<b>a) Labour</b>				
		Mate	day	0.01	391.00	3.91
		Mazdoor (Unskilled)	day	0.143	391.00	55.86
		White washer	day	0.143	447.00	63.86
		<b>b) Materials</b>				
		Lime	kg	0.450	3.50	1.58
		Fevicol adhesive	kg	0.10	256.00	25.60
		Indigo	kg	0.013	66.00	0.86
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				<b>32.26</b>

**Chapter 15**  
**MAINTENANCE OF ROADS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		d) Contractor's profit @ 15 % on (a+b+c)				27.59
		e) Add Cess @ 1.00 % on (a+b+c+d)				2.12
		Cost for 9 sqm = a+b+c+d+e				213.62
		Rate per sqm = a+b+c+d+e/9				23.74
					<b>say</b>	<b><u>23.70</u></b>
<b>15.11</b>	<b>1900, 500</b>	<b>Periodical Renewal to existing bituminous surface</b>				
		<b>1 Open graded Premix carpet 20 mm thick</b>				
		Unit = sqm				
		(i) Tack coat				
		With bituminous Emulsion (RS-1)				
		Rates as per item 5.2 (ii)	sqm		23.30	
		(ii) Pre-mix carpet using bituminous (viscosity grade/ modified bitumen) binder				
		Rates as per item No. 5.8 as relevant	sqm		336.80	
		Or				
		(iii) Premix carpet using bitumen Emulsion				
		Rates as per item No. 5.9	sqm		355.90	
		(iv) Seal coat Type A, B or C				
		Rates as per item No. 5.11	sqm		As applicable	
		<b>2 Surface dressing single coat/first coat or 2nd coat</b>				
		Rates as per item No. 5.5	sqm		156.60	

**CHAPTER-16**  
**Pile Foundation & Well Foundation for Bridge**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
16.1	1100, 1200, 1500, 1700	Bored Cast-in-Situ piles 1200 mm dia , M-25 grade RCC pile excluding reinforcement complete as per drawing and technical specification and removal of excavated earth with all lifts and lead upto 1000 m as per MoRT&H specification clause 1100, 1200, 1500, 1700.				
		<b>Unit = meter</b>				
		<b><u>Sub-Analysis for R.C.C grade M 25</u></b>				
		<b>Unit = cum</b>				
		<b>Taking output = 15 cum</b>				
		<b>a) Material</b>				
		Cement	tonne	5.99	6797.00	40714.03
		Fine sand	cum	6.75	740.00	4995.00
		40 mm Aggregate	cum	5.40	4236.00	22874.40
		20 mm Aggregate	cum	5.40	4374.00	23619.60
		10 mm Aggregate	cum	2.70	4269.00	11526.30
		Admixture	kg	21.60	42.00	907.20
		<b>b) Labour</b>				
		Mate	day	1.20	391.00	469.20
		Mason(1st class)	day	1.80	512.00	921.60
		Mazdoor (unskilled)	day	25.95	391.00	10146.45
		Bhisti	day	4.05	391.00	1583.55
		<b>c) Machinery</b>				
		Concrete mixer 0.40/0.28 cum capacity	hour	6.00	215.00	1290.00
		Generator 33 KVA	hour	6.00	252.00	1512.00
		Light crane 3 t capacity for lohandling tremie pipe	hour	6.00	560.00	3360.00
		<b>Cost for 15.00 cum =</b>			<b>123919.33</b>	
		<b>Per Cum Basic Cost of Labour, Material &amp; Machinery = (a+b+c)/ 15</b>			<b>8261.30</b>	
		<b><u>Analysis for PILING</u></b>				
		<b>Unit = Metre</b>				
		<b>Taking output = 9 Metre of Pile</b>				
		<b>a) Materials</b>				
		Concrete Grade M25	cum	10.17	8261.30	84017.42
		Rate for concrete adopted same as for sub-analysis of item no. 16.1 above				
		Bentonite	kg	385.00	3.20	1232.00
		<b>b) Labour</b>				
		Mate	day	0.18	391.00	70.38
		Mazdoor(unskilled)	day	4.50	391.00	1759.50
		<b>c) Machinery( for boring and construction )</b>				
		Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00
		Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00
		Front loader 1 cum bucket capacity.	hour	0.50	1030.00	515.00
		Tipper 5.5 cum capacity for disposal of muck	hour	0.50	374.00	187.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				26473.34
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				22640.50
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,735.77</b>

**CHAPTER-16**  
**Pile Foundation & Well Foundation for Bridge**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Cost for 9 m = a+b+c+d+d+e+f				175312.91
		Rate per metre (a+b+c+d+e+f)/9				19479.21
					<b>say</b>	<b><u>19479.20</u></b>
16.2	1100, 1200, 1500, 1700	Bored Cast-in-Situ piles 1000 mm dia , M-25 grade RCC pile excluding reinforcement complete as per drawing and technical specification and removal of excavated earth with all lifts and lead upto 1000 m as per MoRT&H specification clause 1100, 1200, 1500, 1700.				
		<i>Unit = meter</i>				
		<i>Taking output = 10 m of pile</i>				
		<b>a) Materials</b>				
		Concrete Grade M25	cum	7.85	8261.30	64851.21
		Rate for concrete adopted same as for sub-analysis of item no. 16.1 above				
		Bentonite	kg	350.00	3.20	1120.00
		<b>b) Labour</b>				
		Mate	day	0.16	391.00	62.56
		Mazdoor(unskilled)	day	4.00	391.00	1564.00
		<b>c) Machinery(for boring and construction)</b>				
		Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00
		Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00
		Front loader 1 cum bucket capacity.	hour	0.40	1030.00	412.00
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.40	374.00	149.60
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				22299.76
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				19071.17
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,462.12</b>
		Cost for 10 m = a+b+c+d+d+e+f				147674.41
		Rate per metre (a+b+c+d+e+f)/10				14767.44
					<b>say</b>	<b><u>14767.40</u></b>
16.3	1100, 1200, 1500, 1700	Bored Cast-in-Situ piles 750 mm dia , M-25 grade RCC pile excluding reinforcement complete as per drawing and technical specification and removal of excavated earth with all lifts and lead upto 1000 m as per MoRT&H specification clause 1100, 1200, 1500, 1700.				
		<i>Unit = meter</i>				
		<i>Taking output = 15 m of pile</i>				
		<b>a) Materials</b>				
		Concrete Grade M25	cum	6.62	8261.30	54689.81
		Rate for concrete adopted same as for sub-analysis of item no. 16.1 above				
		Bentonite	kg	300.00	3.20	960.00
		<b>b) Labour</b>				
		Mate	day	0.14	391.00	54.74
		Mazdoor(unskilled)	day	3.50	391.00	1368.50
		<b>c) Machinery( for boring and construction )</b>				
		Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00



**CHAPTER-16**  
**Pile Foundation & Well Foundation for Bridge**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00
		Front loader 1 cum bucket capacity.	hour	0.30	1030.00	309.00
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.30	374.00	112.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on</b>				20031.29
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				17131.13
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,313.39</b>
		Cost for 15 m = a+b+c+d+d+e+f				132652.05
		<b>Rate per metre (a+b+c+d+e+f)/15</b>				8843.47
					<b>say</b>	<b><u>8843.50</u></b>
<b>16.4</b>	<b>1100, 1200, 1500, 1700</b>	<b>Bored Cast-in-Situ piles 600 mm dia , M-25 grade RCC pile excluding reinforcement complete as per drawing and technical specification and removal of excavated earth with all lifts and lead upto 1000 m as per MoRT&amp;H specification clause 1100, 1200, 1500, 1700.</b>				
		<i>Unit = meter</i>				
		<i>Taking output = 17 m of pile</i>				
		<b>a) Materials</b>				
		Concrete Grade M25	cum	4.80	8261.30	39654.24
		Rate for concrete adopted same as for sub-analysis of item no. 16.1 above				
		Bentonite	kg	275.00	3.20	880.00
		<b>b) Labour</b>				
		Mate	day	0.12	391.00	46.92
		Mazdoor(unskilled)	day	3.50	391.00	1368.50
		<b>c) Machinery( for boring and construction )</b>				
		Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00
		Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00
		Front loader 1 cum bucket capacity.	hour	0.30	1030.00	309.00
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.30	374.00	112.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				16814.54
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				14380.11
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,102.48</b>
		Cost for 17 m = a+b+c+d+d+e+f				111349.99
		<b>Rate per metre (a+b+c+d+e+f)/17</b>				6550.00
					<b>say</b>	<b><u>6550.00</u></b>
<b>16.5</b>	<b>1100, 1200, 1500, 1700</b>	<b>Bored Cast-in-Situ piles 500 mm dia , M-25 grade RCC pile excluding reinforcement complete as per drawing and technical specification and removal of excavated earth with all lifts and lead upto 1000 m as per MoRT&amp;H specification clause 1100, 1200, 1500, 1700.</b>				
		<i>Unit = meter</i>				
		<i>Taking output = 22 m of pile</i>				
		<b>a) Materials</b>				
		Concrete Grade M25	cum	4.32	8261.30	35688.82

**CHAPTER-16**  
**Pile Foundation & Well Foundation for Bridge**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Rate for concrete adopted same as for sub-analysis of item no. 16.1 above				
		Bentonite	kg	250.00	3.20	800.00
		<b>b) Labour</b>				
		Mate	day	0.10	391.00	39.10
		Mazdoor(unskilled)	day	3.25	391.00	1270.75
		<b>c) Machinery( for boring and construction )</b>				
		Hydraulic piling Rig with bentonite pump.	hour	6.00	6067.00	36402.00
		Light crane 3 t capacity for lowering reinforcement cage	hour	0.50	560.00	280.00
		Front loader 1 cum bucket capacity.	hour	0.30	1030.00	309.00
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.30	374.00	112.20
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				15931.63
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				13625.02
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,044.59</b>
		Cost for 22 m = a+b+c+d+d+e+f				105503.10
		<b>Rate per metre (a+b+c+d+e+f)/22</b>				4795.60
					<b>say</b>	<b><u>4795.60</u></b>
16.6	1200, 1500, 1700	<b>Providing and laying RCC with M-25 grade concrete in Well Curb including cost of centering &amp; shuttering, but excluding cost of reinforcement complete as per drawing and technical specification with all lifts and lead upto 1000 m as per MoRT&amp;H specification clause 1200, 1500, 1700.</b>				
		<b>Unit = cum</b>				
		<b>Taking output = 15 cum</b>				
		<b>a) Material</b>				
		Cement	tonne	6.05	6797.00	41121.85
		Fine sand	cum	6.75	740.00	4995.00
		20 mm Aggregate	cum	8.10	4374.00	35429.40
		10 mm Aggregate	cum	5.40	4269.00	23052.60
		<b>b) Labour</b>				
		Mate	day	1.20	391.00	469.20
		Mason (1st calss)	day	1.80	512.00	921.60
		Mazdoor(unskilled)	day	25.95	391.00	10146.45
		Bhisti	day	4.05	391.00	1583.55
		<b>c) Machinery</b>				
		Concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00
		Electric generator 33 KVA	hour	6.00	252.00	1512.00
		<b>d) Formwork for Well Curb @ 20.00 % on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				24104.33
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				30761.95
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				26308.19
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>2,016.96</b>
		Cost for 15 cum = a+b+c+d+e+f+g				203713.08

**CHAPTER-16**  
**Pile Foundation & Well Foundation for Bridge**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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Rate per cum = ( a+b+c+d+e+f+g)/15 13580.87

**say 13580.90**

- 16.7** 1200, 1500, 1700 Providing and laying RCC with M-20 grade concrete in Well Steining including cost of centering & shuttering, but excluding cost of reinforcement complete as per drawing and technical specification with all lifts and lead upto 1000 m as per MoRT&H specification clause 1200, 1500, 1700.

*Unit : cum*

*Taking Output = 15 cum*

**a) Material**

Cement	tonne	5.16	6797.00	35072.52
Fine sand	cum	6.75	740.00	4995.00
40 mm Aggregate	cum	5.40	4236.00	22874.40
20 mm Aggregate	cum	5.40	4374.00	23619.60
10 mm Aggregate	cum	2.70	4269.00	11526.30

**b) Labour**

Mate	day	1.20	391.00	469.20
Mason (1st class)	day	1.80	512.00	921.60
Mazdoor(unskilled)	day	29.95	391.00	11710.45
Bhisti	day	4.05	391.00	1583.55

**c) Machinery**

Concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00
Electric generator 33 KVA	hour	6.00	252.00	1512.00

**d) Formwork for Well Steining @ 10.00 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)** 11557.46

**e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)** 27040.99

**f) Contractor's profit @ 15 % on (a+b+c+d+e)** 23125.96

**g) Add Cess @ 1.00 % on (a+b+c+d+e+f)** **1,772.99**

cost of 15 cum = a+b+c+d+e+f+g 179072.03

Rate per cum (a+b+c+d+e+f+g)/15 11938.14

**say 11938.10**

- 16.8** 1200, 1500, 1700 Providing and laying cast-in-situ PCC with M-20 grade concrete with 10% extra cement in bottom plug of well with minimum cement content 363 Kg/m<sup>3</sup> as per drawing and technical specification with all lifts and lead upto 1000 m as per MoRT&H specification clause 1200, 1500, 1700.

*Unit = cum*

*Taking output = 15 cum*

**a) Material**

Cement including 10 % extra	tonne	5.45	6797.00	37043.65
Fine sand	cum	6.75	740.00	4995.00
40 mm Aggregate	cum	5.40	4236.00	22874.40

**CHAPTER-16**  
**Pile Foundation & Well Foundation for Bridge**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		20 mm Aggregate	cum	5.40	4374.00	23619.60
		10 mm Aggregate	cum	2.70	4269.00	11526.30
		Admixture	Kg	18.60	42.00	781.20
		<b>b) Labour</b>				
		Mate	day	1.20	391.00	469.20
		Mason(1st class)	day	1.80	512.00	921.60
		Mazdoor (unskilled)	day	25.95	391.00	10146.45
		Bhisti	day	4.05	391.00	1583.55
		<b>c) Machinery</b>				
		Concrete mixer (capacity 0.40/0.28 cum)	hour	6.00	215.00	1290.00
		Generator 33 KVA	hour	6.00	252.00	1512.00
		Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	560.00	3360.00
		Add extra for false steining required at the time of bottom plugging @ 5.00 % .				6006.15
		<b>d) Add GST (multiplying factor) @ 0.2127 on</b>				26827.66
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				22943.51
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,759.00</b>
		cost of 15 cum = a+b+c+d+e+f				177659.27
		<b>Rate per cum = (a+b+c+d+e+f)/15</b>				11843.95
					<b>say</b>	<b><u>11844.00</u></b>
<b>16.9</b>	<b>1200, 1500, 1700</b>	<b>Providing and laying cast-in-situ PCC with M-20 grade concrete in top plug of well as per drawing and technical specification with all lifts and lead upto 1000 m as per MoRTH specification clause 1200, 1500, 1700.</b>				
		<b>Unit = cum</b>				
		<b>Taking output = 15 cum</b>				
		<b>a) Material</b>				
		Cement including 10 % extra	tonne	5.16	6797.00	35072.52
		Fine sand	cum	6.75	740.00	4995.00
		40 mm Aggregate	cum	5.40	4236.00	22874.40
		20 mm Aggregate	cum	5.40	4374.00	23619.60
		10 mm Aggregate	cum	2.70	4269.00	11526.30
		<b>b) Labour</b>				
		Mate	day	1.20	391.00	469.20
		Mason(1st class)	day	1.80	512.00	921.60
		Mazdoor (unskilled)	day	25.95	391.00	10146.45
		Bhisti	day	4.05	391.00	1583.55
		<b>c) Machinery</b>				
		Concrete mixer (capacity 0.40/0.28 cum)	hour	6.00	215.00	1290.00
		Generator 33 KVA	hour	6.00	252.00	1512.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on</b>				24250.06

**CHAPTER-16**  
**Pile Foundation & Well Foundation for Bridge**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		e) Contractor's profit @ 15 % on (a+b+c+d)				20739.10
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				<b>1,590.00</b>
		cost of 15 cum = a+b+c+d+e+f				160589.78
		Rate per cum = (a+b+c+d+e+f)/15				10705.99
					<b>say</b>	<b><u>10706.00</u></b>
16.10	1200, 1500, 1700	Providing and laying RCC with M-25 grade concrete in well cap including the cost of centering & shuttering but excluding the cost of reinforcement as per drawing and technical specification with all lifts and lead upto 1000 m as per MoRT&H specification clause 1200, 1500, 1700.				
		<i>Unit : cum</i>				
		<i>Taking Output = 15 cum</i>				
		<b>a) Material</b>				
		Cement	tonne	6.05	6797.00	41121.85
		Fine sand	cum	6.75	740.00	4995.00
		20 mm Aggregate	cum	8.10	4374.00	35429.40
		10 mm Aggregate	cum	5.40	4269.00	23052.60
		<b>b) Labour</b>				
		Mate	day	1.20	391.00	469.20
		Mason (1st class)	day	1.80	512.00	921.60
		Mazdoor(unskilled)	day	25.95	391.00	10146.45
		Bhisti	day	4.05	391.00	1583.55
		<b>c) Machinery</b>				
		Concrete mixer (0.40/0.28 cum)	hour	6.00	215.00	1290.00
		Electric generator 33 KVA	hour	6.00	252.00	1512.00
		<b>d) Formwork for Well Cap @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery i.e. on (a+b+c)</b>				4519.56
		<b>e) Add GST (multiplying factor) @ 0.2127 on (a+b+c+d)</b>				26596.27
		<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				22745.62
		<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				<b>1,743.83</b>
		cost of 15 cum = a+b+c+d+e+f+g				176126.93
		Rate per cum (a+b+c+d+e+f+g)/15				11741.80
					<b>say</b>	<b><u>11741.80</u></b>

**CHAPTER-16**  
**Pile Foundation & Well Foundation for Bridge**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
16.11	1200	Sinking of wells of circular shape in all kinds of soil with or without water by all methods, other than pneumatic sinking including construction of cofferdams, wherever necessary including dressing for laying the well curbs, removal of underground snags, if any, such as logs, isolated boulders etc. encountered during sinking including use of Kentledge including supports, loading and unloading of weight etc.as per drawing and technical specification and removal of earths etc. with all lifts and lead upto 1000 m as per MoRT&H specification clause 1200.  <b>Rates may be taken from the relevant items of chapter - 12 for Highways and MDRs. Rates given in item no. 16.11 is for analysis purpose only.</b>				
16.12	1200, 1600, 1700 & 1900	<b>Supplying, fabricating and placing in position MS cutting edge of well curbs consisting of MS flats, plates, angles etc. complete including the cost of nuts and bolts as per drawing and technical specification with all lifts and lead upto 1000 m as per MoRT&amp;H specification clause 1200, 1600, 1700, 1900.</b>				
		<i>Unit = 1 MT</i>				
		<i>Taking output = 1 Tonne</i>				
		<b>a) Material</b>				
		Structural steel in plates, angles, etc including 5 per cent wastage	tonne	1.05	59530.00	62506.50
		Nuts & bolts	Kg	20.00	64.50	1290.00
		Electrodes, cutting gas and other consumables for fabrication @ 10 per cent of cost of (a)				6379.65
		<b>b) Labour</b>				
		Mate	day	1.32	391.00	516.12
		Fitter	day	5.50	447.00	2458.50
		Blacksmith	day	5.50	480.00	2640.00
		Welder	day	5.50	512.00	2816.00
		Mazdoor(unskilled)	day	16.50	391.00	6451.50
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				18091.89
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				15472.52
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>1,186.23</b>
		<b>Cost per Tonne (a+b+c+d+e)</b>				119808.92
						<b>say <u>119808.90</u></b>
16.13	2600	<b>Supplying and installing strip seal type Elastomeric expansion joint of approved design and make as per drawing and technical specification clause 2600 of MoRT&amp;H with all lifts and lead upto 1000 m.</b>				
		Unit = Metre				
		Taking ourtput = 1 Metre				
		<b>a) Material</b>				
		Strip seal joint	m	1.00	12,204.00	12,204.00

**CHAPTER-16**  
**Pile Foundation & Well Foundation for Bridge**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
		Add 5 per cent for supervision by manufacturer				610.20
		<b>b) Labour</b>				
		Mate	day	0.10	391.00	39.10
		Mazdoor (Skilled)	day	1.00	475.00	475.00
		Mazdoor (Unskilled)	day	0.50	391.00	195.50
		Mason (1st class)	day	0.50	512.00	256.00
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				2930.96
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				2506.61
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>192.17</b>
		Cost for 1.00 m = a+b+c+d+e				19,409.55
		<b>Rate per m = (a+b+c+d+e)/1</b>				<b>19,409.55</b>
					<b>say</b>	<b><u>19409.60</u></b>
16.14	2000	<b>Supplying, fitting &amp; fixing in position true to line &amp; level elastomeric bearing conforming to IRC : 83 (Part-II) Section IX complete including all accessories with additional steel fixtures as per drawings &amp; MoRT&amp;H technical specification clause 2000 with all lifts and lead upto 1000 m.</b>				
		Unit: one cubic centimetre				
		Taking out put = 11400 cu.cm				
		Considering an elastomeric bearing of size 47.50 x 30.00 x 8.00 Cm for this analysis.				
		<b>a) Material</b>				
		<b>Sub-Analysis of rate</b>				
		Steel	kg	1.00	59.53	59.53
		Add for machine charges including drilling holes @ 20.00 %				11.91
				<b>Total cost</b>	<b>71.44</b>	
		Steel fixtures	kg	68.00	71.44	4857.65
		Add for 8 nos studs (4 short & 4 long) @ 10.00 %				485.76
		<b>b) Add GST (multiplying factor) @ 0.2127 on (a)</b>				1136.54
		<b>c) Contractor's profit @ 15 % on (a+b)</b>				971.99
		<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				74.52
		cost for 11400 cu.cm of elastomeric bearing = a+b+c+d				7526.47
		<b>Rate per cu.cum of elastomeric bearing = (a+b+c+d)/11400</b>				0.66
					<b>say</b>	<b><u>0.70</u></b>
		<b>i. Cost of elastomeric bearing including fitting fixing</b>				
		(Rate as per item no. 12.10 of Chapter 12	cu.cm	1.00	1.60	1.60
		<b>ii. Cost for providing additional steel fixtures</b>	cu.cm	1.000	0.70	0.70
		<b>Cost per cu.cum including fixtures = (i+ii)</b>				2.30
					<b>say</b>	<b><u>2.30</u></b>

**CHAPTER-16**  
**Pile Foundation & Well Foundation for Bridge**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
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**Note**

1. Initial and Routine load test and Lateral load tests for piles may be done with the items available in the Chapter - 12 of the Highways & MDRs.
2. Sand can be either coarse or fine as required/ available. Here, provision of fine sand is considered only due to non-availability of coarse sand in Tripura. However, design of concrete dictates for use of coarse sand, then separate analysis may be taken as per site condition.



Government of Tripura  
Public Works Department



**ANALYSIS OF RATES**  
*for*  
**TRIPURA SCHEDULE OF RATES**  
*for*  
**ROAD & BRIDGE WORKS**  
**(PART-III)**  
*for*  
**Miscellaneous items for**  
**Roads, Timber Bridges,**  
**River training works.**  
**Year:- 2023**

Published By: The Chief Engineer, PWD(R&B), Agartala, Tripura

**MISCELLANEOUS-1  
DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
<b>M1.1</b>	<b>Dismantling of Brick soling</b> Dismantling of brick soling, stacking serviceable materials and unserviceable materials separately with all lifts and upto a lead of 1000 m as per MoRD Technical Specification Clause 202.					
	<b>I (I) By Manual Means</b> <i>Unit = cum</i> <i>Taking output = 1 cum</i>					
	<b>a) Labour</b>					
	Mate	day	0.06	391.00	23.46	L-19
	Mazdoor(unskilled)	day	1.50	391.00	586.50	L-20
	<b>b) Machinery</b>					
	Tractor with trolley	hour	0.38	237.00	90.06	P&M-076
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				148.89	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				127.34	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				9.76	
	<b>Rate per cum = (a+b+c+d+e)/1.00</b>				986.01	
				<b>say</b>	<b><u>986.00</u></b>	
	<b>II (II) By Mechanical Means</b> <i>Unit = cum</i> <i>Taking output = 60 cum</i>					
	<b>a) Labour</b>					
	Mate	day	0.80	391.00	312.80	L-19
	Mazdoor(unskilled)	day	20.00	391.00	7820.00	L-20
	<b>b) Machinery</b>					
	Front end loader 1 cum bucket capacity	hour	6.00	920.00	5520.00	P&M-030
	Tractor with trolley	hour	18.00	237.00	4266.00	P&M-076
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				3811.33	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				3259.52	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				249.90	
	Cost for 60 cum = a+b+c+d+e				25239.54	
	<b>Rate per cum = (a+b+c+d+e)/60</b>				420.66	
				<b>say</b>	<b><u>420.70</u></b>	
<b>M1.2</b>	<b>Dismantling of Brick soling</b> Dismantling of brick soling, stacking serviceable materials and unserviceable materials separately with all lifts and upto a lead of 500 m by manual means as per MoRD Technical Specification Clause 202.					
	<b>I (I) By Manual Means</b> <i>Unit = cum</i> <i>Taking output = 1 cum</i>					
	<b>a) Labour</b>					
	Mate	day	0.06	391.00	23.46	L-19
	Mazdoor(unskilled)	day	1.50	391.00	586.50	L-20
	<b>b) Add GST (multiplying factor) = 0.2127 on (a)</b>				129.74	
	<b>c) Contractor's profit = 15 % on (a+b)</b>				110.95	
	<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				8.51	
	<b>Rate per cum = (a+b+c+d)/1.00</b>				859.16	
				<b>say</b>	<b><u>859.20</u></b>	
<b>M1.3</b>	<b>Charges for Brick soling</b>					

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
i.	i. Laying brick soling on prepared subgrade with brick on edge (excluding the cost of bricks but including the cost of binding materials) according to lines, grades and cross-section shown on the drawing, filling joints with sand , watering and rolling the same with three wheeled road roller 80-100 kN as per MoRD Technical Specification Clause 412.					
	<b>Unit = sqm</b>					
	<b>Taking output = 150 sqm</b>					
	<b>a) Labour</b>					
	Mate	day	0.52	391.00	203.32	L-19
	Mazdoor (unskilled)	day	10.00	391.00	3910.00	L-20
	Mason(1st class)	day	3.00	512.00	1536.00	L-17
	<b>b) Machinery</b>					
	Three wheel 80-100 KN static roller @ 150 sqm per hour	hour	1.00	392.00	392.00	P&M-064
	Water tanker 6 KL capacity	hour	1.00	200.00	200.00	P&M-084
	<b>c) Material</b>					
	Fine sand	cum	5.66	590.00	3339.40	M-175
	Water	KL	6.00	133.00	798.00	M-202
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				2207.55	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				1887.94	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				144.74	
	Cost for 150 sqm = a+b+c+d+e+f				14618.96	
	<b>Rate per sqm = (a+b+c+d+e+f)/150</b>				97.46	
				<b>say</b>	<b><u>97.50</u></b>	
ii.	ii. Laying flat brick soling on prepared subgrade (excluding the cost of bricks but including the cost of binding materials) according to lines, grades and cross-section shown on the drawing, filling joints with Earth, free from clay with a Plasticity Index not exceeding 6, watering and rolling the same with three wheeled road roller 80-100 kN as per MoRD Technical Specification Clause 412.					
	<b>Unit = sqm</b>					
	<b>Taking output = 150 sqm</b>					
	<b>a) Labour</b>					
	Mate	day	0.44	391.00	172.04	L-19
	Mazdoor (unskilled)	day	8.00	391.00	3128.00	L-20
	Mason(1st class)	day	3.00	512.00	1536.00	L-17
	<b>b) Machinery</b>					
	Three wheel 80-100 KN static roller = 150 sqm per hour	hour	1.00	392.00	392.00	P&M-064
	Water tanker 6 KL capacity	hour	1.00	200.00	200.00	P&M-084
	<b>c) Material</b>					
	Earth, free from clay with a Plasticity Index not exceeding 6.	cum	3.396	166.50	565.43	M-086
	Water	KL	3.60	133.00	478.80	M-202
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				1376.65	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				1177.34	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				90.26	
	Cost for 150 sqm = a+b+c+d+e+f				9116.53	
	<b>Rate per sqm = (a+b+c+d+e+f)/150</b>				60.78	
				<b>say</b>	<b><u>60.80</u></b>	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
iii.	iii. Laying brick edging on prepared subgrade (excluding the cost of bricks but including the cost of binding materials) according to lines, grades and cross-section shown on the drawing, filling joints with Earth, free from clay with a Plasticity Index not exceeding 6, watering and rolling the same with three wheeled road roller 80-100 kN as per MoRD Technical Specification Clause 412.					
	<b>Unit = m</b>					
	<b>Taking output = 10 m</b>					
	<b>a) Labour</b>					
	Mate	day	0.02	391.00	7.82	L-19
	Mazdoor (unskilled)	day	0.30	391.00	117.30	L-20
	Mason(1st class)	day	0.24	512.00	122.88	L-17
	<b>b) Machinery</b>					
	Three wheel 80-100 KN static roller @ 150 sqm per hour	hour	0.01	392.00	3.92	P&M-064
	Water tanker 6 KL capacity	hour	0.01	200.00	2.00	P&M-084
	<b>c) Material</b>					
	Earth, free from clay with a Plasticity Index not exceeding 6.	cum	0.04	166.50	6.66	M-086
	Water	KL	0.04	133.00	5.32	M-202
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				56.56	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				48.37	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				3.71	
	Cost for 10 m = a+b+c+d+e+f				374.53	
	<b>Rate per m = (a+b+c+d+e+f)/10</b>				37.45	
				<b>say</b>	<b><u>37.50</u></b>	
iv.	iv. Laying brick edging laid lengthwise on prepared subgrade (excluding the cost of bricks but including the cost of binding materials) according to lines, grades and cross-section shown on the drawing, filling joints with Earth, free from clay with a Plasticity Index not exceeding 6, watering and rolling the same with three wheeled road roller 80-100 kN as per MoRD Technical Specification Clause 412.					
	<b>Unit = m</b>					
	<b>Taking output = 10 m</b>					
	<b>a) Labour</b>					
	Mate	day	0.01	391.00	3.91	L-19
	Mazdoor (unskilled)	day	0.15	391.00	58.65	L-20
	Mason(1st class)	day	0.10	512.00	51.20	L-17
	<b>b) Machinery</b>					
	Three wheel 80-100 KN static roller @ 150 sqm per hour	hour	0.005	392.00	1.96	P&M-064
	Water tanker 6 KL capacity	hour	0.005	200.00	1.00	P&M-084
	<b>c) Material</b>					
	Earth, free from clay with a Plasticity Index not exceeding 6.	cum	0.02	166.50	3.33	M-086
	Water	KL	0.02	133.00	2.66	M-202
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				26.10	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				22.32	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1.71	
	Cost for 10 m = a+b+c+d+e+f				172.84	
	<b>Rate per m = (a+b+c+d+e+f)/10</b>				17.28	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
				<i>say</i>	<u>17.30</u>	
<b>M1.4</b>	<b>Labour charge for Breaking of jhama bats / jhama bricks / 1st class bricks.</b>					
	Breaking of jhama bats/ jhama bricks/ 1st class bricks (including bigger lumps) into metal/ chips /aggregates and stacking serviceable materials and unserviceable materials separately as per direction of the Engineer-in-charge with all lifts and upto a lead of 100 m.					
	<b>Unit = cum</b>					
	<b>Taking output = 1 cum.</b>					
i.	<b>Required sizes for filter media as per MoRD Technical Specification Clause 1204.3.8.</b>					
	<b>a) Labour</b>					
	Mate	day	0.10	391.00	39.10	L-19
	Mazdoor(unskilled)	day	2.45	391.00	957.95	L-20
	<b>b) Add GST (multiplying factor) = 0.2127 on (a)</b>				212.07	
	<b>c) Contractor's profit = 15 % on (a+b)</b>				181.37	
	<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				13.90	
	<b>Rate per cum = (a+b+c+d)/1.00</b>				1404.40	
				<b>say</b>	<b><u>1404.40</u></b>	
ii.	<b>ii. Required sizes for GSB (53 mm to 0.075 mm) as per MoRD Technical Specification Clause 401.</b>					
	<b>a) Labour</b>					
	Mate	day	0.11	391.00	43.01	L-19
	Mazdoor(unskilled)	day	2.65	391.00	1036.15	L-20
	<b>b) Add GST (multiplying factor) = 0.2127 on (a)</b>				229.54	
	<b>c) Contractor's profit = 15 % on (a+b)</b>				196.30	
	<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				15.05	
	<b>Rate per cum = (a+b+c+d)/1.00</b>				1520.05	
				<b>say</b>	<b><u>1520.10</u></b>	
iii.	<b>iii. Required sizes for WBM Grading 2 (63 mm to 0.075 mm) as per MoRD Technical Specification Clause 405.</b>					
	<b>a) Labour</b>					
	Mate	day	0.10	391.00	39.10	L-19
	Mazdoor(unskilled)	day	2.50	391.00	977.50	L-20
	<b>b) Add GST (multiplying factor) = 0.2127 on (a)</b>				216.23	
	<b>c) Contractor's profit = 15 % on (a+b)</b>				184.92	
	<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				14.18	
	<b>Rate per cum = (a+b+c+d)/1.00</b>				1431.93	
				<b>say</b>	<b><u>1431.90</u></b>	
iv.	<b>iv. Required sizes for WBM Grading 3 (53 mm to 0.075 mm) as per MoRD Technical Specification Clause 405.</b>					
	<b>a) Labour</b>					
	Mate	day	0.11	391.00	43.01	L-19
	Mazdoor(unskilled)	day	2.65	391.00	1036.15	L-20
	<b>b) Add GST (multiplying factor) = 0.2127 on (a)</b>				229.54	
	<b>c) Contractor's profit = 15 % on (a+b)</b>				196.30	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				15.05	
	<b>Rate per cum = (a+b+c+d)/1.00</b>				1520.05	
				<b>say</b>	<b><u>1520.10</u></b>	
<b>M1.5</b>	<b>Charge for construction of Granular Sub-base</b>					
	Charge for Construction of granular sub-base by providing well graded material (53 mm to 0.075 mm Jhama Brick Aggregate , Grading-I), spreading in uniform layers with tractor with attachments on prepared surface, mixing by mix in place method at OMC, applying and brooming sand to fill up the interstices of coarse aggregate, watering and compacting with smooth wheel roller to achieve the desired density, complete as per MoRD Technical Specification Clause 401.(excluding the cost of jhama aggregate which are available at site only).					
	<b>i. (i) For Grading-I Material</b>					
	<b>A (A) By Mix in Place Method</b>					
	<b>Unit = cum</b>					
	<b>Taking output = 300 cum</b>					
	<b>a) Labour</b>					
	Mate	day	0.48	391.00	187.68	L-19
	Mazdoor(skilled)	day	2.00	475.00	950.00	L-22
	Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-20
	<b>b) Machinery</b>					
	Three wheel 80-100 Kn static roller @ 10 cum per hour	hour	30.00	392.00	11760.00	P&M-064
	Tractor with Rotavator 25 cum	hour	12.00	320.00	3840.00	P&M-077
	Water tanker 6 KL capacity	hour	5.00	200.00	1000.00	P&M-084
	<b>c) Material</b>					
	Well graded Granular sub-base Material as per table 400.1					
	53 mm to 9.5 mm = 85 % (free of cost available at site)	cum	326.24		0.00	
	Fine Sand = 15 %	cum	57.56	590.00	33960.40	M-175
	Water	KL	30.00	133.00	3990.00	M-202
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				12676.51	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				10841.19	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				831.16	
	Cost for 300 cum = a+b+c+d+e+f				83946.94	
	<b>Rate per cum = (a+b+c+d+e+f)/300</b>				279.82	
				<b>say</b>	<b><u>279.80</u></b>	
<b>M1.6</b>	<b>Charge for construction of Water Bound Macadam Sub-Base / Base</b>					
	<b>1 (1) WBM Grading-2</b>					

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
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Charge for laying, spreading and compacting 63 mm to 0.075 mm jhama brick aggregates to water bound macadam specification including spreading in uniform thickness, hand packing rolling with three wheel roller 80-100 kN in stages to proper grade and camber, applying and brooming binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density Grading 2 as per MoRD Technical Specification Clause 405.(excluding the cost of jhama aggregate which are available at site only).

**1.A (A) By Manual Means***Unit = cum**Taking output = 360 cum***a) Labour**

Mate	day	10.08	391.00	3941.28	L-19
Mazdoor(skilled)	day	2.00	475.00	950.00	L-22
Mazdoor(uns skilled)	day	250.00	391.00	97750.00	L-20

**b) Machinery**

Three wheel 80-100 Kn static roller @ 8 cum per hour	hour	45.00	392.00	17640.00	P&M-065
Water tanker 6 KL capacity	hour	24.00	200.00	4800.00	P&M-084

**c) Material****Refer Tables 400.7,8,9 and 10)****Aggregate well graded granular sub-base**

Grading-II, 63 mm to 0.075 mm @ 1.11 cum per 10 sqm for compacted thickness of 75 mm (free of cost available at site)	cum	532.80		0.00	
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**Binding material**

Binding Material (earth) @ 0.06 cum per 10 sqm for Grading-II material	cum	28.80	17.10	492.48	M-038
Water	KL	144.00	133.00	19152.00	M-202

**d) Add GST (multiplying factor) = 0.2127 on (a+b+c)****e) Contractor's profit = 15 % on (a+b+c+d)****f) Add Cess @ 1.00 % on (a+b+c+d+e)**

Cost for 360 cum = a+b+c+d+e+f 203853.62

**Rate per cum = (a+b+c+d+e+f)/360** 566.26**say 566.30****1.B (B) By Mechanical Means***Unit = cum**Taking output = 360 cum***a) Labour**

Mate	day	0.68	391.00	265.88	L-19
Mazdoor(skilled)	day	2.00	475.00	950.00	L-22
Mazdoor(uns skilled)	day	15.00	391.00	5865.00	L-20

**b) Machinery**

Tractor with rotavator	hour	14.40	320.00	4608.00	P&M-077
Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	392.00	17640.00	P&M-065
Water tanker 6 KL capacity	hour	24.00	200.00	4800.00	P&M-084

**c) Material****Refer Tables 400.7,8,9 and 10)****Aggregate well graded granular sub-base**

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Grading-II, 63 mm to 0.075 mm @ 1.11 cum per 10 sqm for compacted thickness of 75 mm (free of cost available at site)	cum	532.80		0.00	
	<b>Binding material</b>					
	Binding Material @ 0.06cum per 10 sqm for Grading-II material	cum	28.80	17.10	492.48	M-038
	Water	KL	144.00	133.00	19152.00	M-202
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				11437.59	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				9781.64	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				749.93	
	Cost for 360 cum = a+b+c+d+e+f				75742.52	
	<b>Rate per cum = (a+b+c+d+e+f)/360</b>				210.40	
				<b>say</b>	<b><u>210.40</u></b>	
<b>2</b>	<b>(2) WBM Grading-III</b>					
	Providing, laying, spreading and compacting 53 mm to 0.075 mm jhama brick aggregates to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with three wheel 80-100 kN static roller / vibratory roller in stages to proper grade and camber, applying and brooming and binding materials to fill up the interstices of coarse aggregate, watering and compacting to the required density as per MoRT&H Technical Specification Clause 404.					
<b>2.A</b>	<b>(A) By Manual Means</b>					
	<b>Unit = cum</b>					
	<b>Taking output = 360 cum</b>					
	<b>a) Labour</b>					
	Mate	day	10.08	391.00	3941.28	L-19
	Mazdoor(skilled)	day	2.00	475.00	950.00	L-22
	Mazdoor(unskilled)	day	250.00	391.00	97750.00	L-20
	<b>b) Machinery</b>					
	Three wheel 80-100 Kn static roller = 8 cum per hour	hour	45.00	392.00	17640.00	P&M-065
	Water tanker 6 KL capacity	hour	24.00	200.00	4800.00	P&M-084
	<b>c) Material</b>					
	<b>Refer Tables 400.7,8,9 and 10)</b>					
	<b>Aggregate</b>					
	Grading-III, 53 mm to 0.075 mm = 1.09 cum per 10 sqm for compacted thickness of 75 mm (free of cost available at site)	cum	523.20		0.00	
	<b>Binding material</b>					
	Binding Material = 0.06 cum per 10 sqm for Grading-III material	cum	28.80	17.10	492.48	M-038
	Water	KL	144.00	133.00	19152.00	M-202
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				30783.17	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				26326.34	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				2018.35	
	Cost for 360 cum = a+b+c+d+e+f				203853.62	
	<b>Rate per cum = (a+b+c+d+e+f)/360</b>				566.26	
				<b>say</b>	<b><u>566.30</u></b>	
<b>2.B</b>	<b>(B) By Mechanical Means</b>					
	<b>Unit = cum</b>					



**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	<b>Taking output = 360 cum</b>					
	<b>a) Labour</b>					
	Mate	day	0.68	391.00	265.88	L-19
	Mazdoor(skilled)	day	2.00	475.00	950.00	L-22
	Mazdoor(uns skilled)	day	15.00	391.00	5865.00	L-20
	<b>b) Machinery</b>					
	Tractor with rotavator	hour	14.40	320.00	4608.00	P&M-077
	Three wheel 80-100 KN static roller @ 8 cum per hour	hour	45.00	392.00	17640.00	P&M-065
	Water tanker 6 KL capacity	hour	24.00	200.00	4800.00	P&M-084
	<b>c) Material</b>					
	<b>Refer Tables 400.7,8,9 and 10)</b>					
	<b>Aggregate</b>					
	Grading-III, 53 mm to 0.075 mm @1.09 cum per 10 sqm for compacted thickness of 75 mm (free of cost available at site)	cum	523.20		0.00	
	<b>Binding material</b>					
	Binding Material @ 0.06 cum per 10 sqm for Grading-III material	cum	28.80	17.10	492.48	M-038
	Water	KL	144.00	133.00	19152.00	M-202
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>					
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>					
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>					
	Cost for 360 cum = a+b+c+d+e+f					75742.52
	<b>Rate per cum = (a+b+c+d+e+f)/360</b>					210.40
						<b>say</b> <u><b>210.40</b></u>

**M1.7 Mastic Asphalt waering course**

Providing and laying mastic asphalt wearing course with paving grade bitumen (IS 73 : 2013), 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 13.2 mm nominal size at the rate of 0.005 cum per sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of the surfaces is not less than 100° C, protruding 1 mm to 4 mm over mastic surface, all complete as per MoRT&H Technical Specification Clause 515.

**i. 25 mm thick****Unit = sqm****Taking output = 35.00 sqm (0.875 cum )****assuming a density of 2.3 tonnes/cum.=****2.0125 tonnes****a) Labour**

Mate	day	0.440	391.00	172.04	L-19
Mazdoor(uns killed)	day	10.00	391.00	3910.00	L-20
Mazdoor(skilled)	day	1.000	475.00	475.00	L-22

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	0.06	345.00	20.70	P&M-033
Air compressor 210 cfm	hour	0.06	210.00	12.60	P&M-001
Mastic cooker	hour	6.00	125.00	750.00	P&M-043
Bitumen boiler 1500 litres capacity	hour	6.00	198.00	1188.00	P&M-011
Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.00	237.00	237.00	P&M-076

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	<b>c) Material</b> Base mastic (without coarse aggregates) = 60 % Coarse aggregate (13.2 mm to 6.3 mm) = 40 %					
	<b>i) Bitumen (VG-30)</b> = 15% by weight of mix 2.0125 x 15.00/100 = 0.302	tonne	0.302	61186.00	18478.17	M-042
	<b>ii) Coarse Aggregate</b> iv) Crushed stone chipping 6.7 mm size 100% passing 11.2mm and retained on 2.36 mm = 40 per cent by weight of mix	cum	0.553	3972.90	2197.01	M-077
	<b>iii) Fine Aggregate</b> Crushed stone dust or grit passing 2.36mm and retained on 75 micron = 30 per cent by weight of mix = 2.0125 x 30/100 = 0.604 tonnes = 0.604/1.625 = 0.372	cum	0.372	2472.50	919.77	M-072
	<b>iv) Filler</b> Lime stone dust filler with calcium content not less than 80 per cent by weight = 15 per cent by weight of mix = 2.0125 x 15/100 = 0.302	tonne	0.302	3540.00	1069.08	M-128
	<b>v) Stone chips for skid resistance</b> Stone chips of 13.2 mm nominal = 0.005cum per 10 sqm = 35 x 0.005/10 = 0.018	cum	0.018	4325.50	77.86	M-190
	<b>vi) Bitumen (VG-30) for precoating</b> = 2 per cent by weight = 0.0175 x 1.456 x 2.0125/100 = 0.0005 MT	tonne	0.0005	61186.00	30.59	M-042
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				6282.70	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				5373.08	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				411.94	
	Cost for 35.00 sqm = a+b+c+d+e+f				41605.54	
	<b>Rate per sqm = (a+b+c+d+e+f)/35</b>				1188.73	
				<b>say</b>	<b><u>1189.00</u></b>	
ii.	<b>ii. 40 mm thick</b>  <b>Unit = sqm</b> <b>Taking output = 22.00 sqm (0.88 cum)</b> <b>assuming a density of 2.3 tonnes/cum. = 2.024 tonnes</b>					
	<b>a) Labour</b>					
	Mate	day	0.44	391.00	172.04	L-19
	Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-20
	Mazdoor(skilled)	day	1.00	475.00	475.00	L-22
	<b>b) Machinery</b>					
	Hydraulic broom = 1250 sqm per hour	hour	0.06	345.00	20.70	P&M-033
	Air compressor 210 cfm	hour	0.06	210.00	12.60	P&M-001
	Mastic cooker	hour	6.00	125.00	750.00	P&M-043
	Bitumen boiler 1500 litres capacity	hour	6.00	198.00	1188.00	P&M-011
	Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.10	237.00	260.70	P&M-076
	<b>c) Material</b> Base mastic (without coarse aggregates) = 60 % Coarse aggregate (13.2 mm to 6.3 mm) = 40 %					
	<b>i) Bitumen (VG-30)</b> = 15% by weight of mix 2.024 x 15.00/100 = 0.304	tonne	0.304	61186.00	18600.54	M-042
	<b>ii) Coarse Aggregate</b>					

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	iv) Crushed stone chipping 6.7 mm size 100% passing 11.2mm and retained on 2.36 mm = 40 per cent by weight of mix	cum	0.556	3972.90	2208.93	M-077
	<b>iii) Fine Aggregate</b> Crushed stone dust or grit passing 2.36mm and retained on 75 micron = 30 per cent by weight of mix = $2.024 \times$ $30/100 = 0.607$ tonnes = $0.607/1.625 =$ 0.374	cum	0.374	2252.60	842.47	M-072
	<b>iv) Filler</b> Lime stone dust filler with calcium content not less than 80 per cent by weight = 18 per cent by weight of mix = $2.024 \times 15/100 = 0.304$	tonne	0.304	3540.00	1076.16	M-128
	<b>v) Stone chips for skid resistance</b> Stone chips of 13.2 mm nominal = $0.005 \text{ cum per } 10 \text{ sqm} = 22 \times 0.005/10$ = 0.011	cum	0.011	4325.50	47.58	M-190
	<b>vi) Bitumen (VG-30) for pre-coating</b> = 2 per cent by weight = $0.0176 \times 1.456$ $\times 2.024/100 = 0.0005$ MT	tonne	0.0005	61186.00	30.59	M-042
	<b>d) Add GST (multiplying factor) =</b> <b>0.2127 on (a+b+c)</b>				6294.93	
	<b>e) Contractor's profit = 15 % on</b> <b>(a+b+c+d)</b>				5383.54	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				412.74	
	Cost for 22.00 sqm = a+b+c+d+e+f				41686.52	
	<b>Rate per sqm = (a+b+c+d+e+f)/22</b>				1894.84	
				<b>say</b>	<b><u>1895.00</u></b>	
iii.	<b>iii. 50 mm thick</b>					
	<b>Unit = sqm</b>					
	<b>Taking output = 18.00 sqm (0.90 cum)</b>					
	<b>assuming a density of 2.3 tonnes/cum. =</b>					
	<b>2.07 tonnes</b>					
	<b>a) Labour</b>					
	Mate	day	0.44	391.00	172.04	L-19
	Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-20
	Mazdoor(skilled)	day	1.00	475.00	475.00	L-22
	<b>b) Machinery</b>					
	Hydraulic broom = 1250 sqm per hour	hour	0.06	345.00	20.70	P&M-033
	Air compressor 210 cfm	hour	0.06	210.00	12.60	P&M-001
	Mastic cooker	hour	6.00	125.00	750.00	P&M-043
	Bitumen boiler 1500 litres capacity	hour	6.00	198.00	1188.00	P&M-011
	Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.15	237.00	272.55	P&M-076
	<b>c) Material</b>					
	Base mastic (without coarse aggregates) = 60 %					
	Coarse aggregate (13.2 mm to 6.3 mm) = 40 %					
	<b>i) Bitumen (VG-30)</b> = 15% by weight of mix $2.07 \times$ $15.00/100 = 0.311$	tonne	0.311	61186.00	19028.85	M-042
	<b>ii) Coarse Aggregate</b>					
	iv) Crushed stone chipping 6.7 mm size 100% passing 11.2mm and retained on 2.36 mm = 40 per cent by weight of mix	cum	0.569	3972.90	2260.58	M-077
	<b>iii) Fine Aggregate</b> Crushed stone dust or grit passing 2.36mm and retained on 75 micron = 30 per cent by weight of mix = $2.07 \times$ $30/100 = 0.621$ tonnes = $0.621/1.625 =$ 0.382	cum	0.382	2252.60	860.49	M-072

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	<b>iv) Filler</b>					
	Lime stone dust filler with calcium content not less than 80 per cent by weight = 15 per cent by weight of mix = $2.07 \times 15/100 = 0.311$	tonne	0.311	3540.00	1100.94	M-128
	<b>v) Stone chips for skid resistance</b>					
	Stone chips of 13.2 mm nominal = 0.005cum per 10 sqm = $18 \times 0.005/10 = 0.009$	cum	0.009	4325.50	38.93	M-190
	<b>vi) Bitumen (VG-30) for precoating</b>					
	= 2 per cent by weight = $0.018 \times 1.456 \times 2.07/100 = 0.0005$ MT	tonne	0.0005	61186.00	30.59	M-042
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				6406.79	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				5479.21	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				420.07	
	Cost for 18.00 sqm = a+b+c+d+e+f				42427.35	
	<b>Rate per sqm = (a+b+c+d+e+f)/18.00</b>				2357.07	
				<b>say</b>	<b><u>2357.00</u></b>	
<b>M1.8</b>	<b>Sanding</b>					
	Applying local sands to areas of road where bleeding of excess bitumen has occurred as per specification.					
	<b>Unit = sqm</b>					
	<b>Taking output = 3500 sqm(0.900 cum/2.07t)</b>					
	<b>a) Labour</b>					
	Mate	day	0.08	391.00	31.28	L-19
	Mazdoor (unskilled)	day	2.00	391.00	782.00	L-20
	<b>b) Material</b>					
	Fine Sand	cum	6.25	590.00	3687.50	M-175
	Add 5.00 % for wastage				225.04	0.00
	<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1005.18	
	<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				859.65	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				65.91	
	Cost for 3500 sqm = a+b+c+d+e				6656.56	
	<b>Rate per sqm = (a+b+c+d+e)/3500</b>				1.90	
				<b>say</b>	<b><u>1.90</u></b>	
<b>M1.9</b>	<b>laying Reinforced Cement Concrete Pipe NP3 as per design in single Row</b>					
	Laying reinforced cement concrete pipe NP3 for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding cost of pipes (available at site), excavation, protection works, backfilling, concrete and masonry works in head walls and parapets as per MoRD Technical specification Clause 1106.					
	<b>Unit = metre</b>					
	<b>Taking output = 7.50 metres ( 3 pipes of 2.5 m length each )</b>					
<b>A</b>	<b>A. 1200 mm dia</b>					
	<b>a) Labour</b>					
	Mate	day	0.14	391.00	54.74	L-19
	Mason (1st Class)	day	0.50	512.00	256.00	L-17
	Mazdoor (unskilled)	day	3.00	391.00	1173.00	L-20
	<b>b) Material</b>					
	Sand	cum	0.05	740.00	37.00	M-174

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Cement	tonne	0.07	6797.00	475.79	M-054
	c) Add GST (multiplying factor) = 0.2127 on (a+b)				424.66	
	d) Contractor's profit = 15 % on (a+b+c)				363.18	
	e) Add Cess @ 1.00 % on (a+b+c+d)				27.84	
	Cost for 7.50 metres = a+b+c+d+e				2812.21	
	Rate per metre = (a+b+c+d+e)/7.50				374.96	
				<b>say</b>	<b><u>375.00</u></b>	
<b>B</b>	<b>B. 1000 mm dia</b>					
	a) Labour					
	Mate	day	0.09	391.00	35.19	L-19
	Mason (1st Class)	day	0.25	512.00	128.00	L-17
	Mazdoor (unskilled)	day	2.00	391.00	782.00	L-20
	b) Material					
	Sand	cum	0.04	740.00	29.60	M-174
	Cement	tonne	0.03	6797.00	203.91	M-054
	c) Add GST (multiplying factor) = 0.2127 on (a+b)				250.71	
	d) Contractor's profit = 15 % on (a+b+c)				214.41	
	e) Add Cess @ 1.00 % on (a+b+c+d)				16.44	
	Cost for 7.50 metres = a+b+c+d+e				1660.26	
	Rate per metre = (a+b+c+d+e)/7.50				221.37	
				<b>say</b>	<b><u>221.40</u></b>	
<b>C</b>	<b>C. 750 mm dia</b>					
	a) Labour					
	Mate	day	0.05	391.00	19.55	L-19
	Mason (1st Class)	day	0.15	512.00	76.80	L-17
	Mazdoor (unskilled)	day	1.20	391.00	469.20	L-20
	b) Material					
	Sand	cum	0.02	740.00	14.80	M-174
	Cement	tonne	0.02	6797.00	135.94	M-054
	c) Add GST (multiplying factor) = 0.2127 on (a+b)				152.35	
	d) Contractor's profit = 15 % on (a+b+c)				130.30	
	e) Add Cess @ 1.00 % on (a+b+c+d)				9.99	
	Cost for 7.50 metres = a+b+c+d+e				1008.93	
	Rate per metre = (a+b+c+d+e)/7.50				134.52	
				<b>say</b>	<b><u>134.50</u></b>	
<b>D</b>	<b>D. 600 mm dia</b>					
	a) Labour					
	Mate	day	0.04	391.00	15.64	L-19
	Mason (1st Class)	day	0.12	512.00	61.44	L-17
	Mazdoor (unskilled)	day	0.96	391.00	375.36	L-20
	b) Material					
	Sand	cum	0.0192	740.00	14.21	M-174
	Cement	tonne	0.014	6797.00	95.16	M-054
	c) Add GST (multiplying factor) = 0.2127 on (a+b)				119.50	
	d) Contractor's profit = 15 % on (a+b+c)				102.20	
	Cost for 7.50 metres = a+b+c+d+e				783.50	
	Rate per metre = (a+b+c+d+e)/7.50				104.47	
				<b>say</b>	<b><u>104.50</u></b>	
<b>M1.10</b>	<b>Laying Reinforced Cement Concrete Pipe NP3 as per design in Double Row</b>					

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.	
	Laying reinforced cement concrete pipe NP3 for culverts on first class bedding of granular material in Double row including fixing collar with cement mortar 1:2 but excluding cost of pipes (available at site), excavation, protection works, backfilling, concrete and masonry works in head walls and parapets as per MoRD Technical specification Clause 1106.						
	<b>Unit = metre</b>						
	<b>Taking output = 7.50 metres ( 6 pipes of 2.5 m length each in two rows)</b>						
<b>A</b>	<b>A. 1200 mm dia</b>						
	<b>a) Labour</b>						
	Mate	day	0.34	391.00	132.94	L-19	
	Mason (1st Class)	day	1.20	512.00	614.40	L-17	
	Mazdoor (unskilled)	day	7.20	391.00	2815.20	L-20	
	<b>b) Material</b>						
	Sand	cum	0.11	740.00	81.40	M-174	
	Cement	tonne	0.14	6797.00	951.58	M-054	
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>						
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>						
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						
	Cost for 7.50 metres = a+b+c+d+e					6473.02	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>					863.07	
						<b>say</b>	<b><u>863.10</u></b>
<b>B</b>	<b>B. 1000 mm dia</b>						
	<b>a) Labour</b>						
	Mate	day	0.22	391.00	86.02	L-19	
	Mason (1st Class)	day	0.60	512.00	307.20	L-17	
	Mazdoor (unskilled)	day	4.80	391.00	1876.80	L-20	
	<b>b) Material</b>						
	Sand	cum	0.08	740.00	59.20	M-174	
	Cement	tonne	0.06	6797.00	407.82	M-054	
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>						
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>						
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						
	Cost for 7.50 metres = a+b+c+d+e					3855.26	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>					514.03	
						<b>say</b>	<b><u>514.00</u></b>
<b>C</b>	<b>C. 750 mm dia</b>						
	<b>a) Labour</b>						
	Mate	day	0.11	391.00	43.01	L-19	
	Mason (1st Class)	day	0.30	512.00	153.60	L-17	
	Mazdoor (unskilled)	day	4.80	391.00	1876.80	L-20	
	<b>b) Material</b>						
	Sand	cum	0.08	740.00	59.20	M-174	
	Cement	tonne	0.06	6797.00	407.82	M-054	
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>						
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>						
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						
	Cost for 7.50 metres = a+b+c+d+e					3578.33	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>					477.11	
						<b>say</b>	<b><u>477.10</u></b>
<b>D</b>	<b>D. 600 mm dia</b>						
	<b>a) Labour</b>						
	Mate	day	0.09	391.00	35.19	L-19	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Mason (1st Class)	day	0.24	512.00	122.88	L-17
	Mazdoor (unskilled)	day	3.84	391.00	1501.44	L-20
	<b>b) Material</b>					
	Sand	cum	0.060	740.00	44.40	M-174
	Cement	tonne	0.050	6797.00	339.85	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				434.71	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				371.77	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				28.50	
	Cost for 7.50 metres = a+b+c+d+e				2878.74	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>				383.83	
				<b>say</b>	<b><u>383.80</u></b>	
<b>M1.11</b>	<b>Laying Reinforced Cement Concrete Pipe NP2 as per design in single Row</b>					
	Laying reinforced cement concrete pipe NP2 for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding cost of pipes (available at site), excavation, protection works, backfilling, concrete and masonry works in head walls and parapets as per MoRD Technical specification Clause 1106.					
	<b>Unit = metre</b>					
	<b>Taking output = 7.50 metres ( 3 pipes of 2.5 m length each )</b>					
<b>A</b>	<b>A. 1200 mm dia</b>					
	<b>a) Labour</b>					
	Mate	day	0.14	391.00	54.74	L-19
	Mason (1st Class)	day	0.50	512.00	256.00	L-17
	Mazdoor (unskilled)	day	3.00	391.00	1173.00	L-20
	<b>b) Material</b>					
	Sand	cum	0.05	740.00	37.00	M-174
	Cement	tonne	0.07	6797.00	475.79	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				424.66	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				363.18	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				27.84	
	Cost for 7.50 metres = a+b+c+d+e				2812.21	
	<b>Rate per metre= (a+b+c+d+e)/7.50</b>				374.96	
				<b>say</b>	<b><u>375.00</u></b>	
<b>B</b>	<b>B. 900 mm dia</b>					
	<b>a) Labour</b>					
	Mate	day	0.09	391.00	35.19	L-19
	Mason (1st Class)	day	0.25	512.00	128.00	L-17
	Mazdoor (unskilled)	day	2.00	391.00	782.00	L-20
	<b>b) Material</b>					
	Sand	cum	0.04	740.00	29.60	M-174
	Cement	tonne	0.03	6797.00	203.91	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				250.71	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				214.41	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				16.44	
	Cost for 7.50 metres = a+b+c+d+e				1660.26	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>				221.37	
				<b>say</b>	<b><u>221.40</u></b>	
<b>C</b>	<b>C. 600 mm dia</b>					
	<b>a) Labour</b>					
	Mate	day	0.05	391.00	19.55	L-19

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Mason (1st Class)	day	0.15	512.00	76.80	L-17
	Mazdoor (unskilled)	day	1.20	391.00	469.20	L-20
	<b>b) Material</b>					
	Sand	cum	0.02	740.00	14.80	M-174
	Cement	tonne	0.02	6797.00	135.94	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				152.35	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				130.30	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				9.99	
	Cost for 7.50 metres = a+b+c+d+e				1008.93	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>				134.52	
					<b>say</b>	<b><u>134.50</u></b>
<b>D</b>	<b>D. 450 mm dia</b>					
	<b>a) Labour</b>					
	Mate	day	0.04	391.00	15.64	L-19
	Mason (1st Class)	day	0.12	512.00	61.44	L-17
	Mazdoor (unskilled)	day	0.96	391.00	375.36	L-20
	<b>b) Material</b>					
	Sand	cum	0.0192	740.00	14.21	M-174
	Cement	tonne	0.014	6797.00	95.16	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				119.50	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				102.20	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				7.83	
	Cost for 7.50 metres = a+b+c+d+e				791.33	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>				105.51	
					<b>say</b>	<b><u>105.50</u></b>
<b>E</b>	<b>E. 300 mm dia</b>					
	<b>a) Labour</b>					
	Mate	day	0.03	391.00	11.73	L-19
	Mason (1st Class)	day	0.10	512.00	51.20	L-17
	Mazdoor (unskilled)	day	0.77	391.00	301.07	L-20
	<b>b) Material</b>					
	Sand	cum	0.0154	740.00	11.40	M-174
	Cement	tonne	0.012	6797.00	81.56	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				97.20	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				83.12	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				6.37	
	Cost for 7.50 metres = a+b+c+d+e				643.65	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>				85.82	
					<b>say</b>	<b><u>85.80</u></b>
<b>M1.12</b>	<b>Laying Reinforced Cement Concrete Pipe NP2 as per design in Double Row</b>					
	Laying reinforced cement concrete pipe NP2 for culverts on first class bedding of granular material in Double row including fixing collar with cement mortar 1:2 but excluding cost of pipes (available at site), excavation, protection works, backfilling, concrete and masonry works in head walls and parapets as per MoRD Technical specification Clause 1106.					
	<b>Unit = metre</b>					
	<b>Taking output = 7.50 metres ( 6 pipes of 2.5 m length each in two rows)</b>					
<b>A</b>	<b>A. 1200 mm dia</b>					
	<b>a) Labour</b>					
	Mate	day	0.34	391.00	132.94	L-19



**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Mason (1st Class)	day	1.20	512.00	614.40	L-17
	Mazdoor (unskilled)	day	7.20	391.00	2815.20	L-20
	<b>b) Material</b>					
	Sand	cum	0.11	740.00	81.40	M-174
	Cement	tonne	0.14	6797.00	951.58	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				977.47	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				835.95	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				64.09	
	Cost for 7.50 metres = a+b+c+d+e				6473.02	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>				863.07	
					<b>say</b>	<b><u>863.10</u></b>
<b>B</b>	<b>B. 900 mm dia</b>					
	<b>a) Labour</b>					
	Mate	day	0.22	391.00	86.02	L-19
	Mason (1st Class)	day	0.60	512.00	307.20	L-17
	Mazdoor (unskilled)	day	4.80	391.00	1876.80	L-20
	<b>b) Material</b>					
	Sand	cum	0.08	740.00	59.20	M-174
	Cement	tonne	0.06	6797.00	407.82	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				582.17	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				497.88	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				38.17	
	Cost for 7.50 metres = a+b+c+d+e				3855.26	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>				514.03	
					<b>say</b>	<b><u>514.00</u></b>
<b>C</b>	<b>C. 600 mm dia</b>					
	<b>a) Labour</b>					
	Mate	day	0.11	391.00	43.01	L-19
	Mason (1st Class)	day	0.30	512.00	153.60	L-17
	Mazdoor (unskilled)	day	4.80	391.00	1876.80	L-20
	<b>b) Material</b>					
	Sand	cum	0.080	740.00	59.20	M-174
	Cement	tonne	0.060	6797.00	407.82	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				540.35	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				462.12	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				35.43	
	Cost for 7.50 metres = a+b+c+d+e				3578.33	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>				477.11	
					<b>say</b>	<b><u>477.10</u></b>
<b>D</b>	<b>D. 450 mm dia</b>					
	<b>a) Labour</b>					
	Mate	day	0.09	391.00	35.19	L-19
	Mason (1st Class)	day	0.24	512.00	122.88	L-17
	Mazdoor (unskilled)	day	3.84	391.00	1501.44	L-20
	<b>b) Material</b>					
	Sand	cum	0.060	740.00	44.40	M-174
	Cement	tonne	0.050	6797.00	339.85	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				434.71	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				371.77	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				28.50	
	Cost for 7.50 metres = a+b+c+d+e				2878.74	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>				383.83	
					<b>say</b>	<b><u>383.80</u></b>
<b>E</b>	<b>E. 300 mm dia</b>					

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	<b>a) Labour</b>					
	Mate	day	0.07	391.00	27.37	L-19
	Mason (1st Class)	day	0.19	512.00	97.28	L-17
	Mazdoor (unskilled)	day	3.07	391.00	1200.37	L-20
	<b>b) Material</b>					
	Sand	cum	0.050	740.00	37.00	M-174
	Cement	tonne	0.040	6797.00	271.88	M-054
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				347.53	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				297.21	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				22.79	
	Cost for 7.50 metres = a+b+c+d+e				2301.43	
	<b>Rate per metre = (a+b+c+d+e)/7.50</b>				306.86	
				<b>say</b>	<b>306.90</b>	

**M1.13 900, Maintenance of bituminous surface road**  
**502, using Jhama brick aggregate**  
**503**

Repair to pot holes by removal of failed material, trimming the sides to vertical and levelling the bottom, cleaning the same with compressed air or any appropriate method, filled with B.M (using jhama brick aggregate & bitumen of VG-30), after applying prime coat at the bottom and tack coat on sides and on bottom (using bitumen emulsion) and compacting, trimming & finishing the surface to form a smooth continuous surface, all as per MoRD technical specification Clauses 1900, 502, 503 and 504.

**Unit = cum**

**Taking output = 187.5x0.075(avg)**  
**= 14.06 cum = (26.71 Tonne)**

**a) Labour**

Mate	day	0.80	310.00	248.00
Mazdoor (Unskilled)	day	20.00	310.00	6200.00

**b) Machinery**

Emulsion pressure distributor	hour	4.00	202.00	808.00
Mixall 6/10 t capacity	hour	4.00	765.00	3060.00
Three wheeled 80-100 KN Static Roller	hour	4.00	392.00	1568.00

**c) Material**

Primer with bitumen emulsion (SS-1) @ 9.00 kg/10 sqm 187.5x0.9 = 168.75 kg.	Tonne	0.1688	38830.00	6554.50
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Tack coat with bitumen emulsion (RS-1)

@ 3.00 kg/ 10 sqm)

Bottom = 187.5

Sides = 28.27

Total = 215.77

Tonne	0.0647	37082.00	2399.21
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Bitumen (VG-30) for BM @ 3.5% by weight of mix	Tonne	0.935	40138.00	37529.03
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= 26.71 x 3.5 / 100 = 0.935

Weight of mix (BM) 14.06 cum = (26.71 tonne)

Weight of Bitumen = 0.935

Weight of aggregate 26.71 -0.935 = 25.775

Taking density of aggregate 1.5 t per cum

Volume of jhama brick aggregate 25.775

/ 1.5 = 17.183 cum

45 mm to 22.4 mm 70 %	cum	12.028	3329.80	40050.83
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22.4 mm to 2.36 mm 30%	cum	5.155	3407.50	17565.66
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**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	d) Add GST (multiplying factor) = 0.2127 on (a+b+c)				23,382.22	
	e) Contractor's profit and overheads = 15 % on (a+b+c+d)				20,904.82	
	f) Add Cess @ 1.00 % on (a+b+c+d+e)				1602.70	
	Cost of 14.06 cum = a+b+c+d+e+f				1,61,872.98	
	Rate per cum = a+b+c+d+e+f/14.06				11,513.01	
				say	<u>11513.00</u>	
<b>M1.14</b>	<b>511 Seal coat on old bituminous road surface</b>					
	Sand seal coat on old bituminous road surface by applying Viscosity Graded (VG-30) bitumen @ 1.00 kg per sqm using rubber brush after proper cleaning of the road surface and spreading of river sand @ 0.06 cum/ 10 sqm complete as per specification and direction of the Engg.-in-Charge.					
	Unit = sqm Taking output = 1250 sqm					
	<b>a) Labour</b>					
	Mate	day	0.64	391.00	250.24	
	Mazdoor (Unskilled)	day	11.25	391.00	4,398.75	
	Mazdoor (Semi-Skilled)	day	1.50	447.00	670.50	
	<b>b) Machinery</b>					
	Cleaning by mechanical/ manual means	@ 15 % of (a)			797.92	
	Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	1.00	198.00	198.00	
	<b>c) Material</b>					
	Bitumen (VG-30) @ 1.00 kg per sqm	t	1.250	61,186.00	76,482.50	
	Sand (fine) applied @ 0.06 cum per 10 sqm	cum	7.50	740.00	5,550.00	
	d) Cost of rubber brush, etc.	@ 5 % of (a)			265.97	
	e) Add GST (multiplying factor) = 0.2127 on (a+b+c)				17,864.56	
	f) Contractor's profit @ 15 % on (a+b+c+d)				15,971.77	
	g) Add Cess @ 1.00 % on (a+b+c+d+e+f)				1224.50	
	Cost of 1250 sqm = a+b+c+d+e+f+g				1,23,674.72	
	Rate per sqm = (a+b+c+d+e+f+g)/1250				98.94	
				say	<u>98.90</u>	
<b>M1.15</b>	<b>900, Patch repairing/ Maintenance of 502, bituminous surface road using Jhama 503 brick aggregate &amp; viscosity graded and bitumen (VG-30) 504</b>					

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Repairing pot-holes and making up small depressions with ramming or power rolling after removal/ disposal of disintegrated materials within a lead of 50 m, cutting pot holes to regular shapes with vertical edges and levelling the bottom, cleaning the same with compressed air or any other appropriate method including screening, cleaning of aggregates; and filling up with with jhama chips using bitumen of VG-30 @ 54 kg per m <sup>3</sup> of loose volume of jhama brick chips, after applying tack coat of bitumen on sides and bottom @ 0.75 kg/ sqm and finishing the top of repaired surface levelled with adjoining area in proper grade and camber including spreading of sand @ 0.006 cum/ sqm of prepared road surface as per direction of the Engineer-in-Charge and all as per MoRD technical specification Clauses 1900, 502, 503 and 504.					
	<b>Unit = cum</b> <b>Taking output = 187.5 x 0.075(avg. depth)</b> <b>= 14.06 cum = (26.71 Tonne)</b>					
	<b>a) Labour</b>					
	Mate	day	0.90	310.00	279.00	
	Mazdoor (Unskilled)	day	22.80	310.00	7068.00	
	<b>b) Machinery</b>					
	Bitumen emulsion pressure distributor	hour	4.00	202.00	808.00	
	Mixall 6/10 t capacity	hour	4.00	765.00	3060.00	
	Three wheeled 80-100 KN Static Roller	hour	4.00	392.00	1568.00	
	<b>c) Material</b>					
	Weight of mix (BM) 14.06 cum = (26.71 tonne)					
	Weight of aggregate, 96.5 % of weight of mix 26.71 Tonne = 25.775 Tonne					
	Taking density of aggregate 1.5 t per cum					
	Volume of jhama brick aggregate 25.775 / 1.5 = 17.183 cum					
	45 mm to 22.4 mm 70 %	cum	12.028	3329.80	40050.83	
	22.4 mm to 2.36 mm 30%	cum	5.155	3083.00	15892.87	
	Sand (fine) applied @ 0.006 cum per sqm	cum	1.130	740.00	836.20	
	Bitumen (VG-30) for BM @ 54 kg/ cum of loose net volume of aggregate i.e 17.183 cum = 17.183 x 54 kg					
	Weight of Bitumen = 0.9279 Tonne	Tonne	0.9279	40138.00	37244.05	
	Tack coat with bitumen of VG-30 @ 0.75 kg/ sqm)					
	Bottom = 187.5					
	Sides = 37.54					
	Total = 225.04 sqm, Bitumen for tack coat	Tonne	0.16878	40138.00	6774.49	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				<b>22,898.02</b>	
	<b>e) Contractor's profit and overheads = 15 % on (a+b+c+d)</b>				<b>20,471.92</b>	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1569.51	
	Cost of 14.06 cum = a+b+c+d+e+f				1,58,520.89	
	<b>Rate per cum = a+b+c+d+e+f/14.06</b>				<b>11,274.60</b>	
				<b>say</b>	<b><u>11274.60</u></b>	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
<b>M1.16</b>	<b>511 Labour charge for Seal coat on old bituminous road surface</b> Labour charge for Sand seal coat on old bituminous road surface by applying Vicocity Graded (VG-30) bitumen @ 1.00 kg per sqm using rubber brush after proper cleaning of the road surface and spreading of river sand @ 0.06 cum/10 sqm complete as per specification and direction of the Engg.-in-Charge. (bitumen to be issued at free of cost by the department)  Unit = sqm Taking output = 1250 sqm					
	<b>a) Labour</b>					
	Mate	day	0.64	391.00	250.24	
	Mazdoor (Unskilled)	day	11.25	391.00	4,398.75	
	Mazdoor (Semi-Skilled)	day	1.50	447.00	670.50	
	<b>b) Machinery</b>					
	Cleaning by mechanical/ manual means	@ 15 % of (a)			797.92	
	Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	1.00	198.00	198.00	
	<b>c) Material</b>					
	Sand (fine) applied @ 0.06 cum per 10 sqm	cum	7.50	740.00	5,550.00	
	<b>d) Cost of rubber brush, etc.</b>	@ 5 % of (a)			265.97	
	<b>e) Add GST (multiplying factor) = 0.2127 on (a+b+c+d)</b>				<b>2,445.69</b>	
	<b>f) Contractor's profit @ 15 % on (a+b+c+d+e)</b>				<b>2,186.56</b>	
	<b>g) Add Cess @ 1.00 % on (a+b+c+d+e+f)</b>				167.64	
	Cost of 1250 sqm = a+b+c+d+e+f+g				16,931.27	
	<b>Rate per sqm = (a+b+c+d+e+f+g)/1250</b>				<b>13.55</b>	
				<b>say</b>	<b><u>13.50</u></b>	
<b>M1.17</b>	<b>502 &amp; Tack coat using hot straight run bitumen of grade VG-30 on W.B.M.</b> <b>503</b>					
	Providing and applying tack coat using hot straight run bitumen of grade VG-30, including heating the bitumen, spraying the bitumen, cleaning and preparing the existing road surface as per specifications: <b>On W.B.M. @ 0.75 kg/ sqm.</b>  Unit = sqm Taking output = 100 sqm					
	<b>a) Labour</b>					
	<i>(a) For cleaning:</i>					
	Mate	day	0.06	391.00	23.46	
	Mazdoor (Unskilled)	day	1.46	391.00	570.86	
	<i>(b) For heating bitumen: -</i>					
	Mazdoor (Unskilled)	day	0.19	391.00	74.29	
	<i>(c) For applying tack coat: -</i>					
	Mazdoor (Unskilled)	day	0.47	391.00	183.77	
	<b>b) Machinery</b>					
	Bitumen Pressure Distributor	hour	0.07	202.00	14.14	
	<b>c) Material</b>					
	Bitumen (VG-30) @ 0.75 kg per sqm	t	0.075	40,138.00	3,010.35	
	Materials for cleaning the road surface : -					
	Wire brush (with thick wire)	each	0.05	23.00	1.15	
	Soft brush	each	0.12	23.00	2.76	
	Gunny bags	L.S.	7.80	2.50	19.50	
	Sundries @ 0.6 % of material	L.S.			18.20	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				<b>833.46</b>	

**MISCELLANEOUS-1  
DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	e) Contractor's profit = 15 % on (a+b+c+d)				712.79	
	f) Add Cess @ 1.00 % on (a+b+c+d+e)				54.65	
	Cost of 100 sqm = a+b+c+d+e+f				5,519.38	
	Rate per sqm = (a+b+c+d+e+f)/100				<b>55.19</b>	
				say	<b><u>55.20</u></b>	
<b>M1.18</b>	<b>502 &amp; Tack coat using hot straight run bitumen</b>					
<b>503</b>	<b>of grade VG-30 on bituminous surface</b>					
	Providing and applying tack coat using hot straight run bitumen of grade VG-30, including heating the bitumen, spraying the bitumen, cleaning and preparing the existing road surface as per specifications: : <b>On bituminous surface @ 0.50 Kg/Sqm.</b>					
	Unit = sqm					
	Taking output = 100 sqm					
	<b>a) Labour</b>					
	(a) For cleaning:					
	Mate	day	0.06	391.00	23.46	
	Mazdoor (Unskilled)	day	1.46	391.00	570.86	
	(b) For heating bitumen:					
	Mazdoor (Unskilled)	day	0.19	391.00	74.29	
	(c) For applying tack coat:					
	Mazdoor (Unskilled)	day	0.47	391.00	183.77	
	<b>b) Machinery</b>					
	Bitumen Pressure Distributor	hour	0.07	202.00	14.14	
	<b>c) Material</b>					
	Bitumen (VG-30) @ 0.50 kg per sqm	t	0.050	40,138.00	2,006.90	
	Materials for cleaning the road surface :					
	Wire brush (with thick wire)	each	0.05	23.00	1.15	
	Soft brush	each	0.12	23.00	2.76	
	Gunny bags	L.S.	7.80	2.50	19.50	
	Sundries @ 0.85 % of material	L.S.			17.26	
	<b>d) Add GST (multiplying factor) =</b>				<b>619.83</b>	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				<b>530.09</b>	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				40.64	
	Cost of 100 sqm = a+b+c+d+e+f				4,104.64	
	Rate per sqm = (a+b+c+d+e+f)/100				<b>41.05</b>	
				say	<b><u>41.00</u></b>	
<b>M1.19</b>	<b>Providing and laying factory made kerb stone</b>					
	Providing and laying at or near ground level factory made kerb stone of M-25 grade cement concrete in position to the required line, level and curvature jointed with cement mortar 1:3 (1 cement : 3 sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5 mm), including making drainage opening wherever required complete etc. as per direction of Engineer-in-Charge (length of finished kerb edging shall be measured for payment). (Precast C.C. kerb stone shall be approved by Engineer-in-Charge).					
	Unit = cum					
	Taking output = 7.50 Cum					
	<b>a) Labour</b>					
	<b>Labour for fixing of Kerb stone</b>					
	Mason 1st class	Day	2.50	512.00	1,280.00	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Mason 2nd class	Day	2.50	475.00	1,187.50	
	Mazdoor (Unskilled)	Day	2.50	391.00	977.50	
	Mate	Day	1.65	391.00	645.15	
	<b>b) Material</b>					
	<i>Details for 100 metre i.e. 100 x 0.375 x 0.20</i>					
	<i>= 7.50 cum</i>					
	Precast C.C. Kerb stone M - 25					
	Number of kerb stones = 100 / 0.405 = 247 Nos.					
	247 x 0.40 x 0.375 x 0.20 = 7.41 cum	cum	7.410	8,580.00	63,577.80	
	Mortar 1:3 for fixing joints,					
	No. of joints = 247 - 1 = 246 Nos.					
	Cement Mortar 1:3 for fixing joints = 246 x [(0.115 + 0.20)/2 x 0.375 x 0.005] = 0.073 cum					
	Cement mortar 1:3 (1 cement : 3 sand)					
	<i>Rate vide item number 11.5 (I) of MORD</i>	Cum	0.073	27.90	2.04	
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				<b>14,392.97</b>	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				<b>12,309.14</b>	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				943.70	
	Cost of 7.50 cum = a+b+c+d+e				95,315.80	
	<b>Rate per cum = (a+b+c+d+e)/7.50</b>				<b>12,708.77</b>	
				<b>say</b>	<b><u>12708.80</u></b>	
	<b>Note:</b> i. Carriage of kerb stones are payable separately as per Chapter of carriage of material (item no. 1.8 and 1.10 of MoRD) from nearest place of procurement to the site of work.					
<b>M1.20</b>	<b>1500 Taking out existing CC interlocking paver blocks</b>					
	Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge.					
	Unit = sqm					
	Taking output = 10.00 sqm					
	<b>a) Labour</b>					
	Mate	Day	0.25	391.00	97.75	
	Mazdoor (Unskilled)	Day	1.00	391.00	391.00	
	Other incidental charges @ 1.5 % of Labour					
					7.33	
	<b>b) Add GST (multiplying factor) = 0.2127 on (a)</b>				<b>105.52</b>	
	<b>c) Contractor's profit = 15 % on (a+b)</b>				<b>90.24</b>	
	<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				6.92	
	Cost of 10.00 Sqm = a+b+c+d				698.76	
	<b>Rate per sqm = (a+b+c+d)/10.00</b>				<b>69.88</b>	
				<b>say</b>	<b><u>69.90</u></b>	
<b>M1.21</b>	<b>1500 Laying old cement concrete interlocking paver blocks</b>					

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Laying old cement concrete interlocking paver blocks of any design/shape laid in required line, level, curvature, colour and pattern over and including 50 mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge. (Old CC paver blocks shall be supplied by the department free of cost). Unit = sqm Taking output = 10.00 sqm					
	<b>a) Labour</b>					
	Laying charges					
	Mason 1st class	Day	0.50	512.00	256.00	
	Mason 2nd class	Day	0.50	475.00	237.50	
	Mazdoor (Unskilled)	Day	1.00	391.00	391.00	
	Mate	Day	0.50	391.00	195.50	
	<b>b) Material</b>					
	Bedding Layer 50 mm thick					
	Sand as per Table 1500.5 =10.00 x 0.050 = 0.50 cum	Cum	0.500	33.50	16.75	
	Fine sand for joint as per Table 1500.5	Cum	0.150	816.20	122.43	
	Water	Kl	0.027	0.00	0.00	
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				<b>259.32</b>	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				<b>221.77</b>	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				17.00	
	Cost of 10.00 Sqm = a+b+c+d+e				1,717.28	
	<b>Rate per sqm = (a+b+c+d+e)/10.00</b>				<b>171.73</b>	
				<b>say</b>	<b><u>171.70</u></b>	
<b>M1.22</b>	<b>1500</b>					
	<b>60 mm thick factory made c.c interlocking paver block of M -30 Grade</b>					
	Providing and laying 60 mm 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 50 mm thick compacted bed of sand, filling the joints with fine sand etc. all complete as per specification and approval/ direction of the Engineer-in-charge.					
	Unit = sqm Taking output = 10.00 sqm					
	<b>a) Labour</b>					
	Laying charges (Based on actual observation)					
	Mason 1st class	Day	0.50	512.00	256.00	
	Mason 2nd class	Day	0.50	475.00	237.50	
	Mazdoor (Unskilled)	Day	1.00	391.00	391.00	
	Mate	Day	0.50	391.00	195.50	
	<b>b) Material</b>					
	Interlocking C.C. paver block (60 mm thick, M-30)	Sqm	10.000	709.00	7,090.00	
	Bedding Layer 50 mm thick					
	Sand as per Table 1500.5 =10.00 x 0.050 = 0.50 cum	Cum	0.500	590.00	295.00	
	Fine sand for joint as per Table 1500.5	Cum	0.150	740.00	111.00	
	Water	Kl	0.027	133.00	3.55	
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				<b>1,824.12</b>	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				<b>1,560.55</b>	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				119.64	



**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Cost of 10.00 Sqm = a+b+c+d+e				12,083.86	
	<b>Rate per sqm = (a+b+c+d+e)/10.00</b>				<b>1,208.39</b>	
				<b>say</b>	<b><u>1208.40</u></b>	
	<b>Note:</b> i. Carriage of interlocking blocks are payable separately as per Chapter of carriage of material (item no. 1.8 and 1.10 of MoRD) from nearest place of procurement to the site of work.					
	ii. The rates for sub-grade, sub-base and base course if required can be taken separately from respective Chapters.					
<b>M1.23</b>	<b>1500</b>	<b>60 mm thick factory made c.c. interlocking paver block of M-35 Grade</b>				
	Providing and laying factory made coloured chamfered edge Cement Concrete paver blocks of required strength, thickness & size/shape, made by table vibratory method using PU mould, laid in required colour & pattern over 50 mm 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 fine sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand in footpath, parks, lawns, drive ways or light traffic parking etc. complete as per specifications & approval/ direction of Engineer-in-Charge.					
	(a) 60 mm thick c.c. paver block of M-35 grade with approved colour design and pattern. Unit = sqm Taking output = 10.00 sqm					
	<b>a) Labour</b>					
	Laying charges (Based on actual observation)					
	Mason 1st class	Day	0.50	512.00	256.00	
	Mason 2nd class	Day	0.50	475.00	237.50	
	Mazdoor (Unskilled)	Day	1.00	391.00	391.00	
	Mate	Day	0.50	391.00	195.50	
	<b>b) Machinery</b>					
	Plate Vibrator	Hour	0.520	75.00	39.00	
	<b>c) Material</b>					
	Interlocking C.C. paver block (60 mm thick, M-35)	Sqm	10.000	745.00	7,450.00	
	Bedding Layer 50 mm thick					
	Sand as per Table 1500.5					
	=10.00 x 0.050 = 0.50 cum	Cum	0.500	590.00	295.00	
	Fine sand for joint as per Table 1500.5	Cum	0.150	740.00	111.00	
	Water for wetting of bedding sand	Kl	0.027	133.00	3.55	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				<b>1,908.98</b>	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				<b>1,633.13</b>	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				125.21	
	Cost of 10.00 sqm = a+b+c+d+e+f				12,645.87	
	<b>Rate per sqm = (a+b+c+d+e+f)/10.00</b>				<b>1,264.59</b>	
				<b>say</b>	<b><u>1264.60</u></b>	

**MISCELLANEOUS-1  
DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
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**Note:** i. Carriage of interlocking blocks are payable separately as per Chapter of carriage of material (item no. 1.8 and 1.10 of MoRD) from nearest place of procurement to the site of work.  
ii. The rates for sub-grade, sub-base and base course if required can be taken separately from respective Chapters.

**M1.24 1500 80 mm thick factory made c.c. interlocking paver block of M-30 Grade**

Providing and laying factory made chamfered edge Cement Concrete paver blocks of required strength, thickness & size/shape, made by table vibratory method, to attain superior smooth finish using PU or equivalent moulds, laid in required grey colour & pattern over 50 mm 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 fine sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand in footpath, parks, lawns, drive ways or light traffic parking etc. all complete as per specifications & approval/ direction of the Engineer -in-Charge:

(a) 80 mm thick c.c. paver block of M-30 grade with approved colour design and pattern.

Unit = sqm

Taking output = 10.00 sqm

**a) Labour**

Laying charges (Based on actual observation)

Mason 1st class	Day	0.50	512.00	256.00
Mason 2nd class	Day	0.50	475.00	237.50
Mazdoor (Unskilled)	Day	1.00	391.00	391.00
Mate	Day	0.50	391.00	195.50

**b) Machinery**

Plate Vibrator	Hour	0.700	75.00	52.50
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**c) Material**

Interlocking C.C. paver block (80 mm thick, M-30)	Sqm	10.000	944.00	9,440.00
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Bedding Layer 50 mm thick

Sand as per Table 1500.5

=10.00 x 0.050 = 0.50 cum	Cum	0.500	590.00	295.00
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Fine sand for joint as per Table 1500.5	Cum	0.200	740.00	148.00
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Water for wetting of bedding sand	Kl	0.027	133.00	3.55
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**d) Add GST (multiplying factor) = 0.2127 on (a+b+c) 2,343.00**

**e) Contractor's profit = 15 % on (a+b+c+d) 2,004.31**

**f) Add Cess @ 1.00 % on (a+b+c+d+e) 153.66**

Cost of 10.00 sqm = a+b+c+d+e+f 15,520.02

**Rate per sqm = (a+b+c+d+e+f)/10.00 1,552.00**

**say 1552.00**

**Note:** i. Carriage of interlocking blocks are payable separately as per Chapter of carriage of material (item no. 1.8 and 1.10 of MoRD) from nearest place of procurement to the site of work.

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	<i>ii. The rates for sub-grade, sub-base and base course if required can be taken separately from respective Chapters.</i>					
<b>M1.25</b>	<b>1500</b>	<b>Cement concrete 1:2:4 in pavements, laid to required slope and camber in panels</b>				
	Cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 40 mm nominal size) in pavements, laid to required slope and camber in panels as required including consolidation finishing and tamping complete as per direction of the of the Engineer-in-Charge.					
	Unit = cum					
	Taking output = 1.00 cum					
	cementg concrete 1:2:4 mix					
	<b>a) Labour</b>					
	Laying charges					
	Mason 1st class	Day	0.10	512.00	51.20	
	Bhisti	Day	0.70	391.00	273.70	
	Mazdoor (Unskilled)	Day	1.63	391.00	637.33	
	<b>b) Machinery</b>					
	Concrete mixer 0.25 to 0.4 cum with hopper	Hour	0.40	192.00	76.80	
	Needle vibrator 40 mm	Hour	0.35	66.00	23.10	
	<b>c) Material</b>					
	Stone Aggregate (Single size) : 40 mm nominal size	Cum	0.450	4,236.00	1,906.20	
	Stone Aggregate (Single size) : 20 mm nominal size	Cum	0.270	4,374.00	1,180.98	
	Stone Aggregate (Single size) : 10 mm nominal size	Cum	0.180	4,269.00	768.42	
	Portland Cement	Tonne	0.330	6,797.00	2,243.01	
	Sand	Cum	0.450	740.00	333.00	
	Side shuttering :	L.S. @ 1.00 % of (C)			64.00	
	(Taking the slab to be 15 cm thick and width to be 6 metre, length of road 27 metre = $9.90/24.30 = 0.407$ sqm)					
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>					<b>1,593.92</b>
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>					<b>1,372.75</b>
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>					105.24
	Cost of 1.00 cum = a+b+c+d+e+f					10,629.65
	<b>Rate per sqm = (a+b+c+d+e+f)/1.00</b>					<b>10,629.65</b>
						<b>say</b>
						<b><u>10629.70</u></b>
<b>M1.26</b>	<b>510</b>	Providing, laying and rolling of open - graded MoRT premix surfacing of 25 mm thickness &H/ composed of 13.2 mm to 5.6 mm aggregates 508 of using modified bitumen to required line, MoRD grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades as per Technical Specification and as directed by the Engineerin-Charge.				
	<b>i) With Refinery Modified Bitumen CRMB 55 conforming to IRC: SP: 53-1999</b>					
	Unit = sqm					
	Taking output = 3200 sqm (80 cum)					
	<b>a) Labour</b>					
	Mate	day	0.52	391.00	203.32	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Mazdoor(unskilled)	day	10.00	391.00	3910.00	
	Mazdoor(skilled)	day	3.00	475.00	1425.00	
	<b>b) Machinery</b>					
	Batch type HMP 30/40 TPH	hour	6.00	8900.00	53400.00	
	Electric Generator Set 125 KVA	hour	6.00	445.00	2670.00	
	Tipper 5.50 cum/ 10 tonne capacity	hour	3.64	334.00	1215.76	
	Front end loader 1 cum bucket capacity	hour	6.00	920.00	5520.00	
	Paver finisher hydrostatic with sensor	hour	6.00	2250.00	13500.00	
	Smooth wheeled/tandom roller 8-10 tonnes weight	hour	3.00	1205.00	3615.00	
	<b>c) Material</b>					
	<b>i) Modified Bitumen Refinery produced CRMB - 55</b>					
	@ 18.25 kg per 10 sqm	tonne	5.84	63879.00	373053.36	
	<b>ii) Aggregate</b>					
	Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.34 cum per 10 sqm	cum	108.80	4389.30	477555.84	
	<b>ii) Solvent</b>					
	solvent @ of 70 grams per kg of Modified Bitumen	Kg	408.80	34.50	14103.60	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				202101.56	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				172841.02	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				13251.14	
	Cost for 3200 sqm = a+b+c+d+e+f				1338365.60	
	<b>Rate per sqm = (a+b+c+d+e+f)/3200</b>				418.24	
				<b>say</b>	<b><u>418.20</u></b>	
	<b>ii) With Polymer Modified Bitumen PMB - 70</b>					
	Unit = sqm					
	Taking output = 3200 sqm (80 cum)					
	<b>a) Labour</b>					
	Mate	day	0.52	391.00	203.32	
	Mazdoor(unskilled)	day	10.00	391.00	3910.00	
	Mazdoor(skilled)	day	3.00	475.00	1425.00	
	<b>b) Machinery</b>					
	Batch type HMP 30/40 TPH	hour	6.00	8900.00	53400.00	
	Electric Generator Set 125 KVA	hour	6.00	445.00	2670.00	
	Tipper 5.50 cum/ 10 tonne capacity	hour	3.64	76102.00	277011.28	
	Front end loader 1 cum bucket capacity	hour	6.00	920.00	5520.00	
	Paver finisher hydrostatic with sensor	hour	6.00	2250.00	13500.00	
	Smooth wheeled/tandom roller 8-10 tonnes weight	hour	3.00	1205.00	3615.00	
	<b>c) Material</b>					
	<b>i) Polymer Modified Bitumen PMB - 70</b>					
	@ 18.25 kg per 10 sqm	tonne	5.84	71320.00	416508.80	
	<b>ii) Aggregate</b>					
	Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.34 cum per 10 sqm	cum	108.80	4389.30	477555.84	
	<b>ii) Solvent</b>					
	solvent @ of 70 grams per kg of Modified Bitumen	Kg	408.80	34.50	14103.60	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				270006.24	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				230914.36	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				17703.43	
	Cost for 3200 sqm = a+b+c+d+e+f				1788046.87	
	<b>Rate per sqm = (a+b+c+d+e+f)/3200</b>				558.76	
				<b>say</b>	<b><u>558.80</u></b>	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
<b>M1.27</b>	510 of Providing, laying and rolling of open - graded MoRT premix surfacing of 20 mm thickness &H/ composed of 13.2 mm to 5.6 mm aggregates 508 of using modified bitumen to required line, MoRD grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades as per Technical Specification and as directed by the Engineer-in-Charge.					
	<b>i) With Refinery Modified Bitumen CRMB 55 conforming to IRC: SP: 53-1999</b>					
	Unit = sqm Taking output = 4000 sqm (80 cum)					
	<b>a) Labour</b>					
	Mate	day	0.52	391.00	203.32	
	Mazdoor(unskilled)	day	10.00	391.00	3910.00	
	Mazdoor(skilled)	day	3.00	475.00	1425.00	
	<b>b) Machinery</b>					
	Batch type HMP 30/40 TPH	hour	6.00	8900.00	53400.00	
	Electric Generator Set 125 KVA	hour	6.00	445.00	2670.00	
	Tipper 5.50 cum/ 10 tonne capacity	hour	3.64	334.00	1215.76	
	Front end loader 1 cum bucket capacity	hour	6.00	920.00	5520.00	
	Paver finisher hydrostatic with sensor	hour	6.00	2250.00	13500.00	
	Smooth wheeled/tandem roller 8-10 tonnes weight	hour	3.00	1205.00	3615.00	
	<b>c) Material</b>					
	<b>i) Modified Bitumen Refinery produced CRMB - 55</b>					
	@ 14.60 kg per 10 sqm	tonne	5.84	63879.00	373053.36	
	<b>ii) Aggregate</b>					
	Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	108.00	4389.30	474044.40	
	<b>ii) Solvent</b>					
	solvent @ of 70 grams per kg of Modified Bitumen	Kg	408.80	34.50	14103.60	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				201354.68	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				172202.27	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				13202.17	
	Cost for 4000 sqm = a+b+c+d+e+f				1333419.56	
	<b>Rate per sqm = (a+b+c+d+e+f)/4000</b>				333.35	
				<b>say</b>	<b><u>333.40</u></b>	
	<b>ii) With Polymer Modified Bitumen PMB - 70</b>					
	Unit = sqm Taking output = 4000 sqm (80 cum)					
	<b>a) Labour</b>					
	Mate	day	0.52	391.00	203.32	
	Mazdoor(unskilled)	day	10.00	391.00	3910.00	
	Mazdoor(skilled)	day	3.00	475.00	1425.00	
	<b>b) Machinery</b>					
	Batch type HMP 30/40 TPH	hour	6.00	8900.00	53400.00	
	Electric Generator Set 125 KVA	hour	6.00	445.00	2670.00	
	Tipper 5.50 cum/ 10 tonne capacity	hour	3.64	76102.00	277011.28	
	Front end loader 1 cum bucket capacity	hour	6.00	920.00	5520.00	
	Paver finisher hydrostatic with sensor	hour	6.00	2250.00	13500.00	
	Smooth wheeled/tandem roller 8-10 tonnes weight	hour	3.00	1205.00	3615.00	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	<b>c) Material</b>					
	<b>i) Polymer Modified Bitumen PMB - 70</b> @ 14.60 kg per 10 sqm	tonne	5.84	71320.00	416508.80	
	<b>ii) Aggregate</b> Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	108.00	4389.30	474044.40	
	<b>ii) Solvent</b> solvent @ of 70 grams per kg of Modified Bitumen	Kg	408.80	34.50	14103.60	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				269259.35	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				230275.61	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				17654.46	
	Cost for 4000 sqm = a+b+c+d+e+f				1783100.83	
	<b>Rate per sqm = (a+b+c+d+e+f)/4000</b>				445.78	
				<b>say</b>	<b><u>445.80</u></b>	

**M1.28** Road Stud with Lense Reflector

804 of Providing and fixing reflective road studs of MoRT size 100 x 20 mm made of ASA (Acrylic styrene Acryloretrite) or HIPS (High impact polystyrene) or ABS (Acrylonitrile butadiene styrene) or any other suitable material approved by the engineer having electronically welded micro-prismatic lens with abrasion resistant coating. The glow stud shall support a load of 13.635 tonne tested in accordance with ASTM D 4280. The slope of retro-reflective surface shall be 35 (± 5) degrees to base. The reflective panel should conform to ASTM D 788. The area of each retro-reflecting surface shall not be less than 13 sqcm. The luminance intensity should be as per the specification and shall be tested as described in ASTM I : 809 as recommended in BS: 873 part 4 : 1973. The studs shall be fixed to the Road surface in accordance with technical specification clause no. 804.7.2 using the adhesive conforming to IS or as per procedure recommended by the manufacturer complete and as per direction of Engineer-in-Charge and in field performance as per technical specification clause no. 804.7.3

Unit = Nos

Details of cost for 15 Nos.

<b>a) Labour</b>						
Mason (2nd Class)	day	0.50	475.00		237.50	
Mazdoor (Unskilled)	day	0.50	391.00		195.50	
<b>b) Material</b>						
ABS/ ASA/ HIPS body road stud	Nos	15.00	<b>99.00</b>		1485.00	
Add 2.25 % of the cost of (b) as Sundries (LS) for material required for fixing cats eyes and providing barricading to divert traffic.					33.41	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	c) Add GST (multiplying factor) = 0.2127 on (a+b)				415.07	
	d) Contractor's profit = 15 % on (a+b+c)				354.97	
	e) Add Cess @ 1.00 % on (a+b+c+d)				27.21	
	Cost for 15 Nos = a+b+c+d+e				2748.66	
	Rate per No = (a+b+c+d+e)/15				183.24	
				<b>say</b>	<b><u>183.20</u></b>	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
<b>M1.29</b>	Solar Powered Road Markers (Solar studs)					
	804 of Providing and fixing Solar Powered Road MoRT Markers (Solar studs) of specified size to &H meet the requirement of technical specification clause 804.6 made of aluminium alloy and poly carbonate material which shall be absolutely weather resistant and shall support a load of 13.635 tonne tested in accordance with ASTM D 4280, of appropriate color & water resistant to meet the requirement of IP 65 in accordance with IS: 12063:1987 category 2 for protection against water ingress. It shall have super bright LEDs of flashing rate not less than 1Hz having a life of not less than three years. The slope of retro-reflective surface shall be 35 (±5) degrees to base. The studs shall be fixed to the Road surface in accordance with technical specification clause no. 804.7.2 using the adhesive conforming to IS or as per procedure recommended by the manufacturer complete and as per direction of Engineer-in-Charge and in field performance as per technical specification clause no. 804.7.3.					
	Unit = Nos					
	Details of cost for 15 Nos.					
	<b>a) Labour</b>					
	Mason (2nd Class)	day	0.50	475.00	237.50	
	Mazdoor (Unskilled)	day	0.50	391.00	195.50	
	<b>b) Material</b>					
	Solar Powered Road Markers made of aluminium alloy and poly carbonate material (Solar studs)	Nos	15.00	<b>786.00</b>	11790.00	
	Add 0.50 % of the cost of (b) as Sundries (LS) for material required for fixing cats eyes and providing barricading to divert traffic.				58.95	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				2612.37	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				2234.15	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				171.28	
	Cost for 15 Nos = a+b+c+d+e				17299.75	
	<b>Rate per No = (a+b+c+d+e)/15</b>				1153.32	
				<b>say</b>	<b><u>1153.30</u></b>	
<b>M1.30</b>	806 Delineators made of ABS					
	Providing and fixing post delineators made of ABS round body fitted with 2 nos 100 mm dia high reflective reflectors and mounted on MS pipe of 65 mm dia duly powder coated anti-rust and anti theft steel to be installed as per direction of Engineer-in-Charge.					
	Unit = Nos					
	Details of cost for 1 No.					
	<b>a) Material &amp; Labour</b>					
	ABS Delineator	Nos	1.00	336.00	336.00	
	Add LS 25 % of the cost of delineator for fixing material				84.00	
	Add LS 45 % of the cost of delineator for fixing charge				151.20	



**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	<b>b) Add GST (multiplying factor) = 0.2127 on a)</b>				121.49	
	<b>c) Contractor's profit = 15 % on (a+b)</b>				103.90	
	<b>d) Add Cess @ 1.00 % on (a+b+c)</b>				7.97	
	<b>Cost for 1 No = a+b+c+d</b>				804.56	
				<b>say</b>	<b><u>804.60</u></b>	
<b>M1.31</b>	Mending Potholes and depressions by stitching picked jhama bricks with one brick-on-edge laid in herring bone pattern and including necessary cushion of sand below the soling (and in between layers) including cutting the pothole area to rectangular shape with vertical edges, removing all loose materials, finishing the surface to match with adjacent areas complete as per direction of the Engineer-in-Charge.					
	<b>(a) One brick-on-edge laid in herring bone pattern on a layer of flat brick (thickness 75 mm plus 125 mm)</b>					
	Unit = sqm					
	Taking output = 150 sqm					
	<b>a) Labour</b>					
	Mason 1st Class	day	7.20	440.00	3,168.00	
	Mate	day	1.20	310.00	372.00	
	Mazdoor (Unskilled)	day	23.00	310.00	7,130.00	
	<b>b) Machinery</b>					
	Three wheel 80-100 KN static roller @ 150 sqm per hour	hour	1.00	392.00	392.00	
	Water tanker 6 kl capacity	hour	1.70	200.00	340.00	
	<b>c) Material</b>					
	Over burnt bricks (picked Jhama)	no	12,450.00	12.20	1,51,890.00	
	Fine Sand (local)	cum	10.88	460.00	5,004.80	
	Water	kl	9.50	133.00	1,263.50	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				<b>36,065.48</b>	
	<b>e) Contractor's profit = 15 % on (a+b+c)</b>				<b>30,843.87</b>	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d)</b>				2364.70	
	Cost for 150 sqm = a+b+c+d+e+f				2,38,834.34	
	<b>Rate per sqm = (a+b+c+d+e+f)/150</b>				<b>1,592.23</b>	
				<b>say</b>	<b><u>1592.20</u></b>	
	<b>(b) One brick-on-edge laid in herring bone pattern (thickness 125 mm)</b>					
	Unit = sqm					
	Taking output = 150 sqm					
	<b>a) Labour</b>					
	Mason 1st Class	day	3.60	440.00	1,584.00	
	Mate	day	0.62	310.00	192.20	
	Mazdoor (Unskilled)	day	12.00	310.00	3,720.00	
	<b>b) Machinery</b>					
	Three wheel 80-100 KN static roller @ 150 sqm per hour	hour	1.00	392.00	392.00	
	Water tanker 6 kl capacity	hour	1.00	200.00	200.00	
	<b>c) Material</b>					
	Over burnt bricks (picked Jhama)	no	7,800.00	12.20	95,160.00	
	Fine Sand (local)	cum	6.79	460.00	3,123.40	
	Water	kl	6.00	133.00	798.00	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				<b>22,369.57</b>	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				<b>19,130.88</b>	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	f) Add Cess @ 1.00 % on (a+b+c+d+e)				1466.70	
	Cost for 150 sqm = a+b+c+d+e+f				1,48,136.75	
	<b>Rate per sqm = (a+b+c+d+e+f)/150</b>				<b>987.58</b>	
				<b>say</b>	<b><u>987.60</u></b>	
<b>M1.32</b>	303.5.: Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with lead upto 50 metres as per direction of the of the Engineer-in-Charge.					
	Unit = 100 sqm					
	Details of cost for 1000 sqm					
	<b>a) Labour</b>					
	Mate	day	0.23	310.00	69.75	
	Mazdoor (Unskilled)	day	5.63	310.00	1,743.75	
	<b>b) Machinery</b>					
	Tractor with ripper attachment	hour	3.75	223.00	836.25	
	Water tanker 6 kl capacity	hour	1.50	200.00	300.00	
	Three wheel 80-100 kN Static Roller	hour	3.23	392.00	1,264.20	
	<b>c) Material</b>					
	Water	kl	9.00	133.00	1,197.00	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				<b>1,150.91</b>	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				<b>984.28</b>	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>75.46</b>	
	Cost for 1000 sqm = a+b+c+d+e+f				7,621.60	
	<b>Rate per 100 sqm = (a+b+c+d+e+f)/10</b>				<b>762.16</b>	
				<b>say</b>	<b><u>762.20</u></b>	
<b>M1.33</b>	600,7 00 & 1200 Providing weep holes on brick masonry/ plain/ reinforced concrete wall with 90 mm dia uPVC pipe with ISI mark of approved/ reputed make extending through the full width of the structures with slope of 1(V):20(H) towards drawing face including cutting, fixing etc. complete as per drawing and direction of the Engineer-in-Charge and technical specification. Unit = Mtr Taking output = 30 Mtr					
	<b>a) Material</b>					
	uPVC pipe 90 mm dia including wastage @ 5 per cent. Average length of each weep hole is taken as one metre for the analysis.	m	31.50	142.00	4,473.00	
	Cement mortar 1:4 (For rate refer to item 11.5 II)	cum	0.045	3,108.20	139.87	
	<b>b) Labour</b>					
	Mate	day	0.03	310.00	9.30	
	Mason 1st Class	day	0.20	440.00	88.00	
	Mazdoor (Unskilled)	day	0.07	310.00	21.70	
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				<b>1006.47</b>	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				<b>860.75</b>	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				<b>65.99</b>	
	Cost for 30 Mtr = (a+b+c+d+e)				6,665.08	
	<b>Rate per Mtr = (a+b+c+d+e)/30</b>				<b>222.17</b>	
				<b>say</b>	<b><u>222.20</u></b>	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
<b>M1.34</b>	600,7 00 & 1200 Providing weep holes on brick masonry/ plain/ reinforced concrete wall with 75 mm dia uPVC pipe with ISI mark of approved/ reputed make extending through the full width of the structures with slope of 1(V):20(H) towards drawing face including cutting, fixing etc. complete as per drawing and direction of the Engineer-in-Charge and technical specification. Unit = Mtr Taking output = 30 Mtr					
	<b>a) Material</b>					
	uPVC pipe 75 mm dia including wastage @ 5 per cent. Average length of each weep hole is taken as one metre for the analysis.	m	31.50	102.00	3,213.00	
	Cement mortar 1:4 (For rate refer to item 11.5 II)	cum	0.038	3,108.20	118.11	
	<b>b) Labour</b>					
	Mate	day	0.03	310.00	9.30	
	Mason 1st Class	day	0.18	440.00	79.20	
	Mazdoor (Unskilled)	day	0.06	310.00	18.60	
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				731.31	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				625.43	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				47.95	
	Cost for 30 Mtr = (a+b+c+d+e)				4,842.90	
	<b>Rate per Mtr = (a+b+c+d+e)/30</b>				<b>161.43</b>	
				<b>say</b>	<b><u>161.40</u></b>	
<b>M1.35</b>	<b>900,</b> Repair to pot holes/ patch repair on all types <b>502,</b> of bituminous pavement by using All <b>503,</b> Weather Instant Patch Repair Cold <b>504</b> Readymix Compound (INSSTAPATTCH/ <b>and</b> SHELMAC - PR/ SHALIPATCH or equivalent <b>3004</b> products accredited by IRC) within specified shelf life including cleaning the existing portion of the road to be repaired by appropriate method, disposal of all failed material, compacting, etc. complete as per relevant technical specification and as per direction of the Engineer-in-charge. (irrespective of recorded premeasured area/ volume of pot holes repaired, to be measured for payment in multiple packs of 25/ 50 kg net HDPE bags with inside LDPE liner actually supplied/ delivered & utilised)					
	Unit = per kg Details of cost for 100 sqm assuming average 20 mm thickness of area or 2500 kg (50 Bag of 50 kg each) coverage – Approximately (1 sqm x 20 mm per 25 kg of mix). Density of mix is approx. 2000 kg/ m3. (Assumed for analysis only)					
	<b>a) Labour</b>					
	Mate	day	0.27	310.00	83.70	
	Mazdoor (Unskilled)	day	7.00	310.00	2,170.00	
	Compaction can be done using shovel and a simple hand rammer. For large repairs, using a roller shall ensure smooth/even compaction..					
	<b>b) Machinery</b>					
	Tractor with trolley (for additional carriage of material at different stretches of road)	hour	0.75	237.00	177.75	
	Three wheel 80-100 kN Static Roller	hour	0.10	392.00	39.20	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	(Only taken for large potholes filled in layers if required as additional)					
	<b>c) Material</b>					
	Instant Road Repair Compound kg		2,500.00	21.10	52,750.00	
	(INSSTAPATTCH/ SHELMAC - PR/ SHALIPATCH or Equivalent)					
	Add 2.5% labour rate for cost of brush etc.				56.34	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				<b>11,757.42</b>	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				<b>10,055.16</b>	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				770.90	
	Cost for 50 bag of 50 kg each = a+b+c+d+e+f				77,860.47	
	<b>Rate per kg = (a+b+c+d+e+f)/2500</b>				<b>31.14</b>	
				<b>say</b>	<b><u>31.10</u></b>	

*Note: i. Manufacturer's specification/ direction shall also to be followed during execution of work.*

- M1.36 900, 502, 503, 504 and 3004** Labour charge for repair to pot holes/ patch repair on all types of bituminous pavement by using All Weather Instant Patch Repair Cold Readymix Compound (INSSTAPATTCH/ SHELMAC - PR/ SHALIPATCH or equivalent products accredited by IRC) within specified shelf life including cleaning the existing portion of the road to be repaired by appropriate method, disposal of all failed material, compacting, etc. complete as per relevant technical specification and as per direction of the Engineer-in-charge. (irrespective of recorded premeasured area/ volume of pot holes repaired, to be measured for payment in multiple packs of 25/ 50 kg net HDPE bags with inside LDPE liner actually issued at free of cost by the department & utilised)

Unit = Bag of 50 Kg each

Details of cost for 100 sqm assuming average 20 mm thickness of area or 2500 kg (50 Bag of 50 kg each) coverage – Approximately (1 sqm x 20 mm per 25 kg of mix). Density of mix is approx. 2000 kg/ m3. (Assumed for analysis only)

**a) Labour**

Mate	day	0.27	310.00	83.70
Mazdoor (Unskilled)	day	7.00	310.00	2,170.00

Compaction can be done using shovel and a simple hand rammer. For large repairs, using a roller shall ensure smooth/even compaction..

**b) Machinery**

Tractor with trolley	hour	0.75	237.00	177.75
(for additional carriage of material at different stretches of road)				
Three wheel 80-100 kN Static Roller	hour	0.10	392.00	39.20

(Only taken for large potholes filled in layers if required as additional)

**c) Material**

Instant Road Repair Compound kg		2,500.00		
(INSSTAPATTCH/ SHELMAC - PR/ SHALIPATCH or Equivalent)				
Add 2.5% labour rate for cost of brush etc.				56.34

**d) Add GST (multiplying factor) = 0.2127 on (a+b+c)** **537.49**

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	e) Contractor's profit = 15 % on (a+b+c+d)				459.67	
	f) Add Cess @ 1.00 % on (a+b+c+d+e)				35.24	
	Cost for 50 bag of 50 kg each = a+b+c+d+e+f				3,559.40	
	Rate per kg = (a+b+c+d+e+f)/2500				1.42	
				say	<u>1.40</u>	
	<i>Note: i. Carriage of packs of 25/ 50 kg net HDPE bags from departmental store to work site is payable seperately as per similar item of Chapter of carriage of material (item no. 1.4 and 1.10 of MoRD).</i>					
	<i>ii. Manufacturer's specification/ direction shall also to be followed during execution of work.</i>					
M1.37	402	Gravel / Soil - Aggregate Base ( Table 400.2 ) Construction of gravel / soil - aggregate base by providing well graded material, spreading in uniform layers with Tractor mount grader on prepared surface, mixing by mix in place method with Tractor mount rotavator at OMC, and compacting with three wheel 80 - 100 kN static roller to achieve the desired density, complete as per Technical Specification Clause 402.				
	(i)	<b>Grading -A</b> Unit = cum Taking out put = 300 cum				
	a)	<b>Labour</b>				
		Mate	day	0.40	310.00	124.00
		Mazdoor(skilled)	day	2.00	380.00	760.00
		Mazdoor (Unskilled)	day	8.00	310.00	2,480.00
	b)	<b>Machinery</b>				
		Tractor mount Grader @ 25 cum per hour	hour	12.00	322.00	3,864.00
		Three wheel 80-100 KN static roller @10 cum per hour	hour	30.00	392.00	11,760.00
		Water tanker 6kl capacity	hour	5.00	200.00	1,000.00
		Tractor withh Rotavator @25 cum per hour	hour	12.00	322.00	3,864.00
	c)	<b>Material</b>				
		Well Graded granular sub-base material as per Table 400.2 Grading-A				
		53 mm to 26.5 mm @ 35 per cent	cum	134.40	3,839.50	5,16,028.80
		26.5 mm to 4.75 mm @ 45 per cent	cum	172.80	4,281.40	7,39,825.92
		2.36 mm below @ 20 per cent	cum	76.80	2,202.70	1,69,167.36
		Water	kl	30.00	133.00	3,990.00
		d) Add GST (multiplying factor) = 0.2127 on (a+b+c)				3,09,024.19
		e) Contractor's profit = 15 % on (a+b+c+d)				2,64,283.24
		f) Add Cess @ 1.00 % on (a+b+c+d+e)				20261.72
		cost of 300cum= a+b+c+d+e+f				20,46,433.23
		Rate per cum= (a+b+c+d+e+f)/300				6,821.44
				say		<u>6821.40</u>
	(ii)	<b>Grading -B</b> Unit = cum Taking out put = 300 cum				
	a)	<b>Labour</b>				
		Mate	day	0.40	310.00	124.00
		Mazdoor(skilled)	day	2.00	380.00	760.00
		Mazdoor (Unskilled)	day	8.00	310.00	2,480.00
	b)	<b>Machinery</b>				
		Tractor mount Grader @ 25 cum per hour	hour	12.00	322.00	3,864.00
		Three wheel 80-100 KN static roller @10 cum per hour	hour	30.00	392.00	11,760.00
		Water tanker 6kl capacity	hour	5.00	200.00	1,000.00

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Tractor withh Rotavator @25 cum per hour	hour	12.00	322.00	3,864.00	
	<b>c) Material</b>					
	Well Graded granular sub-base material as per Table 400.2 Grading-B	cum				
	26.5 mm to 4.75 mm @ 75 per cent	cum	288.00	4,281.40	12,33,043.20	
	2.36 mm below @ 25 per cent	cum	96.00	2,274.50	2,18,352.00	
	Water	kl	30.00	133.00	3,990.00	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				<b>3,14,633.75</b>	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				<b>2,69,080.64</b>	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				20629.52	
	<b>cost of 300cum= a+b+c+d+e+f</b>				<b>20,83,581.11</b>	
	<b>Rate per cum= (a+b+c+d+e+f)/300</b>				<b>6,945.27</b>	
				<b>say</b>	<b><u>6945.30</u></b>	
(iii)	<b>Grading -C</b>					
	Unit = cum					
	<b>Taking out put = 300 cum</b>					
	<b>a) Labour</b>					
	Mate	day	0.40	310.00	124.00	
	Mazdoor(skilled)	day	2.00	380.00	760.00	
	Mazdoor (Unskilled)	day	8.00	310.00	2,480.00	
	<b>b) Machinery</b>					
	Tractor mount Grader @ 25 cum per hour	hour	12.00	322.00	3,864.00	
	Three wheel 80-100 KN static roller @10 cum per hour	hour	30.00	392.00	11,760.00	
	Water tanker 6kl capacity	hour	5.00	200.00	1,000.00	
	Tractor withh Rotavator @25 cum per hour	hour	12.00	322.00	3,864.00	
	<b>c) Material</b>					
	Well Graded granular sub-base material as per Table 400.2 Grading-C	cum				
	9.5 mm to 4.75 mm @ 66 per cent	cum	255.00	4,413.70	11,25,493.50	
	2.36 mm below @ 34 per cent	cum	129.00	2,281.10	2,94,261.90	
	Water	kl	30.00	133.00	3,990.00	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				<b>3,07,903.97</b>	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				<b>2,63,325.21</b>	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				20188.27	
	<b>cost of 300cum= a+b+c+d+e+f</b>				<b>20,39,014.84</b>	
	<b>Rate per cum= (a+b+c+d+e+f)/300</b>				<b>6,796.72</b>	
				<b>say</b>	<b><u>6796.70</u></b>	
<b>M1.38</b>	<b>402 Gravel / Soil - Aggregate Surface Course ( Table 400.3 )</b>					
	Construction of gravel / soil - aggregate surface course by providing well graded material, spreading in uniform layers with Tractor mount grader on prepared surface, mixing by mix in place method with Tractor mount rotavator at OMC, and compacting with three wheel 80 - 100 kN static roller to achieve the desired density, complete as per Technical Specification Clause 402.					
	Unit = cum					
	<b>Taking out put = 300 cum</b>					
	<b>a) Labour</b>					
	Mate	day	0.40	310.00	124.00	
	Mazdoor(skilled)	day	2.00	380.00	760.00	
	Mazdoor (Unskilled)	day	8.00	310.00	2,480.00	
	<b>b) Machinery</b>					
	Tractor mount Grader @ 25 cum per hour	hour	12.00	322.00	3,864.00	
	Three wheel 80-100 KN static roller @10 cum per hour	hour	30.00	392.00	11,760.00	
	Water tanker 6kl capacity	hour	5.00	200.00	1,000.00	
	Tractor withh Rotavator @25 cum per hour	hour	12.00	322.00	3,864.00	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	<b>c) Material</b>					
	Well Graded granular sub-base material as per Table 400.3	cum				
	4.75 to 2.36 mm 40 per cent	cum	153.60	4,501.80	6,91,476.48	
	2.36 mm below @ 60 per cent	cum	210.40	2,274.50	4,78,554.80	
	Water	kl	30.00	133.00	3,990.00	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				<b>2,54,787.65</b>	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				<b>2,17,899.14</b>	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				16705.60	
	<b>cost of 300cum= a+b+c+d+e+f</b>				<b>16,87,265.67</b>	
	<b>Rate per cum= (a+b+c+d+e+f)/300</b>				<b>5,624.22</b>	
				<b>say</b>	<b><u>5624.20</u></b>	
<b>M1.39</b>	IRC:S 40/50 mm compacted thickness with bitumen P:98- 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 as per direction of Engineer-in-charge.					
	Unit = cum					
	Details of cost for 191 cum (450 tonnes)					
	<b>a) Labour</b>					
	Mate	day	0.84	391.00	328.44	
	Mazdoor(unskilled)	day	16.00	391.00	6256.00	
	Mazdoor(skilled)	day	5.00	475.00	2375.00	
	<b>b) Machinery</b>					
	Batch mix HMP 100-120 TPH hydrostatic with sensor control	hour	6.00	15400.00	92400.00	
	Electric generator set, 250 KVA	hour	6.00	625.00	3750.00	
	Tipper 5.50 cum/ 10 tonne capacity	hour	18.64	334.00	6225.76	
	Hydraulic broom @ 1250 sqm per hour	hour	2.20		0.00	
	Front end loader 1 cum bucket capacity	hour	6.00	920.00	5520.00	
	Paver finisher hydrostatic with sensor	hour	6.00	2250.00	13500.00	
	80-100 kN Static Roller	hour	3.90	392.00	1528.80	
	(for initial break down rolling.(6*0.65))					
	80-100 kN Vibratory roller	hour	3.90	1395.00	5440.50	
	(for intermediate rolling.(6*0.65))					
	80-100 kN Tandem roller	hour	3.90	1205.00	4699.50	
	(Finish rolling with 6-8 tonnes smooth wheeled tandem roller.(6*0.65))					
	<b>c) Material</b>					
	<b>i) Paving Asphalt VG-30 of approved quality</b>					
	@5.50% (percentage by weight of total mix	tonne	24.75	40138.00	993415.50	
	<b>ii) Aggregate</b>					
	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, <b>Volume of aggregate =425.25/1.5 = 283.50 cum</b>					
	Grading - II/19 mm (Nominal Size)	cum	85.05	4237.30	360382.37	
	13.2 - 10 mm size = 30% of 283.50 = 85.05 cum					
	10 - 5 mm size = 25% of 283.50 = 70.88 cum	cum	70.88	4355.60	308724.93	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	5 mm and below = 42% of 283.50 = 119.07 cum	cum	119.07	4450.50	529921.04	
	<b>iii) Waste Plastic @ 8% of the weigh of bitumen i.e. 24.75*8%</b>					
	Waste plastic additive	tonne	1.98	38100.00	75438.00	
	<b>iv) Dry hydrated lime (factory made)</b>	quintal	127.60	354.00	45170.40	
	(Lime filler @ 3% ( percentage by weight of aggregate)(consider density of lime as 1.29 T per cum, V = 12.758/1.29 = 9.89 cum)					
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				522194.71	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				446590.64	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				34238.62	
	Cost for 191 cum = a+b+c+d+e+f				3458100.20	
	<b>Rate per cum = (a+b+c+d+e+f)/191</b>				18105.24	
				<b>say</b>	<b><u>18105.20</u></b>	
<b>M1.40</b>	Providing and fixing Solar Powered Road Delineator made of poly carbonate cup of approximate 80 mm dia and 90 mm height and mounted on MS pipe of 65 mm dia duly powder coated anti-rust and anti theft steel to be installed as per direction of Engineer-in-charge.					
	Unit = Nos					
	Details of cost for 1 No.					
	<b>a) Material</b>					
	Solar Power Road Delineator	Nos	1.00	475.00	475.00	
	Add 45 % of the cost of (a) as (LS) for materials required for fixing delineators.				213.75	
	<b>b) Labour</b>					
	Add 25 % of the cost of material as (LS) for charges of fixing delineators and providing barricading to divert traffic.				118.75	
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				171.76	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				146.89	
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				11.26	
	Cost for 1 No = a+b+c+d+e				1137.40	
	<b>Rate per No = (a+b+c+d+e)</b>				1137.40	
				<b>say</b>	<b><u>1137.40</u></b>	
<b>M1.41</b>	<b>Retro Reflective Tapes</b>					
	Providing and fixing retro-relectorised warning signs of red, white, yellow high quality retro-reflecting water proof sheeting tapes (45mx72mm) in width of standard specification and direction of the Engineer-in-charge.					
	Unit = Mtr					
	taking output = 3 x 45 mtr tape.					
	<b>a) Material</b>					
	Retro Reflective Tapes (45m x 72mm)	no	1.00	1,244.50	1244.50	
	Add 3 % of the cost of (a) as (LS) wastage.				37.34	
	<b>b) Labour</b>					
	Helper (skilled)	day	0.05	310.00	15.50	
	Mazdoor(unskilled)	day	0.05	310.00	15.50	
	<b>c) Add GST (multiplying factor) = 0.2127 on (a+b)</b>				279.24	
	<b>d) Contractor's profit = 15 % on (a+b+c)</b>				238.81	



**MISCELLANEOUS-1  
DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				18.31	
	Cost for 3x 45 mtr = a+b+c+d+e				1849.20	
	<b>Rate per mtr = (a+b+c+d+e)</b>				13.70	
				<b>say</b>	<b><u>13.70</u></b>	
<b>M1.42</b>	Flexible median Marker					
	Providing and Fixing of Flexible Median Markers as per IRC:79-2019 which shall be made of combination of tough, high impact resistant, injection-molded, thermoplastic body having overall height, width and body thickness not less than 180 mm, 120 mm and 6.5 mm respectively along with fluorescent yellow colour retro-reflective sheeting of Type XI as per IRC:67-2012 on both the faces with property of flexibility to provide high durability and U shape structure having rebound / bounce back property. The flexible Median Marker should have integrated shank having depth of min 30 mm and a dia min 20 mm fixed by drilling a hole on the kerb for the shanks to go inside, without nails and using epoxy resin based adhesive complete as directed by the engineer-in-charge.					
	Unit = each					
	Details of cost for 1 No. (FMM)					
	<b>a) Material</b>					
	Epoxy adhesive	kg	0.032	171.60	5.49	
	Flexible median marker, yellow color with ABS body material of standard size	no	1.00	95.00	95.00	
	<b>b) Labour</b>					
	Mate	day	0.01	391.00	3.91	
	Mazdoor(unskilled)	day	0.02	391.00	7.82	
	<b>c) Machinery</b>					
	Generator 33 KVA	hour	0.08	225.00	18.00	check link
	Drilling machine 5% of (a)	LS			5.02	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				28.77	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				24.60	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				1.89	
	Cost for 1 No = a+b+c+d+e+f				190.50	
	<b>Rate per No = (a+b+c+d+e+f)</b>				190.50	
				<b>say</b>	<b><u>190.50</u></b>	

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
<b>M1.43</b>	<b>507 Bituminous Concrete using Waste Plastic</b>					
<b>New</b>	<b>A.</b> Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ 5.20 percent of mix including cement filler, transporting the hot mix plant 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 MORT&H specification clause No. 507 complete in all respects and the bituminous mix be suitably modified with waste plastic as per as per "Dry Process" including collection of waste plastic, cleaning, shredding all complete as per IRC :SP: 98.					
	<b>Grading I</b>					
	<b>i. With Viscosity Graded Bitumen of VG-30 &amp; Waste Plastic</b>					
	<b>Unit = cum</b>					
	<b>Taking output = 191 cum (450 tonnes)</b>					
	<b>a) Labour</b>					
	Mate	day	0.440	391.00	172.04	L-19
	Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-20
	Mazdoor(skilled)	day	5.000	475.00	2375.00	L-22
	<b>b) Machinery</b>					
	Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	5.008	15400.00	77123.20	P&M-005
	Mechanical broom (2.10m sweeping width)	hour	1.137	345.00	392.27	P&M-033
	Air Compressor 250 cfm	hour	1.137	210.00	238.77	P&M-001
	Paver finisher hydrostatic with sensor	hour	5.008	2250.00	11268.00	P&M-050
	Generator 250 KVA	hour	5.008	625.00	3130.00	P&M-025
	Front end loader 1 cum bucket capacity	hour	15.694	920.00	14438.48	P&M-030
	Tipper 5.5 cum, 10 T capacity					
	For transportation of mix (450T x 5 km distance from plant to work site)	t.km	2250.00	4.20	9450.00	Item 1.3
	For loading & unloading time	hour	10.017	334.00	3345.68	P&M-073
	Pneumatic Tyre Roller	hour	4.007	1180.00	4728.26	P&M-053
	Smooth wheel tandem roller for static and vibratory passages	hour	11.831	1205.00	14256.36	P&M-058
	Shredding Machine	hour	1.250	549.00	686.25	P&M-087
	<b>c) Material</b>					
	<b>i) Bitumen (VG-30)</b>					
	@ 4.78 per cent of weight of mix	tonne	21.510	61186.00	1316110.86	M-041
	<b>ii) Waste Plastic @ 8 per cent of Bitumen mix</b>	tonne	1.872	38100.00	71323.20	M-295
	<b>iii) Aggregate</b>					
	Total weight of mix = 450 tonnes					
	Weight of bitumen = 21.510 tonnes					
	Weight of plastic = 1.872 tonnes					
	Weight of aggregate = 450.00 - 21.51-1.872 = 426.618 tonnes					
	<b>Taking density of aggregate = 1.5 ton/cum</b>					
	Volume of aggregate = 284.412 cum					
	<b>* Grading - I/ 19 mm (Nominal Size)</b>					
	20 - 10 mm 38 per cent	cum	108.077	4149.18	448431.32	M-011
	10 - 5 mm 17 per cent	cum	48.350	4355.63	210594.67	M-006
	5 mm and below 43 per cent	cum	122.297	4450.55	544288.30	M-013

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.532	6797.00	57992.00	M-052
	* Any one of the alternative may be adopted as per approved design.					
	<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				594005.30	
	<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				508004.39	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				38947.00	
	Cost for 191 cum = a+b+c+d+e+f				3933647.36	
	<b>Rate per cum = (a+b+c+d+e+f)/191</b>				20595.01	
				<b>say</b>	<b><u>20595.00</u></b>	
<b>B</b>	Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ <b>5.40</b> percent of mix including cement filler, transporting the hot mix plant 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 MORT&H specification clause No. 507 complete in all respects and the bituminous mix be suitably modified with waste plastic as per as per "Dry Process" including collection of waste plastic, cleaning, shredding all complete as per IRC :SP: 98.					
	<b>Grading II</b>					
	<b>i. With Viscosity Graded Bitumen of VG-30 &amp; waste plastic</b>					
	<b>Unit = cum</b>					
	<b>Taking output = 191 cum (450 tonnes)</b>					
	<b>a) Labour</b>					
	Mate	day	0.440	391.00	172.04	L-19
	Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-20
	Mazdoor(skilled)	day	5.000	475.00	2375.00	L-22
	<b>b) Machinery</b>					
	Batch mix HMP 100 - 120 TPH @ 75 tonne per hour actual output	hour	5.008	15400.00	77123.20	P&M-005
	Mechanical broom (2.10m sweeping width)	hour	1.624	345.00	560.28	P&M-033
	Air Compressor 250 cfm	hour	1.624	210.00	341.04	P&M-001
	Paver finisher hydrostatic with sensor	hour	5.008	2250.00	11268.00	P&M-050
	Generator 250 KVA	hour	5.008	625.00	3130.00	P&M-025
	Front end loader 1 cum bucket capacity	hour	15.520	920.00	14278.40	P&M-030
	Tipper 5.5 cum, 10 T capacity					
	For transportation of mix (450T x 5 km distance from plant to work site)	t.km	2250.00	4.20	9450.00	Item 1.3
	For loading & unloading time	hour	10.017	334.00	3345.68	P&M-073
	Pneumatic Tyre Roller	hour	4.007	1180.00	4728.26	P&M-053
	Smooth wheel tandem roller for static and vibratory passages	hour	16.902	1205.00	20366.91	P&M-058
	Shredding Machine	hour	1.298	549.00	712.60	P&M-087
	<b>c) Material</b>					
	<b>i) Bitumen (VG-30)</b>					
	@ 4.97 per cent of weight of mix	tonne	22.365	61186.00	1368424.89	M-041
	<b>ii) Waste Plastic @ 8 per cent of Bitumen mix</b>					
		tonne	1.944	38100.00	74066.40	M-295
	<b>iii) Aggregate</b>					
	Total weight of mix = 450 tonnes					

**MISCELLANEOUS-1**  
**DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Weight of bitumen = 22.365 tonnes Weight of plastic = 1.944 tonnes Weight of aggregate = 450 - 22.365 - 1.944 = 425.691 tonnes <b>Taking density of aggregate = 1.5 ton/cum</b> Volume of aggregate = 283.794 cum					
	<b>Grading - II/ 13 mm (Nominal Size)</b>					
	13.2 - 10 mm 21 per cent	cum	59.597	4281.43	255160.30	M-011
	10 - 5 mm 17 per cent	cum	48.245	4355.63	210137.33	M-006
	5 mm and below 60 per cent	cum	170.276	4450.55	757821.00	M-013
	Filler @ 2 per cent of weight of aggregates(cement).	tonne	8.514	6797.00	57869.66	M-052
	* Any one of the alternative may be adopted as per approved design.					
	<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				611231.10	
	<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				522736.21	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				40076.44	
	Cost for 191 cum = a+b+c+d+e+f				4047720.74	
	<b>Rate per cum = (a+b+c+d+e+f)/191</b>				21192.26	
				<b>say</b>	<b><u>21192.30</u></b>	
	<b>Note</b> *1. Quantity of Bitumen & Plastic have been taken for analysis purpose. The actual will depend upon job mix formula.					
	2. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
	3. In case BC is laid over freshly laid tack coat, provision of mechanical broom and 2 mazdoors					
	4. 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 Percent by weight of dry aggregates.					
<b>M1.44</b>	Spring Posts or Reboundable Delineators 450 mm					
<b>New</b>	Providing and fixing Spring Posts or Reboundable Delineators made up of Polyurethane used to divide opposing lanes of road users shall be flexible in nature. Tubular maker having height upto 450 mm shall be having 75 mm reboundable work zone retroreflective sheeting as per ASTM 4956 S2. Application of Tubular Marker Shall be done as per IRC:SP:55. Unit = each Details of cost for 1 No. Spring Posts or Reboundable Delineators 450 mm					
	<b>a) Material</b>					
	Spring Posts or Reboundable Delineators 450 mm	no	1.00	180.00	180.00	
	Add 10% extra for cost of nuts/ bolts/ nails etc. required for fixing	LS			18.00	
	<b>b) Labour</b>					
	Mate	day	0.013	391.00	5.08	
	Mazdoor(unskilled)	day	0.0333	391.00	13.02	
	<b>c) Machinery</b>					
	Generator 33 KVA	hour	0.08	225.00	18.00	

**MISCELLANEOUS-1  
DIFFERENT MISCELLANEOUS ITEMS FOR ROADS & STEEL BRIDGES**

Sr. No.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
	Drilling machine 5% of (a)	LS			9.90	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				51.90	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				44.39	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				3.40	
	Cost for 1 No = a+b+c+d+e+f				343.69	
	<b>Rate per No = (a+b+c+d+e+f)</b>				343.69	
				<b>say</b>	<b><u>343.70</u></b>	
<b>M1.45</b>	Spring Posts or Reboundable Delineators 700 mm					
<b>New</b>	Providing and fixing Spring Posts or Reboundable Delineators made up of Polyurethane used to divide opposing lanes of road users shall be flexible in nature. Tubular maker having height upto 700 mm shall be having 75 mm reboundable work zone retroreflective sheeting as per ASTM 4956 S2. Application of Tubular Marker Shall be done as per IRC:SP:55. Unit = each Details of cost for 1 No. Spring Posts or Reboundable Delineators 450 mm					
	<b>a) Material</b>					
	Spring Posts or Reboundable Delineators 450 mm	no	1.00	270.00	270.00	
	Add 10% extra for cost of nuts/ bolts/ nails etc. required for fixing	LS			27.00	
	<b>b) Labour</b>					
	Mate	day	0.013	391.00	5.08	
	Mazdoor(unskilled)	day	0.0333	391.00	13.02	
	<b>c) Machinery</b>					
	Generator 33 KVA	hour	0.08	225.00	18.00	
	Drilling machine 5% of (a)	LS			14.85	
	<b>d) Add GST (multiplying factor) = 0.2127 on (a+b+c)</b>				74.01	
	<b>e) Contractor's profit = 15 % on (a+b+c+d)</b>				63.29	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				4.85	
	Cost for 1 No = a+b+c+d+e+f				490.11	
	<b>Rate per No = (a+b+c+d+e+f)</b>				490.11	
				<b>say</b>	<b><u>490.10</u></b>	

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
M2.1		Providing of Sal / Nahar / Nageswar piles dressed to heart wood and making shoes with end tapered upto 750 mm from the bottom of the pile, marking of length with chisel in metre and part of a metre run from the bottom of the piles, applying coal tar after verification and approval of the piles and stacking at the work site as per Specification.					
		<b>(i) 250 mm dia to 300 mm dia piles</b>					
		<b>Unit = m</b>					
		<b>Taking output = 10.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.04	391.00	15.64	L-19
		Carpenter(2nd class)	day	0.50	475.00	237.50	L-08
		Mazdoor(unskilled)	day	0.50	391.00	195.50	L-20
		<b>b) Material</b>					
		Sal/Nahar/Nageswar piles, 250 mm dia to 300 mm dia piles	cum	10.10	1790.00	18079.00	M-230
		Applying coal tar, <b>Rate vide item no. M2.9(ex/c OH &amp; CP)</b>	Sqm	8.64	32.58	281.47	Item no. M2.9
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				4000.70	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				3421.47	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				262.31	
		Cost for 10 m = a+b+c+d+e				26493.59	
		<b>Rate per m = (a+b+c+d+e)/10</b>				2649.36	
					<b>say</b>	<b><u>2649.40</u></b>	
		<b>(ii) 200 mm dia to 250 mm dia piles</b>					
		<b>Unit = m</b>					
		<b>Taking output = 10.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.032	391.00	12.51	L-19
		Carpenter(2nd class)	day	0.40	475.00	190.00	L-08
		Mazdoor(unskilled)	day	0.40	391.00	156.40	L-20
		<b>b) Material</b>					
		Sal/Nahar/Nageswar piles, 200 mm dia to 250 mm dia piles	cum	10.10	1575.00	15907.50	M-231
		Applying coal tar, <b>rate vide item no. M2.9</b>	Sqm	7.07		0.00	Item no. M2.9
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				3459.87	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				2958.94	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				226.85	
		Cost for 10 m = a+b+c+d+e				22912.07	
		<b>Rate per m = (a+b+c+d+e)/10</b>				2291.21	
					<b>say</b>	<b><u>2291.20</u></b>	
M2.2		Handling and driving of Sal / Nahar / Nageswar piles with 3/4th to 1.0 ton monkey upto refusal as per Specification.					
		<b>(ii) 250 mm dia to 300 mm dia piles</b>					
		<b>Unit = m</b>					
		<b>Taking output = 10.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.92	391.00	359.72	L-19
		Mistri(for wooden pile driving/ lifting)	day	1.00	512.00	512.00	L-23
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-22
		Mazdoor(semi-skilled)	day	6.00	447.00	2682.00	L-21
		Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-20

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		<b>b) Tools</b>					
		3/4th to 1.00 tonne monkey with necessary chains, pulley and other accessories for handling and driving of wooden piles (hire charges)	day	1.00	3052.00	3052.00	
		Add 1.00% on (a+b) for sundries				134.21	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				2854.59	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				2461.43	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				188.71	
		Cost for 10 m = a+b+c+d+e				19059.65	
		<b>Rate per m = (a+b+c+d+e)/10</b>				1905.97	
					<b>say</b>	<b><u>1906.00</u></b>	
		<b>(ii) 200 mm dia to 250 mm dia piles</b>					
		<b>Unit = m</b>					
		<b>Taking output = 10.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.56	391.00	218.96	L-19
		Mistri(for wooden pile driving/ lifting)	day	1.00	512.00	512.00	L-23
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-22
		Mazdoor(semi-skilled)	day	4.00	447.00	1788.00	L-21
		Mazdoor(unskilled)	day	8.00	391.00	3128.00	L-20
		<b>b) Tools</b>					
		3/4th to 1.00 tonne monkey with necessary chains, pulley and other accessories for handling and driving of wooden piles (hire charges)	day	1.00	3052.00	3052.00	
		Add 1.00% on (a+b) for sundries				96.49	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				2052.33	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1769.67	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				135.67	
		Cost for 10 m = a+b+c+d+e				13703.13	
		<b>Rate per m = (a+b+c+d+e)/10</b>				1370.31	
					<b>say</b>	<b><u>1370.30</u></b>	
<b>M2.3</b>		Scarfing and jointing (half lap joint 1.00 m long) of Sal / Nahar / Nageswar piles of required dia with 3 Nos M.S. circular clamps of made of 50 mm x 10 mm MS flat or plate of required length, 2 nos. 100 mm x 100 mm x 10 mm MS angle 1.50 m long tightened with 12 mm dia & 50 mm long bolts and nuts for circular clamp and 3 Nos. 16 mm dia bolts and nuts of required length with washers on both side of the angles complete (payment for the length of piles required for jointing is to be made separately) as per drawing and as per Specification.					
		<b>(i) 250 mm dia to 300 mm dia piles</b>					
		<b>Unit = No</b>					
		<b>Taking output = 1 No</b>					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-19
		Carpenter(2nd class)	day	0.30	475.00	142.50	L-08
		Mazdoor(unskilled)	day	0.30	391.00	117.30	L-20
		<b>b) Material</b>					
		M.S. Clamp made of MS flat or plate 50 x 10 mm 1.34 m long @ 3.80 kg/m 3 nos	Kg	15.28	59.50	909.16	M-131
		M.S. angle 100 x 100 x 10 mm 1.5 m long @ 15.20 kg/m 2 nos	Kg	45.60	59.50	2713.20	M-131

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		Machine charge of clamps and angles with necessary holes also @ 5.00 %				194.30	
		M.S. nut & bolts with washers 16 mm dia 3 nos 350 mm long	Kg	1.69	64.50	109.01	M-143
		M.S. nut & bolts with washers 12 mm dia 2 nos 50 mm long	Kg	0.09	64.50	5.81	M-143
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				892.32	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				763.12	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				58.51	
		Cost for 1 no = a+b+c+d+e				5909.13	
		<b>Rate per no of joint = (a+b+c+d+e)/1</b>				5909.13	
					<b>say</b>	<b><u>5909.10</u></b>	
		<b>(ii) 200 mm dia to 250 mm dia piles</b>					
		<b>Unit = No</b>					
		<b>Taking output = 1 No</b>					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-19
		Carpenter(2nd class)	day	0.30	475.00	142.50	L-08
		Mazdoor(unskilled)	day	0.30	391.00	117.30	L-20
		<b>b) Material</b>					
		M.S. Clamp made of MS flat or plate 50 x 10 mm 1.19 m long @ 3.80 kg/m 3 nos	Kg	13.57	59.50	807.42	M-131
		M.S. angle 100 x 100 x 10 mm 1.5 m long @ 15.20 kg/m 2 nos	Kg	45.60	59.50	2713.20	M-131
		Machine charge of clamps and angles with necessary holes also @ 5.00 %				189.22	
		M.S. nut & bolts with washers 16 mm dia 3 nos 300 mm long	Kg	1.45	64.50	93.53	M-143
		M.S. nut & bolts with washers 12 mm dia 2 nos 50 mm long	Kg	0.09	64.50	5.81	M-143
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				866.30	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				740.88	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				56.80	
		Cost for 1 no = a+b+c+d+e				5736.85	
		<b>Rate per no of joint = (a+b+c+d+e)/1</b>				5736.85	
					<b>say</b>	<b><u>5736.80</u></b>	
<b>M2.4</b>		Cutting and jointing (butt joints) of Sal/ Nahar /Nageswar piles of required dia fitted with 400 mm long 32 mm dia MS Dowel bar at centre of the pile, 4 nos. 100 mm x 100 mm x 10 mm MS angle 1.50 m long tightened with 6 x 2 Nos. 16 mm dia bolts and nuts of required length with washers on both side of the angles complete as per drawing and as per Specification					
		<b>(i) 250 mm dia to 300 mm dia piles</b>					
		<b>Unit = No</b>					
		<b>Taking output = 1 No</b>					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-19
		Carpenter(2nd class)	day	0.20	475.00	95.00	L-08
		Mazdoor(unskilled)	day	0.20	391.00	78.20	L-20
		<b>b) Material</b>					
		M.S. angle 100 x 100 x 10 mm 1.5 m long @ 15.20 kg/m 4 nos	Kg	91.20	59.50	5426.40	M-131
		Machine charge of clamps and angles with necessary holes also @ 5.00 %				280.18	



**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/Ref.
		M.S. nut & bolts with washers 16 mm dia 12 nos 350 mm long	Kg	6.76	64.50	436.02	M-143
		M.S. dowel bar 32 mm dia 1 no 400 mm long	Kg	2.57	64.50	165.77	M-143
		For staging etc. @ 5.00 %				324.27	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1448.43	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1238.73	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				94.97	
		Cost for 1 no = a+b+c+d+e				9591.87	
		<b>Rate per no of joint = (a+b+c+d+e)/1</b>				9591.87	
					<b>say</b>	<b><u>9591.90</u></b>	
		<b>(ii) 200 mm dia to 250 mm dia piles</b>					
		<b>Unit = No</b>					
		<b>Taking output = 1 No</b>					
		<b>a) Labour</b>					
		Mate	day	0.01	391.00	3.91	L-19
		Carpenter(2nd class)	day	0.20	475.00	95.00	L-08
		Mazdoor(unskilled)	day	0.20	391.00	78.20	L-20
		<b>b) Material</b>					
		M.S. angle 100 x 100 x 10 mm 1.5 m long @ 15.20 kg/m 4 nos	Kg	91.20	59.50	5426.40	M-131
		Machine charge of clamps and angles with necessary holes also @ 5.00 %				280.18	
		M.S. nut & bolts with washers 16 mm dia 12 nos 300 mm long	Kg	5.79	64.50	373.46	M-143
		M.S. dowel bar 32 mm dia 1 no 400 mm long	Kg	2.57	64.50	165.77	M-143
		For staging etc. @ 5.00 %				321.15	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1434.46	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1226.78	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				94.05	
		Cost for 1 no = a+b+c+d+e				9499.34	
		<b>Rate per no of joint = (a+b+c+d+e)/1</b>				9499.34	
					<b>say</b>	<b><u>9499.30</u></b>	
<b>M2.5</b>		Providing and placing R.S. Joists in position in SPT bridges including cutting, hoisting, making holes, fitting with 3 nos of MS hooks of 16 mm dia on both side of the joists with each beam, applying priming coat of red lead paint as per drawing and as per Specification.					
		<b>Unit = t</b>					
		<b>Taking output = 3.182 t.</b>					
		<b>a) Labour</b>					
		Mate	day	2.40	391.00	938.40	L-19
		Carpenter(2nd class)	day	4.00	475.00	1900.00	L-08
		Mazdoor(unskilled)	day	60.00	391.00	23460.00	L-20
		<b>b) Material</b>					
		RS Joist 450 x 150 mm size 12.00 m long @ 44.20 kg/m	Tonne	3.182	59530.00	189424.46	M-184
		M.S. hooks, 16 mm dia 36 nos 200 mm long	Kg	11.59	57.00	660.63	M-186
		Machine charge for cutting joists, making holes, etc. @ 25.00 % of labour				6574.60	
		For making arrangements for placing the joist in position, etc. @ 25.00 % of labour				6574.60	
		Applying a priming coat of red lead paint including staging as required @ 15.00 % of labour				3944.76	

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				49660.65	
		d) Contractor's profit @ 15 % on (a+b+c)				42470.72	
		e) Add Cess @ 1.00 % on (a+b+c+d)				3256.09	
		Cost for 3.182 t = a+b+c+d+e				328864.91	
		Rate per Tonne = (a+b+c+d+e)/3.182				103351.64	
						<b>say <u>103351.60</u></b>	

**M2.6** Charges for placing R.S. Joists in position in SPT bridges including cutting, hoisting, making holes, fitting with 3 nos of MS hooks of 16 mm dia on both side of the joists with each beam, applying priming coat of red lead paint as per drawing and as per Specification (excluding the cost of the RS Joist available at site).

**i. For placing new RS Joist**

**Unit = t**

**Taking output = 3.182 t.**

**a) Labour**

Mate	day	2.40	391.00	938.40	L-19
Carpenter(2nd class)	day	4.00	475.00	1900.00	L-08
Mazdoor(unskilled)	day	60.00	391.00	23460.00	L-20

**b) Material**

RS Joist 450 x 150 mm size 12.00 m long @ 44.20 kg/m (available at site)	Tonne	3.182		0.00	
M.S. hooks, 16 mm dia 36 nos 200 mm long	Kg	11.59	57.00	660.63	M-186
Machine charge for cutting joists, making holes, etc. @ 25.00 % of labour				6574.60	
For making arrangements for placing the joist in position, etc. @ 25.00 % of labour				6574.60	
Applying a priming coat of red lead paint including staging as required @ 15.00 % of labour				3944.76	
c) Add GST (multiplying factor) @ 0.2127 on (a+b)				9370.07	
d) Contractor's profit @ 15 % on (a+b+c)				8013.46	
e) Add Cess @ 1.00 % on (a+b+c+d)				614.37	
Cost for 3.182 t = a+b+c+d+e				62050.89	
Rate per Tonne = (a+b+c+d+e)/3.182				19500.59	
				<b>say <u>19500.60</u></b>	

**ii. For placing old and dismantled RS joists**

**Unit = t**

**Taking output = 3.182 t.**

**a) Labour**

Mate	day	2.40	391.00	938.40	L-19
Carpenter(2nd class)	day	4.00	475.00	1900.00	L-08
Mazdoor(unskilled)	day	60.00	391.00	23460.00	L-20

**b) Material**

RS Joist 450 x 150 mm size 12.00 m long @ 44.20 kg/m (available at site)	Tonne	3.182		0.00	
M.S. hooks, 16 mm dia 36 nos 200 mm long	Kg	11.59	57.00	660.63	M-186
For making arrangements for placing the joist in position, etc. @ 25.00 % of labour				6574.60	
For Scrapping of RS Joist. @ 5.00 % of labour				1314.92	

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		Applying a priming coat of red lead paint including staging as required @ 15.00 % of labour				3944.76	
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				8251.34	
		d) Contractor's profit @ 15 % on (a+b+c)				7056.70	
		e) Add Cess @ 1.00 % on (a+b+c+d)				541.01	
		Cost for 3.182 t = a+b+c+d+e				54642.36	
		Rate per Tonne = (a+b+c+d+e)/3.182				17172.33	
					<b>say</b>	<b><u>17172.30</u></b>	
<b>M2.7</b>		Dismantling R.S. Joists from SPT Bridges and stacking properly at site of work within 100 m lead with all lifts as per drawing and as per Specification.					
		<b>Unit = t</b>					
		<b>Taking output = 3.182 t</b>					
		a) Labour					
		Mate	day	2.20	391.00	860.20	L-19
		Carpenter(2nd class)	day	4.00	475.00	1900.00	L-08
		Mazdoor(unskilled)	day	55.00	391.00	21505.00	L-20
		b) Add GST (multiplying factor) @ 0.2127 on (a)				5161.21	
		c) Contractor's profit @ 15 % on (a+b)				4413.96	
		d) Add Cess @ 1.00 % on (a+b+c)				338.40	
		Cost for 3.182 t = a+b+c+d+e				34178.77	
		Rate per m = (a+b+c+d)/3.182				10741.29	
					<b>say</b>	<b><u>10741.30</u></b>	
<b>M2.8</b>		Providing and fitting fixing of MS bolts with heads and nuts of various dia and length including making of holes in wooden members as per Specification.					
		<b>Unit = kg</b>					
		<b>Taking output = 15.88 kg</b>					
		a) Labour					
		Mate	day	0.01	391.00	3.91	L-19
		Carpenter(2nd class)	day	0.30	475.00	142.50	L-08
		Mazdoor(unskilled)	day	0.30	391.00	117.30	L-20
		b) Material					
		M.S. nut & bolts with washers 16 mm dia 16 nos 350 mm long	Kg	9.01	64.50	581.15	M-143
		M.S. nut & bolts with washers 12 mm dia 30 nos 200 mm long	Kg	5.97	64.50	385.07	M-143
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				261.60	
		d) Contractor's profit @ 15 % on (a+b+c)				223.73	
		e) Add Cess @ 1.00 % on (a+b+c+d)				17.15	
		Cost for 15.88 kg = a+b+c+d+e				1732.41	
		Rate per kg = (a+b+c+d+e)/15.88				109.09	
					<b>say</b>	<b><u>109.10</u></b>	
<b>M2.9</b>		Applying coal tar at least two coats on wood work including handling and stacking the coal tarred material at the work site as per Specification.					
		<b>Unit = sqm</b>					
		<b>Taking output = 10.00 sqm</b>					
		a) Labour					
		Mate	day	0.02	391.00	7.82	L-19
		Mazdoor(unskilled)	day	0.50	391.00	195.50	L-20
		b) Material					

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		Coal Tar (considering 1.52 kg for 1st coat & 1.11 kg for 2nd coat and 5.00 % wastage)	Kg	2.76	37.00	102.12	M-056
		Add 10.00 % of labour cost for Sundries				20.33	
		<b>Basic cost of labour &amp; materials(a+b)/</b>				<b>32.58</b>	
		<b>Sqm</b>					
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				69.29	
		d) Contractor's profit @ 15 % on (a+b+c)				59.26	
		e) Add Cess @ 1.00 % on (a+b+c+d)				4.54	
		Cost for 10.00 sqm = a+b+c+d+e				458.87	
		<b>Rate per sqm = (a+b+c+d+e)/10.00</b>				45.89	
					<b>say</b>	<b><u>45.90</u></b>	
<b>M2.1</b>	<b>0</b>	Providing and fitting fixing of wooden beams including hoisting and placing in position with necessary dog spikes / nuts and bolts as per design and drawing, including applying coal tar of minimum two coats on all sides of new wood work complete as per the as per Specification.					
		<b>Unit = cum</b>					
		<b>Taking output = 0.270 cum</b>					
		4.50 m x 0.30 m x 0.20 m = 0.2700 Cum					
		Wastage @ 2.00 % (+) = 0.0054 Cum					
		<b>Total = 0.2754 Cum</b>					
		<b>A. Sal Wood</b>					
		<b>a) Labour</b>					
		Mate	day	0.20	391.00	78.20	L-19
		Carpenter(2nd class)	day	1.00	475.00	475.00	L-08
		Mazdoor(unskilled)	day	4.00	391.00	1564.00	L-20
		<b>b) Material</b>					
		Sal wood beam	Cum	0.2754	78000.00	21481.20	M-232
		Structural steel Dog spikes for beams, MS Bar 16 mm dia 4 nos @ 0.90 m long	kg	5.79	59.53	344.68	M-199
		Cost for making dog spikes @ 20.00 % of materials cost				68.94	
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	4.62	32.58	150.51	Rate as per item M2.9
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				5139.37	
		d) Contractor's profit @ 15 % on (a+b+c)				4395.28	
		e) Add Cess @ 1.00 % on (a+b+c+d)				336.97	
		Cost for 0.27 cum = a+b+c+d+e				34034.14	
		<b>Rate per cum = (a+b+c+d+e)/0.27</b>				126052.39	
					<b>say</b>	<b><u>126052.40</u></b>	
		<b>B. Karai Wood</b>					
		<b>a) Labour</b>					
		Mate	day	0.20	391.00	78.20	L-19
		Carpenter(2nd class)	day	1.00	475.00	475.00	L-08
		Mazdoor(unskilled)	day	4.00	391.00	1564.00	L-20
		<b>b) Material</b>					
		Karai wood beam	Cum	0.2754	45200.00	12448.08	M-233
		Structural steel Dog spikes for beams, MS Bar 16 mm dia 4 nos @ 0.90 m long	kg	5.79	59.53	344.68	M-199
		Cost for making dog spikes @ 20.00 % of materials cost				68.94	
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	4.62	32.58	150.51	Rate as per item M2.9

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				3218.02	
		d) Contractor's profit and overheads @ 15 % on (a+b+c)				2752.11	
		e) Add Cess @ 1.00 % on (a+b+c+d)				211.00	
		Cost for 0.27 cum = a+b+c+d+e				21310.53	
		Rate per cum = (a+b+c+d+e)/0.27				78927.90	
					<b>say</b>	<b><u>78927.90</u></b>	

**M2.1**  
**1**

Providing and fitting fixing of deckings, trackways, battens and planks for abutments & wing walls including hoisting and placing in position with necessary nails and spikes as per design and drawings, including applying coal tar of minimum two coats on all sides of new wood work complete as per the Specification.

**Unit = cum**

**Taking output = 5.508 Cum**

(considering 10.00 m span bridge)

Decking:-

66 x 4.200 m x 0.150 m x 0.100 m =  
4.1580 Cum

Trackway:-

12 x 10.000 m x 0.150 m x 0.075 m =  
1.3500 Cum

Total:- = 5.5080

Cum

Wastage @ 2.00 % (+) = 0.1102 Cum

**Grand Total = 5.6182 Cum**

**A. Sal Wood**

**a) Labour**

Mate	day	0.91	391.00	355.81	L-19
Carpenter(2nd class)	day	5.06	475.00	2403.50	L-08
Mazdoor(unskilled)	day	17.71	391.00	6924.61	L-20

**b) Material**

Sal wood Scantling	Cum	5.6182	52000.00	292146.40	M-234
M.S. Spikes	kg	22.47	65.00	1460.55	M-142
Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	194.85	32.58	6347.67	Rate as per item M2.9

c) Add GST (multiplying factor) @

0.2127 on (a+b)

65860.12

d) Contractor's profit @ 15 % on (a+b+c)

56324.80

e) Add Cess @ 1.00 % on (a+b+c+d)

4318.23

Cost for 5.508 cum = a+b+c+d+e

436141.69

Rate per cum = (a+b+c+d+e)/5.508

79183.31

**say 79183.30**

**B. Karai Wood**

**a) Labour**

Mate	day	0.82	391.00	320.62	L-19
Carpenter(2nd class)	day	4.55	475.00	2161.25	L-08
Mazdoor(unskilled)	day	15.93	391.00	6228.63	L-20

**b) Material**

Karai wood scantling	Cum	5.6182	34650.00	194670.63	M-235
M.S. Spikes	kg	22.47	65.00	1460.55	M-142
Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	194.85	32.58	6347.67	Rate as per item M2.9

c) Add GST (multiplying factor) @

0.2127 on (a+b)

44919.97

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		d) Contractor's profit and overheads @ 15 % on (a+b+c)				38416.40	
		e) Add Cess @ 1.00 % on (a+b+c+d)				2945.26	
		Cost for 5.508 cum = a+b+c+d+e				297470.98	
		Rate per cum = (a+b+c+d+e)/5.508				54007.08	
					<b>say</b>	<b><u>54007.10</u></b>	
		<b>C. Soft Wood</b>					
		a) Labour					
		Mate	day	0.66	391.00	258.06	L-19
		Carpenter(2nd class)	day	4.10	475.00	1947.50	L-08
		Mazdoor(unskilled)	day	12.30	391.00	4809.30	L-20
		b) Material					
		Soft wood scantling	Cum	5.6182	28300.00	158995.06	M-239
		M.S. Spikes	kg	22.47	65.00	1460.55	M-142
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	194.85	32.58	6347.67	Rate as per item M2.9
		c) Add GST (multiplying factor) @ 0.2127 on (a+b)				36971.12	
		d) Contractor's profit and overheads @ 15 % on (a+b+c)				31618.39	
		e) Add Cess @ 1.00 % on (a+b+c+d)				2424.08	
		Cost for 5.508 cum = a+b+c+d+e				244831.72	
		Rate per cum = (a+b+c+d+e)/5.508				44450.20	
					<b>say</b>	<b><u>44450.20</u></b>	

**M2.1**  
**2**

Providing and fitting fixing of joist runner, wheel guards, rail post, struts, railings, bracings of piles, including hoisting and placing in position with necessary nails and spikes and finally fitted with nuts & bolts as per design and drawings, including applying of coal tar of minimum two coats on all sides of new wood work complete (payment for nuts & bolts is to be made separately) as per the as per Specification.

**Unit = cum**

**Taking output = 3.2206 Cum**

(considering 10.00 m span bridge)

Wheel Guard:-

2 x 10.000 m x 0.150 m x 0.200 m = 0.6000 Cum

Rail Post:-

14 x 1.000 m x 0.100 m x 0.100 m = 0.1400 Cum

Strut:-

14 x 1.500 m x 0.100 m x 0.075 m = 0.1575 Cum

Railing:-

6 x 10.000 m x 0.100 m x 0.075 m = 0.4500 Cum

Joist Packing:-

6 x 10.000 m x 0.150 m x 0.125 m = 1.1250 Cum

Bracing:-

14 x 4.750 m x 0.150 m x 0.075 m = 0.7481 Cum

Total:- = 3.2206 Cum

Wastage @ 2.00 % (+) = 0.0644 Cum

**Grand Total = 3.2850 Cum**

**A. Sal Wood**

a) Labour

Mate	day	0.66	391.00	258.06	L-19
Carpenter(2nd class)	day	3.29	475.00	1562.75	L-08
Mazdoor(unskilled)	day	13.16	391.00	5145.56	L-20

b) Material

Sal wood Scantling	Cum	3.2850	52000.00	170820.00	M-234
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**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		M.S. Nails & Spikes for placing the scantling in position	kg	3.29	65.00	213.85	M-142
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	112.12	32.58	3652.56	Rate as per item M2.9
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				38637.55	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				33043.55	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				2533.34	
		Cost for 3.2206 cum = a+b+c+d+e				255867.21	
		<b>Rate per cum = (a+b+c+d+e)/3.2206</b>				79447.06	
					<b>say</b>	<b><u>79447.10</u></b>	
		<b>B. Karai Wood</b>					
		<b>a) Labour</b>					
		Mate	day	0.53	391.00	207.23	L-19
		Carpenter(2nd class)	day	2.96	475.00	1406.00	L-08
		Mazdoor(unskilled)	day	10.36	391.00	4050.76	L-20
		<b>b) Material</b>					
		Karai wood scantling	Cum	3.2850	34650.00	113825.25	M-235
		M.S. Nails & Spikes for placing the scantling in position	kg	3.29	65.00	213.85	M-142
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	112.12	32.58	3652.56	Rate as per item M2.9
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				26237.75	
		<b>d) Contractor's profit and overheads @ 15 % on (a+b+c)</b>				22439.01	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				1720.32	
		Cost for 3.2206 cum = a+b+c+d+e				173752.72	
		<b>Rate per cum = (a+b+c+d+e)/3.2206</b>				53950.42	
					<b>say</b>	<b><u>53950.40</u></b>	
		<b>C. Soft Wood</b>					
		<b>a) Labour</b>					
		Mate	day	0.43	391.00	168.13	L-19
		Carpenter(2nd class)	day	2.66	475.00	1263.50	L-08
		Mazdoor(unskilled)	day	7.98	391.00	3120.18	L-20
		<b>b) Material</b>					
		Soft wood scantling	Cum	3.2850	28300.00	92965.50	M-239
		M.S. Nails & Spikes for placing the scantling in position	kg	3.29	65.00	213.85	M-142
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	112.12	32.58	3652.56	Rate as per item M2.9
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				21564.32	
		<b>d) Contractor's profit and overheads @ 15 % on (a+b+c)</b>				18442.20	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				1413.90	
		Cost for 3.2206 cum = a+b+c+d+e				142804.14	
		<b>Rate per cum = (a+b+c+d+e)/3.2206</b>				44340.85	
					<b>say</b>	<b><u>44340.80</u></b>	

**M2.1**  
**3**

Dismantling of existing Wood work with all T&P and scaffolding whenever necessary, sorting the dismantled materials, disposal of unserviceable materials and stacking the serviceable materials separately and refitting the serviceable dismantled materials with spikes and nails with all lifts and lead at site of work as per Specification.

**Unit = cum**

**Taking output = 4.00 cum**

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		<b>a) Labour</b>					
		Mate	day	0.80	391.00	312.80	L-19
		Carpenter(2nd class)	day	4.00	475.00	1900.00	L-08
		Mazdoor(unskilled)	day	16.00	391.00	6256.00	L-20
		<b>b) Material</b>					
		M.S. Nails & Spikes for placing the scantling in position	kg	12.00	65.00	780.00	M-142
		Cost for T&P and scaffolding whenever necessary @ 0.50 %				46.24	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1977.06	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1690.81	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				129.63	
		Cost for 4.00 cum = a+b+c+d+e				13092.54	
		<b>Rate per cum = (a+b+c+d+e)/4.00</b>				3273.14	
					<b>say</b>	<b><u>3273.10</u></b>	
<b>M2.1</b>		Handling and lifting of Sal/ Nahar/ Nageswar piles by any means from river / cherra bed level, stacking properly, as per Specification.					
<b>4</b>							
		<b>(ii) 250 mm dia to 300 mm dia piles</b>					
		<b>Unit = m</b>					
		<b>Taking output = 10.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.60	391.00	234.60	L-19
		Mistri(for wooden pile driving/ lifting)	day	1.00	512.00	512.00	L-23
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-22
		Mazdoor(semi-skilled)	day	3.00	447.00	1341.00	L-21
		Mazdoor(unskilled)	day	10.00	391.00	3910.00	L-20
		<b>b) Tools</b>					
		Chain, pully and other accessories for handling and lifting of wooden piles (hire charges)	day	1.00	1928.00	1928.00	
		Add 1.00% on (a+b) for sundries				88.76	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1887.84	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1627.83	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				124.80	
		Cost for 10 m = a+b+c+d+e				12604.83	
		<b>Rate per m = (a+b+c+d+e)/10</b>				1260.48	
					<b>say</b>	<b><u>1260.50</u></b>	
		<b>(ii) 200 mm dia to 250 mm dia piles</b>					
		<b>Unit = m</b>					
		<b>Taking output = 10.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.48	391.00	187.68	L-19
		Mistri(for wooden pile driving/ lifting)	day	1.00	512.00	512.00	L-23
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-22
		Mazdoor(semi-skilled)	day	2.00	447.00	894.00	L-21
		Mazdoor(unskilled)	day	8.00	391.00	3128.00	L-20
		<b>b) Tools</b>					
		Chain, pully and other accessories for handling and lifting of wooden piles (hire charges)	day	1.00	1928.00	1928.00	
		Add 1.00% on (a+b) for sundries				76.00	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1616.45	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1393.82	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				106.86	



**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		Cost for 10 m = a+b+c+d+e				10792.81	
		<b>Rate per m = (a+b+c+d+e)/10</b>				1079.28	
					<b>say</b>	<b><u>1079.30</u></b>	
<b>M2.1</b>		Making 12 mm dia holes in the RS joists at specified spacing for fitting, fixing of wooden joist runner as per Specification.					
<b>5</b>							
		<b>Unit = no</b>					
		<b>Taking output = 36 Nos</b>					
		<b>a) Labour</b>					
		Mate	day	0.08	391.00	31.28	L-19
		Blacksmith	day	1.00	480.00	480.00	L-04
		Mazdoor(unskilled)	day	2.00	391.00	782.00	L-20
		<b>b) Tools</b>					
		Appliances for making holes @ 5.00 %				64.66	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				288.83	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				247.02	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				18.94	
		Cost for 36 nos = a+b+c+d+e				1912.73	
		<b>Rate per no = (a+b+c+d+e)/36</b>				53.13	
					<b>say</b>	<b><u>53.10</u></b>	
<b>M2.1</b>		Charges for fitting fixing of new timber beams, deckings, trackways, battens and planks for abutments & wing walls, joist runner, wheel guards, rail post, struts, railings, bracings of piles, including hoisting and placing in position with necessary nails and spikes and or nuts & bolts as per design and drawings, including applying coal tar of minimum two coats on all sides of new wood work complete as per Specification (excluding the cost of new timbers available at the site of work and the cost of nuts and bolts which are to paid separately).					
<b>6</b>							
		<b>Unit = cum</b>					
		<b>Taking output = 5.508 Cum</b>					
		(considering 10.00 m span bridge)					
		Decking:-					
		66 x 4.200 m x 0.150 m x 0.100 m = 4.1580 Cum					
		Trackway:-					
		12 x 10.000 m x 0.150 m x 0.075 m = 1.3500 Cum					
		Total:-				5.5080 Cum	
		Wastage @ 2.00 %				(+)= 0.1102 Cum	
		<b>Grand Total = 5.6182 Cum</b>					
		<b>A. Sal Wood</b>					
		<b>a) Labour</b>					
		Mate	day	0.91	391.00	355.81	L-19
		Carpenter(2nd class)	day	5.06	475.00	2403.50	L-08
		Mazdoor(unskilled)	day	17.71	391.00	6924.61	L-20
		<b>b) Material</b>					
		Sal wood Scantling	Cum	5.6182		0.00	
		M.S. Spikes	kg	22.47	65.00	1460.55	M-142
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	194.45	32.58	6334.64	Rate as per item M2.9
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				3717.81	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				3179.54	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				243.76	
		Cost for 5.508 cum = a+b+c+d+e				24620.21	

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		<b>Rate per cum = (a+b+c+d+e)/5.508</b>				4469.90	
					<b>say</b>	<b><u>4469.90</u></b>	
		<b>B. Karai Wood</b>					
		<b>a) Labour</b>					
		Mate	day	0.82	391.00	320.62	L-19
		Carpenter(2nd class)	day	4.55	475.00	2161.25	L-08
		Mazdoor(unskilled)	day	15.93	391.00	6228.63	L-20
		<b>b) Material</b>					
		Karai wood scantling	Cum	5.6182		0.00	
		M.S. Spikes	kg	22.47	65.00	1460.55	M-142
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	194.45	32.58	6334.64	Rate as per item M2.9
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				3510.76	
		<b>d) Contractor's profit and overheads @ 15 % on (a+b+c)</b>				3002.47	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				230.19	
		Cost for 5.508 cum = a+b+c+d+e				23249.10	
		<b>Rate per cum = (a+b+c+d+e)/5.508</b>				4220.97	
					<b>say</b>	<b><u>4221.00</u></b>	
		<b>C. Soft Wood</b>					
		<b>a) Labour</b>					
		Mate	day	0.66	391.00	258.06	L-19
		Carpenter(2nd class)	day	4.10	475.00	1947.50	L-08
		Mazdoor(unskilled)	day	12.30	391.00	4809.30	L-20
		<b>b) Material</b>					
		Soft wood scantling	Cum	5.6182		0.00	
		M.S. Spikes	kg	22.47	65.00	1460.55	M-142
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	194.45	32.58	6334.64	Rate as per item M2.9
		<b>c) Add GST (multiplying factor) @ on (a+b)</b>				3150.10	
		<b>d) Contractor's profit and overheads @ 15 % on (a+b+c)</b>				2694.02	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				206.54	
		Cost for 5.508 cum = a+b+c+d+e				20860.71	
		<b>Rate per cum = (a+b+c+d+e)/5.508</b>				3787.35	
					<b>say</b>	<b><u>3787.30</u></b>	
<b>M2.1</b>		Charges for fitting fixing of old dismantled beams, deckings, trackways, battens and planks for abutments & wing walls, joist runner, wheel guards, rail post, struts, railings, bracings of piles, including hoisting and placing in position with necessary nails and spikes and or nuts & bolts as per design and drawings, including applying coal tar of minimum two coats on all sides of new wood work complete as per the Specification (excluding the cost of new timbers available at the site of work and the cost of nuts and bolts which are to paid separately).					
<b>7</b>							
		<b>Unit = cum</b>					
		<b>Taking output = 5.508 Cum</b>					
		(considering 10.00 m span bridge)					
		<b>Decking:-</b>					
		66 x 4.200 m x 0.150 m x 0.100 m = 4.1580 Cum					
		<b>Trackway:-</b>					
		12 x 10.000 m x 0.150 m x 0.075 m = 1.3500 Cum					
		<b>Total:-</b>					
		= 5.5080 Cum					
		<b>Wastage @ 2.00 %</b>					
		(+)= 0.1102 Cum					
		<b>Grand Total = 5.6182 Cum</b>					
		<b>A. Sal Wood</b>					

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		<b>a) Labour</b>					
		Mate	day	0.72	391.00	281.52	L-19
		Carpenter(2nd class)	day	4.49	475.00	2132.75	L-08
		Mazdoor(unskilled)	day	13.47	391.00	5266.77	L-20
		<b>b) Material</b>					
		Sal wood Scantling	Cum	5.6182		0.00	
		M.S. Spikes	kg	22.47	65.00	1460.55	M-142
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	194.45	32.58	6334.64	Rate as per item M2.9
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				3291.79	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				2815.20	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				215.83	
		Cost for 5.508 cum = a+b+c+d+e				21799.06	
		<b>Rate per cum = (a+b+c+d+e)/5.508</b>				3957.71	
					<b>say</b>	<b><u>3957.70</u></b>	
		<b>B. Karai Wood</b>					
		<b>a) Labour</b>					
		Mate	day	0.65	391.00	254.15	L-19
		Carpenter(2nd class)	day	3.59	475.00	1705.25	L-08
		Mazdoor(unskilled)	day	12.57	391.00	4914.87	L-20
		<b>b) Material</b>					
		Karai wood scantling	Cum	5.6182		0.00	
		M.S. Spikes	kg	22.47	65.00	1460.55	M-142
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	194.45	32.58	6334.64	Rate as per item M2.9
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				3120.19	
		<b>d) Contractor's profit and overheads @ 0.2127 on (a+b+c)</b>				2668.45	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				204.58	
		Cost for 5.508 cum = a+b+c+d+e				20662.68	
		<b>Rate per cum = (a+b+c+d+e)/5.508</b>				3751.39	
					<b>say</b>	<b><u>3751.40</u></b>	
		<b>C. Soft Wood</b>					
		<b>a) Labour</b>					
		Mate	day	0.46	391.00	179.86	L-19
		Carpenter(2nd class)	day	2.87	475.00	1363.25	L-08
		Mazdoor(unskilled)	day	8.61	391.00	3366.51	L-20
		<b>b) Material</b>					
		Soft wood scantling	Cum	5.6182		0.00	
		M.S. Spikes	kg	22.47	65.00	1460.55	M-142
		Coal tarring, Rate as per item no. M2.9(ex/c CP & OH)	Sqm	194.45	32.58	6334.64	Rate as per item M2.9
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				2702.31	
		<b>d) Contractor's profit and overheads @ 15 % on (a+b+c)</b>				2311.07	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				177.18	
		Cost for 5.508 cum = a+b+c+d+e				17895.37	
		<b>Rate per cum = (a+b+c+d+e)/5.508</b>				3248.98	
					<b>say</b>	<b><u>3249.00</u></b>	

**M2.1**  
**8**

Providing of third class local wood piles dressed to heart wood and making shoes with end tapered upto 750 mm from the bottom of the pile, marking of length with chisel in metre and part of a metre run from the bottom of the piles, applying coal tar after verification and approval of the piles and stacking at the work site as per Specification.

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
<b>(i) 300 mm dia to 350 mm dia piles</b>							
<b>Unit = m</b>							
<b>Taking output = 10.00 m</b>							
<b>a) Labour</b>							
		Mate	day	0.04	391.00	15.64	L-19
		Carpenter(2nd class)	day	0.50	475.00	237.50	L-08
		Mazdoor(unskilled)	day	0.50	391.00	195.50	L-20
<b>b) Material</b>							
		3rd class local wood piles 300 mm to 350 mm dia	cum	10.10	1510.00	15251.00	M-241
		Applying coal tar, Rate vide item no. M2.9(ex/c OH & CP)	Sqm	10.21	32.58	332.61	Item no. M2.9
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						3410.06	
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						2916.35	
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						223.59	
Cost for 10 m = a+b+c+d+e						22582.25	
<b>Rate per m = (a+b+c+d+e)/10</b>						2258.22	
						<b>say</b>	<b><u>2258.20</u></b>
<b>(ii) 250 mm dia to 300 mm dia piles</b>							
<b>Unit = m</b>							
<b>Taking output = 10.00 m</b>							
<b>a) Labour</b>							
		Mate	day	0.032	391.00	12.51	L-19
		Carpenter(2nd class)	day	0.40	475.00	190.00	L-08
		Mazdoor(unskilled)	day	0.40	391.00	156.40	L-20
<b>b) Material</b>							
		3rd class local wood piles 250 mm to 300 mm dia	cum	10.10	1020.00	10302.00	M-242
		Applying coal tar, Rate vide item no. M2.9(ex/c OH & CP)	Sqm	8.64	32.58	281.47	Item no. M2.9
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						2327.44	
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						1990.47	
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						152.60	
Cost for 10 m = a+b+c+d+e						15412.90	
<b>Rate per m = (a+b+c+d+e)/10</b>						1541.29	
						<b>say</b>	<b><u>1541.30</u></b>
<b>(iii) 200 mm dia to 250 mm dia piles</b>							
<b>Unit = m</b>							
<b>Taking output = 10.00 m</b>							
<b>a) Labour</b>							
		Mate	day	0.032	391.00	12.51	L-19
		Carpenter(2nd class)	day	0.40	475.00	190.00	L-08
		Mazdoor(unskilled)	day	0.40	391.00	156.40	L-20
<b>b) Material</b>							
		3rd class local wood piles 200 mm to 250 mm dia	cum	10.10	730.00	7373.00	M-243
		Applying coal tar, Rate vide item no. M2.9(ex/c OH & CP)	Sqm	7.07	32.58	230.32	Item no. M2.9
<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>						1693.57	
<b>d) Contractor's profit @ 15 % on (a+b+c)</b>						1448.37	
<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>						111.04	
Cost for 10 m = a+b+c+d+e						11215.21	
<b>Rate per m = (a+b+c+d+e)/10</b>						1121.52	
						<b>say</b>	<b><u>1121.50</u></b>

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
M2.1 9		Handling and lifting of Sal / Nahar / Nageswar piles by any means from river / cherra bed level, stacking properly, as per Specification.					
		<b>(i) 300 mm dia to 350 mm dia piles</b>					
		<b>Unit = m</b>					
		<b>Taking output = 10.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.92	391.00	359.72	L-19
		Mistri(for wooden pile driving/ lifting)	day	1.00	512.00	512.00	L-23
		Mazdoor(skilled)	day	2.00	475.00	950.00	L-22
		Mazdoor(semi-skilled)	day	6.00	447.00	2682.00	L-21
		Mazdoor(unskilled)	day	15.00	391.00	5865.00	L-20
		<b>b) Tools</b>					
		1/2 tonne monkey with necessary chains, pulley and other accessories for handling and driving of wooden piles (hire charges)	day	1.00	2384.00	2384.00	
		Add 1.00% on (a+b) for sundries				127.53	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				2712.50	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				2338.91	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				179.32	
		Cost for 10 m = a+b+c+d+e				18110.98	
		<b>Rate per m = (a+b+c+d+e)/10</b>				1811.10	
					<b>say</b>	<b><u>1811.10</u></b>	
		<b>(ii) 250 mm dia to 300 mm dia piles</b>					
		<b>Unit = m</b>					
		<b>Taking output = 10.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.72	391.00	281.52	L-19
		Mistri(for wooden pile driving/ lifting)	day	1.00	512.00	512.00	L-23
		Mazdoor(skilled)	day	1.00	475.00	475.00	L-22
		Mazdoor(semi-skilled)	day	5.00	447.00	2235.00	L-21
		Mazdoor(unskilled)	day	12.00	391.00	4692.00	L-20
		<b>b) Tools</b>					
		1/2 tonne monkey with necessary chains, pulley and other accessories for handling and driving of wooden piles (hire charges)	day	1.00	2384.00	2384.00	
		Add 1.00% on (a+b) for sundries				105.80	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				2250.26	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1940.34	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				148.76	
		Cost for 10 m = a+b+c+d+e				15024.68	
		<b>Rate per m = (a+b+c+d+e)/10</b>				1502.47	
					<b>say</b>	<b><u>1502.50</u></b>	
		<b>(iii) 200 mm dia to 250 mm dia piles</b>					
		<b>Unit = m</b>					
		<b>Taking output = 10.00 m</b>					
		<b>a) Labour</b>					
		Mate	day	0.44	391.00	172.04	L-19
		Mistri(for wooden pile driving/ lifting)	day	1.00	512.00	512.00	L-23
		Mazdoor(skilled)	day	1.00	475.00	475.00	L-22
		Mazdoor(semi-skilled)	day	3.00	447.00	1341.00	L-21
		Mazdoor(unskilled)	day	7.00	391.00	2737.00	L-20
		<b>b) Tools</b>					

**MISCELLANEOUS-2**  
**MISCELLANEOUS ITEMS FOR TIMBER BRIDGES**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		1/2 tonne monkey with necessary chains, pulley and other accessories for handling and driving of wooden piles (hire charges)	day	1.00	2384.00	2384.00	
		Add 1.00% on (a+b) for sundries				76.21	
		<b>c) Add GST (multiplying factor) @ 0.2127 on (a+b)</b>				1621.00	
		<b>d) Contractor's profit @ 15 % on (a+b+c)</b>				1397.74	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				107.16	
		Cost for 10 m = a+b+c+d+e				10823.14	
		<b>Rate per m = (a+b+c+d+e)/10</b>				1082.31	
					<b>say</b>	<b><u>1082.30</u></b>	

**MISCELLANEOUS-3**  
**MISCELLANEOUS ITEMS FOR RIVER TRAINING WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
<b>M3.1</b>		Supplying bamboo (1st class) 85 mm to 100 mm dia and making shoe with end tapered upto 300 mm from the bottom of the bamboo as per drawing and specification.  <b>Unit = metre</b> <b>Taking output = 100.00 metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.040	391.00	15.64	L-19
		Mazdoor(unskilled)	day	1.000	391.00	391.00	L-20
		<b>b) Material</b>					
		Bamboo (1st Class) 85 mm - 100 mm dia	metre	105.000	24.00	2520.00	M-033
		<b>c) Sundries</b>					
		L.S @ 2.00 % of (a+b)				58.53	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				634.95	
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				543.02	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				41.63	
		Cost for 100 m = a+b+c+d+e+f				4204.77	
		<b>Rate per metre = (a+b+c+d+e+f)/100</b>				42.05	
					<b>say</b>	<b><u>42.00</u></b>	
<b>M3.2</b>		Handling and driving bamboo (1st class) 85 mm to 100 mm dia upto the length required by heavy hammer as per drawing and specification.  <b>Unit = metre</b> <b>Taking output = 50.00 metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.240	391.00	93.84	L-19
		Mazdoor(unskilled)	day	6.000	391.00	2346.00	L-20
		<b>b) Material</b>					
		Bamboo (1st Class) 85 mm - 100 mm dia				0.00	
		<b>c) Sundries</b>					
		L.S @ 2.00 % of (a+b)				48.80	
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+c)</b>				529.33	
		<b>e) Contractor's profit @ 15 % on (a+c+d)</b>				452.70	
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				34.71	
		Cost for 50.00 m = a+c+d+e+f				3505.37	
		<b>Rate per metre = (a+c+d+e+f)/50.00</b>				70.11	
					<b>say</b>	<b><u>70.10</u></b>	
<b>M3.3</b>		Providing and fitting, fixing bamboo (1st class) 85 mm to 100 mm dia for horizontal, diagonal bracing, strut etc. with nails/ spikes and binding wire (GI 2.0 mm) as per drawing and specification.  <b>Unit = metre</b> <b>Taking output = 100.00 metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.120	391.00	46.92	L-19
		Mazdoor(unskilled)	day	3.000	391.00	1173.00	L-20
		<b>b) Material</b>					
		Bamboo (1st Class) 85 mm - 100 mm dia	metre	105.000	24.00	2520.00	M-033
		Nails	kg	2.000	65.00	130.00	M-142
		Binding wire (GI, 2.00 mm)	kg	1.500	80.00	120.00	M-040

**MISCELLANEOUS-3**  
**MISCELLANEOUS ITEMS FOR RIVER TRAINING WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		c) Sundries					
		L.S @ 2.00 % of (a+b)				79.80	
		d) Add GST (multiplying factor) @				865.63	
		e) Contractor's profit @ 15 % on				740.30	
		f) Add Cess @ 1.00 % on				56.76	
		(a+b+c+d+e)					
		Cost for 100 m = a+b+c+d+e+f				5732.41	
		Rate per metre = (a+b+c+d+e+f)/100				57.32	
					<b>say</b>	<b><u>57.30</u></b>	
<b>M3.4</b>		Providing and fitting, fixing brush wood (Tetul, Sheora, Mandar, etc.) tied with GI wire 2.00 mm well packed complete as per drawing and specification.					
		<b>Unit = cum</b>					
		<b>Taking output = 6.00 cum</b>					
		a) Labour					
		Mate	day	0.080	391.00	31.28	L-19
		Mazdoor(unskilled)	day	2.000	391.00	782.00	L-20
		b) Material					
		Brush wood (Tetul, Sheora, Mandar, etc.)	cum	6.000	123.50	741.00	M-052
		Binding wire (GI, 2.00 mm)	kg	0.500	80.00	40.00	M-040
		c) Sundries					
		L.S @ 2.00 % of (a+b)				31.89	
		d) Add GST (multiplying factor) @				345.89	
		e) Contractor's profit @ 15 % on				295.81	
		f) Add Cess @ 1.00 % on				22.68	
		(a+b+c+d+e)					
		Cost for 6.00 cum = a+b+c+d+e+f				2290.54	
		Rate per cum = (a+b+c+d+e+f)/6.00				381.76	
					<b>say</b>	<b><u>381.80</u></b>	
<b>M3.5</b>		Providing and fitting, fixing double layer split muli bamboo tatti lining in position as per drawing and specification.					
		<b>Unit = sqm</b>					
		<b>Taking output = 20.00 sqm</b>					
		a) Labour					
		Mate	day	0.120	391.00	46.92	L-19
		Mazdoor(semi-skilled)	day	1.000	447.00	447.00	L-21
		Mazdoor(unskilled)	day	3.000	391.00	1173.00	L-20
		b) Material					
		Muli Bamboo 40 mm to 50 mm dia	metre	297.000	4.00	1188.00	M-035
		GI. Wires 1.00 mm, etc. L.S @ 2.00 % of (a+b)				57.10	
		c) Add GST (multiplying factor) @				619.39	
		d) Contractor's profit @ 15 % on				529.71	
		e) Add Cess @ 1.00 % on (a+b+c+d)				40.61	
		(a+b+c+d+e)					
		Cost for 20.0 sqm = a+b+c+d+e				4101.73	
		Rate per cum = (a+b+c+d+e)/20.00				205.09	
					<b>say</b>	<b><u>205.10</u></b>	
<b>M3.6</b>		Supplying ballies 100 mm dia well dressed and making shoe with end tapered upto 300 mm from the bottom including marking length and part of a metre as per drawing and specification.					
		<b>Unit = metre</b>					
		<b>Taking output = 100.00 metre</b>					
		i) Sal Ballies					
		a) Labour					
		Mate	day	0.08	391.00	31.28	L-19



**MISCELLANEOUS-3**  
**MISCELLANEOUS ITEMS FOR RIVER TRAINING WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		Carpenter(2nd class)	day	1.00	475.00	475.00	L-08
		Mazdoor(unskilled)	day	2.00	391.00	782.00	L-20
		<b>b) Material</b>					
		Sal Ballies 100 mm dia	metre	105.000	350.00	36750.00	M-240
		<b>c) Sundries</b>					
		L.S @ 2.00 % of (a+b)				760.77	
		<b>d) Add GST (multiplying factor) @</b>				8252.56	
		<b>e) Contractor's profit @ 15 % on</b>				7057.74	
		<b>f) Add Cess @ 1.00 % on</b>				541.09	
		<b>(a+b+c+d+e)</b>					
		Cost for 100.00 metre = a+b+c+d+e+f				54650.44	
		<b>Rate per metre = (a+b+c+d+e+f)/100.00</b>				546.50	
					<b>say</b>	<b><u>546.50</u></b>	
		<b>ii) 3rd class local wood ballies</b>					
		<b>a) Labour</b>					
		Mate	day	0.08	391.00	31.28	L-19
		Carpenter(2nd class)	day	1.00	475.00	475.00	L-08
		Mazdoor(unskilled)	day	2.00	391.00	782.00	L-20
		<b>b) Material</b>					
		3rd class local wood Ballies 100 mm dia	metre	105.000	49.50	5197.50	M-245
		<b>c) Sundries</b>					
		L.S @ 2.00 % of (a+b)				129.72	
		<b>d) Add GST (multiplying factor) @</b>				1407.12	
		<b>e) Contractor's profit @ 15 % on</b>				1203.39	
		<b>f) Add Cess @ 1.00 % on</b>				92.26	
		<b>(a+b+c+d+e)</b>					
		Cost for 100.00 metre = a+b+c+d+e+f				9318.26	
		<b>Rate per metre = (a+b+c+d+e+f)/100.00</b>				93.18	
					<b>say</b>	<b><u>93.20</u></b>	
<b>M3.7</b>		Handling and driving ballies of 100 mm dia upto the length required by heavy hammer as per drawing and specification.					
		<b>Unit = metre</b>					
		<b>Taking output = 50.00 metre</b>					
		<b>a) Labour</b>					
		Mate	day	0.28	391.00	109.48	L-19
		Mazdoor(unskilled)	day	7.00	391.00	2737.00	L-20
		<b>b) Sundries</b>					
		L.S @ 2.00 % of (a)				56.93	
		<b>c) Add GST (multiplying factor) @</b>				617.56	
		<b>d) Contractor's profit @ 15 % on</b>				528.14	
		<b>e) Add Cess @ 1.00 % on (a+b+c+d)</b>				40.49	
		<b>(a+b+c+d+e)</b>					
		Cost for 50.00 metre = a+b+c+d+e				4089.60	
		<b>Rate per metre = (a+b+c+d+e)/50.00</b>				81.79	
					<b>say</b>	<b><u>81.80</u></b>	
<b>M3.8</b>		Providing and fitting, fixing ballies of 100 mm dia for horizontal, diagonal bracing, strut etc. with nails / spikes and binding wire (GI 2.0 mm) as per drawing and specification.					
		<b>Unit = metre</b>					
		<b>Taking output = 100.00 metre</b>					
		<b>i) Sal Ballies</b>					
		<b>a) Labour</b>					
		Mate	day	0.08	391.00	31.28	L-19
		Carpenter(2nd class)	day	1.00	475.00	475.00	L-08
		Mazdoor(unskilled)	day	2.00	391.00	782.00	L-20

**MISCELLANEOUS-3**  
**MISCELLANEOUS ITEMS FOR RIVER TRAINING WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
		<b>b) Material</b>					
		Sal Ballies 100 mm dia	metre	105.000	350.00	36750.00	M-240
		Nails	kg	4.000	65.00	260.00	M-142
		Binding wire (GI, 2.00 mm)	kg	2.000	80.00	160.00	M-040
		<b>c) Sundries</b>					
		L.S @ 2.00 % of (a+b)				760.77	
		<b>d) Add GST (multiplying factor) @</b>				8341.89	
		<b>e) Contractor's profit @ 15 % on</b>				7134.14	
		<b>f) Add Cess @ 1.00 % on</b>				546.95	
		<b>(a+b+c+d+e)</b>					
		Cost for 100.00 metre = a+b+c+d+e+f				55242.03	
		<b>Rate per metre = (a+b+c+d+e+f)/100.00</b>				552.42	
							<b>say <u>552.40</u></b>
		<b>ii) 3rd class local wood ballies</b>					
		<b>a) Labour</b>					
		Mate	day	0.08	391.00	31.28	L-19
		Carpenter(2nd class)	day	1.00	475.00	475.00	L-08
		Mazdoor(unskilled)	day	2.00	391.00	782.00	L-20
		<b>b) Material</b>					
		3rd class local wood Ballies 100 mm dia	metre	105.000	49.50	5197.50	M-245
		Nails	kg	4.000	65.00	260.00	M-142
		Binding wire (GI, 2.00 mm)	kg	2.000	80.00	160.00	M-040
		<b>c) Sundries</b>					
		L.S @ 2.00 % of (a+b)				138.12	
		<b>d) Add GST (multiplying factor) @</b>				1498.24	
		<b>0.2127 on (a+b+c)</b>					
		<b>e) Contractor's profit @ 15 % on</b>				1281.32	
		<b>(a+b+c+d)</b>					
		<b>f) Add Cess @ 1.00 % on</b>				98.23	
		<b>(a+b+c+d+e)</b>					
		Cost for 100.00 metre = a+b+c+d+e+f				9921.69	
		<b>Rate per metre = (a+b+c+d+e+f)/100.00</b>				99.22	
							<b>say <u>99.20</u></b>
<b>M3.9</b>		Providing and placing gunny / polythene (of minimum wall thickness of 500 micron) bags filled with sand (of minimum qty of 0.034 cum) and properly manually stitched to avoid any leakage of sand as per specification.					
		<b>Unit = No</b>					
		<b>Taking output = 100.00 Nos</b>					
		<b>a) Labour</b>					
		Mate	day	0.08	391.00	31.28	L-19
		Mazdoor(unskilled)	day	2.00	391.00	782.00	L-20
		<b>b) Material</b>					
		Empty gunny/ polythene (of minimum wall thickness of 500 micron) bags	No	100.000	2.50	250.00	M-090
		Sand	Cum	3.570	590.00	2106.30	M-175
		<b>c) Sundries</b>					
		L.S @ 2.00 % of (a+b)				63.39	
		<b>d) Add GST (multiplying factor) @</b>				687.65	
		<b>0.2127 on (a+b+c)</b>					
		<b>e) Contractor's profit @ 15 % on</b>				588.09	
		<b>(a+b+c+d)</b>					
		<b>f) Add Cess @ 1.00 % on</b>				45.09	
		<b>(a+b+c+d+e)</b>					
		Cost for 100.00 nos = a+b+c+d+e+f				4553.81	

**MISCELLANEOUS-3**  
**MISCELLANEOUS ITEMS FOR RIVER TRAINING WORKS**

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)	Remarks/ Ref.
<b>Rate per No = (a+b+c+d+e+f)/100.00</b>						45.54	

**say 45.50**

**M3.10**

Providing and fixing bitumen or tar drum guard posts including two coats of white synthetic enamel paint over a primer coat in the exposed outside surface above Ground level and applying two coats of coal tar on the outside surface below ground level including bottom before placing the same for a depth of 450 mm below ground level filled with earth as per specification.

**Unit = No**

**Taking output = 10.00 Nos**

(considering drum of 600 mm dia and 1000 mm total height out of which 450 mm is below ground level)

**a) Labour**

Mate	day	0.08	391.00	31.28	L-19
Mazdoor(unskilled)	day	2.00	391.00	782.00	L-20

**b) Material**

i. Bitumen Drum (empty)	No	10.000	315.00	3150.00	M-044
ii. Compensation of earth taken from private land (for AGL portion)	Cum	1.560	18.00	28.08	M-063
iii. Applying coal tar, <b>Rate vide item no. M2.9(ex/c OH &amp; CP)</b>	Sqm	11.31	32.58	368.45	Item no. M2.9
iv. Applying white synthetic enamel paint, <b>Rate vide item no. 10.5 of MoRD</b>	Sqm	10.37	110.30	1143.81	Item no. 10.5 of MoRD
iv. Excavation & refilling of earth <b>Rate vide item no. 11.1 of MoRD</b>	Cum	1.270	360.00	457.20	Item no. 11.1 of MoRD

**c) Sundries**

L.S @ 2.00 % of (a+b) 79.83

**d) Add GST (multiplying factor) @ 0.2127 on (a+b.i,ii,iii+c)** 944.31

**e) Contractor's profit @ 15 % on (a+b.i,ii,iii+c+d)** 807.59

**f) Add Cess @ 1.00 % on (a+b.i,ii,iii+c+d+e)** 61.92

Cost for 10.00 nos = a+b+c+d+e 7854.46

**Rate per No = (a+b+c+d+e)/10.00** 785.45

**say 785.40**

## Chapter - Miscellaneous - 4

## BASES AND SURFACE COURSES (NON-BITUMINOUS &amp; BITUMINOUS) using ORGANOSILANE NANO TECHNOLOGY

Sr. No.	Ref. to MORD Spec.	Description	Unit	Quantity	Rate (₹)	Amount (₹)
<b>M-4.1</b>	As per Technical Specification approved by TRRDA.	<b>Surface Water Proofing with Organosilane Nanotechnology:</b> Providing and applying waterproofing with organosilane nano technology and nano acrylic co-polymer with water (<1000 ppm TDS) on top compacted subgrade, shoulder( in the ratio of 1.00 kg organosilane nano technology : 1.00 kg nano acrylic co- polymer : 200 litre water) by spraying solution at the rate of 3.00 litre/sqm in two spray application( 1.50 litre+1.50 litre) as per Technical Specification approved by TRRDA.				
		Unit =Sqm Taking output = 7000 sqm				
		<b>a) Labour</b>				
		Mate	day	0.20	391.00	78.20
		Mazdoor (Unskilled)	day	3.00	391.00	1,173.00
		Mazdoor (skilled)	day	2.00	475.00	950.00
		<b>b) Machinery</b>				
		80-100 KN vibratory Roller @ 100 cum per hour	hour	2.56	392.00	1,003.52
		water tanker 6kl capacity 1 trip per hour	hour	2.19	200.00	438.00
		<b>c) Material Terrasil</b>				
		<b>Terrasil</b>				
		Organosilane nano technology @ 0.015 kg per sqm	kg	105.00	466.10	48,940.50
		<b>Zycobond</b> : Nano- acrylic co- polymer @ 0.015 kg per sqm	kg	105.00	152.50	16,012.50
		Water	kl	21.00	133.00	2,793.00
		<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>15,184.38</b>
		<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>12,985.97</b>
		<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>995.59</b>
		<b>cost of 7000 sqm= a+b+c+d+e+f</b>				<b>1,00,554.66</b>
		<b>Rate per sqm= (a+b+c+d+e+f)/7000</b>				<b>14.36</b>
					<b>say</b>	<b><u>14.40</u></b>
<b>M-4.2</b>	As per Technical Specification approved by TRRDA.	<b>Bases with Organosilane Nano Technology(NON-BITUMINOUS:</b> Construction of stabilized granular sub-base/ base by providing well graded material (Jhama Brick Aggregate , as per approved Table, mixing with organosilane nanotechnology and nano acrylic co-polymer with water (<1000 ppm TDS), spreading in uniform layers with tractor with attachments on prepared surface, mixing by mix in place method with rotavator at OMC, watering and compacting with vibratory roller to achieve the desired density, complete as per Technical Specification approved by TRRDA.				
		Unit =Cum Taking output = 300 Cum				
		<b>a) Labour</b>				
		Mate	day	0.67	391.00	261.97
		Mazdoor (Unskilled)	day	2.00	391.00	782.00
		Mazdoor (skilled)	day	14.65	475.00	6,958.75
		<b>b) Machinery</b>				
		Hydraulic exavator 0.90 cum bucket capacity @ 100 cum per hour	hour	3.00	1,200.00	3,600.00
		Tipper 5.5 cum capacity, 4 trip per hour	hour	13.64	334.00	4,555.76
		Dozer D-50 for spreading @ 200 cum per hour	hour	1.50	2,370.00	3,555.00
		Tractor with attachment for grading @ 25 cum per hour	hour	12.00	320.00	3,840.00
		80-100 KN vibratory Roller @ 100 cum per hour	hour	3.00	1,395.00	4,185.00
		water tanker 6 kl capacity ( Truck Mounted)	hour	3.45	200.00	690.00
		Tractor with Rotavator @ 25 cum per hour	hour	12.00	320.00	3,840.00

Tractor with ripper @ 60 cum per hour	hour	13.00	223.00	2,899.00
<b>c) Material</b>				
Cement	t	16.65	6,797.00	1,13,170.05
<b>Terrasil</b> organosilane nano technology @ 0.015 kg per sqm	kg	325.23	466.10	1,51,589.70
<b>Zycobond</b> : Nano- acrylic co- polymer soil	kg	325.23	152.50	49,597.58
(Compensation for earth taken from private land)	cum	240.00	133.00	31,920.00
Jhama Brick Aggragate 40 mm to 22.4 mm	cum	90.00	3,329.80	2,99,682.00
Jhama Brick Aggragate 22.4 mm to 2.36 mm	cum	30.00	3,407.50	1,02,225.00
Water	kl	82.75	133.00	11,005.75
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,68,959.85</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,44,497.61</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>11,078.15</b>
<b>cost of 300 cum= a+b+c+d+e+f</b>				<b>11,18,893.17</b>
<b>Rate per sqm= (a+b+c+d+e+f)/300</b>				<b>3,729.64</b>
			<b>say</b>	<b><u>3729.60</u></b>

**M-4.3 Prime Coat with organosilane nanotechnology**

(i) **Low porosity**  
As per Technical Specification approved by TRRDA. Providing and applying prime coat with organosilane nanotechnology and cationic bitumen emulsion (CSS-1) and with water (<1000 ppm TDS) ( in the ratio of 1.00 kg organosilane nanotechnology : 100.00 kg cationic bitumen emulsion (CSS-1) : 200 litre water) by spraying solution at the rate of 1.00 litre/sqm using mechanical means on prepared surface of granular base of low porosity including cleaning of road surface as per Technical Specification approved by TRRDA.

Unit =Sqm				
Taking output = 1750 sqm				
<b>a) Labour</b>				
Mate	day	0.06	391.00	23.46
Mazdoor (Unskilled)	day	1.25	391.00	488.75
Mazdoor (skilled)	day	0.17	475.00	80.75
<b>b) Machinery</b>				
Hydraulic broom @ 1250 sqm per hour	hour	1.40	345.00	483.00
Air compressor 210 cfm	hour	1.40	210.00	294.00
Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	202.00	202.00
Water tanker 6kl capacity 1 trip per hour	hour	0.19	200.00	38.00
<b>c) Material</b>				
Bitumen emulsion (CSS-1)	t	0.58	60,228.00	34,932.24
<b>Terraprime</b> organosilane nano technology @ 0.0033 kg per sqm	kg	5.833	1,017.00	5,932.16
Water	kl	1.17	133.00	155.61
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>9,067.39</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>7,754.60</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>594.52</b>
<b>cost of 1750 sqm= a+b+c+d+e+f</b>				<b>60,046.49</b>
<b>Rate per sqm= (a+b+c+d+e+f)/1750</b>				<b>34.31</b>
			<b>say</b>	<b><u>34.30</u></b>

(ii) **Medium porosity**  
Providing and applying prime coat with organosilane nanotechnology and cationic bitumen emulsion (CSS-1) and with water (<1000 ppm TDS) ( in the ratio of 1.00 kg organosilane nanotechnology : 100.00 kg cationic bitumen emulsion (CSS-1) : 200 litre water) by spraying solution at the rate of 1.20 litre/sqm using mechanical means on prepared surface of granular base of medium porosity including cleaning of road surface as per Technical Specification approved by TRRDA.

Unit =Sqm				
Taking output = 1750 sqm				
<b>a) Labour</b>				
Mate	day	0.07	391.00	27.37
Mazdoor (Unskilled)	day	1.50	391.00	586.50
Mazdoor (skilled)	day	0.20	475.00	95.00

<b>b) Machinery</b>					
Hydraulic broom @ 1250 sqm per hour	hour	1.40	345.00	483.00	
Air compressor 210 cfm	hour	1.40	210.00	294.00	
Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	202.00	202.00	
Water tanker 6 kl capacity 1 trip per hour	hour	0.23	200.00	46.00	
<b>c) Material</b>					
Bitumen emulsion (CSS-1)	t	0.70	60,228.00	42,159.60	
<b>Terraprime</b>					
organosilane nano technology @ 0.0040	kg	7.00	1,017.00	7,119.00	
kg per sqm					
Water	kl	1.40	133.00	186.20	
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>10,889.96</b>	
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>9,313.29</b>	
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>714.02</b>	
<b>cost of 1750 sqm= a+b+c+d+e+f</b>				<b>72,115.94</b>	
<b>Rate per sqm= (a+b+c+d+e+f)/1750</b>				<b>41.21</b>	
				<b>say</b>	<b><u>41.20</u></b>

**(iii) High porosity**

Providing and applying prime coat with organosilane nanotechnology and cationic bitumen emulsion (CSS-1) and with water (<1000 ppm TDS) ( in the ratio of 1.00 kg organosilane nanotechnology : 100.00 kg cationic bitumen emulsion (CSS-1) : 200 litre water) by spraying solution at the rate of 1.00 litre/sqm using mechanical means on prepared surface of granular base of high porosity including cleaning of road surface as per Technical Specification approved by TRRDA.

Unit =Sqm

Taking output = 1750 sqm

**a) Labour**

Mate	day	0.09	391.00	35.19
Mazdoor (Unskilled)	day	2.00	391.00	782.00
Mazdoor (skilled)	day	0.27	475.00	128.25

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	1.40	345.00	483.00
Air compressor 210 cfm	hour	1.40	210.00	294.00
Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	202.00	202.00
Water tanker 6 kl capacity 1 trip per hour	hour	0.31	200.00	62.00

**c) Material**

Bitumen emulsion (CSS-1)	t	0.93	60,228.00	56,012.04
<b>Terraprime</b>				
organosilane nano technology @ 0.0053	kg	9.333	1,017.00	9,491.66
kg per sqm				
Water	kl	1.87	133.00	248.71

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)****14,408.05****e) Contractor's profit @ 15 % on (a+b+c+d)****12,322.04****f) Add Cess @ 1.00 % on (a+b+c+d+e)****944.69****cost of 1750 sqm= a+b+c+d+e+f****95,413.63****Rate per sqm= (a+b+c+d+e+f)/1750****54.52****say****54.50****M-4.4****Tack Coat with Organosilane Nano technology**

- (i) Providing and applying tack coat with organosilane nanotechnology and cationic bitumen emulsion (CRS-1) and with water (<1000 ppm TDS) ( in the ratio of 1.40 kg organosilane nanotechnology : 100.00 kg cationic bitumen emulsion (CRS-1) : 200 litre water) by spraying solution at the rate of 1.00 litre/sqm using mechanical means on prepared bituminous surface cleaned with Hydraulic brooms per Technical Specification approved by TRRDA.

As per  
Technical  
Specificati  
on  
approved  
by  
TRRDA.

Unit =Sqm

Taking output = 1750 sqm

**a) Labour**

Mate	day	0.02	391.00	7.82
Mazdoor (Unskilled)	day	0.47	391.00	183.77
Mazdoor (skilled)	day	0.07	475.00	33.25

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	1.40	345.00	483.00
Air compressor 210 cfm	hour	1.40	210.00	294.00

	Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	202.00	202.00
	Water tanker 6kl capacity 1 trip per hour	hour	0.08	200.00	16.00
<b>c)</b>	<b>Material</b>				
	Bitumen emulsion (CRS-1)	t	0.23	57,286.00	13,347.64
	<b>Nanotac</b>				
	organosilane nano technology	kg	3.267	1,017.00	3,322.54
	Water	kl	0.47	133.00	62.51
<b>d)</b>	<b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>3,818.50</b>
<b>e)</b>	<b>Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>3,265.65</b>
<b>f)</b>	<b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>250.37</b>
	<b>cost of 1750 sqm= a+b+c+d+e+f</b>				<b>25,287.05</b>
	<b>Rate per sqm= (a+b+c+d+e+f)/1750</b>				<b>14.45</b>
				<b>say</b>	<b><u>14.40</u></b>
<b>(ii)</b>	Providing and applying tack coat with organosilane nanotechnology and cationic bitumen emulsion (CRS-1) and with water (<1000 ppm TDS) ( in the ratio of 1.00 kg organosilane nanotechnology : 100.00 kg cationic bitumen emulsion (CRS-1) : 200 litre water) by spraying solution at the rate of 1.20 litre/sqm using mechanical means on the prepared dry and hungry bituminous surface including cleaning of road surface as per Technical Specification approved by TRRDA.				
	Unit =Sqm				
	Taking output = 1750 sqm				
<b>a)</b>	<b>Labour</b>				
	Mate	day	0.01	391.00	3.91
	Mazdoor (Unskilled)	day	0.21	391.00	82.11
	Mazdoor (skilled)	day	0.03	475.00	14.25
<b>b)</b>	<b>Machinery</b>				
	Hydraulic broom @ 1250 sqm per hour	hour	1.40	345.00	483.00
	Air compressor 210 cfm	hour	1.40	210.00	294.00
	Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	202.00	202.00
	Water tanker 6kl capacity 1 trip per hour	hour	0.09	200.00	18.00
<b>c)</b>	<b>Material</b>				
	Bitumen emulsion (CRS-1)	t	0.263	57,286.00	15,066.22
	<b>Nanotac</b>				
	organosilane nano technology	kg	3.675	1,017.00	3,737.48
	Water	kl	0.53	133.00	70.49
<b>d)</b>	<b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>4,247.93</b>
<b>e)</b>	<b>Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>3,632.91</b>
<b>f)</b>	<b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>278.52</b>
	<b>cost of 1750 sqm= a+b+c+d+e+f</b>				<b>28,130.81</b>
	<b>Rate per sqm= (a+b+c+d+e+f)/1750</b>				<b>16.07</b>
				<b>say</b>	<b><u>16.10</u></b>
<b>(iii)</b>	Providing and applying tack coat with organosilane nanotechnology and cationic bitumen emulsion (CRS-1) and with water (<1000 ppm TDS) ( in the ratio of 1.00 kg organosilane nanotechnology : 100.00 kg cationic bitumen emulsion (CRS-1) : 200 litre water) by spraying solution at the rate of 1.00 litre/sqm using mechanical means on the prepared granular surface treated with primer including cleaning of road surface as per Technical Specification approved by TRRDA.				
	Unit =Sqm				
	Taking output = 1750 sqm				
<b>a)</b>	<b>Labour</b>				
	Mate	day	0.01	391.00	3.91
	Mazdoor (Unskilled)	day	0.19	391.00	74.29
	Mazdoor (skilled)	day	0.03	475.00	14.25
<b>b)</b>	<b>Machinery</b>				
	Hydraulic broom @ 1250 sqm per hour	hour	1.40	345.00	483.00
	Air compressor 210 cfm	hour	1.40	210.00	294.00
	Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	202.00	202.00
	Water tanker 6kl capacity 1 trip per hour	hour	0.08	200.00	16.00
<b>c)</b>	<b>Material</b>				
	Bitumen emulsion (CRS-1)	t	0.233	57,286.00	13,347.64
	<b>Nanotac</b>				
	organosilane nano technology	kg	3.267	1,017.00	3,322.54
	Water	kl	0.47	133.00	62.51

d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)	3,790.34
e) Contractor's profit @ 15 % on (a+b+c+d)	3,241.57
f) Add Cess @ 1.00 % on (a+b+c+d+e)	248.52
cost of 1750 sqm= a+b+c+d+e+f	25,100.57
Rate per sqm= (a+b+c+d+e+f)/1750	14.34
	<b>say 14.30</b>

- (iv) Providing and applying tack coat with organosilane nanotechnology and cationic bitumen emulsion (CRS-1) and with water (<1000 ppm TDS) ( in the ratio of 1.00 kg organosilane nanotechnology : 100.00 kg cationic bitumen emulsion (CRS-1) : 200 litre water) by spraying solution at the rate of 1.00 litre/sqm using mechanical means on the prepared non-bituminous surfaces ( cement concrete pavement ) including cleaning of road surface as per Technical Specification approved by TRRDA.

Unit =Sqm

Taking output = 1750 sqm

**a) Labour**

Mate	day	0.01	391.00	3.91
Mazdoor (Unskilled)	day	0.23	391.00	89.93
Mazdoor (skilled)	day	0.03	475.00	14.25

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	1.40	345.00	483.00
Air compressor 210 cfm	hour	1.40	210.00	294.00
Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	202.00	202.00
Water tanker 6kl capacity 1 trip per hour	hour	0.10	200.00	20.00

**c) Material**

Bitumen emulsion (CRS-1)	t	0.292	57,286.00	16,727.51
<b>Nanotac</b>				
organosilane nano technology	kg	4.083	1,017.00	4,152.41
Water	kl	0.58	133.00	77.14

d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)

4,693.05

e) Contractor's profit @ 15 % on (a+b+c+d)

4,013.58

f) Add Cess @ 1.00 % on (a+b+c+d+e)

307.71

cost of 1750 sqm= a+b+c+d+e+f

31,078.49

Rate per sqm= (a+b+c+d+e+f)/1750

17.76

**say 17.80**

**M-4.5 Bituminous Macadam with Organosilane**

As per Technical Specification approved by TRRDA. Providing and laying bituminous macadam with organosilane nanotechnology by hot mix plant using crushed aggregates of grading as per Table 500.4 premixed with bituminous binder (VG-30) with 0.1% organosilane nanotechnology Zycotherm by weight of bituminous binder , transported to site upto a lead of 1000 m laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction as per Technical Specification Clause 504

Unit =Cum

Taking output = 102.5 cum (225 t)

**a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor (skilled)	day	3.00	475.00	1,425.00

**b) Machinery**

Batch mix HMP 40-60 TPH @40 t per hour actual output	hour	6.00	12,100.00	72,600.00
Hydraulic broom @ 1250 sqm per hour	hour	1.10	345.00	379.50
Air compressor 210 cfm	hour	1.10	210.00	231.00
Paver finisher	hour	6.00	1,050.00	6,300.00
Generator 125 KVA	hour	6.00	445.00	2,670.00
Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
Tipper 5.5 cum, 10 t capacity	hour	6.21	334.00	2,074.14
Three wheel 80-100 KN static roller for initial break down rolling	hour	12.00	392.00	4,704.00
Final and finishing rolling: Vibratory roller 80-100 KN for intermediate rolling	hour	6.00	1,395.00	8,370.00

**c) Material**

i) Bitumen (VG-30)@ 3.3 percent of mix (Weight of mix= 102.5X 2.2=225t)	t	7.43	61,186.00	4,54,306.05
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ii) <b>Zycotherm</b>	organosilane nano technology	kg	7.425	1,144.00	8,494.20
iii) <b>Aggregate</b>	Total weight of mix = 225 t				
	Total weight of bitumen = 7.425 t				
	Weight of aggregate = 2250-7.425 = 217.575 t				
	Taking density of aggregate = 1.5 t/cum				
	Volume of Aggregate = 145.05 ( 19 mm nominal size) as per table 500.4	cum	145.05	4,237.30	6,14,620.37
	25-10 mm - 40 percent	cum	58.02		
	10-5 mm - 40 percent	cum	58.02		
	5 mm and below - 20 percent	cum	29.01		
d) <b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>					<b>2,52,221.27</b>
e) <b>Contractor's profit @ 15 % on (a+b+c+d)</b>					<b>2,15,704.33</b>
f) <b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>					<b>16,537.33</b>
<b>cost of 102.50 cum= a+b+c+d+e+f</b>					<b>16,70,270.50</b>
<b>Rate per sqm= (a+b+c+d+e+f)/102.5</b>					<b>16,295.32</b>
				<b>say</b>	<b><u>16295.30</u></b>

- Note:
- 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 225 t considered in these analysis. To cater for the idle period of these rollers, their usage rates have been multiply by a factor of 0.65.
  - Quantity of bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.
  - Labour for traffic control, watch and ward and other miscellaneous duties at site, including sundries have been included an administrative overheads of the contractor.
  - As the BM will have to be laid over freshly laid tack coat, provision of hydraulic brom and 2 mazdoor for the same have been deleted as the same has been included in the cost of tack coat.
  - Analysis is based on 1000 m lead mixed material. Cost of additional cartage may be added as per site requirement.

**M-4.6****Built-up Spray Grout with Organosilane**

- (i) Providing, laying and rolling of built-up spray grout layer over prepared base consisting of a two layer composite construction of crushed coarse aggregates using motor grader for aggregates. Key stone chips spreader may be used with application of bituminous binder (Bitumen VG-30 mixed with 0.1% organosilane nanotechnology Zycotherm by weight of bituminous binder) after each layer. and with key aggregates placed on top of the second layer to serve as a base, conforming to line, grades and cross section specified, the compacted layer thickness being 75 mm as per Technical Specification Clause 505.

As per  
Technical  
Specifi-  
cation  
approved  
by  
TRRDA.

**( A ) By Manual Means**

Unit =Sqm

Taking output = 800 sqm ( 60 cum)

**a) Labour**

Mate	day	5.50	391.00	2,150.50
Mazdoor (Unskilled)	day	100.50	391.00	39,295.50
Chips spreader	day	10.00	391.00	3,910.00
Bitumen sprayer	day	2.50	447.00	1,117.50
Mazdoor ( semi-skilled) for spraying bitumen	day	25.50	447.00	11,398.50

**b) Machinery**

Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	6.00	0.00	0.00
Three wheel 80-100 KN static roller	hour	6.00	392.00	2,352.00

**c) Material**

i) <b>Bitumen (VG-30) @ 30 Kg per 10 sqm @ 15 Kg per 10 sqm for each layer</b>	t	2.40	61,186.00	1,46,846.40
ii) <b>Zycotherm</b>	kg	2.400	1,144.00	2,745.60
organosilane nano technology				
iii) <b>Aggregate</b>				

Crushed stone coarse aggregate passing 53 mm seive and retained on 2.8 mm seive @ 1.00cum per 10 sqm for each layer	cum	80.000	3,707.30	2,96,584.00
key aggregate passing 22.4 mm seive and retained on 2.8 mm seive @ 0.13 cum per 10 sqm .	cum	10.40	3,981.00	41,402.40
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,16,517.57</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>99,648.00</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>7,639.68</b>
<b>cost of 800 sqm= a+b+c+d+e+f</b>				<b>7,71,607.65</b>
<b>Rate per sqm= (a+b+c+d+e+f)/800</b>				<b>964.51</b>
			<b>say</b>	<b><u>964.50</u></b>

**( B ) By Mechanical Means**

Unit =Sqm

Taking output = 3000 sqm ( 225 cum)

**a) Labour**

Mate	day	0.40	391.00	156.40
Mazdoor (Unskilled)	day	8.00	391.00	3,128.00
Mazdoor ( skilled)	day	2.00	475.00	950.00

**b) Machinery**

Hydraulic self propelled chip spreader both for aggregates and key aggregates @ 1500 sqm per hour for 3000X 3 sqm	hour	6.00	3,629.00	21,774.00
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Bitumen pressure distributor for 3000X 2 sqm @ 1750 sqm per hour	hour	3.43	202.00	692.86
Tipper 5.5 cum, 10 t capacity	hour	10.00	334.00	3,340.00
Three wheel 80-100 KN static roller@ 10 cum per hour	hour	22.50	392.00	8,820.00
Front end loader 1 cum bucket capacity	hour	5.00	920.00	4,600.00

**c) Material**

<b>i) Bitumen (VG-30) @ 30 Kg per 10 sqm @ 15 Kg per 10 sqm for each layer</b>	t	9.00	61,186.00	5,50,674.00
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**ii) Zycotherm**

organosilane nano technology	kg	9.000	1,144.00	10,296.00
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**iii) Aggregate**

Crushed stone coarse aggregate passing 53 mm seive and retained on 2.8 mm seive @ 1.00cum per 10 sqm for each layer	cum	300.000	3,707.30	11,12,190.00
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key aggregate passing 22.4 mm seive and retained on 2.8 mm seive @ 0.13 cum per 10 sqm .	cum	39.00	3,981.00	1,55,259.00
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**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **3,98,148.93****e) Contractor's profit @ 15 % on (a+b+c+d)** **3,40,504.38****f) Add Cess @ 1.00 % on (a+b+c+d+e)** **26,105.34****cost of 3000 sqm= a+b+c+d+e+f** **26,36,638.91****Rate per sqm= (a+b+c+d+e+f)/3000** **878.88****say 878.90****M-4.7****Modified Penetration Macadam with Organosilane**

- (i) 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 (Bitumen VG-30 mixed with 0.1% organosilane nanotechnology Zycotherm by weight of bituminous binder) and key aggregates and rolling with a three wheel 80-100 kN static roller to achieve the desired degree of compaction per Technical Specification Clause 506.

**( A ) 50 mm thick**

Unit =Sqm

Taking output = 4500 sqm ( 225 cum)

**a) Labour**As per  
Technical  
Specificati  
on  
approved  
by

Mate	day	0.32	391.00	125.12
Mazdoor (Unskilled)	day	6.00	391.00	2,346.00
Mazdoor (skilled)	day	2.00	475.00	950.00

**b) Machinery**

TRRDA.	Hydraulic self propelled chip spreader both for aggregates and key aggregates @ 1500 sqm per hour for 4500X 2 sqm = 9000 sqm	hour	6.00	3,629.00	21,774.00
	Bitumen pressure distributor for @ 1750 sqm per hour	hour	2.57	202.00	519.14
	Tipper 5.5 t capacity	hour	10.00	334.00	3,340.00
	Three wheel 80-100 KN static roller	hour	22.50	392.00	8,820.00
	Front end loader	hour	6.00	920.00	5,520.00
	<b>c) Material</b>				
	<b>i) Bitumen (VG-30) @ 1.75 Kg per sqm</b>	t	7.87	61,186.00	4,81,533.82
	<b>ii) Zycotherm organosilane nano technology</b>	kg	7.870	1,144.00	9,003.28
	<b>iii) Aggregate</b>				
	40 mm size hand broken metal @ 0.06 cum per sqm	cum	270.000	4,236.00	11,43,720.00
	12 mm size stone chips @ 0.018 cum per sqm	cum	81.00	4,304.00	3,48,624.00
	<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>4,30,988.77</b>
	<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>3,68,589.62</b>
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>28,258.54</b>
	<b>cost of 4500 sqm= a+b+c+d+e+f</b>				<b>28,54,112.29</b>
	<b>Rate per sqm= (a+b+c+d+e+f)/4500</b>				<b>634.25</b>
				<b>say</b>	<b><u>634.20</u></b>

**( B ) 75 mm thick**

Unit =Sqm

Taking output = 4500 sqm ( 337.5 cum)

<b>a) Labour</b>					
Mate	day	0.40	391.00	156.40	
Mazdoor (Unskilled)	day	8.00	391.00	3,128.00	
Mazdoor (skilled)	day	2.00	475.00	950.00	
<b>b) Machinery</b>					
Hydraulic self propelled chip spreader both for aggregates and key aggregates @ 1500 sqm per hour for 4500X 2 sqm = 9000 sqm	hour	6.00	3,629.00	21,774.00	
Bitumen pressure distributor for @ 1750 sqm per hour	hour	2.57	202.00	519.14	
Tipper 5.5 t capacity	hour	10.00	334.00	3,340.00	
Three wheel 80-100 KN static roller	hour	33.75	392.00	13,230.00	
Front end loader	hour	6.00	920.00	5,520.00	
<b>c) Material</b>					
<b>i) Bitumen (VG-30) @ 2.00 Kg per sqm</b>	t	9.00	61,186.00	5,50,674.00	
<b>ii) Zycotherm organosilane nano technology</b>	kg	9.000	1,144.00	10,296.00	
<b>iii) Aggregate</b>					
40 mm size hand broken metal @ 0.09 cum per sqm	cum	405.000	4,236.00	17,15,580.00	
12 mm size stone chips @ 0.018 cum per sqm	cum	81.00	4,304.00	3,48,624.00	
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>					<b>5,68,715.46</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>					<b>4,86,376.05</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>					<b>37,288.83</b>
<b>cost of 4500 sqm= a+b+c+d+e+f</b>					<b>37,66,171.88</b>
<b>Rate per sqm= (a+b+c+d+e+f)/4500</b>					<b>836.93</b>
				<b>say</b>	<b><u>836.90</u></b>

<b>M-4.8</b>	As per Technical Specification approved by TRRDA. (As per PMGSY SOR 2019)	<b>Surface Dressing using Bituminous binder with</b> Providing and laying surface dressing as wearing course consisting of a layer of bituminous binder (Bitumen VG-30 mixed with 0.1% organosilane nanotechnology Zycotherm by weight of bituminous binder) laid on the prepared surface, followed by a cover of crushed stone aggregates of specified size and rolling with three wheel 80-100 kN static roller including cleaning the road surface as per Technical Specification Clause 507.
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**( A ) By Manual Means****Case-I: Nominal chipping size 13.2 mm**

Unit =Sqm

Taking output = 900 sqm

<b>a) Labour</b>				
Mate	day	2.60	391.00	1,016.60
Bitumen sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	58.00	391.00	22,678.00
Mazdoor ( semi-skilled)	day	6.00	447.00	2,682.00
Add: 0.50 % of (a) Labour Sundries			LS	134.12
<b>b) Machinery</b>				
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.25	198.00	445.50
Three wheel 80-100 KN static roller	hour	2.25	392.00	882.00
<b>c) Material</b>				
<b>i) Bitumen (VG-30) @ 1.00 Kg per sqm</b>	t	0.90	61,186.00	55,067.40
<b>ii) Zycotherm organosilane nano technology</b>	kg	0.900	1,144.00	1,029.60
<b>iii) Aggregate</b>				
Crushed stone chipping, 13.2 mm nominal size @ 0.010 cum per Sqm	cum	9.000	4,325.50	38,929.50
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>26,228.40</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>22,431.02</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,719.71</b>
<b>cost of 900 sqm= a+b+c+d+e+f</b>				<b>1,73,690.85</b>
<b>Rate per sqm= (a+b+c+d+e+f)/900</b>				<b>192.99</b>
				<b>say <u>193.00</u></b>

**Case-II: Nominal chipping size 9.5 mm**

Unit =Sqm

Taking output = 1000 sqm

<b>a) Labour</b>				
Mate	day	2.60	391.00	1,016.60
Bitumen sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	58.00	391.00	22,678.00
Mazdoor ( semi-skilled)	day	6.00	447.00	2,682.00
Add: 0.50 % of (a) Labour Sundries			LS	134.12
<b>b) Machinery</b>				
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.00	198.00	396.00
Three wheel 80-100 KN static roller	hour	2.00	392.00	784.00
<b>c) Material</b>				
<b>i) Bitumen (VG-30) @ 10.9 Kg per sqm</b>	t	0.90	61,186.00	55,067.40
<b>ii) Zycotherm organosilane nano technology</b>	kg	0.900	1,144.00	1,029.60
<b>iii) Aggregate</b>				
Crushed stone chipping, 9.5 mm nominal size @ 0.008 cum per Sqm	cum	8.000	4,237.30	33,898.40
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>25,126.91</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>21,489.00</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,647.49</b>
<b>cost of 1000 sqm= a+b+c+d+e+f</b>				<b>1,66,396.53</b>
<b>Rate per sqm= (a+b+c+d+e+f)/1000</b>				<b>166.40</b>
				<b>say <u>166.40</u></b>

**( B ) By Mechanical Means****Case-I: Nominal chipping size 13.2 mm**

Unit =Sqm

Taking output = 7500 sqm

<b>a) Labour</b>				
Mate	day	0.44	391.00	172.04
Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
Mazdoor ( skilled)	day	2.00	475.00	950.00
<b>b) Machinery</b>				
Hydraulic broom @ 1250 sqm per hour	hour	6.00	345.00	2,070.00
Air compressor 210 cfm	hour	6.00	210.00	1,260.00
Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.00	3,629.00	21,774.00
Tipper 5.5-10 t capacity for carriage of stone chips from stockpile on the road to chip spreader	hour	6.00	334.00	2,004.00
Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
Bitumen pressure distributor	hour	6.00	202.00	1,212.00
Three wheel 80-100 KN static roller weight	hour	18.75	392.00	7,350.00
<b>c) Material</b>				
<b>i) Bitumen (VG-30) @ 1.00 Kg per sqm</b>	t	7.50	61,186.00	4,58,895.00
<b>ii) Zycotherm</b>				

organosilane nano technology	kg	7.500	1,144.00	8,580.00
<b>iii) Aggregate</b>				
Crushed stone chipping, 13.2 mm nominal size @ 0.010 cum per Sqm	cum	75.000	4,325.50	3,24,412.50
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,78,182.73</b>
<b>e) Contractor's profit and overheads @ 15 % on (a+b+c+d)</b>				<b>1,52,385.19</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>11,682.86</b>
<b>cost of 7500 sqm= a+b+c+d+e+f</b>				<b>11,79,969.33</b>
<b>Rate per sqm= (a+b+c+d+e+f)/7500</b>				<b>157.33</b>
			<b>say</b>	<b><u>157.30</u></b>

**Case-II: Nominal chipping size 9.5 mm**

Unit =Sqm

Taking output = 7500 sqm

**a) Labour**

Mate	day	0.44	391.00	172.04
Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
Mazdoor ( skilled)	day	2.00	475.00	950.00

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	6.00	345.00	2,070.00
Air compressor 210 cfm	hour	6.00	210.00	1,260.00
Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.00	3,629.00	21,774.00
Tipper 5.5- 10 t capacity for carriage of stone chips from stockpile on the road to chip spreader	hour	6.00	334.00	2,004.00
Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
Bitumen pressure distributor	hour	6.00	202.00	1,212.00
Three wheel 80-100 KN static roller	hour	15.00	392.00	5,880.00

**c) Material**

<b>i) Bitumen (VG-30) @0.9 Kg per sqm</b>	t	6.75	61,186.00	4,13,005.50
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	6.750	1,144.00	7,722.00
<b>iii) Aggregate</b>				
Crushed stone chipping, 9.5 mm nominal size @ 0.008 cum per Sqm	cum	60.000	4,237.30	2,54,238.00
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,53,000.76</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,30,849.09</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>10,031.76</b>
<b>cost of 7500 sqm= a+b+c+d+e+f</b>				<b>10,13,208.15</b>
<b>Rate per sqm= (a+b+c+d+e+f)/7500</b>				<b>135.09</b>
			<b>say</b>	<b><u>135.10</u></b>

**M-4.9 (i) Surface Dressing using Bitumen Emulsion with Organosilane Nanotechnology**

As per Technical Specification on approved by TRRDA. Providing and laying surface dressing as wearing course consisting of a layer of bitumen emulsion mixed with 0.5% organosilane nanotechnology Nanotac by weight of bituminous emulsion laid on the prepared surface, followed by a cover of crushed stone chippings of specified size and rolling with three wheel 80-100 kN static roller including cleaning the road surface as per Technical Specification Clause 507.

**( A ) By Manual Means****Case-I: Nominal chipping size 13.2 mm**

Unit =Sqm

Taking output = 900 sqm

**a) Labour**

Mate	day	2.36	391.00	922.76
Bitumen Emulsion sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	58.00	391.00	22,678.00
Add: 0.50 % of (a) Labour Sundries			LS	120.24

**b) Machinery**

Bitumen Emulsion sprayer capacity 1000 litre fitted with spray set	hour	2.25	202.00	454.50
Three wheel 80-100 KN static roller	hour	2.25	392.00	882.00

**c) Material**

<b>i) Bitumen Emulsion (RS-1) @ 1.50 Kg per sqm</b>	t	1.35	57,286.00	77,336.10
<b>ii) Nanotac</b>				
organosilane nano technology	kg	6.750	1,017.00	6,864.75
<b>iii) Aggregate</b>				

Crushed stone chipping, 13.2 mm nominal size @ 0.010 cum per Sqm	cum	9.000	4,325.50	38,929.50
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>31,614.63</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>27,037.42</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>2,072.87</b>
<b>cost of 900 sqm= a+b+c+d+e+f</b>				<b>2,09,359.77</b>
<b>Rate per sqm= (a+b+c+d+e+f)/900</b>				<b>232.62</b>
			<b>say</b>	<b><u>232.60</u></b>

**Case-II: Nominal chipping size 9.5 mm**

Unit =Sqm

Taking output = 1000 sqm

**a) Labour**

Mate	day	2.36	391.00	922.76
Bitumen Emulsion sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	58.00	391.00	22,678.00
Add: 0.50 % of (a) Labour Sundries	LS			120.24

**b) Machinery**

Bitumen Emulsion sprayer capacity 1000 litre fitted with spray set	hour	2.00	202.00	404.00
Three wheel 80-100 KN static roller	hour	2.00	392.00	784.00

**c) Material**

<b>i) BitumenEmulsion (RS-1) @ 1.40 Kg per sqm</b>	t	1.40	57,286.00	80,200.40
<b>ii) Nanotac organosilane nano technology</b>	kg	6.750	1,017.00	6,864.75
<b>iii) Aggregate</b>				
Crushed stone chipping, 9.5 mm nominal size @ 0.008 cum per Sqm	cum	8.000	4,237.30	33,898.40

<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>31,122.17</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>26,616.26</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>2,040.58</b>
<b>cost of 1000 sqm= a+b+c+d+e+f</b>				<b>2,06,098.55</b>
<b>Rate per sqm= (a+b+c+d+e+f)/1000</b>				<b>206.10</b>
			<b>say</b>	<b><u>206.10</u></b>

**( B ) By Mechanical Means****Case-I: Nominal chipping size 13.2 mm**

Unit =Sqm

Taking output = 7500 sqm

**a) Labour**

Mate	day	0.44	391.00	172.04
Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
Mazdoor ( skilled)	day	2.00	475.00	950.00

**b) Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	6.00	345.00	2,070.00
Air compressor 210 cfm	hour	6.00	210.00	1,260.00
Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.00	3,629.00	21,774.00
Tipper 5.5-10 t capacity for carriage of stone chips from stockpile on the road to chip spreader	hour	6.00	334.00	2,004.00
Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
Bitumen pressure distributor	hour	6.00	202.00	1,212.00
Three wheel 80-100 KN static roller weight	hour	18.75	392.00	7,350.00

**c) Material**

<b>i) BitumenEmulsion (RS-1) @ 1.50 Kg per sqm</b>	t	11.25	57,286.00	6,44,467.50
<b>ii) Nanotech organosilane nano technology</b>	kg	6.750	1,017.00	6,864.75
<b>iii) Aggregate</b>				
Crushed stone chipping, 13.2 mm nominal size @ 0.010 cum per Sqm	cum	75.000	4,325.50	3,24,412.50

<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,17,289.17</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,85,829.74</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>14,246.95</b>
<b>cost of 7500 sqm= a+b+c+d+e+f</b>				<b>14,38,941.65</b>
<b>Rate per sqm= (a+b+c+d+e+f)/7500</b>				<b>191.86</b>
			<b>say</b>	<b><u>191.90</u></b>

**Case-II: Nominal chipping size 9.5 mm**

Unit =Sqm

Taking output = 7500 sqm

<b>a) Labour</b>				
Mate	day	0.44	391.00	172.04
Mazdoor (Unskilled)	day	9.00	391.00	3,519.00
Mazdoor ( skilled)	day	2.00	475.00	950.00
<b>b) Machinery</b>				
Hydraulic broom @ 1250 sqm per hour	hour	6.00	345.00	2,070.00
Air compressor 210 cfm	hour	6.00	210.00	1,260.00
Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.00	3,629.00	21,774.00
Tipper 5.5-10 t capacity for carriage of stone chips from stockpile on the road to chip spreader	hour	6.00	334.00	2,004.00
Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
Bitumen pressure distributor	hour	6.00	202.00	1,212.00
Three wheel 80-100 KN static roller weight	hour	15.00	392.00	5,880.00
<b>c) Material</b>				
<b>i) BitumenEmulsion (RS-1) @ 1.40 Kg per sqm</b>	t	10.50	57,286.00	6,01,503.00
<b>ii) Nanotech</b>				
organosilane nano technology	kg	6.750	1,017.00	6,864.75
<b>iii) Aggregate</b>				
Crushed stone chipping, 9.5 mm nominal size @ 0.008 cum per Sqm	cum	60.000	4,237.30	2,54,238.00
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,92,911.84</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,64,981.79</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>12,648.60</b>
<b>cost of 7500 sqm= a+b+c+d+e+f</b>				<b>12,77,509.02</b>
<b>Rate per sqm= (a+b+c+d+e+f)/7500</b>				<b>170.33</b>
			<b>say</b>	<b><u>170.30</u></b>

#### M-4.10 Pre- coating Chips with Organosilane Nanotechnology

As per Technical Specification on approved by TRRDA. Pre-coating chips with 1 percent of paving bitumen (Bitumen VG-30 mixed with 0.1% organosilane nanotechnology Zycotherm by weight of bituminous binder) by weight of chips in a suitable mixer duly heated to 160 oC as per Technical Specification Clause 507.2.5.

Unit =Cum

Taking output = 30 Cum

<b>a) Labour</b>				
Mate	day	0.60	391.00	234.60
Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
<b>b) Machinery</b>				
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	6.00	198.00	1,188.00
Mixall 6-10 t capacity	hour	6.00	765.00	4,590.00
<b>c) Material</b>				
<b>i) Bitumen (VG-30) @ 1 percent by weight of chips (30X1.6)/100</b>	t	0.48	61,186.00	29,369.28
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	0.480	1,144.00	549.12
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>8,890.01</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>7,602.90</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>582.89</b>
<b>cost of 30 cum= a+b+c+d+e+f</b>				<b>58,871.80</b>
<b>Rate per sqm= (a+b+c+d+e+f)/30</b>				<b>1,962.39</b>
			<b>say</b>	<b><u>1962.40</u></b>

#### M-4.11 20 mm thick Open-Graded Premix Carpet using Bituminous (Bitumen VG-30) Binder with organosilane nanotechnology

As per Technical Specification approved by TRRDA. Providing , laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates using bitumen (Bitumen VG-30 mixed with 0.1% organosilane nanotechnology Zycotherm by weight of bituminous binder) 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 of either Type A or Type B or Type C or Type D as per Technical Specification Clause 508

### Case-I: By Manual Means

Unit = Sqm

Taking output = 500 Sqm (10 cum)

#### a) Labour

Mate	day	1.08	391.00	422.28
Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
Mazdoor (Semi-skilled)	day	6.00	447.00	2,682.00

#### b) Machinery

Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	4.00	198.00	792.00
Mixall 6-10 t capacity	hour	4.00	765.00	3,060.00
Three wheel 80-100 KN static roller weight	hour	2.00	392.00	784.00

#### c) Material

i) Bitumen (VG-30) @ 14.60 Kg per 10 Sqm	t	0.73	61,186.00	44,665.78
ii) Zycotherm organosilane nano technology	kg	0.730	1,144.00	835.12
iii Crushed stone chipping, 13.2 mm to 5.6 mm nominal size @ 0.27 cum per 10 Sqm	cum	13.500	4,061.00	54,823.50

d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)

24,731.84

e) Contractor's profit @ 15 % on (a+b+c+d)

21,151.13

f) Add Cess @ 1.00 % on (a+b+c+d+e)

1,621.59

cost of 500 cum= a+b+c+d+e+f

1,63,780.23

Rate per sqm= (a+b+c+d+e+f)/500

327.56

**say 327.60**

### Case-II: By Mechanical Means

Unit = Sqm

Taking output = 4000 Sqm (80 cum)

#### a) Labour

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor (Semi-skilled)	day	3.00	447.00	1,341.00

#### b) Machinery

HMP 30/40 t per hour	hour	6.00	8,900.00	53,400.00
Electric Generator st 125 KVA	hour	6.00	445.00	2,670.00
Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
Tipper 5.5/10 t capacity	hour	3.64	334.00	1,215.76
Three wheel 80-100 KN static roller weight	hour	16.00	392.00	6,272.00
Paver finisher	hour	6.00	1,050.00	6,300.00

#### c) Material

i) Bitumen (VG-30) @ 14.60 Kg per 10 Sqm	t	5.84	61,186.00	3,57,326.24
ii) Zycotherm organosilane nano technology	kg	5.840	1,144.00	6,680.96
iii Crushed stone chipping, 13.2 mm to 5.6 mm nominal size @ 0.27 cum per 10 Sqm	cum	108.000	4,061.00	4,38,588.00

d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)

1,87,904.98

e) Contractor's profit @ 15 % on (a+b+c+d)

1,60,699.84

f) Add Cess @ 1.00 % on (a+b+c+d+e)

12,320.32

cost of 4000 cum= a+b+c+d+e+f

12,44,352.42

Rate per sqm= (a+b+c+d+e+f)/4000

311.09

**say 311.10**

M-4.12

**20 mm thick Open-Graded Premix Carpet using Bitumen Emulsion as per Technical Specification Clause 508.2 with organosilane nanotechnology**



- (i) Providing , laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates using bitumen emulsion mixed with 0.5% organosilane nanotechnology Nanotac 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 of either Type A or Type B or Type C or Type D as per Technical Specification Clause 508.2

Unit =Sqm

Taking output = 900 sqm (24.3 cum)

As per Technical Specification approved by TRRDA.	<b>a) Labour</b>					
	Mate	day	0.80	391.00	312.80	
	Mazdoor (Unskilled)	day	18.00	391.00	7,038.00	
	Mazdoor (skilled)	day	2.00	475.00	950.00	
	<b>b) Machinery</b>					
	Concrete mixer 0.4 / 0.28 cum capacity	hour	6.00	192.00	1,152.00	
	Three wheel 80-100 KN static roller	hour	3.60	392.00	1,411.20	
	<b>c) Material</b>					
	<b>i) Bitumen Emulsion (RS-1) @21.50 Kg per 10 sqm</b>	t	1.94	57,286.00	1,11,134.84	
	<b>ii) Nanotac</b> organosilane nano technology	kg	9.700	1,017.00	9,864.90	
	<b>iii) Aggregate</b> Crushed stone Aggregate 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.300	4,061.00	98,682.30	
	<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>49,037.14</b>	
	<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>41,937.48</b>	
	<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>3,215.21</b>	
	<b>cost of 900 sqm= a+b+c+d+e+f</b>				<b>3,24,735.87</b>	
<b>Rate per sqm= (a+b+c+d+e+f)/900</b>				<b>360.82</b>		
			<b>say</b>	<b><u>360.80</u></b>		

**M-4.13 As per Technical Specification approved by TRRDA. (As per PMGSY SOR 2019)** **Mix Seal Surfacing with organosilane nanotechnology**

Providing , laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.9 mm ( Type-A ) or 13.2 mm to 0.9 mm (Type-B) aggregates using bitumen (Bitumen VG-30 mixed with 0.1% organosilane nanotechnology Zycotherm by weight of bituminous binder) 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 , finishing to required level and grades as per Technical Specification Clause 509.Technical Specification Clause 508

**(A) By Manual Means**

**i) Type -A**

Unit = Sqm

Taking output = 500 Sqm (10 cum)

<b>a) Labour</b>					
Mate	day	1.40	391.00	547.40	
Mazdoor (Unskilled)	day	21.00	391.00	8,211.00	
Mazdoor (Semi-skilled)	day	7.00	447.00	3,129.00	
<b>b) Machinery</b>					
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	6.00	198.00	1,188.00	
Mixall 6-10 t capacity	hour	6.00	765.00	4,590.00	
Three wheel 80-100 KN static roller weight	hour	6.00	392.00	2,352.00	

<b>c) Material</b>					
i)	<b>Bitumen (VG-30) @ 22.00 Kg per 10 Sqm</b>	t	1.10	61,186.00	67,304.60
<b>ii) Zycotherm</b>					
	organosilane nano technology	kg	1.100	1,144.00	1,258.40
iii)	Crushed stone aggregates 11.2 mm to 0.9 mm @ 0.27 cum per 10 Sqm	cum	13.500	4,501.80	60,774.30
d)	<b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>31,767.74</b>
e)	<b>Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>27,168.37</b>
f)	<b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>2,082.91</b>
	<b>cost of 500 cum= a+b+c+d+e+f</b>				<b>2,10,373.72</b>
	<b>Rate per sqm= (a+b+c+d+e+f)/500</b>				<b>420.75</b>
				<b>say</b>	<b><u>420.70</u></b>

**ii) Type -B**

Unit = Sqm

Taking output = 500 Sqm (10 cum)

<b>a) Labour</b>					
	Mate	day	1.40	391.00	547.40
	Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
	Mazdoor (Semi-skilled)	day	7.00	447.00	3,129.00
<b>b) Machinery</b>					
	Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	6.00	198.00	1,188.00
	Mixall 6-10 t capacity	hour	6.00	765.00	4,590.00
	Three wheel 80-100 KN static roller weight	hour	6.00	392.00	2,352.00
<b>c) Material</b>					
i)	<b>Bitumen (VG-30) @ 19.00 Kg per 10 Sqm</b>	t	0.95	61,186.00	58,126.70
<b>ii) Zycotherm</b>					
	organosilane nano technology	kg	0.950	1,144.00	1,086.80
iii)	Crushed stone aggregates 13.2 mm to 0.9 mm @ 0.27 cum per 10 Sqm	cum	13.500	4,389.30	59,255.55
d)	<b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>29,456.07</b>
e)	<b>Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>25,191.38</b>
f)	<b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,931.34</b>
	<b>cost of 500 cum= a+b+c+d+e+f</b>				<b>1,95,065.23</b>
	<b>Rate per sqm= (a+b+c+d+e+f)/500</b>				<b>390.13</b>
				<b>say</b>	<b><u>390.10</u></b>

**(B) By Mechanical Means****i) Type -A**

Unit = Sqm

Taking output = 4000 Sqm (80 cum)

<b>a) Labour</b>					
	Mate	day	0.52	391.00	203.32
	Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
	Mazdoor (skilled)	day	3.00	475.00	1,425.00
<b>b) Machinery</b>					
	HMP 30/40 t per hour	hour	6.00	8,900.00	53,400.00
	Electric Generator st 125 KVA	hour	6.00	445.00	2,670.00
	Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
	Tipper 5.5/10 t capacity	hour	3.60	334.00	1,202.40
	Three wheel 80-100 KN static roller weight	hour	18.00	392.00	7,056.00
	Paver finisher	hour	6.00	1,050.00	6,300.00
<b>c) Material</b>					
i)	<b>Bitumen (VG-30) @ 22.00 Kg per 10 Sqm</b>	t	8.80	61,186.00	5,38,436.80
<b>ii) Zycotherm</b>					
	organosilane nano technology	kg	8.800	1,144.00	10,067.20
iii)	Crushed stone aggregate 11.2 mm to 0.9 mm @ 0.27 cum per 10 Sqm	cum	108.000	4,501.80	4,86,194.40
d)	<b>Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,37,455.12</b>
e)	<b>Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>2,03,076.04</b>
f)	<b>Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>15,569.16</b>
	<b>cost of 4000 cum= a+b+c+d+e+f</b>				<b>15,72,485.43</b>
	<b>Rate per sqm= (a+b+c+d+e+f)/4000</b>				<b>393.12</b>
				<b>say</b>	<b><u>393.10</u></b>

**ii) Type B**

Unit = Sqm

Taking output = 4000 Sqm (80 cum)

<b>a) Labour</b>					
	Mate	day	0.52	391.00	203.32

Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor (skilled)	day	3.00	475.00	1,425.00
<b>b) Machinery</b>				
HMP 30/40 t per hour	hour	6.00	8,900.00	53,400.00
Electric Generator st 125 KVA	hour	6.00	445.00	2,670.00
Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
Tipper 5.5/10 t capacity	hour	3.60	334.00	1,202.40
Three wheel 80-100 KN static roller weight	hour	18.00	392.00	7,056.00
Paver finisher	hour	6.00	1,050.00	6,300.00
<b>c) Material</b>				
<b>i) Bitumen (VG-30) @ 19.00 Kg per 10 Sqm</b>	t	7.60	61,186.00	4,65,013.60
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	7.600	1,144.00	8,694.40
<b>iii</b> Crushed stone aggregate 13.2 mm to 0.9 mm @ 0.27 cum per 10 Sqm	cum	108.000	4,389.30	4,74,044.40
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>2,18,961.70</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,87,260.12</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>14,356.61</b>
<b>cost of 4000 cum= a+b+c+d+e+f</b>				<b>14,50,017.55</b>
<b>Rate per sqm= (a+b+c+d+e+f)/4000</b>				<b>362.50</b>
			<b>say</b>	<b><u>362.50</u></b>

**M-4.14 Seal Coat with organosilane nanotechnology**

As per Providing and laying seal coat using bitumen (Bitumen Technic VG-30 mixed with 0.1% organosilane nanotechnology al Zycotherm by weight of bituminous binder) sealing the Specific voids in a bituminous surface laid to the specified levels, ation grade and cross fall using Type A or Type B or Type C approve or Type D as per Technical Specification Clause 510 d by TRRDA.

**(A) By Manual Means****i) Type -A**

Unit = Sqm

Taking output = 1100 sqm

**a) Labour**

Mate	day	1.15	391.00	449.65
Bitumen Sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	22.00	391.00	8,602.00
Mazdoor (Semi-skilled)	day	6.00	447.00	2,682.00

**b) Machinery**

Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.20	198.00	435.60
Three wheel 80-100 KN static roller weight	hour	2.20	392.00	862.40

**c) Material**

<b>i) Bitumen (VG-30) @ 9.80 Kg per 10 Sqm</b>	t	1.08	61,186.00	66,080.88
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**ii) Zycotherm**

organosilane nano technology	kg	1.080	1,144.00	1,235.52
<b>iii</b> Crushed stone chipping of 6.7 mm size 100 percent passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	9.900	3,972.90	39,331.71

<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>25,550.96</b>
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<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>21,851.66</b>
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<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,675.29</b>
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<b>cost of 1100 cum= a+b+c+d+e+f</b>				<b>1,69,204.67</b>
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<b>Rate per sqm= (a+b+c+d+e+f)/1100</b>				<b>153.82</b>
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**say 153.80****ii) Type -B**

Unit = Sqm

Taking output = 1250 sqm

**a) Labour**

Mate	day	0.85	391.00	332.35
Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
Mazdoor (Semi-skilled)	day	2.00	447.00	894.00

**b) Machinery**

Mixall 6/10 t capacity	hour	2.50	765.00	1,912.50
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.50	198.00	495.00
Three wheel 80-100 KN static roller weight	hour	2.50	392.00	980.00

<b>c) Material</b>				
i) Bitumen (VG-30) @ 6.80 Kg per 10 Sqm	t	0.85	61,186.00	52,008.10
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	0.850	1,144.00	972.40
iii Crushed stone or grit as passing 2.36 mm seive and retained on 180 micron seive applied @ 0.06 cum per 10 sqm.	cum	7.500	2,252.60	16,894.50
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>17,091.26</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>14,616.77</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,120.62</b>
<b>cost of 1250 cum= a+b+c+d+e+f</b>				<b>1,13,182.50</b>
<b>Rate per sqm= (a+b+c+d+e+f)/1250</b>				<b>90.55</b>
				<b>say</b>
				<b><u>90.50</u></b>

**iii) Type -C**

)

Unit = Sqm

Taking output = 1100 sqm

<b>a) Labour</b>				
Mate	day	1.15	391.00	449.65
Bitumen Sprayer	day	1.00	447.00	447.00
Mazdoor (Unskilled)	day	22.00	391.00	8,602.00
Mazdoor (Semi-skilled)	day	5.00	447.00	2,235.00
<b>b) Machinery</b>				
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.20	198.00	435.60
Three wheel 80-100 KN static roller weight	hour	2.20	392.00	862.40
<b>c) Material</b>				
i) Bitumen (VG-30) @ 6.50 Kg per 10 Sqm	t	0.72	61,186.00	44,053.92
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	0.720	1,144.00	823.68
iii Crushed stone chipping of 6.7 mm size 100 percent passing 9.5 mm seive and retained on 2.36 mm seive applied @ 0.09 cum per 10 sqm	cum	9.900	3,972.90	39,331.71
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>20,683.15</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>17,688.62</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>1,356.13</b>
<b>cost of 1100cum= a+b+c+d+e+f</b>				<b>1,36,968.86</b>
<b>Rate per sqm= (a+b+c+d+e+f)/1100</b>				<b>124.52</b>
				<b>say</b>
				<b><u>124.50</u></b>

**iv) Type -D( with fine sand)**

Unit = Sqm

Taking output = 1250 sqm

<b>a) Labour</b>				
Mate	day	0.85	391.00	332.35
Mazdoor (Unskilled)	day	15.00	391.00	5,865.00
Mazdoor (Semi-skilled)	day	2.00	447.00	894.00
<b>b) Machinery</b>				
Mixall 6/10 t capacity	hour	2.50	765.00	1,912.50
Three wheel 80-100 KN static roller weight	hour	2.50	198.00	495.00
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	2.50	392.00	980.00
<b>c) Material</b>				
i) Bitumen (VG-30) @ 6.80 Kg per 10 Sqm	t	0.85	61,186.00	52,008.10
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	0.850	1,144.00	972.40
iii Sand (fine) applied @ 0.06 cum per 10 sqm	cum	7.500	740.00	5,550.00
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>14,678.29</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>12,553.15</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>962.41</b>
<b>cost of 1250 cum= a+b+c+d+e+f</b>				<b>97,203.19</b>
<b>Rate per sqm= (a+b+c+d+e+f)/1250</b>				<b>77.76</b>
				<b>say</b>
				<b><u>77.80</u></b>

**B)By Mechanical Means****Case-I: Type A**

Unit = Sqm

Taking output =7500 Sqm (67.5 cum)

<b>a) Labour</b>				
Mate	day	0.24	391.00	93.84
Mazdoor (Unskilled)	day	6.00	391.00	2,346.00
<b>b) Machinery</b>				
Hydraulic self propelled chip spreader	hour	6.00	3,629.00	21,774.00
Tipper 5.5/10 t capacity for carriage of stone chips from stockpile on the road to chip spreader	hour	6.00	334.00	2,004.00
Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
Bitumen pressure distributor	hour	6.00	202.00	1,212.00
Three wheel 80-100 KN static roller weight	hour	15.00	392.00	5,880.00
<b>c) Material</b>				
i) Bitumen (VG-30) @ 9.80 Kg per 10 Sqm	t	7.35	61,186.00	4,49,717.10
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	7.350	1,144.00	8,408.40
<b>iii</b> Crushed stone chipping of 6.7 mm size 100 percent passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm				
	cum	67.500	3,972.90	2,68,170.75
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,62,742.32</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,39,180.26</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>10,670.49</b>
<b>cost of 7500 cum= a+b+c+d+e+f</b>				<b>10,77,719.16</b>
<b>Rate per sqm= (a+b+c+d+e+f)/7500</b>				<b>143.70</b>
				<b>say 143.70</b>

**Note:** Since seal coat is provided immediately over the bituminous layer, Hydraulic broom for cleaning the surface has not been catered.

**Case - II Type B**

Unit = Sqm

Taking output = 5000 Sqm (30 cum)

<b>a) Labour</b>				
Mate	day	0.16	391.00	62.56
Mazdoor (Unskilled)	day	4.00	391.00	1,564.00
<b>b) Machinery</b>				
HMP 30/40 t per hour	hour	2.00	8,900.00	17,800.00
Electric Generator st 125 KVA	hour	2.00	445.00	890.00
Front end loader 1 cum bucket capacity	hour	2.00	920.00	1,840.00
Tipper 5.5/10 t capacity	hour	1.36	334.00	454.24
Paver finisher	hour	2.00	1,050.00	2,100.00
Three wheel 80-100 KN static roller weight	hour	10.00	392.00	3,920.00
<b>c) Material</b>				
i) Bitumen (VG-30) @ 6.80 Kg per 10 Sqm	t	3.40	61,186.00	2,08,032.40
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	3.400	1,144.00	3,889.60
<b>iii</b> Crushed stone or grit as passing 2.36 mm sieve and retained on 180 micron sieve applied @ 0.06 cum per 10 sqm.				
	cum	30.000	2,252.60	67,578.00
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>65,539.42</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>56,050.53</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>4,297.21</b>
<b>cost of 5000 cum= a+b+c+d+e+f</b>				<b>4,34,017.96</b>
<b>Rate per sqm= (a+b+c+d+e+f)/5000</b>				<b>86.80</b>
				<b>say 86.80</b>

**Note:** Since seal coat is required to provide immediately over the premix carpet on the same day, out of 6 working hours of the HMP, 4.00 hours are proposed to be utilised for the premix carpet and the balance 2.00 hours have been considered for this case.

**Case-III: Type C**

Unit = Sqm

Taking output =7500 Sqm (67.5 cum)

<b>a) Labour</b>				
Mate	day	2.00	391.00	782.00
Mazdoor (Unskilled)	day	5.00	391.00	1,955.00
<b>b) Machinery</b>				
Hydraulic self propelled chip spreader	hour	6.00	3,629.00	21,774.00
Tipper 5.5/10 t capacity	hour	6.00	334.00	2,004.00
Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
Bitumen pressure distributor	hour	6.00	202.00	1,212.00

Three wheel 80-100 KN static roller weight	hour	15.00	392.00	5,880.00
<b>c) Material</b>				
<b>i) Bitumen (VG-30) @ 6.5 Kg per 10 Sqm</b>	t	4.88	61,186.00	2,98,587.68
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	4.880	1,144.00	5,582.72
<b>iii</b> Crushed stone chipping of 6.7 mm size 100 percent passing 9.5 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	67.500	3,972.90	2,68,170.75
<b>d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)</b>				<b>1,30,059.28</b>
<b>e) Contractor's profit @ 15 % on (a+b+c+d)</b>				<b>1,11,229.11</b>
<b>f) Add Cess @ 1.00 % on (a+b+c+d+e)</b>				<b>8,527.57</b>
<b>cost of 7500 cum= a+b+c+d+e+f</b>				<b>8,61,284.10</b>
<b>Rate per sqm= (a+b+c+d+e+f)/7500</b>				<b>114.84</b>
			<b>say</b>	<b><u>114.80</u></b>

**M-4.15 25 mm thick Open-Graded Premix Carpet using Bituminous (Bitumen VG-30) Binder with organosilane nanotechnology**

As per Providing , laying and rolling of open-graded premix Technic carpet of 25 mm thickness composed of 13.2 mm to 5.6 mm aggregates using bitumen (Bitumen VG-30 mixed with 0.1% organosilane nanotechnology Zycotherm by weight of bituminous binder) to required line, grade and level to serve as wearing course on a previously prepared base , including mixing in a suitable plant, TRRDA. 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 of either Type A or Type B or Type C or Type D as per Technical Specification Clause 508

**Case - I By Manual Means**

Unit = Sqm

Taking output = 400 Sqm (10 cum)

**a) Labour**

Mate	day	1.08	391.00	422.28
Mazdoor (Unskilled)	day	21.00	391.00	8,211.00
Mazdoor (Semi-skilled)	day	6.00	447.00	2,682.00

**b) Machinery**

Mixall 6-10 t capacity	hour	4.00	765.00	3,060.00
Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	4.00	198.00	792.00
Three wheel 80-100 KN static roller weight	hour	2.00	392.00	784.00

**c) Material**

<b>i) Bitumen (VG-30) @ 18.25 Kg per 10 Sqm</b>	t	0.73	61,186.00	44,665.78
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	0.730	1,144.00	835.12
<b>iii</b> Crushed stone chipping, 13.2 mm to 5.6 mm nominal size @ 0.34 cum per 10 sqm	cum	13.500	4,061.00	54,823.50

**d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)** **24,731.84**

**e) Contractor's profit @ 15 % on (a+b+c+d)** **21,151.13**

**f) Add Cess @ 1.00 % on (a+b+c+d+e)** **1,621.59**

**cost of 400 cum= a+b+c+d+e+f** **1,63,780.23**

**Rate per sqm= (a+b+c+d+e+f)/400** **409.45**

**say 409.50**

**Case -II By Mechanical Means**

Unit = Sqm

Taking output = 3200 Sqm (80.0 cum)

**a) Labour**

Mate	day	0.52	391.00	203.32
Mazdoor (Unskilled)	day	10.00	391.00	3,910.00
Mazdoor ( Semi-skilled)	day	3.00	447.00	1,341.00

**b) Machinery**

HMP 30/40 t per hour	hour	6.00	8,900.00	53,400.00
Electric Generator st 125 KVA	hour	6.00	445.00	2,670.00
Front end loader 1 cum bucket capacity	hour	6.00	920.00	5,520.00
Tipper 5.5/10 t capacity	hour	3.64	334.00	1,215.76

Paver finisher	hour	6.00	1,050.00	6,300.00
Three wheel 80-100 KN static roller weight	hour	16.00	392.00	6,272.00
<b>c) Material</b>				
i) Bitumen (VG-30) @ 18.25 Kg per 10 Sqm	t	5.84	61,186.00	3,57,326.24
<b>ii) Zycotherm</b>				
organosilane nano technology	kg	5.840	1,144.00	6,680.96
iii) Crushed stone chipping, 13.2 mm to 5.6 mm nominal size @ 0.34 cum per 10 sqm	cum	108.000	4,061.00	4,38,588.00
d) Add GST (multiplying factor) @ 0.2127 on (a+b+c)				<b>1,87,904.98</b>
e) Contractor's profit @ 15 % on (a+b+c+d)				<b>1,60,699.84</b>
f) Add Cess @ 1.00 % on (a+b+c+d+e)				<b>12,320.32</b>
cost of 3200 cum= a+b+c+d+e+f				<b>12,44,352.42</b>
Rate per sqm= (a+b+c+d+e+f)/3200				<b>388.86</b>
			<b>say</b>	<b><u>388.90</u></b>