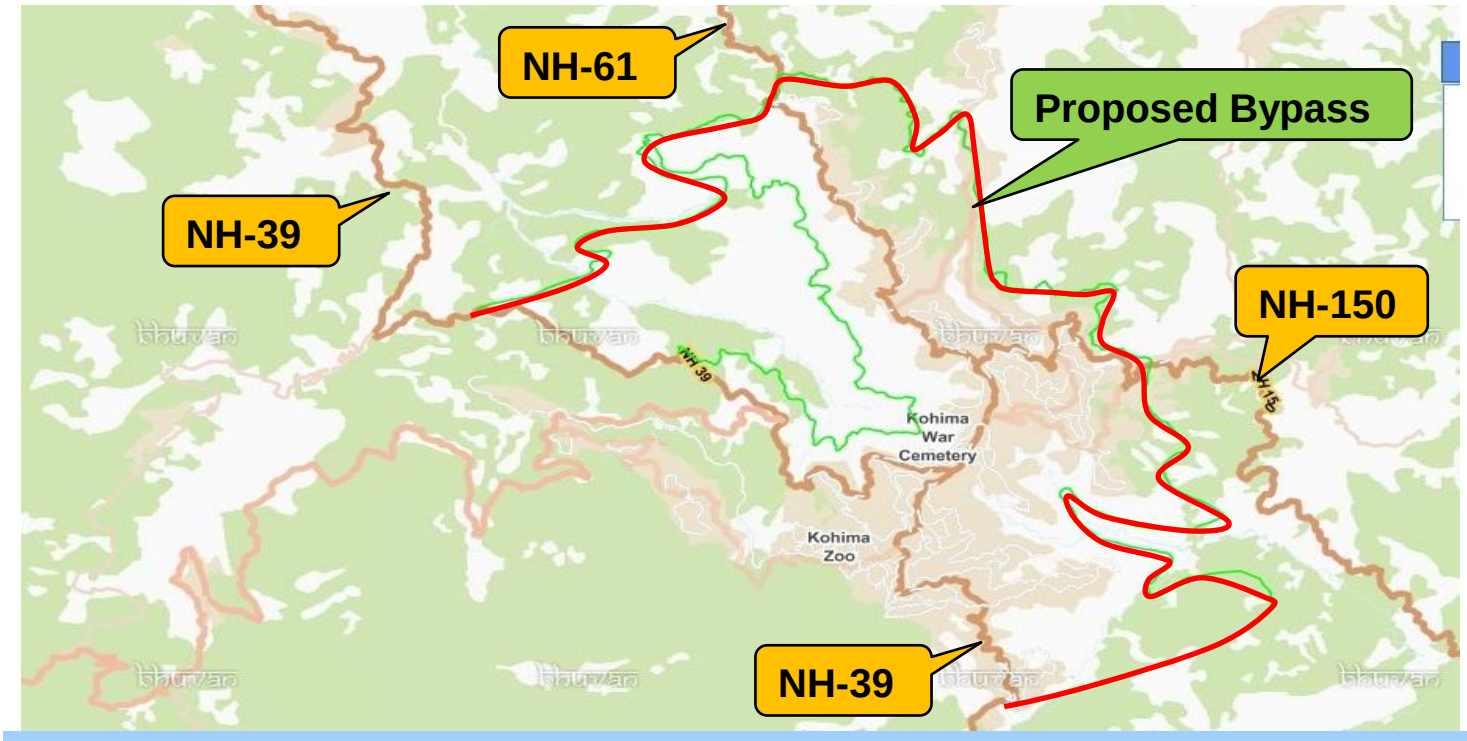
NATIONAL HIGHWAY INFRASTRUCTURE DEVELOPMENT CORPORATION LTD
Government of India
(Ministry of Road Transport and Highways)

Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 4 Laning of **Kohima Bypass** connecting NH-39 (New NH-02),NH-150 (New NH-02), NH-61 (New NH-29) and NH-39 (New NH-02) on Engineering, Procurement and Construction (EPC) mode in the state of Nagaland.



FINAL DETAILED PROJECT REPORT

RATE ANALYSIS (VOLUME-VI)

OCT 2018

In Association with

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CARRIAGE CALCULATION CHART

CARRIAGE OF MATERIALS BY TIPPER OF 5.5 CUM OR 8t CAPACITY INCLUDING OVER HEAD CHARGES & C.P.

Sl. No	Name of Materials	Source	Unit	Gross Tipper/Truck Capacity Per Trip	Multiplying factor for void	Net Tipper capacity (Payble quantity) Per Trip	Cost of Loading Unloading & Stacking per cum	Cost of Haulage Per cum			Lead in km			Carriage Cost = {8/Nc[(Hs*Ls) + (Hg*Lg) + (Hk*Lk)]} + Loading & Unloading	Remarks
								For Surface Road	For Graveled Road	For Katcha Track & Track in River Bed	For Surface Road	For Graveled Road	For Katcha Track & Track in River Bed		
						Nc		Hs	Hg	Hk	Ls	Lg	Lk		
1	Boulder	LOCAL JOYTSMA	m^3	8	0.75	6.00	150.37	8.30	10.00	20.20	37	0	3	640.64	
2	Stone metal above 50mm	LOCAL JOYTSMA	m^3	8	0.624	4.99	150.37	8.30	10.00	20.20	37	0	3	739.64	
3	Stone Agg. Below 50mm	LOCAL JOYTSMA	m^3	8	0.574	4.59	150.37	8.30	10.00	20.20	37	0	3	790.97	
4	Screening Materials	LOCAL JOYTSMA	m^3	8	0.75	6.00	150.37	8.30	10.00	20.20	37	0	3	640.64	
5	Stone chips	LOCAL JOYTSMA	m^3	8	0.75	6.00	150.37	8.30	10.00	20.20	37	0	3	640.64	
6	Coarse Sand	DIMAPUR	m^3	8	0.624	4.99	150.37	8.30	10.00	20.20	92	0	3	1471.21	
7	Local sand	DIMAPUR	m^3	8	0.624	4.99	150.37	8.30	10.00	20.20	92	0	3	1471.21	
8	Cement	DIMAPUR	mt	8	1	8	403.86	10.79	12.92	26.07	92	0	0	1396.54	
9	Steel	GUWAHATI	mt	8	1	8	403.86	10.79	12.92	26.07	375	0	0	4450.11	
10	Bricks	DIMAPUR	1000 No.	2000	1	2000	150.37	8.30	10.00	20.20	92	0	3	153.67	
11	Bitumen	GUWAHATI	mt	8	1	8	403.86	10.79	12.92	26.07	375	0	0	4450.11	
12	Emulsion	GUWAHATI	mt	8	1	8	403.86	10.79	12.92	26.07	375	0	0	4450.11	
13	R.C.C. Hume Pipe														
	1200 MM	DIMAPUR				7.5		8.30	10.00	20.20	95	0	0	841.07	

CHAPTER-1						
CARRIAGE OF MATERIALS						
Sr No	**Ref. to MoRTH Spec.**		**Description**	**Unit**	**Cost Rs with 7.41% escalation upto 2018 wrt WP Index**	**Remarks/ Input ref.**
1.1			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.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.			
			AS PER SOR	cum	***150.37***	
1.2			Loading and unloading of Stone Boulder, stone aggregate, Brick Aggregate, Kankar, earth, Crushed slag, Stone for			
			AS PER SOR	cum	***285.71***	
1.3			**Loading and Unloading of Cement or Steel by Manual Means and Stacking.**			
			AS PER SOR	t	***403.86***	
1.4			**Cost of Haulage Excluding Loading and Unloading**			
			Haulage of materials by tipper excluding cost of loading, unloading and stacking.			
			Unit = t.km			
			Taking output 10 tonnes load and lead 10 km = 100 t.km			
		(i)	**Surfaced Road**			
			AS PER SOR	tonne.km	***9.02***	
1.4		**(ii)**	**Unsurfaced Graveled Road**			
			AS PER SOR	tonne.km	***10.85***	
1.4		**(iii)**	**Katcha Track and Track in River Bed/Nallah Bed and Choe Bed.**			
			AS PER SOR	tonne.km	***21.70***	

CHAPTER-2							
SITE CLEARANCE							
Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
2.1	201	**Cutting of Trees, including cutting of Trunks, Branches**					
		Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 metres and earth filling in the depression/pit.					
		Unit = Each					
	(i)	**Girth from 300 mm to 600 mm**					
		AS PER SOR	each			***472.60***	
	(ii)	**Girth from 600 mm to 900 mm**					
		AS PER SOR	each			***786.24***	
	(iii)	**Girth from 900 mm to 1800 mm**					
		AS PER SOR	each			***1616.52***	
	(iv)	**Girth above 1800 mm**					
		AS PER SOR	each			***3139.59***	
2.2	201	**Clearing Grass and Removal of Rubbish**					
		Clearing grass and removal of rubbish up to a distance of 50					
		AS PER SOR	hectare			***35771.83***	
2.3	201	**Clearing and Grubbing Road Land .**					
		Clearing and grubbing road land including uprooting rank					
	(i)	**By Manual Means:-**					
	A	**In area of light jungle**					
		AS PER SOR	hectare			***107777.34***	
	B	**In area of thorny jungle**					
		AS PER SOR	hectare			***144012.11***	
2.3	(ii)	**By Mechanical Means**					
	A	**In area of light jungle**					
		AS PER SOR	hectare			***42879.15***	
	B	**In area of thorny jungle**					
		AS PER SOR	hectare			***52452.60***	

CHAPTER - 3								
EARTH WORK, EROSION CONTROL AND DRAINAGE								
Sr No	**Ref. to MoRTH Spec.**		**Description**	**Unit**	**Quantity**	**Rate Rs**	**Cost Rs with 7.41% escalation upto 2018 wrt**	**Remarks/ Input ref.**
3.11	**301**		**Removal of Unserviceable Soil with Disposal upto 1000 metres**					
			Removal of unserviceable soil including excavation, loading and disposal upto 1000 metres lead but excluding replacement by suitable soil which shall be paid separately as per clause 305.					
			AS PER SOR	cum			***94.52***	
		Note	This item does not include replacement of unsuitable soil by suitable soil. Replacement, where required, is to be provided and paid separately under clause 305.					
3.16	**305**		**Construction of Embankment with Material obtained from Borrowpits**					
			Construction of embankment with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2.					
			AS PER SOR	cum			***522.01***	
		Note	Compensation for earth will vary from place to place and will have to be assessed realistically as per particular ground situation. In case earth is available from Govt. land, compensation for earth will not be required. The position is required to be clearly stated in the cost estimate.					
3.17	**305**		**Construction of Embankment with Material Deposited from Roadway Cutting**					
			Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2.					
			AS PER SOR	cum			***270.67***	
		Note	In case the earth cutting is done by dozer and pushed for filling in the embankment, the input of dozer in the cost of embankment shall be deleted as the same is already provided in the cost of excavation. However, if the earth is dumped by tippers from roadway cutting, the input of dozer for spreading is required to be provided.					
3.18	**305**		**Construction of Subgrade and Earthen Shoulders**					
			Construction of sub-grade and earthen shoulders with approved material obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2					
			AS PER SOR	cum			***573.57***	
3.19	**305.3.4**		**Compacting Original Ground**					
		Case-I	**Compacting original ground supporting sub-grade**					
			Loosening of the ground upto a level of 500 mm below the sub-grade level, watered, graded and compacted in layers to meet requirement of table 300-2 for sub-grade construction.					
			AS PER SOR	cum			***89.15***	
3.19		**Case-II**	**:Compacting original ground supporting embankment**					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt	Remarks/ Input ref.
			Loosening, leveling and Compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.					
			AS PER SOR	cum			***55.85***	
3.22	**307**		**Turfing with Sods**					
			Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the engineer including preparation of ground, fetching of sods and watering.					
			AS PER SOR	sqm			***129.97***	
3.23	**308**		**Seeding and Mulching**					
			Preparation of seed bed on previously laid top soil, furnishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion at the rate of 0.23 litres per sqm and laying and fixing jute netting, including watering for 3 months all as per clause 308.					
			AS PER SOR	sqm			***389.90***	
3.29			**Underground Drain at Edge of Pavement (Construction of an underground drain 1 m x 1 m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab10 cm in thickness on urban roads)**					
			AS PER SOR	metre			***6209.37***	
			EARTH WORK ON HILL ROAD					
3.32	**301**		**Excavation in Hill Area in Soil by Mechanical Means**					
			Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres.					
			AS PER SOR	cum			***195.49***	
		Note	In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth shall be disposed off on the valley side.					
3.33	**301**		**Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting.**					
			Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres.					
			AS PER SOR	cum			***276.04***	
		Note	In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth can be disposed off on the valley side.					
3.34	**301**		**Excavation in Hilly Areas in Hard Rock Requiring Blasting**					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt	Remarks/ Input ref.
			Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.					
			AS PER SOR	cum			***424.27***	
		Note	In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth can be disposed off on the valley side.					
			In case of hill roads, the altitude effect comes into play. The output of men and machines decreases progressively after 2100 m elevation leading to increase in cost . High altitude effect has been explained in the basic approach.					

CHAPTER - 4							
SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS							
Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP	Remarks/ Input ref.
4.2	401	**Granular Sub-Base with Coarse Graded Material (Table:-400- 2)**					
		Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.					
		Unit = cum					
		a) AS PER SOR					
		For Grading-I Material	cum			**3410.27**	
		For Grading-II Material	cum			**3469.34**	
		For Grading-III Material	cum			**3509.08**	
		Taking output = 300 cum					
		b) Carriage					
		Coarse graded Granular sub-base Materials per table 400-2					
		For grading-I Material					
		53 mm to 26.5 mm @ 35 per cent	cum	134.400	739.64	99407.19	M-029
		26.5 mm to 4.75 mm @ 45 per cent	cum	172.800	790.97	136678.98	M-026
		2.36 mm below @ 20 per cent (Coarse Sand)	cum	76.800	1471.21	112988.72	M-022
		OR					
		For Grading-II Material					
		26.5 mm to 4.75 mm @ 75 per cent	cum	288.000	790.97	227798.30	M-026
		2.36 mm below @ 25 per cent	cum	96.000	1471.21	141235.90	M-022
		OR					
		For Grading-III Material					
		9.5 mm to 4.75 mm @ 66 per cent	cum	255.000	790.97	201696.42	M-025
		2.36 mm below @ 34 per cent	cum	129.000	790.97	102034.66	M-022
4.2	(i)	**Rate per cum for grading-I Material**					
		Rate per cum = a+(b/300)				4573.85	
					say	***4574.00***	
4.2	(ii)	**Rate per cum for grading-II Material**					
		Rate per cum = a+(b/300)				4699.46	
					say	***4699.00***	
4.2	(iii)	**Rate per cum for grading-III Material**					
		Rate per cum = a+(b/300)				4521.52	
					say	***4522.00***	
	Note	Any one of the grading for material may be adopted as per design					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP	Remarks/ Input ref.
4.3	402	**Lime Stabilisation for Improving Sub-grade**					
		Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 3 per cent slaked lime having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade					
		Unit = cum					
		Taking output = 300 cum (525 tonne)					
		By Mechanical Means					
		a) Labour					
		Mate	day	0.360	500.00	180.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	500.00	500.00	L-15
		Mazdoor for spraying lime	day	8.000	350.00	2800.00	L-13
		b) Machinery					
		Tractor with ripper and rotavator attachments @ 60 cum per hour for ripping and 25 cum per hour for mixing	hour	12.000	529.20	6350.40	P&M-055
		Motor Grader 110 HP @ 50 cum per hour	hour	6.000	3028.20	18169.20	P&M-032
		Vibratory roller 8 - 10 tonne capacity	hour	6.00x0.65*	1948.24	7598.14	P&M-059
		Water tanker 6 KL capacity	hour	12.000	646.80	7761.60	P&M-060
		c) Material					
		Lime at site	tonne	15.750	11550.00	181912.50	M-188
		Cost of water	KL	72.000	60.00	4320.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				22959.18	
		e) Contractor's profit @ 10 % on (a+b+c+d)				25255.10	
		Cost for 300 cum= a+b+c+d+e				277806.12	
		Rate per cum =(a+b+c+d+e)/300				926.02	
					say	***926.00***	
		* Though vibratory roller is required only for 3 hours as per norms, but the same has to be available at site for 6 hours as other machines for spreading and mixing will take 6 hours. The usage rates of roller have been multiplied with a factor of 0.65.					
4.3		**By Manual Means**					
		Unit = cum					
		Taking output = 150 cum (263 tonnes)					
		a) Labour					
		Mate	day	1.440	500.00	720.00	L-12
		Mazdoor skilled	day	1.000	500.00	500.00	L-15
		Mazdoor	day	35.000	350.00	12250.00	L-13
		b) Machinery					
		Vibratory roller 8 - 10 tonne @ 60 cum per hour	hour	2.500	1948.24	4870.60	P&M-059
		Water tanker 6 KL capacity	hour	6.000	646.80	3880.80	P&M-060
		c) Material					
		Lime at site	tonne	8.000	11550.00	92400.00	M-188
		Cost of water	KL	36.000	60.00	2160.00	M-189

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP	Remarks/ Input ref.
		d) Overhead charges @ 10 % on (a+b+c)				11678.14	
		e) Contractor's profit @ 10 % on (a+b+c+d)				12845.95	
		Cost for 150 cum= a+b+c+d+e				141305.49	
		Rate per cum =(a+b+c+d+e)/150				942.04	
					say	***942.00***	
4.4	**402**	**Lime Treated Soil for Sub- Base**					
		Providing, laying and spreading soil on a prepared sub grade, pulverising, mixing the spread soil in place with rotavator with 3 per cent slaked lime with minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to achieve at least 98 per cent of the max dry density to form a layer of sub base.					
		Unit = cum					
		Taking output = 300 cum (525 tonnes)					
		a) Labour					
		Mate	day	0.480	500.00	240.00	L-12
		Mazdoor skilled	day	2.000	500.00	1000.00	L-15
		Mazdoor	day	10.000	350.00	3500.00	L-13
		b) Machinery					
		Excavator 0.90 cum bucket capacity	hour	6.000	1646.40	9878.40	P&M-026
		Tipper for carriage of soil	tonne.km	525 x L	3.14	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Motor Grader 110 HP @ 50 cum per hour	hour	6.000	3028.20	18169.20	P&M-032
		Vibratory roller 8 - 10 tonne	hour	6.000	1948.24	11689.44	P&M-059
		Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	509.60	6115.20	P&M-054
		Water tanker 6 KL capacity	hour	12.000	646.80	7761.60	P&M-060
		c) Material					
		Lime at site	tonne	15.750	11550.00	181912.50	M-188
		Cost of water	KL	72.000	60.00	4320.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				24458.63	
		e) Contractor's profit @ 10 % on (a+b+c+d)				26904.50	
		Cost for 300 cum = a+b+c+d+e				295949.47	
		Rate per cum= (a+b+c+d+e)/300				986.50	
					say	***986.00***	
4.5	**403**	**Cement Treated Soil Sub Base/ Base**					
		Providing, laying and spreading soil on a prepared sub grade, pulverising, adding the designed quantity of cement to the spread soil, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base.					
		Unit = cum					
		AS PER SOR			***say***	***1388.81***	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP	Remarks/ Input ref.
4.12	406	**Wet Mix Macadam**					
		Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.					
		Unit = cum					
		a) AS PER SOR	cum			***4491.89***	
		Taking output = 225 cum (495 tonnes)					
		b) Machinery					
		Tipper	tonne.km	495 x L	3.14	38857.50	Lead =25 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				3885.75	
		c) Overhead charges @ 10 % on b				4274.33	
		d) Contractors Profit @ 10 % on (b+c)				4701.76	
		e) Carriage					
		45 mm to 22.4 mm@ 30 per cent	cum	89.100	790.97	70475.10	M-034
		22.4 mm to 2.36 mm @ 40 per cent	cum	118.800	790.97	93966.80	M-031
		2.36 mm to 75 micron@ 30 per cent	cum	89.100	640.64	57081.08	M-022
		Rate per cum = a+(b+c+d+e)/225				5706.30	
					say	***5706.00***	
		1. Though vibratory roller is required only for 3 hours as per norms, the same is required to be available at site for 6 hours to match with other machines. The usage rates of vibratory roller may be multiplied with a factor of 0.65					
		2. As three wheeled smooth steel rollers are commonly in use, the same has been provided as an alternative which can be used if the thickness of individual layer does not exceed 100 mm..					
4.13	407	**Construction of Median and Island with Soil Taken from Roadway Cutting**					
		Construction of Median and Island above road level with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted as per clause 407					
		AS PER SOR	cum			***519.86***	
		This analysis provides for median and island with earthen top. In case the surface is required to be turfed or planted with shrubs, the same is required to be provided separately as per analysis given in the chapter on horticulture. In case granular fill is required to be paved, quantities of paving are required to be calculated as per approved design and paid separately.					
4.14	407	**Construction of Median and Island with Soil Taken from Borrow Areas**					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP	Remarks/ Input ref.
		Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause 407					
		Unit = cum					
		a) AS PER SOR	cum			***813.09***	
		This analysis provides for median and island with earthen top. In case the surface is required to be turfed or planted with shrubs, the same is required to be provided separately as per analysis given in the chapter on horticulture. In case surface finish is of hard type, the same may be provided separately as per approved design.					

CHAPTER - 5								
BASES AND SURFACE COURSES (BITUMINOUS)								
Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
5.1	502		**Prime Coat**					
			Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.					
			Unit = sqm					
			a) AS PER SOR	sqm			37.59	
			Taking output = 3500 sqm					
			b) Carriage					
			Bitumen emulsion @ 0.6 kg per sqm	tonne	2.100	4450.11	9345.23	M-077
			Rate per sqm = a+b/3500				40.26	
						say	***40.00***	
		Note	Bitumen primer has been provided @ 0.60 kg per sqm as per clause 502.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and the actual quantity approved by the Engineer after the preliminary trials referred to in clause No. 502.4.3.					
5.2	503		**Tack Coat**					
			Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.					
			Unit = sqm					
			a) AS PER SOR	sqm			13.96	
			Taking output = 3500 sqm					
			b) Carriage					
			Bitumen emulsion @ 0.2 kg per sqm	tonne	0.700	4450.11	3115.08	M-077
			Rate per sqm = a+b/3500				14.85	
						say	***15.00***	
		Note	1. Bitumen emulsion has been provided @ 0.20 kg per sqm as per clause 503.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and actual quantity approved by the Engineer after preliminary trials referred to in clause No. 503.4.3					
			2. An output of 3500 sqm has been considered in case of prime coat and tack coat which can be covered by bituminous courses on the same day.					
5.6	507		**Dense Graded Bituminous Macadam**					
			Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.					
			Unit = cum					
			a) AS PER SOR					
			Grading - I40 mm (Nominal Size)	cum			12481.04	
			Grading - II19 mm (Nominal Size)	cum			12475.67	
			Taking output = 195 cum (450 tonnes)					
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	21887.32	131323.92	P&M-022

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3381.00	20286.00	P&M-034
			Generator 250 KVA	hour	6.000	1401.40	8408.40	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1019.20	6115.20	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	3.14	35325.00	Lead =25 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				3532.50	
			smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	582.12	2270.27	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	1948.24	7598.14	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1446.48	5641.27	P&M-045
			c) Materials					
			Bitumen @ 4.25 per cent of weight of mix	tonne	19.130	4450.11	85130.63	M-074
		d)	**Carriage**					
			Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 19.13 tonnes					
			Weight of aggregate = 450 -19.13 = 430.87 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 287.25 cum					
			Grading - I40 mm (Nominal Size)					
			37.5 - 25 mm 22 per cent	cum	63.190	790.97	49981.16	M-049
			25 - 10 mm 13 per cent	cum	37.340	790.97	29534.68	M-046
			10 -4.75 mm 19 per cent	cum	54.580	790.97	43170.94	M-040
			4.75 mm and below 44 per cent	cum	126.390	790.97	99970.24	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	640.64	5522.32	M-188
			or					
			Grading - II19 mm (Nominal Size)					
			25 - 10 mm 30 per cent	cum	86.160	790.97	68149.66	M-046
			10 - 5 mm 28 per cent	cum	80.430	790.97	63617.42	M-040
			5 mm and below 40 per cent	cum	114.900	790.97	90882.03	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	640.64	5522.32	M-188
			* Any one of the alternative may be adopted as per approved design					
		(i)	**For Grading I (40 mm nominal size)**					
			e) Overhead charges @ 10 % on (b+c+d)				53381.07	
			f) Contractor's profit @ 10 % on (b+c+d+e)				58719.17	
			Cost for 205 cum = b+c+d+e+f				645910.92	
			Rate per cum = a+(b+c+d+e+f)/195 (For Grading I)				15793.41	
						say	***15793.00***	
		(ii)	**For GradingII(19 mm nominal size)**					
			e) Overhead charges @ 10 % on (a+b+c)				53380.28	
			f) Contractor's profit @ 10 % on (a+b+c+d)				58718.30	
			Cost for 205 cum = b+c+d+e+f				645901.35	
			Rate per cum = a+(b+c+d+e+f)/195 (For Grading-II)				15787.99	
						say	***15788.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		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.					
5.8	**509**		**Bituminous Concrete**					
			Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects					
			Unit = cum					
			a) AS PER SOR					
			(i) for Grading I (13 mm nominal size)	cum			13794.67	
			(ii) for Grading II (10 mm nominal size)	cum			13631.40	
			Taking output = 191 cum (450 tonnes)					
			b) Machinery					
			Tipper 10 tonne capacity	tonne.km	450 x L	3.14	35325.00	Lead =25 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				3532.50	
			c) Carriage					
			i) Bitumen@ 5 per cent of weight of mix	tonne	22.500	4450.11	100127.51	M-074
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 22.5 tonnes					
			Weight of aggregate = 450 -22.50 = 427.50 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 285 cum					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
			*** Grading - I-19 mm (Nominal Size)**					
			20 - 10 mm 35 per cent	cum	99.750	790.97	78898.89	M-045
			10 - 5 mm 23 per cent	cum	65.550	790.97	51847.84	M-040
			5 mm and below 40 per cent	cum	114.000	790.97	90170.16	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	640.64	5522.32	M-188
			or					
			Grading - II-13 mm (Nominal Size)					
			13.2 - 10 mm30 per cent	cum	85.500	790.97	67627.62	M-044
			10 - 5 mm 25 per cent	cum	71.250	790.97	56356.35	M-040
			5 mm and below43 per cent	cum	122.550	790.97	96932.92	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	640.64	5522.32	M-188
			***Any one of the alternative may be adopted as per approved design**					
		(i)	**for Grading-I (13 mm nominal size)**					
			d) Overhead charges @ 10 % on (a+b+c)				37921.89	
			e) Contractor's profit @ 10 % on (a+b+c+d)				41714.08	
			Cost for 191 cum = b+c+d+e				445060.20	
			Rate per cum = a+(b+c+d+e)/191				16124.82	
						say	***16125.00***	
5.8		**(ii)**	**for Grading-II(10 mm nominal size)**					
			d) Overhead charges @ 10 % on (a+b+c)				37905.56	
			e) Contractor's profit @ 10 % on (a+b+c+d)				41696.12	
			Cost for 191 cum = b+c+d+e				445025.91	
			Rate per cum = a+(b+c+d+e)/191				15961.38	
						say	***15961.00***	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case BC is laid over freshly laid tack coat, provision of mechanical broom and 2 mazdoors shall be deleted as the same has been included in the cost of tack coat.					
			5. The individual density for each size of aggregates to be used for construction i.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be ammended for use in field. The average density of 1.5 tonne/cum is only a reference density in this Data Book.					
			6. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e.. excluding the weight of bitumen. The weight of filler will also be 2 per cent by weight of dry aggregates.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.

CHAPTER- 6
CEMENT CONCRETE PAVEMENTS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
6.1	*601*	**Dry Lean Cement Concrete Sub- base**					
		Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing.					
		Unit = cum					
		a) AS PER SOR				***7258.77***	
6.2	*602*	**Cement Concrete Pavement**					
		Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing					
		Unit = cum					
		Taking output = 1050 cum (2415 tonne)					
		a) AS PER SOR				***12481.04***	

CHAPTER-8							
TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES							
Sr No	**Ref. to MoRTH Spec.**	**Description**	**Unit**	**Quantity**	**Rate Rs**	**Cost Rs with 7.41% escalation upto 2018 wrt WP Index**	**Remarks/ Input ref.**
8.2	**408**	**Cast in Situ Cement Concrete M 20 Kerb with Channel**					
		Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCCM20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408					
	A	**Using Concrete Mixer**					
		Unit = Running metre					
		a) As per SOR	m			1182.58	
		Taking output = 300 metre length					
		Cement Concrete					
		Cement concrete of grade M20= 17.48 cum					
		Cement concrete of grade M10 for base = 23.18 cum					
		Total Concrete = **40.66 cum**					
		b) Carriage					
		Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	790.97	28941.46	M-053
		Coarse sand 30 per cent	cum	18.300	1471.21	26923.09	M-005
		Cement 10 per cent	tonne	9.010	1396.54	12582.84	M-081
		Rate per metre = a+b/300				1410.74	
					say	***1411.00***	
8.2	**B**	**Using Concrete Batching and Mixing Plant**					
		Unit = Running metre					
		a) As per SOR	m			1176.14	
		Taking output = 300 metre length					
		Cement Concrete					
		Cement concrete of grade M20= 17.48 cum					
		Cement concrete of grade M10 for base = 23.18 cum					
		Total Concrete = **40.66 cum**					
		b) Carriage					
		Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	790.97	28941.46	M-053
		Coarse sand 30 per cent	cum	18.300	1471.21	26923.09	M-004
		Cement 10 per cent	tonne	9.010	1396.54	12582.84	M-081
		Rate per metre = a+b/300				1404.30	
					say	***1404.00***	
8.3	**801**	**Printing New Letter and Figures of any Shade**					
		Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade					
	(i)	**Hindi** (Matras commas and the like not to be measured and paid for Half letter shall be counted as half)					
		Details for 100 letters of 16 cm height i.e. 1600 cm					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		Unit = per cm height per letter					
		As per SOR				1.72	
8.3	**(ii)**	**English and Roman**					
		Hyphens and the like not to be measured and paid for					
		Detail for 100 letters of 16 cm height. i.e.1600 cm					
		Unit = per cm height per letter					
		As per SOR				1.07	
8.4	**801**	**Retro-Reflectorised Traffic Signs**					
		Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing					
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable					
		Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.					
	(i)	**90 cm equilateral triangle**					
		As per SOR	each			***5804.44***	
	(ii)	**60 cm equilateral triangle**					
		As per SOR	each			***4282.44***	
	(iii)	**60 cm circular**					
		As per SOR	each			***5279.20***	
	(iv)	**80 mm x 60 mm rectangular**					
		As per SOR	each			***6824.83***	
	(v)	**60 cm x 45 cm rectangular**					
		As per SOR	each			***5177.16***	
	(vi)	**60 cm x 60 cm square**					
		As per SOR	each			***5882.85***	
	(vii)	**90 cm high octagon**					
		As per SOR	each			***8330.72***	
	Note	1.Any one area of aluminium sheeting given at (i) to (vii) may be adopted as per site requirement and in accordance with IRC : 67					
		2.Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters					
		3. The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
8.5	**801**	**Direction and Place Identification Signs upto 0.9 sqm Size Board.**					
		Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing					
		As per SOR	sqm			***11210.38***	
	Note	I) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately					
		ii) Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters					
8.6	**801**	**Direction and Place Identification Signs with size more than 0.9 sqm size Board.**					
		Providing and erecting direction and place identification retro-reflectorised sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing					
		As per SOR	sqm			***19689.33***	
	Note	i) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately					
		ii) Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters					
8.7	**802**	**Overhead Signs**					
		Providing and erecting overhead signs with a corrosion resistant 2mm thick aluminium alloy sheet reflectorised with high intensity retro-reflective sheeting of encapsulated lense type with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans					
	A	**Truss and Vertical Support**					
		As per SOR	tonne			***109433.60***	
8.7	**B**	**Aluminium Alloy Plate for Over Head Sign**					
		As per SOR	sqm			***4923.67***	
	Note	1. The cost of excavation and foundation concrete for fixing of vertical support system to be worked out separately as per the approved drawing/design and to be included in the estimate.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		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.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
8.8		**Painting Two Coats on New Concrete Surfaces**					
		Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces					
		As per SOR	sqm			***216.97***	
8.9		**Painting on Steel Surfaces**					
		Providing and applying two coats of ready mix paint of approved brand on steel surface after through cleaning of surface to give an even shade					
		As per SOR	sqm			***137.48***	
8.10		**Painting on Wood Surfaces**					
		Providing and applying two coats of ready mix paint of approved brand on wood surface after thorough cleaning of surface to give an even shade					
		As per SOR	sqm			***153.60***	
8.11		**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work**					
		Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control					
	(i)	**Over 10 cm in width**					
		As per SOR	sqm			***300.75***	
8.11	(ii)	**Up to 10 cm in width**					
		As per SOR	sqm			***268.53***	
8.12		**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work**					
		Painting lines, dashes, arrows etc on roads in two coats on old work with ready mixed road marking paint conforming to IS: 164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control					
	(i)	**Over 10 cm in width**					
		As per SOR	sqm			***201.93***	
8.12	(ii)	**Up to 10 cm in width**					
		As per SOR	sqm			***212.67***	
8.13		**Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface**					
		Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.					
		As per SOR	sqm			***3138.52***	
	Note	1. A sealing primer may be applied in advance on cement concrete pavement to ensure proper bonding. Any laitance and/or curing compound to be removed where paint is required to be applied on concrete surface.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		2.Cost of painter is already included in hire charges of road marking machine.					
8.14		**Kilometre Stone**					
		Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc					
	(i)	**5th kilometre stone (precast)**					
		As per SOR	each			***6625.05***	
8.14	**(ii)**	**Ordinary kilometer stone (precast)**					
		As per SOR	each			***4090.17***	
8.14	**(iii)**	**Hectometer stone (precast)**					
		As per SOR	each			***1045.10***	
	Note	The rate for excavation, cement concrete, steel reinforcement, painting and lettering may be taken from respective chapters.					
8.15		**Road Delineators**					
		Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming toIRC-79 and the drawings.					
		As per SOR	each			***1163.25***	
	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		**Boundary pillar**					
		Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25-1967, fixed in position including finishing and lettering but excluding painting					
		As per SOR	each			***1542.41***	
	Note	In case of soft ground, a proper foundation may be provided as per approved design. In case foundation is required to be provided, the items of excavation and foundation concrete are required to be measured and paid separately.					
8.17		**G.I Barbed Wire Fencing 1.2 Metre High**					
		Providing and fixing 1.2 metres high GI barbed wire fencing with 1.8 m angle iron posts 40 mm x 40 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 9 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807					
		Unit = per running metre					
		As per SOR				***661.65***	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
	Note	Cost of excavation for foundation and foundation concrete to be added separately in the cost estimate as per approved design. The rate for these items may be taken from respective chapters.					
8.18		**G.I Barbed Wire Fencing 1.8 Metre High**					
		Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807					
		Unit = per running metre					
		As per SOR				***976.36***	
	Note	Cost of excavation for foundation and foundation concrete to be added separately in the cost estimate as per approved design. The rate for these items may be taken from respective chapters.					
8.19		**Fencing With Welded Steel Wire Fabric 75 mm x 50 mm**					
		Providing 1.20 metre high fencing with angle iron posts 50 mm x 50 mm x 6 mm at 3 metre center to center with 0.40 metre embedded in M15 grade cement concrete, corner, end and every 10th post to be strutted, provided with welded steel wire fabric of 75 mm x 50 mm mesh or 75 mm x 25 mm mesh and fixed to iron posts by flat iron 50 x 5 mm and bolts etc. complete in all respects.					
		Unit = Running metre					
		As per SOR				***996.76***	
	Note	i) Adopt any one type of welded steel wire fabric 75 x 50 mm or 75 x 25 mm as per approved design.					
		ii) The item of excavation and cement concrete in foundation shall be measured and paid separately					
8.20		**Tubular Steel Railing on Medium Weight Steel Channel (ISMC series) 100 mm x 50 mm**					
		Providing, fixing and erecting 50 mm dia steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 metres high above ground, 2 m centre to centre, complete as per approved drawings					
		Unit = Running metre					
		As per SOR				***2467.21***	
8.21		**Tubular Steel Railing on Precast RCC Posts, 1.2 m High Above Ground Level**					
		Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M20 grade RCC vertical posts1.8 metres high (1.2 m above GL) with 3 holes 50 mm dia for pipe, fixed 2 metres centre to, complete as per approved drawing					
		Unit = Running metre					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		As per SOR				*1922.64*	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
8.22		**Reinforced Cement Concrete Crash Barrier**					
		Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with **M-20 grade** concrete with HYSD reinforcement conforming to IRC:21 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified					
		As per SOR	metre			***6311.41***	
	Note	i) Excavation and backfilling are incidental to work and not to be measured separately.					
		ii) Rate for RCC M 20 may be taken from chapter on super structure.					
8.23		**Metal Beam Crash Barrier**					
		Type - A, "W" : Metal Beam Crash Barrier					
		Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per clause 810					
		As per SOR	metre			***3878.58***	
	Note	In the case of median crash barrier, 'W' metal beam or thrie beam section should be provided on both sides of the vertical posts fixed in the median. Extra provision for metal beam railing and spacer is required to be made when fixed in the median depending on approved design.					
8.24		**Road Traffic Signals electrically operated**					
	Note	Since it is a ready made item commercially produced and erected by specialised firm in the electrical and electronic field, rate may be taken based on market enquiry from firms specialised in this field and ISI certified for the approved design and drawing.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
8.25		**Flexible Crash Barrier, Wire Rope Safety Barrier**					
		Providing and erecting a wire rope safety barrier with vertical posts of medium weight RS Joist (ISMB series) 100 mm x 75 mm (11.50 kg/m), 1.50 m long 0.85 m above ground and 0.65 m below ground level, split at the bottom for better grip, embedded in M 15 grade cement concrete 450 x 450 x 450 mm, 1.50 m center to center and with 4 horizontal steel wire rope 40 mm dia and anchored at terminal posts 15 m apart. Terminal post to be embedded in M 15 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					
		As per SOR	metre			***4591.78***	
	Note	The items of excavations and cement concrete works will be measured and included separately as per the approved designs and drawings.					
8.26		**Anti-Glare Devices in Median**					
	A	**Plantation**					
		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 envoirenment and are eco-friendly. The rate for this item is available in the chapter 11 on horticulture.					
	B	**Anti-glare screen with 25 mm steel pipe framework fixed with circular and rectangular vans**					
		Providing and erecting an anti - glare screen with 25 mm dia vertical pipes fabricated and framed in the form of panels of one metre length and 1.75 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.					
		Unit = Running metre					
		As per SOR	metre			***3009.63***	
	Note	The items of excavation and cement concrete as per approved design to be measured and paid separately					
8.26	**C**	**Anti-glare screen with rectangular vane of MS sheet**					
		Providing and erecting anti - glare screen with rectangular vanes of size 750 x 500 mm made from MS sheet, 3 mm thick and fixed on MS angle 50 x 50 x 6 mm at an angle of 450 to the direction of flow of traffic, 1.5 m center to center, top edge of the screen 1.75 m above ground level, vertical post firmly embedded in 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					
		Unit = Running metre					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		As per SOR	metre			***1167.55***	
	Note	The items of excavation and cement concrete as per approved design to be measured and paid separately. Rate of painting has been analaysed separately in this chapter.					
8.27		**Street Lighting**					
		Providing and erecting street light mounted on a steel circular hollow pole of standard specifications for street lighting, 9 m high spaced 40 m apart, 1.8 m overhang on both sides if fixed in the median and on one side if fixed on the footpath, fitted with sodium vapour lamp and fixed firmly in concrete foundation.					
	(i)	**For Fixing in Median**					
		As per SOR	each			***59529.84***	
	(ii)	**For fixing in Footpath**					
		As per SOR	each			***59382.69***	
	Note	The items of excavation and cement concrete foundation will be measured and included separately in the estimate as per approved design and drawing. The rate for painting has been analysed in this chapter.					
8.28		**Lighting on Bridges**					
		Providing and fixing lighting on bridges, mounted on steel hollow circular poles of standard specifications, 5 m high fixed on parapets with cement concrete, 20 m apart and fitted with sodium vapour lamp					
		As per SOR	each			***31762.21***	
	Note	The items of cement concrete to be measured and paid separately as per approved design. The rate for painting has already been analysed in this chapter.					
8.29		**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**					
		As per SOR	metre			***11033.16***	
8.29	**(ii)**	**Double row for two utility services**					
		As per SOR	metre			***21474.48***	
8.29	**(iii)**	**Triple Row for three utility services**					
		As per SOR	metre			***31954.48***	
	Note	1.Inspection chamber at both ends is the responsibility of the agency who is laying the duct. Hence not included.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		2.The rates for stone masonry / brick masonry and cement mortar to be adopted from respective clauses.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
8.30		**Highway Patrolling and Traffic Aid Post**					
		It is proposed to locate one Traffic Aid Post every 50-60 km of the highway.					
		The organisation and financial aspect are required to be finalised in consultation with administrative and traffic authorities .					
8.31		**Items Related to Underpass/ Subway/ Overhead Bridge/ Overhead Foot Bridge**					
		The items involved for underpass/ subway/ overhead bridge/ overhead foot bridge are earthwork, plain cement concrete, plastering, painting, information sign etc. The rates for these items are available in respective chapters which can be adopted for the quantities derived from the approved designs and drawings					
8.32		**Traffic Control System and Communication System**					
		Providing a traffic control centre and communication system including telecommunication facilities and related accessories, CCTV, radar, vehicle detection camera, central computer system					
		These are specialised item of telecommunication system and are the commercial products. The designer is required to contact the manufacturers to ascertain market prices. In case of civil works required to be executed for these installations, pricing may be done as per rates in relevant chapters for quantities derived as per approved design and drawing.					
		As regards the locations where such devices are required to be installed, the traffic control authority should be consulted to finalise the location					
8.33		**Gantry Mounted Variable Message Sign Board**					
		Providing and erecting gantry mounted variable message sign board electronically operated capable of flashing the desired message over a designed support system of aluminium alloy or galvanised steel, erected as per approved design and drawings and with lateral clearance as per clause 802.3					
	(i)	**Gantry Support System**					
		Unit = tonne					
		As per SOR	tonne			***104611.97***	
8.33	**(ii)**	**Message Display**					
		Message display board 6 sqm electronically operated with complete electronic fitments for flashing the pre-determined messages.					
		This is a specilised commercial product and the lumpsum rate including erection at site is required to be as certained from the market and including in the rate analysis. The size of the board will vary depending upon specific location.					
		The rate for the gantry mounted variable sign would be the addition of cost of gantry support system as per approved design determined at (i) above and the cost of message display board as certained from the market at (ii) above					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
8.34		**Traffic Impact Attenuators at Abutments and Piers**					
	A	**With Scrap Tyres**					
		Provision and installation of traffic attenuators at abutment/pier of flyovers bridges using scrap tyres of size 100 x 20 retrieved from trucks laid in 2 rows and 4 tiers, one above the other and tied with 20 mm wire rope as per approved design and drawings.					
		Unit = sqm					
		As per SOR	sqm		***say***	***4283.51***	
8.34	**B**	**Using Plastic/Steel Barrel, Filled with Sand**					
		Provision and installation of traffic impact attenuator at abutment/pier of flyovers bridges using plastic/steel barrels 0.60 m dia and 1.0 m in height, filled with sand in three rows and tied with20 mm steel wire rope as per approved design and drawings					
		Unit = sqm					
		As per SOR	sqm		***say***	***2530.58***	
8.35		**Road Markers/Road Stud with Lense Reflector**					
		Providing and fixing of road stud 100x 100 mm, die-cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973					
		Unit = Nos					
		Taking output = 50Nos					
		As per SOR			***say***	***2131.01***	
8.36		**Traffic Cone**					
		Provision of red fluorescent with white reflective sleeve traffic cone made of low density polyethylene (LDPE) material with a square base of 390 x 390 x 35 mm and a height of 770 mm, 4 kg in weight, placed at 1.5 m interval, all as per BS 873					
		Unit = Running metre					
		As per SOR				***1367.33***	
8.37		**Roadside Amenities**					
	A	**Rest areas**					
		Providing plainly furnished accommodation for rest rooms, dormitories, restaurants, stalls, shops, petrol pump, telephone booth, first aid room, traffic aid post, police assistance booth, including electricity, toilet and sewerage system					
		Pricing may be done based on current plinth area rates approved by PWD/CPWD/MES for a particular zone. Area is required to be assessed for specific location as per actual site conditions					
	B	**Parking areas and bus laybyes for trucks, buses and light vehicles**					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		Pricing of parking areas may be done for the quantities of various items based on the approved dimensions and pavement design for a particular terrain and soil. Rates for items may be from respective chapters.					
	C	**Lawn**					
		Providing a lawn planted with grass and its maintenance					
		Pricing of lawn may be done as per rates given in the chapter on horticulture for the quantities as per approved dimensions in the drawings					
8.38		**Rumble Strips**					
		Provision of 15 nos rumble strips covered with premix bituminous carpet, 15-20 mm high at center, 250 mm wide placed at 1 m center to center at approved locations to control speed, marked with white strips of road marking paint.					
		Unit = sqm					
		Taking output = 100 sqm (including gaps)					
		The rate per sqm of premix carpet and road marking may be adopted from chapter 5 & 8 respectively for the quantities calculated from approved drawings					
8.39		**Policeman Umbrella**					
		Provision of a 2 m high (floor to roof) umbrella for traffic policeman at road crossings, where necessary, installed on a raised platform, built on a central support of a steel pipe 100 mm dia, roof made of 25 mm dia steel pipe to provide covered area of 3 sqm, roofed with CGI sheets, all steel parts to be given 2 coats of paint					
		Unit = each					
		Taking output = one number					
		Earthwork	cum				
		Cement Concrete	cum				
		brick masonry or	cum				
		stone masonry	cum				
		Quantities of these items to be calculated as per approved design and cost added as per rates of these items given in chapter 3 and 13					
		Painting	sqm	2.500			
		a) Labour					
		Mate	day	0.090			
		Mazdoor	day	1.000			
		Blacksmith	day	1.000			
		Welder	day	0.250			
		b) Material					
		Steel pipe 100 mm dia	metre	3.500			
		Steel pipe 25 mm dia	metre	10.000			
		CGI sheets	kg	8.000			
		Add 25 per cent of cost of material for fabrication					
		Add 2 per cent of cost of material for welding consumables, J-hooks, washers etc.					
		c) Machinery					
		Tractor-trolley	hour	0.500			

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		d) Overheads @ per cent on (a+b+c)					
		e) Contractors Profit@ per cent on (a+b+c+d)					
		Rate per policeman umbrella = a+b+c+d+e					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
8.40		**High Mast Pole Lighting at Interchanges and Flyovers**					
		Providing and erecting a high mast pole lighting with 30 m high hot dip galvanised mast designed to withstand forces exerted with wind speeds of 180 km per hour with 3 seconds gust, as per IS:875 (Part 3) - 1978, fitted with a base flange, door at the base of mast with heavy duty internal lock, lantern carriage, suitable winching arrangement for safe working load of 750 kg and high powered electrically driven power tools for raising and lowering of lantern carriage, flexible 8 core electric cable, lightening conductor, earthing terminal, and fixing 2 nos aviation obstruction lights on top of the mast, all complete as per approved design and drawings					
		This is a specialised work and is generally done by firms who specialise in such jobs. The detailed designs and estimates are submitted by the firms along with their tender for checks by the Department. The cost of this work is required to be worked out based on approved design, drawings and estimate of the lowest tender. A separate contract for this work is concluded as the contractors for road and bridge works generally donot undertake such jobs.					
8.41		**Toll Plaza**					
		The construction, operation and maintenance of Toll Plaza can be broken into separate items of work as under based on the approved design and drawings:-					
		a) Provision of toll collection service lane to separate different categories of vehicles for purpose of toll collection. This involves considerable increase in carriage way width					
		b) Provision of 2.5 m wide separators for different toll collection service lanes for safety					
		c) Toll booths with integrated roof cover					
		d) Barrier gates for individual lanes					
		e) Provision of building to provide facility to toll plaza personnel					
		f) Toll plaza office equipment and furniture					
		g) Water supply, electricity, sanitation, septic-tank system and drainage					
		h) Telephone, intercomes, wireless communication system					
		i) High mast lighting					
		j) Pavement marking					
		k) Overhead signs					
		l) Fixed message signs (Advance)					
		m) Variable message signs					
		n) Traffic cones and pylons					
		o) First aid post					
		p) Traffic aid post and security					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		The quantities for the above mentioned items may be calculated from the approved design and drawings and their rates adopted from respective chapters of the Standard Data Book					
8.42		**Safety Devices and Signs in Construction Zones**					
		Provision and fixing of traffic signs for limited period at suitable locations in construction zone comprising of warning zone, approach transition zone, working zone and terminal transition zone with a minimum distance of 60 cm from the edge of the kerb in case of kerbed roads and 2 to 3 m from the edge of the carriageway in case of un-kerbed roads, the bottom edge of the lowest sign plate to be not less than 2 m above the road level, fixed on 60 mm x 60 mm x 6 mm angle iron post, founded and installed as per approved design and drawings, removed and disposed of after completion of construction work, all as per IRC:SP:55-2001					
		Unit = each					
		Taking output = one sign post					
		Following types of signs are required to be fixed in construction zones for safety of traffic					
		a) Diversion one km ahead					
		b) Traffic sign ahead					
		c) Road ahead closed					
		d) Men at work					
		e) Road narrow					
		f) Single file traffic					
		g) Right lane diverted					
		h) Left lane diverted					
		i) Right lane closed					
		j) Left lane closed					
		k) Median closed					
		l) Diversion to other carriageway					
		m) Traffic signal ahead					
		n) Two way traffic					
		o) Un - even road					
		p) Slippery road					
		q) Loose chippings					
		r) Dual carriageway ends					
		s) Diversion					
		t) Do not enter					
		u) Road closed					
		v) Stop					
		w) Slow					
		x) One way					
		y) Give way					
		z) Overtaking prohibited					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
		aa) Speed limit					
		bb) Weight limit					
		cc) Height and length limit					
		dd) No stopping or standing					
		ee) Any other warning or regulatory safety sign as per site requirement and consistent with IRC:SP:55-2001 and IRC:67					
		The rate for traffic signs are already worked out and given elsewhere in this chapter. The same may be adopted.					
8.43		**Portable Barricade in Construction Zone**					
		Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45 x 45 x 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150 mm in width at an angle of 450, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001					
		Unit = each					
		As per SOR				***4120.25***	

CHAPTER-12								
FOUNDATIONS								
Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
12.1	304		**Excavation for Structures**					
			Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.					
		I	**Ordinary soil**					
		A	**Manual Means**					
		(i)	**Depth upto 3 m**					
			As per SOR	cum			*103.52*	
		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 excavated earth can be used partially for backfilling of foundation pit and partly for road work except for marshy soil. Hence cost of disposal has not been added except for marshy soil. This remark is common to all cases of item 12.1 excluding marshy soil.					
			3.The cost of shoring and shuttering, where needed, may be added @ 1 per cent on cost of excavation for open foundation.					
12.1 (I) A		(ii)	**Depth 3 m to 6 m**					
			As per SOR	cum			*133.66*	
		Note	Cost of dewatering may be added where required upto 15 per cent of labour cost. Assessment for dewatering shall be done as per actual ground conditions.					
12.1 (I) A		(iii)	**Depth above 6 m**					
			As per SOR	cum			*178.21*	
		Note	1. Cost of dewatering may be added where required upto 20 per cent of labour cost. Assessment for dewatering shall be made as per site conditions..					
12.1 (I)		B	**Mechanical Means**					
		(i)	**Depth upto 3 m**					
			As per SOR	cum			*80.56*	
		Note	Cost of dewatering upto 5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
12.1 (I) B		(ii)	**Depth 3 m to 6 m**					
			As per SOR	cum			*76.00*	
		Note	Cost of dewatering upto 7.5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
12.1 (I) B		(iii)	**Depth above 6m**					
			As per SOR	cum			*91.73*	
		Note	1. Cost of dewatering upto 10 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
			2.Labour provided for excavation by mechanical means includes that required for trimming of bottom and side slopes.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.

CHAPTER-13

SUB-STRUCTURE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.1	1300 & 2200		Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and Technical Specifications					
			Unit = cum					
			Taking output = 1 cum					
			AS PER SOR			*say*	*12922.50*	
13.2	1300 & 2200		Pointing with cement mortar (1:3) on brick work in substructure as per Technical Specifications					
			Unit = 10 sqm					
			Taking output = 10 sqm					
			AS PER SOR			*say*	*127.82*	
13.3	1300 & 2200		Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical Specifications					
			Unit = 10 sqm					
			Taking output = 10 sqm					
			AS PER SOR			*say*	*274.97*	
13.4	1400 & 2200		Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications					
		A	Random Rubble Masonry					
			(coursed/uncoursed)					
			a) As per SOR				*9215.78*	
			Taking output = 1 cum					
			b) Carriage					
			Stone	cum	1.00	640.64	640.64	M-148
			Through and bond stone	No	7.00	640.64	4484.48	M-182
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement	cum	0.17	1396.54	235.04	Item 12.6 (A)
			Sand	cum	0.35	1471.21	509.77	Item 12.6 (A)
			Rate per cum (a+b)				15085.71	
						say	*15086.00*	
13.4		B	Coursed rubble masonry (first sort)					
			Unit = cum					
			a) As per SOR				*9568.08*	
			Taking output = 1 cum					
			b) Carriage					
			Stone	cum	1.10	640.64	704.70	M-148
			Through and bond stone	each	7.00	640.64	4484.48	M-182
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.30	1396.54	418.96	Item 12.6 (A)
			Rate per cum (a+b)				15176.23	
						say	*15176.00*	
13.4		C	Ashlar masonry (first sort)					
			Plain ashlar					
			Unit = cum					
			a) As per SOR				*13146.98*	
			Taking output = 1 cum					
			b) Carriage					
			Stone	cum	1.11	640.64	711.11	M-169
			Through and bond stone	each	7.00	640.64	4484.48	M-182
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.33	1396.54	460.86	Item 12.6 (A)
			Rate per cum (a+b)				18803.44	
						say	*18803.00*	
	Note		The labour already considered in the cement mortar have been taken into account while providing these categories in the stone masonry works.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.5	1500, 1700 & 2200		Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications					
			Unit = cum					
			Taking output = 1 cum					
		A	PCC Grade M15					
		(p)	Height upto 5m					
			a) As per SOR				*11355.39*	
			b) Carriage					
			Cement	tonne	0.28	1396.54	384.51	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			40 mm Aggregate	cum	0.54	790.97	427.12	M-055
			20 mm Aggregate	cum	0.27	790.97	213.56	M-053
			10 mm Aggregate	cum	0.09	790.97	71.19	M-051
			Rate per cum (a+b)				13113.81	
						say	*13114.00*	
13.5		B	PCC Grade M20					
		(p)	Height upto 5m					
			a) As per SOR				*12876.31*	
			b) Carriage					
			Cement	tonne	0.34	1396.54	480.41	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				14730.63	
						say	*14731.00*	
13.5		C	PCC Grade M25					
		(p)	Height upto 5m					
		Case I	Using concrete Mixer					
			a) As per SOR				*13657.18*	
			b) Carriage					
			Cement	tonne	0.40	1396.54	557.69	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				15588.78	
						say	*15589.00*	
13.5 C (p)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				*13605.62*	
			b) Carriage					
			Cement	tonne	0.40	1396.54	558.03	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				15537.57	
						say	*15538.00*	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.5 C		(q)	Height 5m to 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				***14154.49***	
			b) Carriage					
			Cement	tonne	0.40	1396.54	557.69	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				16086.09	
						say	***16086.00***	
13.5 C (q)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				***14100.78***	
			b) Carriage					
			Cement	tonne	0.40	1396.54	558.03	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				16032.73	
						say	***16033.00***	
13.5 C		(r)	Height above 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				***14775.32***	
			b) Carriage					
			Cement	tonne	0.40	1396.54	557.69	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				16706.92	
						say	***16707.00***	
13.5 C (r)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				***14719.47***	
			b) Carriage					
			Cement	tonne	0.40	1396.54	558.03	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				16651.41	
						say	***16651.00***	
13.5		D	PCC Grade M30					
		(p)	Height upto 5m					
		Case I	Using concrete Mixer					
			a) As per SOR				***13740.96***	
			b) Carriage					
			Cement	tonne	0.41	1396.54	566.06	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				15680.94	
						say	***15681.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.5 D (p)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				13682.96	
			b) Carriage					
			Cement	tonne	0.41	1396.54	565.60	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				15622.47	
						say	15622.00	
13.5 D		(q)	Height 5m to 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				14241.49	
			b) Carriage					
			Cement	tonne	0.41	1396.54	566.06	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				16181.47	
						say	16181.00	
13.5 D (q)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				14181.34	
			b) Carriage					
			Cement	tonne	0.41	1396.54	565.60	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				16120.85	
						say	16121.00	
13.5 D		(r)	Height above 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				14865.54	
			b) Carriage					
			Cement	tonne	0.41	1396.54	566.06	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				16805.52	
						say	16806.00	
13.5 D (r)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				14803.25	
			b) Carriage					
			Cement	tonne	0.41	1396.54	565.60	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			40 mm Aggregate	cum	0.36	790.97	284.75	M-055
			20 mm Aggregate	cum	0.36	790.97	284.75	M-053
			10 mm Aggregate	cum	0.18	790.97	142.37	M-051
			Rate per cum (a+b)				16742.76	
						say	16743.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.5		E	RCC Grade M20					
		(p)	Height upto 5m					
		Case I	Using concrete Mixer					
			a) As per SOR				13124.43	
			b) Carriage					
			Cement	tonne	0.35	1396.54	485.07	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				14983.41	
						say	14983.00	
13.5 E (p)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				13086.83	
			b) Carriage					
			Cement	tonne	0.35	1396.54	484.83	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				14945.58	
						say	14946.00	
13.5 E		(q)	Height 5m to 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				13602.40	
			b) Carriage					
			Cement	tonne	0.35	1396.54	485.07	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				15461.38	
						say	15461.00	
13.5 E (q)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				13562.66	
			b) Carriage					
			Cement	tonne	0.35	1396.54	484.83	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				15421.41	
						say	15421.00	
13.5 E		(r)	Height above 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				14198.53	
			b) Carriage					
			Cement	tonne	0.35	1396.54	485.07	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16057.51	
						say	16058.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.5 E (r)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				14157.71	
			b) Carriage					
			Cement	tonne	0.35	1396.54	484.83	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16016.46	
						say	16743.00	
13.5		F	RCC Grade M25					
		(p)	Height upto 5m					
		Case I	Using concrete Mixer					
			a) As per SOR				13914.97	
			b) Carriage					
			Cement	tonne	0.40	1396.54	563.27	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				15852.15	
						say	15852.00	
13.5 F (p)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				14713.02	
			b) Carriage					
			Cement	tonne	0.40	1396.54	563.04	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16649.97	
						say	16650.00	
13.5 F		(q)	Height 5m to 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				14370.38	
			b) Carriage					
			Cement	tonne	0.40	1396.54	563.27	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16307.57	
						say	16308.00	
13.5 F (q)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				15194.22	
			b) Carriage					
			Cement	tonne	0.40	1396.54	563.04	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				17131.17	
						say	17131.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.5 F		(r)	Height above 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				15053.51	
			b) Carriage					
			Cement	tonne	0.40	1396.54	563.27	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16990.70	
						say	16991.00	
13.5 F (r)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				15917.09	
			b) Carriage					
			Cement	tonne	0.40	1396.54	563.04	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				17854.04	
						say	17854.00	
13.5		G	RCC Grade M30					
		(p)	Height upto 5m					
		Case I	Using concrete Mixer					
			a) As per SOR				13962.23	
			b) Carriage					
			Cement	tonne	0.41	1396.54	567.93	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				15904.07	
						say	15904.00	
13.5 G (p)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				13927.85	
			b) Carriage					
			Cement	tonne	0.41	1396.54	567.93	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				15869.69	
						say	15870.00	
13.5 G		(q)	Height 5m to 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				14356.42	
			b) Carriage					
			Cement	tonne	0.41	1396.54	567.93	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16298.26	
						say	16298.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.5 G (q)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				14320.98	
			b) Carriage					
			Cement	tonne	0.41	1396.54	567.93	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16262.82	
						say	16263.00	
13.5 G		(r)	Height above 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				14914.95	
			b) Carriage					
			Cement	tonne	0.41	1396.54	567.93	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16856.79	
						say	16857.00	
13.5 G (r)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				14877.36	
			b) Carriage					
			Cement	tonne	0.41	1396.54	567.93	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16819.20	
						say	16819.00	
13.5		H	RCC Grade M35					
		(p)	Height upto 5m					
		Case I	Using concrete Mixer					
			a) As per SOR				14178.12	
			b) Carriage					
			Cement	tonne	0.42	1396.54	589.34	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16141.37	
						say	16141.00	
13.5 H (p)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				15018.07	
			b) Carriage					
			Cement	tonne	0.42	1396.54	589.34	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16981.32	
						say	16981.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.5 H		(q)	Height 5m to 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				14487.46	
			b) Carriage					
			Cement	tonne	0.42	1396.54	589.34	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16450.71	
						say	16451.00	
13.5 H (q)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				15345.67	
			b) Carriage					
			Cement	tonne	0.42	1396.54	589.34	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				17308.92	
						say	17309.00	
13.5 H		(r)	Height above 10m					
		Case I	Using concrete Mixer					
			a) As per SOR				14951.47	
			b) Carriage					
			Cement	tonne	0.42	1396.54	589.34	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-005
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				16914.73	
						say	16915.00	
13.5 H (r)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			a) As per SOR				15836.53	
			b) Carriage					
			Cement	tonne	0.42	1396.54	589.34	M-081
			Coarse sand	cum	0.45	1471.21	662.04	M-004
			20 mm Aggregate	cum	0.54	790.97	427.12	M-053
			10 mm Aggregate	cum	0.36	790.97	284.75	M-051
			Rate per cum (a+b)				17799.78	
						say	17800.00	
13.6	Section 1600 & 2200		Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and Technical Specifications					
			Unit: MT					
			a) As per SOR				91287.76	
			Taking output = 1 MT					
			b) Carriage					
			HYSD bars including 5 per cent overlaps and wastage	tonne	1.05	4450.11	4672.62	M-082
			Binding wire	kg	6.00	0.00	0.00	M-072
			Rate for per MT (a+b)				95960.38	
			As per SOR			say	95960.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.8	2706 & 2200		**Providing weep holes in Brick masonry/Plain/ Reinforced concrete abutment, wing wall/ return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical Specifications**					
			Unit = Nos.					
			Taking output = 30 Nos.					
			a) As per SOR	Nos			***662.72***	
			b) Carriage					
			AC pipe 100 mm dia. (including wastage @ 5 per cent)	metre	31.50	0.00	0.00	M-056
			Average length of weep hole is taken as one metre for the purpose of estimating.					
			MS clamp	each.	30.00	0.00	0.00	M-123
			collar for AC pipe (average) taking 10% of above pipe rate	each.	10.00	0.00	0.00	M-056/10
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.05	0.00	0.00	Item 12.6 (A)
			Rate per m a+b/30				662.72	
						say	***663.00***	
	Note		1. In case of stone masonry, the size of the weep hole shall be 150 mm x 80 mm or circular with 150 mm diameter.					
			2. For structure in stone masonry, the weep holes shall be deemed to be included in the item of stone masonry work and shall not be paid separately.					
13.9	710.1.4. of IRC:78 & 2200		**Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification**					
			Unit = Cum					
			Taking output = 10 cum					
		A	**Granular material**					
			a) As per SOR	cum			***3320.04***	
			b) Carriage					
			Granular material	cum	12.00	640.64	7687.69	M-009
			Rate per cum = a+b/10				4088.81	
						say	***4089.00***	
13.9		**B**	**Sandy material**					
			a) As per SOR	cum			***5084.79***	
			b) Carriage					
			Sand	cum	12.00	1471.21	17654.49	M-006
			Rate per cum = a+b/10				6850.24	
						say	***6850.00***	
13.10	710.1.4. of IRC:78 and 2200		**Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification.**					
			Unit = cum					
			a) As per SOR	cum			***4067.62***	
			Taking output = 10 cum.					
			b) Carriage					
			Filter media of stone aggregate conforming to clause 2504.2.2. of MoRTH specifications.	cum	12.00	640.64	7687.69	M-012
			Rate per cum = a+b/10				4836.39	
						say	***4836.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs with 7.41% escalation upto 2018 wrt WP Index	Remarks/ Input ref.
13.14	2000 & 2200		**Supplying, fitting and fixing in position true to line and level elastomeric bearing conforming to IRC: 83 (Part-II) section IX and clause 2005 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.**					
			Unit: one cubic centimetre					
			a) As per SOR	cubic cm			***7.73***	
			b) Carriage					
			Elastomeric bearing assembly consisting of 7 layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process of vulcanisation, complete with all components as per drawing and Technical Specifications.	each.	1.00	0.00	0.00	M-066
			Rate per cc of elastomeric bearing = a+b				7.73	
						say	***8.00***	
13.16	2000 & 2200		**Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete as per drawing and approved Technical Specifications.**					
			Unit: one tonne capacity					
			a) As per SOR	MT			***574.64***	
			b) Carriage					
			Pot type bearing assembly consisting of a metal piston supported by a disc, PTFE pads providing sliding surfaces against stainless steel mating together with cast steel assemblies/fabricated structural steel assemblies duly painted with all components as per clause 2006 and complete as per drawings and Technical Specifications.	each.	1.00	0.00	0.00	M-068
			Rate per tonne capacity = a+b				574.64	
						say	***575.00***	

GOVERNMENT OF NAGALAND

PUBLIC WORKS DEPARTMENT
(NATIONAL HIGHWAYS)

SCHEDULE OF RATES

FOR
N H & MORT&H Works in Nagaland
(Enforced with effect from 1st July' 2016)

Published under the Authority
Of the Chief Engineer
Public Works Department (NH)
Nagaland :: Kohima 797001

Price : Rs.500.00

P R E F A C E

The Nagaland P W D (NH) Schedule of Rate for National Highway & MORT&H related works in Nagaland was last revised in the year 2015. There has been substantial variation in the cost of materials, carriage and manpower required for construction of road and bridge works and hence, the need to revise the Schedule of Rate every year.

This Schedule of Rate was prepared based on the ***STANDARD DATA BOOK FOR ANALYSIS OF RATES (First Revision) published by IRC on behalf of the Govt. of India, Ministry of Road Transport & Highways, New Delhi.***

The current basic rates of materials and labour cost were arrived at after collection of various inputs called from all the Circles and Divisions of National Highways under Public Works Department of the State for preparation of the Schedule of Rate. Suitable cost indices have been worked out for wider applicability of the schedule in different districts of the state.

The rates for river bed materials including broken stone aggregate have been worked out considering an average lead of 10 KM from the quarry site for the purpose of analyzing the items involving such materials. In case the lead is more than 10 Km, provision of extra lead may be adopted as per site requirement.

The Schedule of Rates shall be read in conjunction with the relevant specifications of IRC and the MORT&H (Fifth Revision- 2013)

All possible care has been taken for publication of the Schedule of Rate free from mistakes/omissions. However, any mistakes or omissions, if detected, may kindly be brought to the notice of the undersigned for corrective measures. Any other suggestion(s) for improvement of the schedule will be thankfully acknowledged.

I take this opportunity to express my sincere thanks and appreciation to all the Officers and Technical Personnel of NH, PWD, Nagaland who have contributed immensely towards successful revision and publication of the Nagaland ***Schedule of Rate 2016*** *for National Highways and MoRT&H related works.*

The Schedule of Rate 2016 is effective from 01.07.2016

Sd/-
Chief Engineer PWD (NH)
Nagaland, Kohima

I N D E X

Summary of Rate Analysis		*Districts of Nagaland*									
Code No	***Descriptions***	**Unit**	**DMR**	**KMA / MKG / PRN**	**WKA**	**PHEK**	**ZBTO**	**TSG**	**KPE**	**MON**	**LLG**
CHAPTER-1 **CARRIAGE OF MATERIALS**											
1.1	Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum. (Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip)	cum	140.00	140.00	140.00	140.00	140.00	140.00	140.00	140.00	140.00
1.2	Loading and Unloading of Boulders by Manual Means	cum	266.00	266.00	266.00	266.00	266.00	266.00	266.00	266.00	266.00
1.3	Loading and Unloading of Cement or Steel by Manual Means and stacking.	tonne	376.00	376.00	376.00	376.00	376.00	376.00	376.00	376.00	376.00
1.4	Cost of Haulage Excluding Loading and Unloading										
(i)	***Surfaced Road***	tonne.km	8.40	8.40	8.40	8.40	8.40	8.40	8.40	8.40	8.40
(ii)	***Unsurfaced Gravelled Road***	tonne.km	10.10	10.10	10.10	10.10	10.10	10.10	10.10	10.10	10.10
(iii)	***Katcha Track and Track in river bed / nallah bed and choe bed.***	tonne.km	20.20	20.20	20.20	20.20	20.20	20.20	20.20	20.20	20.20
1.5	Hand Broken Stone Aggregates 63 mm nominal size (Supply of quarried stone, hand breaking into coarse aggregate 63 mm nominal size (passing 80 mm and retained on 50 mm sieve) and stacking as directed)	cum	2433.00	2433.00	2433.00	2433.00	2433.00	2433.00	2433.00	2433.00	2433.00
1.6	Crushing of stone aggregates 40 mm nominal size (Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 40 mm nominal size.)	cum	2025.00	2025.00	2025.00	2025.00	2025.00	2025.00	2025.00	2025.00	2025.00
1.7	Crushing of stone aggregates 20 mm nominal size (Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 20 mm nominal size.)	cum	1718.00	1718.00	1718.00	1718.00	1718.00	1718.00	1718.00	1718.00	1718.00
1.8	Crushing of stone aggregates 13.2 mm nominal size. (Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 13 mm nominal size.)	cum	1449.00	1449.00	1449.00	1449.00	1449.00	1449.00	1449.00	1449.00	1449.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-2 SITE CLEARANCE											
2.1	Cutting of Trees, including Cutting of Trunks, Branches and Removal (Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 mtrs and earth filling in the depression/pit.)										
(i)	***Girth from 300 mm to 600 mm***	each	440.00	440.00	440.00	440.00	440.00	440.00	440.00	440.00	440.00
(ii)	***Girth from 600 mm to 900 mm***	each	732.00	732.00	732.00	732.00	732.00	732.00	732.00	732.00	732.00
(iii)	***Girth from 900 mm to 1800 mm***	each	1505.00	1505.00	1505.00	1505.00	1505.00	1505.00	1505.00	1505.00	1505.00
(iv)	***Girth above 1800 mm***	each	2923.00	2923.00	2923.00	2923.00	2923.00	2923.00	2923.00	2923.00	2923.00
2.2	Clearing Grass and Removal of Rubbish	hectare	33304.00	33304.00	33304.00	33304.00	33304.00	33304.00	33304.00	33304.00	33304.00
2.3	**Clearing and Grubbing Road Land** .(Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.)										
(i)	**By Manual Means:-**										
A	***In area of light jungle***	hectare	100342.00	100342.00	100342.00	100342.00	100342.00	100342.00	100342.00	100342.00	100342.00
B	***In area of thorny jungle***	hectare	134077.00	134077.00	134077.00	134077.00	134077.00	134077.00	134077.00	134077.00	134077.00
(ii)	**By Mechanical Means**										
A	***In area of light jungle***	hectare	39921.00	39921.00	39921.00	39921.00	39921.00	39921.00	39921.00	39921.00	39921.00
B	***In area of thorny jungle***	hectare	48834.00	48834.00	48834.00	48834.00	48834.00	48834.00	48834.00	48834.00	48834.00
2.4	**Dismantling of Structures** (Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres)										
(i)	***Lime /Cement Concrete***										
I	**By Manual Means**										
A	***Lime Concrete, cement concrete grade M-10 and below***	cum	626.00	626.00	626.00	626.00	626.00	626.00	626.00	626.00	626.00
B	***Cement Concrete Grade M-15 & M-20***	cum	759.00	759.00	759.00	759.00	759.00	759.00	759.00	759.00	759.00
C	***Prestressed / Reinforced cement concrete grade M-20 & above***	cum	2117.00	2117.00	2117.00	2117.00	2117.00	2117.00	2117.00	2117.00	2117.00

Code No	Descriptions	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
II	**By Mechanical Means for items No. 202(b) & (c)**										
A	*Cement Concrete Grade M-15 & M-20*	cum	945.00	945.00	945.00	945.00	945.00	945.00	945.00	945.00	945.00
B	*Prestressed / Reinforced cement concrete grade M-20 & above*	cum	1628.00	1628.00	1628.00	1628.00	1628.00	1628.00	1628.00	1628.00	1628.00
(ii)	*Dismantling Brick / Tile work*										
A	*In lime mortar*	cum	360.00	360.00	360.00	360.00	360.00	360.00	360.00	360.00	360.00
B	*In cement mortar*	cum	493.00	493.00	493.00	493.00	493.00	493.00	493.00	493.00	493.00
C	*In mud mortar*	cum	306.00	306.00	306.00	306.00	306.00	306.00	306.00	306.00	306.00
D	*Dry brick pitching or brick soling*	cum	280.00	280.00	280.00	280.00	280.00	280.00	280.00	280.00	280.00
(iii)	*Dismantling Stone Masonry*										
A	*Rubble stone masonry in lime mortar*	cum	413.00	413.00	413.00	413.00	413.00	413.00	413.00	413.00	413.00
B	*Rubble stone masonry in cement mortar.*	cum	493.00	493.00	493.00	493.00	493.00	493.00	493.00	493.00	493.00
C	*Rubble Stone Masonry in mud mortar.*	cum	360.00	360.00	360.00	360.00	360.00	360.00	360.00	360.00	360.00
D	*Dry rubble masonry*	cum	333.00	333.00	333.00	333.00	333.00	333.00	333.00	333.00	333.00
E	*Dismantling stone pitching/ dry stone spalls.*	cum	306.00	306.00	306.00	306.00	306.00	306.00	306.00	306.00	306.00
F	*Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.*	cum	360.00	360.00	360.00	360.00	360.00	360.00	360.00	360.00	360.00
(iv)	*Wood work wrought framed and fixed in frames of trusses upto a height of 5 m above plinth level*	cum	943.00	943.00	943.00	943.00	943.00	943.00	943.00	943.00	943.00
(v)	*Steel work in all types of sections upto a height of 5 m above plinth level excluding cutting of rivet.*										
A	*Including dismembering*	tonne	2594.00	2594.00	2594.00	2594.00	2594.00	2594.00	2594.00	2594.00	2594.00
B	*Excluding dismembering.*	tonne	1932.00	1932.00	1932.00	1932.00	1932.00	1932.00	1932.00	1932.00	1932.00
C	*Extra over item No(V) A and(V) B for cutting rivets.*	tonne	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00
(vi)	*Scraping of bricks dismantled from brick work including stacking.*										
A	*In lime/Cement mortar*	1000 nos	2331.00	2331.00	2331.00	2331.00	2331.00	2331.00	2331.00	2331.00	2331.00
B	*In mud mortar*	1000 nos	833.00	833.00	833.00	833.00	833.00	833.00	833.00	833.00	833.00
(vii)	*Scraping of Stone from dismantled stone masonry*										
A	*In cement and lime mortar*	cum	935.00	935.00	935.00	935.00	935.00	935.00	935.00	935.00	935.00
B	*In Mud mortar*	cum	198.00	198.00	198.00	198.00	198.00	198.00	198.00	198.00	198.00
(viii)	*Scarping plaster in lime or cement mortar from brick/ stone masonry*	sqm	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00

Code No	Descriptions	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(ix)	***Removing all type of hume pipes and stacking within a lead of 1000 metres including earthwork and dismantling of masonry works.***										
A	***Up to 600 mm dia***	metre	346.00	346.00	346.00	346.00	346.00	346.00	346.00	346.00	346.00
B	***Above 600 mm to 900 mm dia***	metre	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00
C	***Above 900 mm***	metre	801.00	801.00	801.00	801.00	801.00	801.00	801.00	801.00	801.00
2.5	**Dismantling of Flexible Pavements** (Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately)										
I	**By Manual Means**										
A	***Bituminous courses***	cum	1163.00	1163.00	1163.00	1163.00	1163.00	1163.00	1163.00	1163.00	1163.00
B	***Granular courses***	cum	808.00	808.00	808.00	808.00	808.00	808.00	808.00	808.00	808.00
II	**By Mechanical Means**										
A	***Bituminous course***	cum	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00
2.6	**Dismantling of Cement Concrete Pavement** (Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately)	cum	2473.00	2473.00	2473.00	2473.00	2473.00	2473.00	2473.00	2473.00	2473.00
2.7	**Dismantling Guard Rails** (Dismantling guard rails by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable materials and unserviceable materials separately.)	metre	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00
2.8	**Dismantling Kerb Stone** (Dismantling kerb stone by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre)	metre	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00
2.9	**Dismantling Kerb Stone channel** (Dismantling kerb stone channel by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre)	metre	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
2.10	**Dismantling Kilometre Stone** (Dismantling of kilometre stone including cutting of earth, foundation and disposal of dismantled material with all lifts and lead upto 1000 m and back filling of pit.)										
A	***5th KM stone***	each	634.00	634.00	634.00	634.00	634.00	634.00	634.00	634.00	634.00
B	***Ordinary KM Stone***	each	376.00	376.00	376.00	376.00	376.00	376.00	376.00	376.00	376.00
C	***Hectometre Stone***	each	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00
2.11	**Dismantling of Fencing** (Dismantling of barbed wire fencing/ wire mesh fencing including posts, foundation concrete, back filling of pit by manual means including disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable material and unserviceable material separately.)	metre	89.00	89.00	89.00	89.00	89.00	89.00	89.00	89.00	89.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
2.12	**Dismantling of CI Water Pipe Line** (Dismantling of CI water pipe line 600 mm dia including disposal with all lifts and lead upto 1000 metres and stacking of serviceable material and unserviceable material separately under supervision of concerned department)	metre	231.00	231.00	231.00	231.00	231.00	231.00	231.00	231.00	231.00
2.13	**Removal of Cement Concrete Pipe of Sewer Gutter** (Removal of cement concrete pipe of sewer gutter 1500 mm dia under the supervision of concerned department including disposal with all lifts and up to a lead of 1000 metres and stacking of serviceable and unserviceable material separately but excluding earth excavation and dismantling of masonry works.)	metre	306.00	306.00	306.00	306.00	306.00	306.00	306.00	306.00	306.00
2.14	**Removal of Telephone / Electric Poles and Lines** (Removal of telephone / Electric poles including excavation and dismantling of foundation concrete and lines under the supervision of concerned department, disposal with all lifts and up to a lead of 1000 metres and stacking the serviceable and unserviceable material separately)	each	296.00	296.00	296.00	296.00	296.00	296.00	296.00	296.00	296.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-3 **EARTH WORK, EROSION CONTROL AND DRAINAGE**											
3.1	**Excavation in Soil by Manual Means.** (Excavation for roadway in soil using manual means including loading in truck for carrying of cut earth to embankment site with all lifts and lead upto1000 metres.)	cum	351.00	351.00	351.00	351.00	351.00	351.00	351.00	351.00	351.00
3.2	**Excavation in ordinary rock by manual means** (Excavation in ordinary rock using manual means including loading in a truck and carrying of excavated material to embankment site with in all lifts and leads upto 1000 metres)	cum	490.00	490.00	490.00	490.00	490.00	490.00	490.00	490.00	490.00
3.3	**Excavation in Soil with Dozer with lead upto 100 metres** (Excavation for road way in soil by mechanical means including cutting and pushing the earth to site of embankment upto a distance of 100 metres (average lead50 metres), including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)	cum	130.00	130.00	130.00	130.00	130.00	130.00	130.00	130.00	130.00
3.4	**Excavation in Ordinary Rock with Dozer with lead upto 100 metres** (Excavation for roadway in ordinary rock by deploying a dozer, 80 HP including cutting and pushing the cut earth to site of embankment upto a distance of 100 metres (average lead 50 metres), trimming bottom and side slopes in accordance with the requirements of lines, grades and cross sections.)	cum	223.00	223.00	223.00	223.00	223.00	223.00	223.00	223.00	223.00
3.5	**Excavation in Hard Rock (requiring blasting) with disposal upto 1000 metres** (Excavation for roadway in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres)	cum	339.00	342.00	345.00	351.00	349.00	351.00	355.00	343.00	348.00
3.6	**Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with disposal upto 1000 metres.** (Excavation for roadwork in soil with hydraulic excavator of0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m)	cum	87.00	87.00	87.00	87.00	87.00	87.00	87.00	87.00	87.00
3.7	**Excavation in Ordinary Rockusing Hydraulic ExcavatorCK-90 and Tippers with disposal upto 1000 metres.** (Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site within all lifts and lead upto 1000 m, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)	cum	105.00	105.00	105.00	105.00	105.00	105.00	105.00	105.00	105.00
3.8	**Excavation in Hard Rock (blasting prohibited**) (Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal within all lifts and lead upto 1000 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)										
A	***Mechanised***	cum	602.00	594.00	589.00	577.00	581.00	577.00	568.00	593.00	584.00
B	***Manual Method***	cum	2033.00	2026.00	2021.00	2008.00	2013.00	2009.00	2000.00	2025.00	2016.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
3.9	**Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres** (Excavation for roadway in hard rock with controlled blasting by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres)	cum	351.00	356.00	360.00	369.00	365.00	368.00	374.00	357.00	363.00
3.10	**Excavation in Marshy Soil** (Excavation for roadway in marshy soil with hydraulic excavator 0.9 cum bucket capacity including cutting and loading in tippers and disposal with in all lifts and lead upto 1000 metres, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections.)	cum	94.00	94.00	94.00	94.00	94.00	94.00	94.00	94.00	94.00
3.11	**Removal of Unserviceable Soil with Disposal upto 1000 metres** (Removal of unserviceable soil including excavation, loading and disposal upto 1000 metres lead but excluding replacement by suitable soil which shall be paid separately as per clause 305.)	cum	88.00	88.00	88.00	88.00	88.00	88.00	88.00	88.00	88.00
3.12	**Pre-splitting of Rock Excavation Slopes** (Carrying out excavation in hard rock to achieve a specified slope of the rock face by controlled use of explosives and blasting accessories in properly aligned and spaced drill holes, collection of the excavated rock by a 80 HP dozer, loading in tipper by a front end loader and disposing of the material with all lifts and lead upto 1000 m, all as specified in clause No. 303)	sqm	158.00	161.00	164.00	170.00	168.00	170.00	174.00	162.00	166.00
3.13	**Excavation for Structures** (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work.)										
(i)	**Ordinary soil**										
A	***Manual Means (Depth upto 3 m)***	cum	533.00	533.00	533.00	533.00	533.00	533.00	533.00	533.00	533.00
B	***Mechanical Means (Depth upto 3 m)***	cum	53.00	53.00	53.00	53.00	53.00	53.00	53.00	53.00	53.00
(ii)	**Ordinary rock (not requiring blasting)**										
A	***Manual Means (Depth upto 3 m)***	cum	666.00	666.00	666.00	666.00	666.00	666.00	666.00	666.00	666.00
B	***Mechanical Means***	cum	67.00	67.00	67.00	67.00	67.00	67.00	67.00	67.00	67.00
(iii)	**Hard rock (requiring blasting)**										
A	***Manual Means***	cum	1108.00	1119.00	1127.00	1145.00	1138.00	1144.00	1158.00	1120.00	1134.00
(iv)	**Hard rock (blasting prohibited)**										
A	***Mechanical Means***	cum	1402.00	1402.00	1402.00	1402.00	1402.00	1402.00	1402.00	1402.00	1402.00
(v)	**Marshy soil**										
A	***Manual means (upto 3 m depth)***	cum	855.00	860.00	865.00	874.00	871.00	874.00	881.00	861.00	869.00
B	***Mechanical Means***	cum	291.00	297.00	301.00	311.00	307.00	310.00	317.00	297.00	305.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
3.14	**Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means** (Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and leads upto 1000 metres.)	sqm	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00
3.15	**Scarifying existing bituminous surface to a depth of 50 mm by mechanical means** (Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead upto 1000 metres.)	sqm	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
3.16	**Embankment Construction with Material Obtained from Borrow Pits** (Construction of embankment with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2)	cum	558.00	486.00	486.00	486.00	486.00	486.00	486.00	486.00	486.00
3.17	**Construction of Embankment with Material Deposited from Roadway Cutting** (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)	cum	252.00	252.00	252.00	252.00	252.00	252.00	252.00	252.00	252.00
3.18	**Construction of Subgrade and Earthen Shoulders** (Construction of subgrade and earthen shoulders with approved material obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2)	cum	606.00	534.00	534.00	534.00	534.00	534.00	534.00	534.00	534.00
3.19	**Compacting Original Ground**										
Case-I	**Compacting original ground supporting subgrade** (Loosening of the ground upto a level of 500 mm below the subgrade level, watered, graded and compacted in layers to meet requirement of table 300-2 for subgrade construction.)	cum	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00
Case-II	:Compacting original ground supporting embankment	cum	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00
3.20	**Stripping and Storing Top Soil** (Stripping, storing of top soil by road side at 15 m internal and re-application on embankment slopes, cut slopes and other areas in localities where the available embankment material is not conducive to plant growth)	cum	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00
3.21	**Stripping, storing and re-laying top soil from borrow areas in agriculture fields.** (Stripping of top soil from borrow areas located in agriculture fields, storing at a suitable place, spreading and re-laying after taking the borrow earth to maintain fertility of the agricultural field, finishing it to the required levels and satisfaction of the farmer.)	cum	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00
3.22	**Turfing with Sods** (Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the engineer including preparation of ground, fetching of rods and watering)	sqm	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00
3.23	**Seeding and Mulching** (Preparation of seed bed on previously laid top soil, furnishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion at the rate of0.23 litres per sqm and laying and fixing jute netting, including watering for 3 months all as per clause 308)	sqm	360.00	363.00	366.00	371.00	369.00	370.00	374.00	363.00	367.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
3.24	**Surface Drains in Soil** (Construction of unlined surface drains of average cross sectional area 0.40 sqm in soil to specified lines, grades, levels and dimensions to the requirement of clause 301 and 309. Excavated material to be used in embankment within a lead of50 metres (average lead 25 metres))										
A	***Mechanical means***	metre	74.00	74.00	74.00	74.00	74.00	74.00	74.00	74.00	74.00
B	***Manual Means***	metre	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00	133.00
3.25	**Surface Drains in Ordinary Rock** (Construction of unlined surface drain of average cross sectional area 0.4 sqm in ordinary rock to specified lines, grades, levels and dimensions as per approved design and to the requirement of clause 301 to 309. Excavated material to be used in embankment at site.)										
A	***Mechanical Means***	metre	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
B	***Manual Means***	metre	200.00	200.00	200.00	200.00	200.00	200.00	200.00	200.00	200.00
3.26	**Surface Drains in Hard Rock** (Rate per metre may be worked out based on quantity of hard rock as per design.)	metre									
3.27	**Sub Surface Drains with Perforated Pipe** (Construction of subsurface drain with perforated pipe of 100 mm internal diameter of metal/ asbestos cement/ cement concrete/PVC, closely jointed, perforations ranging from 3 mm to 6 mm depending upon size of material surrounding the pipe, with 150 mm bedding below the pipe and 300 mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilised in roadway at site)	metre	966.00	988.00	1005.00	4038.00	1028.00	1039.00	1067.00	991.00	1019.00
3.28	**Aggregate Sub- Surface Drains** (Construction of aggregate sub surface drain 300 mm x 450 mm with aggregates conforming to table 300-4, excavated material to be utilised in roadway)	metre	409.00	409.00	409.00	2095.00	409.00	409.00	409.00	409.00	409.00
3.29	**Underground Drain at Edge of Pavement** (Construction of an underground drain 1 m x 1 m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab10 cm in thickness on urban roads)	metre	5295.00	5781.00	6467.00	5691.00	7159.00	7812.00	8824.00	5781.00	6480.00
3.30	**Preparation and Surface Treatment of formation.** (Preparation and surface treatment of formation by removing mud and slurry, watering to the extent needed to maintain the desired moisture content, trimming to the required line, grade, profile and rolling with 8-10 tonne smooth wheeled roller, complete as per clause 310.)	sqm	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
3.31	**Construction of Rock fill Embankment** (Construction of rock fill embankment with broken hard rock fragments of size not exceeding 300 mm laid in layers not exceeding 500 mm thick including filling of surface voids with stone spalls, blinding top layer with granular material, rolled with vibratory road roller, all complete as per clause 313)	cum	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00
3.32	**Excavation in Hill Area in Soil by Mechanical Means** (Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres)	cum	182.00	182.00	182.00	182.00	182.00	182.00	182.00	182.00	182.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
3.33	**Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting.** (Excavation in hilly area in ordinary rock not requiring ballasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres)	cum	257.00	257.00	257.00	257.00	257.00	257.00	257.00	257.00	257.00
3.34	**Excavation in Hilly Areas in Hard Rock Requiring Blasting** (Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.)	cum	389.00	395.00	400.00	411.00	407.00	410.00	418.00	396.00	404.00
3.35	Work in Urban Roads (The cost of earth work in urban roads inhabited area will be comparatively higher due to following reasons:)										
3.36	**Embankment Construction with Fly ash/Pond ash available from coal or lignite burning Thermal Plants as waste material.** (Construction of embankment with fly ash conforming to table 1 of IRC: SP: 58 - 2001 obtained from coal or lignite burning thermal power stations as waste material, spread and compacted in layer of 200mm thickness each at OMC, all as specified in IRC: SP: 58-2001 and as per approved plans.)	cum	423.00	1484.00	2616.00	3592.00	3592.00	5247.00	5021.00	3790.00	2248.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-4											
SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS											
4.1	***Granular Sub-base with Close Graded Material (Table:- 400-1)***										
A	**Plant Mix Method** (Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401)										
(i)	***for grading- I Material***	cum	3612.00	3632.00	3632.00	3632.00	3632.00	3632.00	3632.00	3632.00	3632.00
(ii)	***for grading- II Material***	cum	3679.00	3699.00	3699.00	3699.00	3699.00	3699.00	3699.00	3699.00	3699.00
(iii)	***for grading-III Material***	cum	3698.00	3718.00	3718.00	3718.00	3718.00	3718.00	3718.00	3718.00	3718.00
B	**By Mix in Place Method** (Construction of granular sub-base by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401)										
(i)	***for grading- I Material***	cum	2943.00	2943.00	2943.00	2943.00	2943.00	2943.00	2943.00	2943.00	2943.00
(ii)	***for grading- II Material***	cum	3004.00	3004.00	3004.00	3004.00	3004.00	3004.00	3004.00	3004.00	3004.00
(iii)	***for grading-III Material***	cum	3021.00	3021.00	3021.00	3021.00	3021.00	3021.00	3021.00	3021.00	3021.00
4.2	**Granular Sub-Base with Coarse Graded Material** (Table:- 400- 2) (Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401)										
(i)	***for grading- I Material***	cum	3175.00	3175.00	3175.00	3175.00	3175.00	3175.00	3175.00	3175.00	3175.00
(ii)	***for grading- II Material***	cum	3230.00	3230.00	3230.00	3230.00	3230.00	3230.00	3230.00	3230.00	3230.00
(iii)	***for grading-III Material***	cum	3267.00	3267.00	3267.00	3267.00	3267.00	3267.00	3267.00	3267.00	3267.00
4.3	**Lime Stabilisation for Improving Subgrade** (Laying and spreading available soil in the subgrade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 3 % slaked lime having minimum content of 70% of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade)										
A	***By Mechanical Means***	cum	971.00	1025.00	1065.00	1152.00	1119.00	1145.00	1212.00	1032.00	1099.00
B	***By Manual Means***	cum	1051.00	1105.00	1146.00	1235.00	1201.00	1228.00	1296.00	1112.00	1180.00
4.4	**Lime Treated Soil for Sub- Base** (Providing, laying and spreading soil on a prepared sub grade, pulverising, mixing the spread soil in place with rotavator with 3 % slaked lime with minimum content of 70% of CaO, grading with motor grader and compacting with the road roller at OMC to achieve at least 98%of the max dry density to form a layer of sub base.)	cum	1226.00	1280.00	1320.00	1407.00	1374.00	1400.00	1467.00	1287.00	1354.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
4.5	**Cement Treated Soil Sub Base/ Base** (Providing, laying and spreading soil on a prepared sub grade, pulverising, adding the designed quantity of cement to the spread soil, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base.)	cum	1240.00	1293.00	1367.00	1478.00	1442.00	1513.00	1622.00	1293.00	1368.00
4.6	**Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4in Sub base/ Base** (Providing, laying and spreading Material on a prepared sub grade, adding the designed quantity of cement to the spread Material, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base.)										
(i)	**For Sub-Base course**	cum	3847.00	3908.00	3993.00	4120.00	4078.00	4159.00	4285.00	3908.00	3994.00
(ii)	**For Base course**	cum	3878.00	3938.00	4023.00	4150.00	4109.00	4190.00	4315.00	3938.00	4025.00
4.7	**Deleted**										
4.8	**Inverted Choke** (Construction of inverted choke by providing, laying, spreading and compacting screening B type/ coarse sand of specified grade in uniform layer on a prepared surface with motor grader and compacting with power roller etc)	cum	3432.00	4951.00	7093.00	10296.00	9257.00	11295.00	14457.00	4951.00	7134.00
4.9	**Water Bound Macadam** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tonnes in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.)										
A	***By Manual Means***										
(i)	***Grading- II (Using Screening Crushable type such as Moorum or Gravel)***										
(a)	***Using Screening Crushable type such as Moorum or Gravel***	cum	4036.00	4036.00	4036.00	4036.00	4036.00	4036.00	4036.00	4036.00	4036.00
(b)	***Using Screening Type-A (13.2mm Agg.)***	cum	4095.00	4095.00	4095.00	4095.00	4095.00	4095.00	4095.00	4095.00	4095.00
(c)	***Using Screening Type-B (11.2mm Agg.)***	cum	4305.00	4305.00	4305.00	4305.00	4305.00	4305.00	4305.00	4305.00	4305.00
(ii)	***Grading- III (Using Screening Crushable type such as Moorum or Gravel)***										
(a)	***Using Screening Crushable type such as Moorum or Gravel***	cum	4121.00	4121.00	4121.00	4121.00	4121.00	4121.00	4121.00	4121.00	4121.00
(b)	***Using Screening Type-B (11.2mm Agg.)***	cum	4390.00	4390.00	4390.00	4390.00	4390.00	4390.00	4390.00	4390.00	4390.00
B	***By Mechanical Means:***										
(i)	***Grading- II (Using Screening Crushable type such as Moorum or Gravel)***										
(a)	***Using Screening Crushable type such as Moorum or Gravel***	cum	3657.00	3657.00	3657.00	3657.00	3657.00	3657.00	3657.00	3657.00	3657.00
(b)	***Using Screening Type-A (13.2mm Agg.)***	cum	3716.00	3716.00	3716.00	3716.00	3716.00	3716.00	3716.00	3716.00	3716.00
(c)	***Using Screening Type-B (11.2mm Agg.)***	cum	3926.00	3926.00	3926.00	3926.00	3926.00	3926.00	3926.00	3926.00	3926.00
(ii)	***Grading- III (Using Screening Crushable type such as Moorum or Gravel)***										
(a)	***Using Screening Crushable type such as Moorum or Gravel***	cum	3742.00	3742.00	3742.00	3742.00	3742.00	3742.00	3742.00	3742.00	3742.00
(b)	***Using Screening Type-B (11.2mm Agg.)***	cum	4011.00	4011.00	4011.00	4011.00	4011.00	4011.00	4011.00	4011.00	4011.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
4.10	**Crushed Cement Concrete Sub-base / Base** (Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in table 400.7 transporting the aggregates obtained from breaking of cement concrete slabs at a lead of L km., laying and compacting the same as sub base/ base course, constructed as WBM to clause 404 except the use of screening or binding Material.)	cum	672.00	672.00	672.00	672.00	672.00	672.00	672.00	672.00	672.00
4.11	**Penetration Coat Over Top Layer of Crushed Cement Concrete Base** (Spraying of bitumen over cleaned dry surface of crushed cement concrete base at the rate of 25 kg per 10 sqm by a bitumen pressure distributor, spreading of key aggregates at the rate of 0.13 cum per 10 sqm by a mechanical gritter and rolling the surface as per clause 506.3.8)	sqm	46.00	46.00	46.00	47.00	46.00	47.00	47.00	46.00	46.00
4.12	**Wet Mix Macadam** (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)	cum	4182.00	4182.00	4182.00	4182.00	4182.00	4182.00	4182.00	4182.00	4182.00
4.13	**Construction of Median and Island with Soil Taken from Roadway Cutting** (Construction of Median and Island above road level with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted as per clause 407)	cum	484.00	484.00	484.00	484.00	484.00	484.00	484.00	484.00	484.00
4.14	**Construction of Median and Island with Soil Taken from Borrow Areas** (Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause 407)	cum	757.00	757.00	757.00	757.00	757.00	757.00	757.00	757.00	757.00
4.15	Construction of Shoulders (A. Earthen Shoulders)										
	A. Earthen Shoulders										
	The rate as applicable for sub-grade construction may be adopted.										
	B. Hard Shoulders										
	Rate as applicable for sub-base and or base may be adopted as per approved design.										
	C. Paved shoulders										
	The rate may be adopted as applicable for different layers of pavement depending upon approved design of paved shoulders.										
4.16	**Footpaths and Separators** (Construction of footpath/separator by providing a 150 mm compacted granular sub base as per clause 401 and 25 mm thick cement concrete grade M15, over laid with precast concrete tiles in cement mortar 1:3 including provision of all drainage arrangements but excluding kerb channel..)	sqm	1886.00	2016.00	2143.00	2353.00	2291.00	2393.00	2591.00	2027.00	2198.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
4.17	**Crusher Run Macadam Base** (Providing crushed stone aggregate, depositing on a prepared surface by hauling vehicles, spreading and mixing with a motor grader, watering and compacting with a vibratory roller to clause 410 to form a layer of sub-base/Base)										
A	***By Mix in Place Method***										
(i)	**For 53 mm maximum size**	cum	3602.00	3602.00	3602.00	3602.00	3602.00	3602.00	3602.00	3602.00	3602.00
(ii)	**For 45 mm maximum size**	cum	3798.00	3798.00	3798.00	3798.00	3798.00	3798.00	3798.00	3798.00	3798.00
B	***By Mixing Plant :***										
(i)	**For 53 mm maximum size**	cum	3909.00	3909.00	3909.00	3909.00	3909.00	3909.00	3909.00	3909.00	3909.00
(ii)	**For 45 mm maximum size**	cum	4156.00	4156.00	4156.00	4156.00	4156.00	4156.00	4156.00	4156.00	4156.00
4.18	**Lime, Fly ash stabalised soil sub-base** (Construction of Sub-base using lime - fly ash admixture with granular soil, free from organic matter/ deleterious material or clayey silts and low plasticity clays having PI between 5 and 20 and liquid limit less than 25 and commercial dry lime, slaked at site or pre-slaked with CaO content not less than 50%, fly ash to conform to gradation as per clause 4.3 of IRC: 88-1984, lime + fly ash content ranging between 10 to 30%, the minimum un-confined compressive strength and CBR value after 28 days curing and 4 days soaking to be 7.5kg/sq, cm and 25% respectively, all as specified in IRC: 88-1984.)	cum	1156.00	1357.00	1608.00	1886.00	1847.00	2178.00	2214.00	1783.00	1580.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-5											
BASES AND SURFACE COURSES (BITUMINOUS)											
5.1	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	34.80	35.00	36.00	37.20	36.80	37.50	39.00	35.40	36.10
5.2	***Tack coat***										
	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	12.80	13.00	13.20	13.60	13.50	13.70	14.10	13.00	13.20
5.3	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction)										
(i)	***for Grading I (40 mm nominal size)***	cum	9537.00	9598.00	9686.00	9818.00	9774.00	9862.00	9994.00	9598.00	9686.00
(ii)	***for GradingII(19 mm nominal size)***	cum	9478.00	9540.00	9628.00	9759.00	9716.00	9804.00	9935.00	9540.00	9628.00
5.4	**Deleted**										
5.5	**Deleted**										
5.6	**Dense Graded Bituminous Macadam** (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.)										
(i)	***for Grading I (40 mm nominal size)***	cum	11492.00	11620.00	11773.00	12025.00	11937.00	12079.00	12314.00	11626.00	11801.00
(ii)	***for GradingII(19 mm nominal size)***	cum	11487.00	11615.00	11768.00	12020.00	11932.00	12074.00	12309.00	11621.00	11796.00
5.7	**Deleted**										
5.8	**Bituminous Concrete** (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects)										
(i)	***for Grading-I (13 mm nominal size)***	cum	12697.00	12843.00	13054.00	13309.00	13209.00	13376.00	13647.00	12849.00	13049.00
(ii)	***for Grading-II(10 mm nominal size)***	cum	12544.00	12691.00	12902.00	13157.00	13057.00	13223.00	13495.00	12696.00	12897.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
5.9	**Surface Dressing** (Providing and laying surface dressing as wearing course in single coat using crushed stone aggregates of specified size on a layer of bituminous binder laid on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller)										
Case -1	*:-19 mm nominal chipping size*	sqm	117.00	118.00	119.00	121.00	121.00	122.00	124.00	118.00	119.00
Case II	*13 mm nominal size chipping*	sqm	89.00	90.00	91.00	93.00	92.00	93.00	95.00	90.00	91.00
5.10	**Open - Graded Premix Surfacing** (Providing, laying and rolling of open - graded premix surfacing of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or cut-back or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades.)										
(i)	***Case - I: Mechanical method using Penetration grade Bitumen and HMP of appropriate capacity not less than 75 tonnes/hour .***	sqm	182.00	183.00	185.00	188.00	187.00	189.00	191.00	183.00	185.00
(ii)	***Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion***	sqm	222.00	224.00	227.00	232.00	230.00	233.00	237.00	224.00	227.00
5.11	**Close Graded Premix Surfacing**/Mixed Seal Surfacing (Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour. Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.09 mm (Type-a) or 13.2 mm to 0.09 mm (Type-b) aggregates using penetration grade bitumen to the required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a Smooth wheeled roller 8-10 tonne capacity, and finishing to required level and grade.)	sqm	223.00	225.00	228.00	232.00	230.00	233.00	237.00	225.00	228.00
5.12	**Seal Coat** (Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats)										
(i)	***Case - I : Type A***	sqm	83.00	84.00	85.00	87.00	86.00	87.00	89.00	84.00	85.00
(ii)	***Case - II : Type B (Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 75 tonnes/ hours using crushed stone chipping 6.7 mm size and penetration bitumen of suitable grade.)***	sqm	64.00	64.00	65.00	66.00	66.00	67.00	68.00	64.00	65.00
5.13	**Deleted**										
5.14	**Mastic Asphalt** (Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine-grained hard stone chipping of 13.2 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 1000C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.)	sqm	925.00	940.00	955.00	983.00	973.00	986.00	1010.00	942.00	962.00
5.15	**Slurry Seal** (Providing and laying slurry seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface)										
(i)	***5 mm thickness***	sqm	86.00	87.00	89.00	91.00	90.00	92.00	94.00	87.00	89.00
(ii)	***3 mm thickness***	sqm	57.00	57.00	59.00	60.00	60.00	61.00	63.00	57.00	59.00
(iii)	***1.5 mm thickness***	sqm	34.00	35.00	35.00	36.00	36.00	37.00	38.00	35.00	35.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
5.16	**Recycling of Bituminous Pavement with Central Recycling Plant** (Recycling pavement by cold milling of exiting bituminous layers, planning the surface after cold milling, reclaiming excavated material to the extent of 30 % of the required quantity, hauling and stock piling the reclaimed material near the central recycling plant after carrying out necessary checks and evaluation, adding fresh material including rejuvenators as required, mixing in a hot mix plant, transporting and laying at site and compacting to the required grade, level and thickness, all as specified in clause 517.)	cum	9038.00	9142.00	9289.00	9509.00	9437.00	9581.00	9801.00	9142.00	9290.00
5.17	***Fog Spray***	sqm	41.00	41.00	42.00	44.00	43.00	44.00	45.00	41.00	42.00
	1.In case it is decided by the engineer to blind the fog spray, the following may be added	sqm	7.60	7.70	7.70	7.80	7.80	7.90	8.00	7.70	7.70
5.18	**Bituminous Cold Mix** (Including Gravel Emulsion) (Providing, laying and rolling of bituminous cold mix on prepared base consisting of a mixture of unheated mineral aggregate and emulsified or cutback bitumen, including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing to specified grades and levels.)										
(i)	***Using bitumen emulsion and 9.5 mm or 13.2 mm nominal size aggregate***	cum	14100.00	14294.00	14541.00	14933.00	14799.00	15035.00	15410.00	14300.00	14569.00
(ii)	***Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate***	cum	14203.00	14397.00	14644.00	15036.00	14902.00	15138.00	15513.00	14403.00	14672.00
(iii)	***Using cutback bitumen and 9.5 mm or 13.2 mm nominal size aggregate***	cum	11872.00	12019.00	12199.00	12492.00	12391.00	12560.00	12835.00	12025.00	12227.00
(iv)	***Using cutback bitumen and 19 mm or 26.5 mm nominal size aggregate***	cum	11972.00	12120.00	12300.00	12592.00	12491.00	12660.00	12936.00	12125.00	12328.00
5.19	**Sand Asphalt Base Course** (Providing, laying and rolling sand-asphalt base course composed of sand, mineral filler and bituminous binder on a prepared sub-grade or sub-base to the lines, levels, grades and cross sections as per the drawings including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing.)	cum	11514.00	13434.00	16114.00	20145.00	18831.00	21378.00	25343.00	13440.00	16191.00
5.20	**Modified Binder** (Supply of modified binder produced by mixing bitumen with modifier such as natural rubber or crumb rubber or any other polymer found compatible with bitumen and which allows properties given in clause 521.3 and IRC: SP: 53 blending of modifier with bitumen to be done either at the refinery or at the site plant capable of producing the modified binder to be delivered in drums which shall be agitated in melted condition using suitable device before use to ensure uniform dispersion.)	tonne	Rate may be adopted as per market rate								
5.21	***Crack Prevention Courses***										
(i)	**Stress Absorbing Membrane (SAM) crack width less than 6 mm** (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width below 6 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 9 kg per 10 sqm and spreading 5.6 mm crushed stone aggregates @ 0.11 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	sqm	84.00	85.00	86.00	88.00	87.00	88.00	90.00	85.00	86.00
(ii)	**Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm** (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	sqm	96.00	97.00	98.00	100.00	99.00	101.00	103.00	97.00	98.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(iii)	**Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %** (Providing and laying a single coat of a stress absorbing membrane over a cracked road surface, with crack width above 9 mm and cracked area above 50 % after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 15 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	sqm	125.00	126.00	128.00	131.00	130.00	132.00	135.00	126.00	128.00
(iv)	**Case - IV : Bitumen Impregnated Geotextile** (Providing and laying a bitumen impregnated geotextile layer after cleaning the road surface, geotextile conforming to requirements of clause 704.3, laid over a tack coat with 1.05 kg per sqm of paving grade bitumen 80 - 100 penetration and constructed to the requirement of clause 704.4.5)	sqm	169.00	179.00	186.00	202.00	196.00	202.00	214.00	180.00	192.00
5.22	**Recipe Cold Mix** (Providing and laying of premix of crushed stone aggregates and emulsion binder, mixed in a batch type cold mixing plant, laid over prepared surface, by paver finisher, rolled with a pneumatic tyred roller initially and finished with a smooth steel wheel roller, all as per clause 519.3)										
(i)	***75 mm thickness***	cum	9458.00	9542.00	9662.00	9841.00	9782.00	9902.00	10081.00	9542.00	9662.00
(ii)	***40 mm thickness***	cum	12589.00	12720.00	12907.00	13186.00	13093.00	13280.00	13559.00	12720.00	12907.00
(iii)	***25 mm thickness***	cum	14128.00	14287.00	14514.00	14853.00	14740.00	14967.00	15306.00	14287.00	14514.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-6 **CEMENT CONCRETE PAVEMENTS**											
6.1	**Dry Lean Cement Concrete Sub- base** (Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing.)	cum	5895.00	6578.00	7543.00	8985.00	8517.00	9435.00	10859.00	6578.00	7562.00
6.2	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum	10608.00	11620.00	12965.00	15038.00	14353.00	15606.00	17609.00	11635.00	13066.00
6.3	**Rolled Cement Concrete Base** (Construction of rolled cement concrete base course with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm with minimum, aggregate cement ratio15:1 and minimum cement content of 200 kg/cum, aggregate gradation to be as per table 600-4 after blending, mixing in batching plant at optimum moisture content, transporting to site, laying with a paver with electronic sensor, compacting with 8-10 tonnes smooth wheeled vibratory roller to achieve, the designed flexural strength, finishing and curing.)	cum	6386.00	7108.00	8125.00	9647.00	9153.00	10121.00	11623.00	7108.00	8145.00
6.4	**Transition section between rigid and flexible pavement** (Due to change in the properties of materials and type of construction, a gradual changeover from rigid pavement to flexible pavement is desirable to avoid any damage at the butting joint. After provision of an expansion joint in the cement concrete slab, the thickness of slab should be tapered to 10 cm over a length of 3 m towards the flexible pavement. The deficiency of thickness caused due to tapering of the slab should be made up by the asphaltic layers.)										
6.5	**Construction of Base/Sub-base of pavement with lean concrete - fly ash.** (Construction of Base/sub-base using cement, sand, fly ash and coarse aggregates proportioned as per table 4 of IRC: 74/1979 and with water content ratio, slump and compressive strength as defined in the said table, mix prepared in a batching and mixing plant and compacted with a vibratory roller 8-10 tonnes capacity within the time limit laid down vide clause 7.6.3 of IRC: 74-1979, construction joints properly formed at the end of day's work, cured for 14 days, all as specified in IRC: 74-1979 and as per approved plans.)	cum	5431.00	6350.00	7751.00	7204.00	9517.00	10360.00	12538.00	6445.00	6393.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
6.6	**Cement - Fly ash concrete pavement.** (Construction reinforced-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, replacing cement by fly ash to the extent of 15% and sand by 10%, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum	11107.00	12274.00	13892.00	16709.00	15737.00	16996.00	19458.00	12339.00	13285.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-7 GEOSYNTHETICS AND REINFORCED EARTH											
7.1	**Sub- Surface Drain with Geotextiles** (Construction of sub surface drain 200 mm dia using geotextiles treated with carbon black with physical properties as given in clause 702.2.3 formed in to a stable network and a planar geocomposite structure, joints wrapped with geotextile to prevent ingress of soil, all as per clause 702 and approved drawings including excavation and backfilling)	metre	941.00	972.00	995.00	1045.00	1026.00	1041.00	1080.00	976.00	1014.00
7.2	**Narrow Filter Sub- Surface Drain** (Construction of a narrow filter sub- surface drain consisting of porous or perforated pipe laid in narrow trench surrounded by a geotextile filter fabric, with a minimum of 450 mm overlap of fabric and installed as per clause 702.3 and 309.3.5 including excavation and backfilling)	metre	1025.00	1062.00	1090.00	1152.00	1128.00	1147.00	1194.00	1067.00	1114.00
7.3	**Laying Paving Fabric Beneath a Pavement Overlay** (Providing and laying paving fabric with physical requirements as per table 704-2 over a tack coat of paving grade Bitumen 80-100 penetration, laid at the rate of 1 kg per sqm over thoroughly cleaned and repaired surface to provide a water resistant membrane and crack retarding layer. Paving fabric to be free of wrinkling and folding and to be laid before cooling of tack coat, brooming and rolling of surface with pneumatic roller to maximise paving fabric contact with pavement surface)	sqm	168.00	177.00	185.00	201.00	195.00	200.00	213.00	179.00	191.00
7.4	**Laying Boulder Apron in Crates of Synthetic Geogrids** (Providing, preparing and laying of geogrid crated apron 1 m x 5 m, 600 mm thick including excavation and backfilling with baffles at 1 metre interval, made with geogrids having characteristics as per clause 704.2, joining sides with connectors/ring staples, top corners to be tie tensioned, placing of suitable cross interval ties in layers of 300 mm connecting opposite side with lateral braces and tied with polymer braids to avoid bulging, constructed as per clause 704.3. filled with stone with minimum size of 200 mm and specific gravity not less than 2.65, packed with stone spalls, keyed to the foundation recess in case of sloping ground and laid over a layer of geotextile to prevent migration of fines, all as per clause 704 and laid as per clause 2503.3 and approved design)	cum	1543.00	1616.00	1669.00	1652.00	1741.00	1777.00	1867.00	1625.00	1664.00
7.5	**Reinforced Earth Retaining Wall** (Reinforced earth retaining walls have four main components as under: a) Excavation for foundation, foundation concrete and cement concrete grooved seating in the foundation for facing elements (facia material). b) Facia material and its placement. c) Assembling, joining with facing elements and laying of the reinforcing elements. d) Earthfill with granular material which is to be retained by the wall.)										
(i)	***Facing elements of RCC***	sqm	2070.00	2217.00	2418.00	2266.00	2623.00	2813.00	3111.00	2218.00	2426.00
(ii)	***Assembling, joining and laying of reinforcing elements.***										
A	***With reinforcing element of steel / Aluminium strips / polymeric strips.***										
Type 1	***1.Galvanised carbon steel strips***	metre	250.00	269.00	283.00	314.00	302.00	311.00	335.00	271.00	295.00
Type 2	***2.Copper Strips***	metre	500.00	538.00	567.00	630.00	606.00	626.00	674.00	543.00	592.00
Type 3	***3.Aluminium Strips***	metre	563.00	607.00	640.00	711.00	684.00	706.00	761.00	613.00	668.00
Type 4	***4.Stainless steel strips***	metre	569.00	613.00	646.00	719.00	691.00	713.00	768.00	619.00	674.00
Type 5	***5.Glass reinforced polymer/fibre reinforced polymer/polymeric strips***	metre	524.00	565.00	596.00	662.00	637.00	657.00	708.00	570.00	621.00
B	***With reinforcing elements of synthetic geogrids***	sqm	555.00	598.00	630.00	699.00	673.00	694.00	747.00	603.00	657.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-8 **TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**											
8.1	**Cast in Situ Cement Concrete M20 kerb** (Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M-10 grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408)										
A	***Using Concrete Mixer***	metre	540.00	595.00	671.00	786.00	749.00	822.00	936.00	581.00	673.00
B	***Using Concrete Batching and Mixing Plant***	metre	535.00	585.00	656.00	762.00	728.00	795.00	900.00	598.00	657.00
8.2	**Cast in Situ Cement Concrete M 20 Kerb with Channel** (Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408)										
A	***Using Concrete Mixer***	metre	992.00	1101.00	1254.00	1425.00	1408.00	1554.00	1779.00	1074.00	1257.00
B	***Using Concrete Batching and Mixing Plant***	metre	995.00	1095.00	1236.00	1029.00	1378.00	1512.00	1720.00	1095.00	1238.00
8.3	**Printing new letter and figures of any shade** (Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade)										
(i)	***Hindi (Matras commas and the like not to be measured and paid for Half letter shall be counted as half)***	cm height per letter	1.60	1.60	1.70	1.70	1.70	1.70	1.70	1.70	1.70
(ii)	***English and Roman***	cm height per letter	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
8.4	**Retro- reflectorised Traffic signs** (Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing)										
(i)	**90 cm equilateral triangle**	each	5070.00	5404.00	5747.00	6333.00	6174.00	6426.00	6960.00	5428.00	5871.00
(ii)	**60 cm equilateral triangle**	each	3758.00	3987.00	4252.00	4666.00	4574.00	4773.00	5176.00	3998.00	4310.00
(iii)	**60 cm circular**	each	4617.00	4915.00	5231.00	5757.00	5622.00	5855.00	6344.00	4934.00	5332.00
(iv)	**80 mm x 60 mm rectangular**	each	5949.00	6354.00	6750.00	7449.00	7247.00	7534.00	8156.00	6386.00	6917.00
(v)	**60 cm x 45 cm rectangular**	each	4529.00	4820.00	5131.00	5645.00	5514.00	5745.00	6224.00	4838.00	5227.00
(vi)	**60 cm x 60 cm square**	each	5138.00	5477.00	5825.00	6418.00	6257.00	6511.00	7052.00	5502.00	5952.00
(vii)	**90 cm high octagon**	each	7248.00	7756.00	8230.00	9098.00	8831.00	9170.00	9922.00	7802.00	8462.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
8.5	**Direction and Place Identification signs upto 0.9 sqm size board**. (Providing and erecting direction and place identification retro-reflectorised sign asper IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing)	sqm	9736.00	10437.00	11067.00	12215.00	11834.00	12317.00	13324.00	10505.00	11411.00
8.6	**Direction and Place Identification signs with size more than 0.9 sqm size board.** (Providing and erecting direction and place identification retro- reflectorised sign asper IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing)	sqm	17108.00	18331.00	19454.00	21458.00	20809.00	21684.00	23472.00	18444.00	20029.00
8.7	**Overhead Signs** (Providing and erecting overhead signs with a corrosion resistant aluminium alloy sheet reflectorised with high intensity retro-reflective sheeting of encapsulated lense type with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans)										
A	**Truss and Vertical Support**	tonne	100212.00	101884.00	104151.00	107540.00	106439.00	108596.00	111940.00	101884.00	104195.00
B	**Aluminium alloy plate for over head sign**	sqm	4259.00	4584.00	4828.00	5358.00	5154.00	5317.00	5724.00	4625.00	5032.00
8.8	**Painting Two Coats on New Concrete Surfaces** (Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces)	sqm	191.00	202.00	209.00	227.00	220.00	225.00	239.00	203.00	216.00
8.9	**Painting on Steel Surfaces** (Providing and applying two coats of ready mix paint of approved brand on steel surface after through cleaning of surface to give an even shade)	sqm	123.00	128.00	132.00	141.00	138.00	140.00	147.00	129.00	136.00
8.10	**Painting on Wood Surfaces** (Providing and applying two coats of ready mix paint of approved brand on wood surface after through cleaning of surface to give an even shade)	sqm	137.00	143.00	148.00	159.00	155.00	158.00	166.00	144.00	152.00
8.11	**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work** (Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control)										
(i)	**Over 10 cm in width**	sqm	270.00	280.00	287.00	303.00	297.00	302.00	314.00	281.00	293.00
(ii)	**Up to 10 cm in width**	sqm	241.00	250.00	258.00	274.00	268.00	273.00	285.00	252.00	264.00
8.12	**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work** (Painting lines, dashes, arrows etc on roads in two coats on old work with ready mixed road marking paint confirming to IS: 164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control)										
(i)	**Over 10 cm in width**	sqm	182.00	188.00	192.00	202.00	198.00	201.00	208.00	188.00	196.00
(ii)	**Up to 10 cm in width**	sqm	192.00	198.00	203.00	213.00	209.00	212.00	219.00	199.00	207.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
8.13	**Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface** (Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.)	sqm	2706.00	2922.00	3084.00	3435.00	3300.00	3408.00	3678.00	2949.00	3219.00
8.14	**Kilo Metre Stone** (Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc)										
(i)	**5th kilometre stone (precast)**	each	5757.00	6168.00	6736.00	7400.00	7315.00	7852.00	8692.00	6170.00	6758.00
(ii)	**Ordinary Kilometer stone (Precast)**	each	3529.00	3808.00	4195.00	4644.00	4588.00	4954.00	5526.00	3809.00	4207.00
(iii)	**Hectometer stone (Precast)**	each	921.00	973.00	1046.00	1079.00	1067.00	1188.00	1295.00	973.00	1048.00
8.15	**Road Delineators** (Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide stripes, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and confirming toIRC-79 and the drawings.)	each	1005.00	1083.00	1142.00	1270.00	1221.00	1260.00	1358.00	1093.00	1191.00
8.16	**Boundary pillar** (Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25-1967, fixed in position including finishing and lettering but excluding painting)	each	1405.00	1436.00	1469.00	1449.00	1443.00	1535.00	1585.00	1436.00	1470.00
8.17	**G.I Barbed wire Fencing 1.2 metre high** (Providing and fixing 1.2 metres high GI barbed wire fencing with 1.8 m angle iron posts 40 mm x 40 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 9 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807)	metre	585.00	616.00	642.00	699.00	679.00	692.00	733.00	620.00	659.00
8.18	**G.I Barbed wire Fencing 1.8 metre high** (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807)	metre	867.00	909.00	944.00	1025.00	999.00	1014.00	1071.00	913.00	967.00
8.19	**Fencing with welded steel wire Fabric 75 mm x 50 mm (Suggestive)** (Providing 1.20 metre high fencing with angle iron posts 50 mm x 50 mm x 6 mm at 3 metre center to center with 0.40 metre embedded in M15 grade cement concrete, corner, end and every 10th post to be strutted, provided with welded steel wire fabric of 75 mm x 50 mm mesh or 75 mm x 25 mm mesh and fixed to iron posts by flat iron 50 x 5 mm and bolts etc. complete in all respects.)	metre	883.00	928.00	966.00	1063.00	1034.00	1040.00	1100.00	933.00	991.00
8.20	**Tubular Steel Railing on Medium Weight steel channel** (ISMC series) 100 mm x 50 mm (Providing, fixing and erecting 50 mm dia steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 metres high above ground, 2 m centre to centre, complete as per approved drawings)	metre	2157.00	2297.00	2464.00	2767.00	2713.00	2793.00	3046.00	2303.00	2495.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
8.21	**Tubular Steel Railing on Precast RCC posts, 1.2 m high above ground level** (Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M20 grade RCC vertical posts1.8 metres high (1.2 m above GL) with 3 holes 50 mm dia for pipe, fixed 2 metres centre to, complete as per approved drawing)	metre	1646.00	1790.00	1964.00	2231.00	2294.00	2308.00	2693.00	1795.00	1994.00
8.22	**Reinforced Cement Concrete Crash Barrier** (Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified)										
(i)	**M 20 grade concrete**	metre	5502.00	5876.00	6401.00	5927.00	6931.00	7430.00	9342.00	5876.00	6412.00
8.23	***Metal Beam Crash Barrier***										
A	**Type - A, "W" : Metal Beam Crash Barrier** (Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per clause 810)	metre	3519.00	3611.00	3710.00	3879.00	3820.00	3905.00	4057.00	3616.00	3737.00
B	**Type - B, "THRIE" : Metal Beam Crash Barrier** (Providing and erecting a "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 85 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 2 m high with 1.15 m below ground level, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a space of channel section 150 x 75 x 5 mm, 546 mm long complete as per clause 810)	metre	4567.00	4779.00	4961.00	5320.00	5187.00	5324.00	5617.00	4800.00	5070.00
8.24	**Road Traffic Signals electrically operated** (Since it is a ready made item commercially produced and erected by specialised firm in the electrical and electronic field, rate may be taken based on market enquiry from firms specialised in this field and ISI certified for the approved design and drawing.)										
8.25	**Flexible Crash Barrier, Wire Rope Safety Barrier** (Providing and erecting a wire rope safety barrier with vertical posts of medium weight RS Joist (ISMB series) 100 mm x 75 mm (11.50 kg/m), 1.50 m long 0.85 m above ground and 0.65 m below ground level, split at the bottom for better grip, embedded in M 15 grade cement concrete 450 x 450 x 450 mm, 1.50 m center to center and with 4 horizontal steel wire rope 40 mm dia and anchored at terminal posts 15 m apart. Terminal post to be embedded in M 15 gradecementconcretefoundation2400 x 450 x 900 mm (depth), strengthened by a strut of RS joist 100 x 75 mm, 2 m long at 450 inclination and a tie 100 x 8 mm, 1.50 m long at the bottom, all embedded in foundation concrete as per approved design and drawing, rate excluding excavation and cement concrete.)	metre	4089.00	4275.00	4437.00	4843.00	4723.00	4758.00	5018.00	4294.00	4531.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
8.26	***Anti - Glare Devices in Median***										
A	**Plantation** (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 envoirenment and are eco-friendly. The rate for this item is available in the chapter 11 on horticulture.)										
B	**Anti - Glare Screen with 25 mm steel pipe framework fixed with circular and rectangular vans** (Providing and erecting an anti - glare screen with 25 mm dia vertical pipes fabricated and framed in the form of panels of one metre length and 1.75 mtr height fixed with circular vane 250 mm dia at top and rectangular vane 600 x 300 mm at the middle, made out of steel sheet of 3 mm thickness, end vertical pipes of the panel made larger for embedding in foundation concrete, applying 2 coats of paint on all exposed surfaces, all as per approved design and drawings.)	metre	2644.00	2802.00	2928.00	3340.00	3235.00	3328.00	3545.00	2950.00	3161.00
C	**Anti - Glare Screen with Rectangular Vane of MS sheet** (Providing and erecting anti - glare screen with rectangular vanes of size 750 x 500 mm made from MS sheet, 3 mm thick and fixed on MS angle 50 x 50 x 6 mm at an angle of 450 to the direction of flow of traffic, 1.5 m center to center, top edge of the screen 1.75 m above ground level, vertical post firmly embedded in cement concrete foundation 0.60 m below ground level, applying 2 coats of paint on exposed faces, all complete as per approved design and drawings)	metre	1068.00	1087.00	1112.00	1197.00	1183.00	1207.00	1248.00	1128.00	1158.00
8.27	**Street Lighting** (Providing and erecting street light mounted on a steel circular hollow pole of standard specifications for street lighting, 9 m high spaced 40 m apart, 1.8 m overhang on both sides if fixed in the median and on one side if fixed on the footpath, fitted with sodium vapour lamp and fixed firmly in concrete foundation.)										
(i)	***For Fixing in Median***	each	51379.00	55423.00	58456.00	65496.00	62953.00	64521.00	69575.00	55928.00	60983.00
(ii)	***For fixing in Footpath***	each	51248.00	55286.00	58315.00	65254.00	62718.00	64372.00	69418.00	55791.00	60839.00
8.28	**Lighting on Bridges** (Providing and fixing lighting on bridges, mounted on steel hollow circular poles of standard specifications, 5 m high fixed on parapets with cement concrete, 20 m apart and fitted with sodium vapour lamp)	each	27422.00	29571.00	31182.00	34898.00	33548.00	34405.00	37090.00	29839.00	32525.00
8.29	**Cable Duct Across the Road** (Providing and laying of a reinforced cement concrete pipe duct, 300 mm dia, across the road (new construction), extending from drain to drain in cuts and toe of slope to toe of slope in fills, constructing head walls at both ends, providing a minimum fill of granular material over top and sides of RCC pipe as per IRC:98-1997, bedded on a 0.3 m thick layer of granular material free of rock pieces, outer to outer distance of pipe at least half dia of pipe subject to minimum 450 mm in case of double and triple row ducts, joints to be made leak proof, invert level of duct to be above higher than ground level to prevent entry of water and dirt, all as per IRC: 98 - 1997 and approved drawings.)										
(i)	***Single Row for one utility service***	metre	9553.00	10272.00	10864.00	12023.00	11617.00	12044.00	13010.00	10347.00	11265.00
(ii)	***Double Row for two utility services***	metre	18602.00	19993.00	21114.00	23364.00	22555.00	23349.00	25186.00	20144.00	21914.00
(iii)	***Triple Row for three utility services***	metre	27685.00	29750.00	31399.00	34739.00	33529.00	34689.00	37397.00	29977.00	32599.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
8.30	**Highway Patrolling and Traffic Aid Post** (It is proposed to locate one Traffic Aid Post every 50-60 km of the highway.)										
8.31	**Items related to under pass/ subway/ overhead bridge/ overhead foot bridge** (The items involved for underpass/ subway/ overhead bridge/ overhead foot bridge are earthwork, plain cement concrete, plastering, painting, information sign etc. The rates for these items are available in respective chapters which can be adopted for the quantities derived from the approved designs and drawings)										
8.32	**Traffic Control System and Communication system** (Providing a traffic control centre and communication system including telecommunication facilities and related accessories, CCTV, radar, vehicle detection camera, central computer system These are specialised item of telecommunication system and are the commercial products. The designer is required to contact the manufacturers to ascertain market prices. In case of civil works required to be executed for these installations, pricing may be done as per rates in relevant chapters for quantities derived approved design and drawing.)										
8.33	**Gantry Mounted Variable Message Sign board** (Providing and erecting gantry mounted variable message sign board electronically operated capable of flashing the desired message over a designed support system of aluminium alloy or galvanised steel, erected as per approved design and drawings and with lateral clearance as per clause 802.3)										
(i)	***Gantry Support System***	tonne	95725.00	97395.00	99659.00	103043.00	101944.00	104098.00	107438.00	97395.00	99702.00
(ii)	***Message Display (Message display board 6 sqm electronically operated with complete electronic fitments for flashing the pre-determined messages.)***										
8.34	**Traffic Impact Attenuators at Abutments and Piers**										
A	**With Scrap Tyres** (Provision and installation of traffic attenuators at abutment/pier of flyovers bridges using scrap tyres of size 100 x 20 retrieved from trucks laid in 2 rows and 4 tiers, one above the other and tied with 20 mm wire rope as per approved design and drawings.)	sqm	3702.00	3988.00	4202.00	4667.00	4488.00	4631.00	4989.00	4023.00	4381.00
B	**Using Plastic/Steel Barrel, Filled with Sand** (Provision and installation of traffic impact attenuator at abutment/pier of flyovers bridges using plastic/steel barrels 0.60 m dia and 1.0 m in height, filled with sand in three rows and tied with20 mm steel wire rope as per approved design and drawings)	sqm	1803.00	2356.00	3104.00	1510.00	3872.00	4574.00	5686.00	2362.00	3147.00
C	**With HI - DRO cell Sandwich** (Patented) ((In this patented HI - DRO cell system, water gets discharged from plastic tubes on impact over a pre-determined time, thus absorbing the energy))	sqm	4942.00	5240.00	5463.00	5948.00	5762.00	5911.00	6283.00	5277.00	5650.00
8.35	**Road Markers/Road Stud with Lense Reflecto**r (Providing and fixing of road stud 100x 100 mm, die cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973)	each	1838.00	1984.00	2093.00	2331.00	2239.00	2312.00	2495.00	2002.00	2185.00
8.36	**Traffic Cone** (Provision of red fluorescent with white reflective sleeve traffic cone made of low density polyethylene (LDPE) material with a square base of 390 x 390 x 35 mm and a height of 770 mm, 4 kg in weight, placed at 1.5 m interval, all as per BS 873)	each	1179.00	1273.00	1344.00	1496.00	1438.00	1485.00	1602.00	1285.00	1402.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
8.37	***Roadside Amenities***										
A	**Rest Areas** (Providing plainly furnished accommodation for rest rooms, dormitories, restaurants, stalls, shops, petrol pump, telephone booth, first aid room, traffic aid post, police assistance booth, including electricity, toilet and sewerage system Pricing may be done based on current plinth area rates approved by PWD/CPWD/MES for a particular zone. Area is required to be assessed for specific location as per actual site conditions)										
B	**Parking areas and Bus Laybyes for Trucks, Buses and Light vehicles** (Pricing of parking areas may be done for the quantities of various items based on the approved dimensions and pavement design for a particular terrain and soil. Rates for items may be from respective chapters.)										
C	**Lawn** (Providing a lawn planted with grass and its maintenance)										
8.38	**Rumble Strips** (Provision of 15 nos rumble strips covered with premix bituminous carpet, 15-20 mm high at center, 250 mm wide placed at 1 m center to center at approved locations to control speed, marked with white strips of road marking paint.)	sqm									
8.39	**Policeman Umbrella** (Provision of a 2 m high (floor to roof) umbrella for traffic policeman at road crossings, where necessary, installed on a raised platform, built on a central support of a steel pipe 100 mm dia, roof made of 25 mm dia steel pipe to provide covered area of 3 sqm, roofed with CGI sheets, all steel parts to be given 2 coats of paint)	each									
8.40	**High Mast Pole Lighting at Interchanges and Flyovers** (Providing and erecting a high mast pole lighting with 30 m high hot dip galvanised mast designed to withstand forces exerted with wind speeds of 180 km per hour with 3 seconds gust, as per IS:875 (Part 3) - 1978, fitted with a base flange, door at the base of mast with heavy duty internal lock, lantern carriage, suitable winching arrangement for safe working load of 750 kg and high powered electrically driven power tools for raising and lowering of lantern carriage, flexible 8 core electric cable, lightening conductor, earthing terminal, and fixing 2 nos aviation obstruction lights on top of the mast, all complete as per approved design and drawings This is a specialised work and is generally done by firms who specialise in such jobs. The detailed designs and estimates are submitted by the firms alongwith their tender for checks by the Department. The cost of this work is required to be worked out based on approved design, drawings and estimate of the lowest tender. A separate contract for this work is concluded as the contractors for road and bridge works generally donot undertake such works)										
8.41	**Toll Plaza** (The construction, operation and maintenance of Toll Plaza can be broken into separate items of work as under based on the approved design and drawings:-)										

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
8.42	**Safety Devices and signs in Construction Zones** (Provision and fixing of traffic signs for limited period at suitable locations in construction zone comprising of warning zone, approach transition zone, working zone and terminal transition zone with a minimum distance of 60 cm from the edge of the kerb in case of kerbed roads and 2 to 3 m from the edge of the carriageway in case of un-kerbed roads, the bottom edge of the lowest sign plate to be not less than 2 m above the road level, fixed on 60 mm x 60 mm x 6 mm angle iron post, founded and installed as per approved design and drawings, removed and disposed of after completion of construction work, all as per IRC:SP:55-2001)										
8.43	**Portable Barricade in Construction Zone** (Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45 x 45 x 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150 mm in width at an angle of 450, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001)	each	3766.00	3836.00	3919.00	4054.00	4008.00	4083.00	4208.00	3839.00	3934.00
8.44	***Permanent Type Barricade in Construction Zone***										
A	**With Steel Components** (Construction of a permanent type barricade made of steel components, 1.5 m high from road level, fitted with 3 horizontal rails 200 mm wide and 4 m long on 50 x 50 x 5 mm angle iron vertical support, painted with yellow and white strips, 150 mm in width at an angle of450, complete as per IRC:SP:55-2001)	each	5916.00	6038.00	6179.00	6410.00	6331.00	6456.00	6669.00	6043.00	6206.00
B	**With Wooden Components** (Construction of a permanent type barricade made of wooden components, 1.5 m high from road level, fitted with 3 horizontal planks 200 mm wide and 3.66 m long on 100 x 100mm wooden vertical post, painted with yellow and white striups, 150 mm in width at an angle of450, complete as per IRC:SP:55-2001)	each	6469.00	6469.00	6469.00	6469.00	6469.00	6469.00	6469.00	6469.00	6469.00
C	**With Bricks** (Construction of a permanent type barricade made with brick work in mud mortar, 1.5 m high, 4 m long, 600 mm thick, plastered with cement mortar 1:6, painted with yellow and white strips)	each	22880.00	28663.00	36789.00	48880.00	45006.00	52726.00	64725.00	28669.00	36978.00
8.45	**Drum Delineator in Construction Zone** (Provision of metal drum/empty bitumen drum delineator, 300 mm in diameter, 800 mm high, filled with earth for stability, painted in circumferential strips of alternate black and white 100 mm wide fitted with reflectors 3 Nos of 7.5 cm dia, all as per IRC:SP:55-2001)	each	773.00	806.00	830.00	884.00	863.00	879.00	920.00	810.00	851.00
8.46	**Flagman** (Positioning of a smart flagman with a yellow vest and a yellow cap and a red flag 600 x 600 mm securely fastened to a staff 1 m in length for guiding the traffic)	each	748.00	753.00	757.00	766.00	762.00	765.00	772.00	754.00	762.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-9 PIPE CULVERTS											
9.1	**Deleted**										
9.2	**Laying Reinforced Cement Concrete Pipe NP4/prestrssed concrete pipe on first class bedding in single row** . (Laying Reinforced cement concrete pipe NP4/prestrssed concrete pipe for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .)										
A	***1000 mm dia***	metre	15819.00	16404.00	17656.00	19448.00	19514.00	19022.00	20474.00	16547.00	17992.00
B	***1200 mm dia***	metre	16598.00	17845.00	18790.00	20823.00	20043.00	20678.00	22249.00	17999.00	19560.00
9.3	**Laying Reinforced Cement Concrete Pipe NP 4 /prestrssed concrete pipe on first class bedding in double row .** (Laying Reinforced cement concrete pipe NP4 /prestrssed concrete pipe for culverts on first class bedding of granular material in double row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .)										
A	***1000 mm dia***	metre	27185.00	33319.00	35900.00	44991.00	39732.00	38555.00	41459.00	33605.00	36495.00
B	***1200 mm dia***	metre	33744.00	36238.00	38127.00	42194.00	40633.00	41905.00	45046.00	36546.00	39669.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-10											
MAINTENANCE OF ROADS											
10.1	**Restoration of Rain Cuts** (Restoration of rain cuts with soil, moorum, gravel or a mixture of these, clearing the loose soil, benching for 300 mm width, laying fresh material in layers not exceeding 250 mm and compacting with plate compactor or power rammers to restore the original alignment, levels and slopes)	cum	309.00	309.00	309.00	309.00	309.00	309.00	309.00	309.00	309.00
10.2	**Maintenance of Earthen Shoulder** (filling with fresh soil) (Making up loss of material/ irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment.)	sqm	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
10.3	**Maintenance of Earth Shoulder** (stripping excess soil) (Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor)	sqm	25.70	25.70	25.70	25.70	25.70	26.00	25.70	25.70	26.00
10.4	**Filling Pot- holes and Patch Repairs with open - graded Premix surfacing, 20mm.** (Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 511, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2)	sqm	194.00	195.00	197.00	201.00	200.00	202.00	205.00	195.00	197.00
10.5	**Filling Pot- holes and Patch Repairs with - Bituminous concrete, 40mm.** (Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 504, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2)										
(i)	***for grading I Material***	sqm	481.00	485.00	491.00	500.00	497.00	503.00	512.00	485.00	491.00
(ii)	***for grading II Material***	sqm	502.00	508.00	516.00	528.00	524.00	531.00	542.00	508.00	517.00
10.6	**Crack Filling** (Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.)	metre	4.80	4.90	4.90	5.10	5.00	5.10	5.20	4.90	4.90
10.7	**Dusting** (Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.)	sqm	3.30	3.35	3.35	3.35	3.30	3.35	3.35	3.35	3.35
10.8 A	***Fog Seal (ref item 5.17)***	sqm	49.00	49.00	50.00	52.00	51.00	52.00	53.00	49.00	50.00
B	***Crack Prevention courses. (ref item 5.21)***										
(i)	***Stress Absorbing Membrane (SAM) crack width less than 6 mm***	sqm	96.00	97.00	98.00	100.00	99.00	101.00	103.00	97.00	98.00
(ii)	***Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm***	sqm	125.00	126.00	128.00	131.00	130.00	132.00	135.00	126.00	128.00
(iii)	***Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %***	sqm	169.00	178.70	186.40	202.20	196.00	202.00	214.00	180.00	192.00
(iv)	***Bitumen Impregnated Geotextile***	sqm	88.00	98.00	112.00	128.00	127.00	140.00	161.00	98.00	113.00
C	***Slurry Seal (ref item 5.15)***										
(i)	***5 mm thickness***	sqm	88.00	98.00	112.00	128.00	127.00	140.00	161.00	98.00	113.00
(ii)	***3 mm thickness***	sqm	59.00	65.00	74.00	83.00	83.00	91.00	104.00	66.00	74.00
(iii)	***1.5 mm thickness***	sqm	34.00	35.00	35.00	36.00	36.00	37.00	38.00	35.00	35.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
D	***Surface Dressing for maintance works. (ref item 5.9)***										
(i)	***19 mm nominal chipping size***	sqm	117.00	118.00	119.00	121.00	121.00	122.00	124.00	118.00	119.00
(ii)	***13 mm nominal size chipping***	sqm	89.00	90.00	91.00	93.00	92.00	93.00	95.00	90.00	91.00
10.9	**Repair of joint Grooves with Epoxy Mortar** (Repair of spalled joint grooves of contraction joints, longitudinal joints and expansion joints in concrete pavements using epoxy mortar or epoxy concrete)	metre	920.00	987.00	1037.00	1147.00	1105.00	1138.00	1222.00	995.00	1079.00
10.10	**Repair of old Joints Sealant** (Removal of existing sealant and re sealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material)	metre	117.00	123.00	128.00	138.00	134.00	137.00	144.00	124.00	131.00
10.11	**Hill Side Drain Clearance** (Removal of earth from the choked hill side drain and disposing it on the valley side manually)	metre	69.00	69.00	69.00	69.00	69.00	69.00	69.00	69.00	69.00
10.12	**Land Slide Clearance in soil** (Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side)	cum	68.00	68.00	68.00	68.00	68.00	68.00	68.00	68.00	68.00
10.13	**Land slide Clearance in Hard Rock Requiring Blasting** (Clearing of land slide in hard rock requiring blasting for 50% of the boulders and disposal of the same on the valley side.)	cum	174.00	180.00	184.00	193.00	189.00	192.00	199.00	180.00	187.00
10.14	**Snow Clearance on Roads with Dozer** (Snow clearance from road surface by a bull- dozer 165 Hp and disposing it on the valley side)	cum	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60
10.15	**Snow Clearance on Roads with Snow Blowers** (Snow clearance from road surface by a snow blower and disposing on the valley side.)	cum	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-11 HORTICULTURE											
11.1	**Spreading of Sludge Farm Yard Manure or/and good Earth** (Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm- yard manure or/and good earth to be paid for separately))	cum	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
11.2	**Grassing with ' Doobs' Grass** (Grassing with 'Doobs' grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for moving including supplying good earth if needed)										
(i)	***In rows 15 cm apart in either direction***	sqm	91.00	97.00	102.00	111.00	108.00	111.00	118.00	98.00	105.00
(ii)	***In rows 7.5 cm apart in either direction***	sqm	171.00	183.00	192.00	211.00	204.00	210.00	225.00	185.00	199.00
11.3	**Making Lawns including Ploughing and Dragging with 'Swagha' Breaking of Clod** (Making lawns including ploughing and breaking of clod, removal of rubbish, dressing and supplying doobs grass roots and planting at 15 cm apart, including supplying and spreading of farm yard manure at rate of 0.18 cum per 100 sqm)	sqm	111.00	119.00	124.00	137.00	132.00	136.00	145.00	120.00	129.00
11.4	**Maintenance of Lawns or Turfing of Slopes** (Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc)	sqm	780.00	780.00	780.00	780.00	780.00	780.00	780.00	780.00	780.00
11.5	**Turfing Lawns with Fine Grassing including Ploughing, Dressing** (Turfing lawns with fine grassing including ploughing, dressing including breaking of clods, removal of rubbish, dressing and supplying doobs grass roots at 10 cm apart, including supplying and spreading of farm yard manure at rate of0.6 cum per 100 sqm)	sqm	118.00	126.00	132.00	144.00	140.00	143.00	153.00	127.00	137.00
11.6	Maintenance of Lawns with Fine Grassing for the First Year	sqm	638.00	638.00	638.00	638.00	638.00	638.00	638.00	638.00	638.00
11.7	**a) Planting Permanent Hedges including Digging of Trench**es (Planting permanent hedges including digging of trenches, 60 cm wide and 45 cm deep, refilling the excavated earth mixed with farmyard manure, supplied at the rate of 4.65 cum per 100 metres and supplying and planting hedge plants at 30 cm apart)	metre	227.00	235.00	241.00	255.00	250.00	254.00	264.00	236.00	247.00
(b)	***Maintenance of Hedge for one year***	metre	469.00	470.00	471.00	473.00	472.00	472.00	474.00	470.00	471.00
11.8 [a]	***Planting Flowering Plants and Shrubs in Central Verge***	km	81718.00	85264.00	87924.00	93687.00	91470.00	93243.00	97676.00	85708.00	90140.00
(b)	***Maintenance of Flowering Plants and Shrubs in Central Verge for one Year***	km	467641.00	468104.00	468450.00	469202.00	468913.00	469144.00	469722.00	468161.00	468739.00
11.9	**Planting of Trees and their Maintenance for one Year** (Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge mannure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year)	each	2216.00	2220.00	2223.00	2229.00	2227.00	2229.00	2234.00	2220.00	2225.00
11.10	**Renovation Lawns including, Weeding, Forking the Ground, Top Dressing with Forked Soil** (Renovation lawns including, weeding, forking the ground, top dressing with forked soil, watering and maintenance the lawns, for 30 days or more, till the grass forms a thick lawn, free from weeds, and fit for moving and disposal of rubbish as directed, including supplying good earth, if needed but excluding the cost of well decayed farm yard manure)	sqm	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
11.11	**Supply at Site Well Decayed Farm Yard Manure** (Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking)	cum									

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
11.12	**Supply at Site of Work/ Store - Deoiled Neem Cake** (Supply at site of work/ store- deoiled neem cake duly packed in used gunny bags)	quintal									
11.13	**Supplying Sludge** (Supplying sludge duly stacked at site/ store)	cum									
11.14	**Half Brick Circular Tree Guard, in 2nd class Brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground** (Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete)	each	2782.00	3543.00	4618.00	6197.00	5703.00	6726.00	8312.00	3543.00	4639.00
11.15	**Edging with 2nd class Bricks, laid dry lengthwise** (Edging with 2nd class bricks, laid dry lengthwise, including excavation, refilling, consolidation, with a hand packing and spreading nearly surplus earth within a lead of 50 metres)	metre	55.00	71.00	93.00	126.00	115.00	136.00	168.00	71.00	93.00
11.16	**Making Tree Guard 53 cm dia and 1.3 m high as per design from empty bitumen drum** (Making tree guard 53 cm dia and 1.3 m high as per design from empty bitumen drum, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets, complete in all respect)	each	7473.00	8054.00	8491.00	9435.00	9072.00	9363.00	10090.00	8127.00	8853.00
11.17	**Making Tree Guard 53 cm dia and 2 metres high as per design from empty bitumen drums** (Making tree guard 53 cm dia and 2 metres high as per design from empty bitumen drums, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing four legs 40 cm long of 30 x 3 mm MS riveted to tree guard and providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets complete in all respects)	each	16812.00	18124.00	19110.00	21243.00	20422.00	21080.00	22722.00	18288.00	19928.00
11.18	**Wrought Iron and Mild Steel Welded Work** (Wrought iron and mild steel welded work) (using angles, square bars, tees and channel grills, grating frames, gates and tree guards of any size and design etc. including cost of screens and welding rods or bolts and nuts complete fixed in position but without the cost of excavation and concrete for fixing which will be paid separately)	quintal	10790.00	10923.00	11103.00	11372.00	11285.00	11456.00	11722.00	10923.00	11106.00
11.19	**Tree Guard with MS Iron** (Providing and fixing MS iron tree guard 60 cm dia and 2 metre high above ground level formed of 4 Nos (25 x 6 mm) and 8 Nos (25 x 3 mm) vertical MS riveted to 3 Nos (25 x 6 mm) iron rings in two halves, bolted together with 8 mm dia and 30 mm long bolts including painting two coats with paint of approved brand over a coat of priming, complete in all respects.)	each tree guard	2561.00	2605.00	2660.00	2890.00	2857.00	2767.00	2849.00	2606.00	2666.00
11.20	**Tree Guard with MS Angle Iron and Steel Wire** (Providing and fixing tree guard 0.60 metre square, 2.00 metre high fabricated with MS angle iron 30 x 30 x 3 mm, MS iron 25 x 3 mm and steel wire3 mm dia welded and fabricated as per design in two halves bolted together)	each tree guard	3589.00	3683.00	3779.00	4071.00	4007.00	3967.00	4116.00	3690.00	3814.00
11.21	**Compensatory Afforestation** (Planting trees as compensatory afforestation at the rate of 290 trees per hectare at a spacing of 6 m by grubbing and leveling the ground upto a depth of 150 mm, digging holes 0.9 m dia, 1 m deep, mixing farm yard/sludge manure with soil, planting of sapling 2 m high with 25 cm dia stem, backfilling the hole and watering)	hectare	125436.00	126431.00	127177.00	128794.00	128172.00	128670.00	129913.00	126555.00	127799.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-12 FOUNDATIONS											
12.1	**Excavation for Structures** (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)										
I	***Ordinary soil***										
A	Manual Means										
(i)	***upto 3 m depth***	cum	265.00	265.00	265.00	265.00	265.00	265.00	265.00	265.00	265.00
(ii)	***3 m to 6 m depth***	cum	341.00	341.00	341.00	341.00	341.00	341.00	341.00	341.00	341.00
(iii)	***Above 6 m depth***	cum	454.00	454.00	454.00	454.00	454.00	454.00	454.00	454.00	454.00
B	Mechanical Means										
(i)	***Depth upto 3 m***	cum	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00
(ii)	***Depth 3 m to 6 m***	cum	85.00	85.00	85.00	85.00	85.00	85.00	85.00	85.00	85.00
(iii)	***Depth above 6m***	cum	108.00	108.00	108.00	108.00	108.00	108.00	108.00	108.00	108.00
II	***Ordinary rock (not requiring blasting)***										
A	Manual Means										
(i)	***Depth upto 3 m***	cum	378.00	378.00	378.00	378.00	378.00	378.00	378.00	378.00	378.00
B	Mechanical Means	cum	91.00	91.00	91.00	91.00	91.00	91.00	91.00	91.00	91.00
III	***Hard rock (requiring blasting)***										
A	Manual Means	cum	952.00	965.00	974.00	995.00	987.00	993.00	1009.00	966.00	982.00
IV	***Hard rock (blasting prohibited)***										
A	Mechanical Means	cum	1108.00	1108.00	1108.00	1108.00	1108.00	1108.00	1108.00	1108.00	1108.00
V	***Marshy soil***										
(i)	***upto 3 m depth***										
A	Manual means	cum	888.00	888.00	888.00	888.00	888.00	888.00	888.00	888.00	888.00
B	Mechanical Means	cum	247.00	247.00	247.00	247.00	247.00	247.00	247.00	247.00	247.00
VI	***Back Filling in Marshy Foundation Pits***	cum	542.00	542.00	542.00	542.00	542.00	542.00	542.00	542.00	542.00
12.2	**Filling Annular Space Around Footing in Rock** (Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per items 13.4.)										
12.3	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	cum	2441.00	4359.00	7064.00	11108.00	9795.00	12369.00	16361.00	4359.00	7116.00
12.4	**Deleted**										

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
12.5	**Brick masonry** (Brick masonry work in cement mortar 1:3 in foundation complete excluding pointing and plastering, as per drawing and technical specifications	cum	9796.00	12067.00	15272.00	20111.00	18800.00	21557.00	26287.00	12067.00	15334.00
12.6 A	***Cement mortar1:3 (1cement :3 sand)***	cum	6831.00	8289.00	10345.00	12652.00	12422.00	14379.00	17414.00	8289.00	10385.00
B	***Cement mortar1:2 (1cement :2 sand)***	cum	7790.00	9211.00	11216.00	13533.00	13240.00	15148.00	18107.00	9211.00	11255.00
C	***Cement mortar1:4 (1cement :4 sand)***	cum	6177.00	7649.00	9726.00	12011.00	11823.00	13799.00	16864.00	7649.00	9766.00
D	***Cement mortar1:6 (1cement :6 sand)***	cum	5804.00	7447.00	9766.00	12253.00	12107.00	14312.00	17734.00	7447.00	9811.00
12.7	**Stone masonry** (Stone masonry work in cement mortar 1:3 in foundation complete as drawing and Technical Specification										
(a)	***Square Rubble Coursed rubble masonry(first sort)***	cum	9203.00	9837.00	10731.00	12128.00	12000.00	12486.00	13806.00	9837.00	10749.00
(b)	***Random Rubble Masonry***	cum	7908.00	8563.00	9487.00	10930.00	10799.00	11301.00	12665.00	8563.00	9505.00
12.8	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications										
A	**PCC Grade M15**	cum	9002.00	9995.00	11395.00	12992.00	12809.00	14142.00	16209.00	9995.00	11422.00
B	**PCC Grade M20**	cum	10279.00	11333.00	12820.00	14546.00	14321.00	15735.00	17929.00	11333.00	12849.00
C	**RCC Grade M20**										
Case I	***Using concrete mixer***	cum	10495.00	11551.00	13042.00	14774.00	14548.00	15966.00	18166.00	11551.00	13071.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	10537.00	11519.00	12904.00	11336.00	14303.00	15621.00	17665.00	11519.00	12931.00
D	**PCC Grade M25**										
Case I	***Using concrete Mixer***	cum	10892.00	11992.00	13544.00	15370.00	15112.00	16589.00	18880.00	11992.00	13574.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	10921.00	11947.00	13394.00	11928.00	14856.00	16233.00	18369.00	11947.00	13422.00
E	**RCC Grade M25**										
Case I	***Using concrete Mixer***	cum	11114.00	12218.00	13775.00	15608.00	15348.00	16830.00	19128.00	12218.00	13806.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	11156.00	12186.00	13638.00	12178.00	15104.00	16485.00	18628.00	12186.00	13666.00
F	**PCC Grade M30**										
Case I	***Using Concrete Mixer***	cum	10934.00	12037.00	13593.00	15425.00	15165.00	16645.00	18942.00	12037.00	13624.00
Case II	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	10957.00	11985.00	13436.00	11983.00	14901.00	16281.00	18422.00	11985.00	13464.00
G	**RCC Grade M30**										
Case I	***Using Concrete Mixer***	cum	11126.00	12230.00	13788.00	15622.00	15361.00	16843.00	19142.00	12230.00	13818.00
Case II	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	11170.00	12200.00	13652.00	12203.00	15119.00	16502.00	18646.00	12200.00	13680.00
H	**RCC Grade M35**										
Case I	***Using Concrete Mixer***	cum	11247.00	12359.00	13929.00	15783.00	15513.00	17007.00	19323.00	12359.00	13959.00
Case II	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	11291.00	12329.00	13794.00	12380.00	15273.00	16667.00	18829.00	12329.00	13823.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
12.9	Providing and constructing temporary island 16 m diameter for construction of well foundation for 8m dia. Well.										
A	***Assuming depth of water 1.0 m and height of island to be 1.25m.***	each	132677.00	163183.00	235005.00	342389.00	307524.00	375859.00	481849.00	163183.00	236399.00
B	***Assuming depth of water 4.0 m and height of island 4.5 m.***	each	842568.00	1184706.00	1771895.00	2652446.00	2366553.00	2926904.00	3796019.00	1182955.00	1783331.00
C	***Providing and constructing one span service road to reach island location from one pier location to another pier location***	metre	4877.00	4337.00	5295.00	6727.00	6262.00	7173.00	8586.00	4337.00	5314.00
12.10	Providing and laying cutting edge of mild steel weighing 40 kg per metre for well foundation complete as per drawing and technical specification.	tonne	118627.00	120423.00	122743.00	126307.00	125132.00	127299.00	130749.00	120447.00	122904.00
12.11	Plain/Reinforced cement concrete, in well foundation complete as per drawing and technical specification										
A	***Well curb***										
(i)	**RCC M20 Grade**										
Case I	***Using concrete mixer***	cum	12110.00	13330.00	15049.00	16784.00	16525.00	18423.00	20962.00	13330.00	15082.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	12159.00	13292.00	14891.00	13081.00	16504.00	18025.00	20384.00	13292.00	14921.00
(ii)	**RCC M25 Grade**										
Case I	***Using concrete mixer***	cum	12855.00	14132.00	15933.00	18054.00	17753.00	19467.00	22124.00	14132.00	15970.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	13690.00	14943.00	16671.00	15084.00	18428.00	20059.00	22615.00	14952.00	16742.00
(iii)	**RCC M35 Grade**										
Case I	***Using concrete mixer***	cum	13104.00	14400.00	16229.00	18388.00	18075.00	19815.00	22512.00	14400.00	16264.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	13977.00	15253.00	17009.00	15469.00	18799.00	20455.00	21680.00	15262.00	17083.00
B	***Well steining***										
(I)	**PCC M15 Grade**	cum	9522.00	10572.00	12053.00	13743.00	13550.00	14958.00	17145.00	10572.00	12082.00
(ii)	**PCC M20 Grade**	cum	10873.00	11988.00	13561.00	15385.00	15148.00	16644.00	18965.00	11988.00	13591.00
(iii)	**RCC M20 Grade**										
Case I	***Using concrete mixer***	cum	11101.00	12219.00	13795.00	15628.00	15389.00	16888.00	19215.00	12219.00	13825.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	11146.00	12184.00	13650.00	11991.00	15129.00	16523.00	18685.00	12184.00	13677.00
(iv)	**PCC M25 Grade**										
Case I	***Using concrete mixer***	cum	11548.00	12715.00	14361.00	16296.00	16023.00	17590.00	20017.00	12715.00	14393.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	11580.00	12667.00	14202.00	12647.00	15752.00	17212.00	19477.00	12667.00	14232.00
(v)	**RCC M25 Grade**										
Case I	***Using concrete mixer***	cum	11784.00	12955.00	14605.00	16550.00	16274.00	17845.00	20280.00	12955.00	14639.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	12549.00	13698.00	15282.00	13827.00	16893.00	18387.00	20730.00	13706.00	15347.00
(vi)	**PCC M30 Grade**										
Case I	***Using concrete mixer***	cum	11621.00	12793.00	14448.00	16395.00	16117.00	17692.00	20132.00	12793.00	14479.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	11645.00	12739.00	14280.00	12736.00	15837.00	17304.00	19580.00	12739.00	14310.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(vii)	**RCC M30 Grade**										
Case I	***Using concrete mixer***	cum	11825.00	12999.00	14655.00	16604.00	16569.00	18164.00	20636.00	13200.00	14908.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	11872.00	12967.00	14511.00	12971.00	16070.00	17539.00	19818.00	12967.00	14540.00
(viii)	**RCC M35 Grade**										
Case I	***Using concrete mixer***	cum	12012.00	13200.00	14877.00	16856.00	16569.00	18164.00	20636.00	13200.00	14908.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	12813.00	13982.00	15591.00	14180.00	17232.00	18751.00	21135.00	13990.00	15660.00
(ix)	**RCC M40 Grade**	cum	12923.00	14101.00	15721.00	14327.00	17373.00	18902.00	21304.00	14108.00	15790.00
C	***Bottom Plug***										
(i)	**PCC Grade M20**										
Case I	***Using Concrete Mixer***	cum	11604.00	12733.00	14299.00	16159.00	15890.00	17371.00	19687.00	12738.00	14355.00
Case II	***Using Batching Plant, Transit Mixer and Crane/concrete pump***	cum	11350.00	12404.00	13863.00	12392.00	15347.00	16726.00	18885.00	12409.00	13917.00
(ii)	**PCC Grade M25**										
Case I	***Using Concrete Mixer***	cum	12031.00	13193.00	14801.00	16728.00	16437.00	17956.00	20336.00	13199.00	14862.00
Case II	***Using Batching Plant, Transit Mixer and Crane/concrete pump***	cum	11773.00	12860.00	14361.00	12955.00	15888.00	17306.00	19528.00	12866.00	14420.00
(iii)	**PCC Grade M30**										
Case I	***Using Concrete Mixer***	cum	12101.00	13269.00	14884.00	16823.00	16527.00	18054.00	20445.00	13275.00	14946.00
Case II	***Using Batching Plant, Transit Mixer and Crane/concrete pump***	cum	11847.00	12939.00	14448.00	13055.00	15984.00	17409.00	19643.00	12946.00	14507.00
(iv)	**PCC Grade M35**										
Case I	***Using Concrete Mixer***	cum	12264.00	13444.00	15078.00	17043.00	16739.00	18282.00	20699.00	13450.00	15139.00
Case II	***Using Batching Plant, Transit Mixer and Crane/concrete pump***	cum	12006.00	13111.00	14637.00	13270.00	16190.00	17632.00	19892.00	13117.00	14697.00
D	***Intermediate plug***										
(I)	**Grade M20 PCC**										
Case I	***Using Concrete Mixer***	cum	11110.00	12186.00	13676.00	15448.00	15193.00	16603.00	18809.00	12192.00	13730.00
Case II	***Using Batching Plant, Transit Mixer and Crane/concrete pump***	cum	10890.00	11893.00	13283.00	11881.00	14696.00	16009.00	18067.00	11899.00	13334.00
(ii)	**Grade M25 PCC**										
Case I	***Using Concrete Mixer***	cum	11517.00	12624.00	14155.00	15991.00	15714.00	17161.00	19427.00	12630.00	14214.00
Case II	***Using Batching Plant, Transit Mixer and Crane/concrete pump***	cum	11293.00	12328.00	13758.00	12419.00	15212.00	16562.00	18679.00	12334.00	13814.00
(iii)	**Grade M30 PCC**										
Case I	***Using Concrete Mixer***	cum	11584.00	12696.00	14235.00	16081.00	15799.00	17254.00	19530.00	12702.00	14293.00
Case II	***Using Batching Plant, Transit Mixer and Crane/concrete pump***	cum	11362.00	12403.00	13840.00	12514.00	15303.00	16661.00	18788.00	12409.00	13897.00
E	***Top plug***										

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(i)	**Grade M15 PCC**										
Case I	***Using Concrete Mixer***	cum	8657.00	9611.00	10958.00	12493.00	12318.00	13598.00	15586.00	9611.00	10984.00
(ii)	**Grade M20 PCC**										
Case I	***Using Concrete Mixer***	cum	9885.00	10898.00	12328.00	13987.00	13771.00	15131.00	17241.00	10898.00	12355.00
(iii)	**Grade M25 PCC**										
Case I	***Using Concrete Mixer***	cum	10498.00	11559.00	13056.00	14815.00	14567.00	15991.00	18198.00	11559.00	13085.00
Case II	***Using Batching Plant, Transit Mixer and Crane/concrete pump***	cum	10527.00	11516.00	12911.00	11497.00	14320.00	15647.00	17706.00	11516.00	12938.00
(iv)	**Grade M30 PCC**										
Case I	***Using Concrete Mixer***	cum	10565.00	11630.00	13134.00	14905.00	19807.00	16083.00	18302.00	11630.00	13163.00
Case II	***Using Batching Plant, Transit Mixer and Crane/concrete pump***	cum	10586.00	11581.00	12982.00	11578.00	14397.00	15731.00	17800.00	11581.00	13009.00
F	***Well cap***										
(i)	**RCC Grade M20**										
Case I	***Using concrete Mixer***	cum	10426.00	11477.00	12960.00	14681.00	14458.00	15869.00	18058.00	11477.00	12989.00
Case II	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	10466.00	11442.00	12820.00	11240.00	14211.00	15521.00	17554.00	11442.00	12846.00
(ii)	**RCC Grade M25**										
Case I	***Using concrete Mixer***	cum	11114.00	12218.00	13775.00	15608.00	15348.00	16830.00	19128.00	12218.00	13806.00
Case II	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	11158.00	12188.00	13640.00	12180.00	15106.00	16488.00	18631.00	12188.00	13668.00
(iii)	**RCC Grade M30**										
Case I	***Using Concrete Mixer***	cum	11126.00	12230.00	13788.00	15622.00	15361.00	16843.00	19142.00	12230.00	13818.00
Case II	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	11169.00	12199.00	13651.00	12201.00	15118.00	16500.00	18644.00	12199.00	13679.00
(iv)	**RCC Grade M35**										
Case I	***Using Concrete Mixer***	cum	11247.00	12359.00	13929.00	15783.00	15513.00	17007.00	19323.00	12359.00	13959.00
Case II	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	11291.00	12329.00	13794.00	12380.00	15273.00	16667.00	18829.00	12329.00	13823.00
(v)	**RCC M40 Grade**	cum	12157.00	13265.00	14789.00	13492.00	16342.00	17779.00	20037.00	13272.00	14853.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
12.12	**Sinking of 6 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.										
A	**Sandy soil**										
(i)	***Depth below bed level upto 3.0 M***	metre	4523.00	4523.00	4523.00	4523.00	4523.00	4523.00	4523.00	4523.00	4523.00
(ii)	***Beyond 3m upto 10m depth***	metre	6127.00	6127.00	6127.00	6127.00	6127.00	6127.00	6127.00	6127.00	6127.00
(iii)	***Beyond 10m upto 20m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	8092.00	8092.00	8092.00	8092.00	8092.00	8092.00	8092.00	8092.00	8092.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	15180.00	15180.00	15180.00	15180.00	15180.00	15180.00	15180.00	15180.00	15180.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour .***	metre	18216.00	18216.00	18216.00	18216.00	18216.00	18216.00	18216.00	18216.00	18216.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	36065.00	36065.00	36065.00	36065.00	36065.00	36065.00	36065.00	36065.00	36065.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour .***	metre	43278.00	43278.00	43278.00	43278.00	43278.00	43278.00	43278.00	43278.00	43278.00
B	**Clayey soil (6m dia. Well)**										
(i)	***Depth below bed level upto 3.0 M***	metre	6163.00	6163.00	6163.00	6163.00	6163.00	6163.00	6163.00	6163.00	6163.00
(ii)	***Beyond 3m upto 10m depth***	metre	13193.00	13193.00	13193.00	13193.00	13193.00	13193.00	13193.00	13193.00	13193.00
(iii)	***Beyond 10 m upto 20 m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	17425.00	17425.00	17425.00	17425.00	17425.00	17425.00	17425.00	17425.00	17425.00
b	***Add for dewatering @ 5% of cost, if required.***	metre	18296.00	18296.00	18296.00	18296.00	18296.00	18296.00	18296.00	18296.00	18296.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	32685.00	32685.00	32685.00	32685.00	32685.00	32685.00	32685.00	32685.00	32685.00
b	***Add 5% of cost for dewatering of the cost, if required***	metre	42899.00	42899.00	42899.00	42899.00	42899.00	42899.00	42899.00	42899.00	42899.00
c	***Add 25% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	40856.00	40856.00	40856.00	40856.00	40856.00	40856.00	40856.00	40856.00	40856.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	77656.00	77656.00	77656.00	77656.00	77656.00	77656.00	77656.00	77656.00	77656.00
b	***Add 5% of cost for dewatering, if required***	metre	97846.00	97846.00	97846.00	97846.00	97846.00	97846.00	97846.00	97846.00	97846.00
c	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	93187.00	93187.00	93187.00	93187.00	93187.00	93187.00	93187.00	93187.00	93187.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
C	**Soft rock (6m dia well)**										
(i)	***Depth of soft rock strata upto 3m***	metre	26621.00	26621.00	26621.00	26621.00	26621.00	26621.00	26621.00	26621.00	26621.00
D	**Hard rock (6m dia well)**										
(i)	***Depth of soft rock strata upto 3m***	metre	25096.00	25241.00	25349.00	25584.00	25494.00	25566.00	25746.00	25259.00	25439.00
12.13	**Sinking of 7 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.										
A	**Sandy soil**										
(i)	***Depth below bed level upto 3.0 M***	metre	12375.00	12375.00	12375.00	12375.00	12375.00	12375.00	12375.00	12375.00	12375.00
(ii)	***Beyond 3m upto 10m depth***	metre	8202.00	8202.00	8202.00	8202.00	8202.00	8202.00	8202.00	8202.00	8202.00
(iii)	***Beyond 10m upto 20m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	10834.00	10834.00	10834.00	10834.00	10834.00	10834.00	10834.00	10834.00	10834.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	20322.00	20322.00	20322.00	20322.00	20322.00	20322.00	20322.00	20322.00	20322.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour) .***	metre	24386.00	24386.00	24386.00	24386.00	24386.00	24386.00	24386.00	24386.00	24386.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	48280.00	48280.00	48280.00	48280.00	48280.00	48280.00	48280.00	48280.00	48280.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.***	metre	57936.00	57936.00	57936.00	57936.00	57936.00	57936.00	57936.00	57936.00	57936.00
B	**Clayey soil (7m dia. Well)**										
(I)	***Depth below bed level upto 3.0 M***	metre	8202.00	8202.00	8202.00	8202.00	8202.00	8202.00	8202.00	8202.00	8202.00
(ii)	***Beyond 3m upto 10m depth***	metre	11520.00	11520.00	11520.00	11520.00	11520.00	11520.00	11520.00	11520.00	11520.00
(iii)	***Beyond 10 m upto 20 m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	15215.00	15215.00	15215.00	15215.00	15215.00	15215.00	15215.00	15215.00	15215.00
b	***Add for dewatering @ 5% of cost, if required.***	metre	15975.00	15975.00	15975.00	15975.00	15975.00	15975.00	15975.00	15975.00	15975.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	28539.00	28539.00	28539.00	28539.00	28539.00	28539.00	28539.00	28539.00	28539.00
b	***Add 5% of cost for dewatering on the cost, if required***	metre	37457.00	37457.00	37457.00	37457.00	37457.00	37457.00	37457.00	37457.00	37457.00
c	***Add 25% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	35673.00	35673.00	35673.00	35673.00	35673.00	35673.00	35673.00	35673.00	35673.00

Code No	Descriptions	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	67805.00	67805.00	67805.00	67805.00	67805.00	67805.00	67805.00	67805.00	67805.00
b	***Add 5% of cost for dewatering, if required***	metre	85434.00	85434.00	85434.00	85434.00	85434.00	85434.00	85434.00	85434.00	85434.00
c	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	81366.00	81366.00	81366.00	81366.00	81366.00	81366.00	81366.00	81366.00	81366.00
C	**Soft rock (7m dia well)**										
(i)	***Depth of soft rock strata upto 3m***	metre	19821.00	19821.00	19821.00	19821.00	19821.00	19821.00	19821.00	19821.00	19821.00
D	**Hard rock (7m dia well)**										
(i)	***Depth upto 3 m***	metre	31751.00	32004.00	32193.00	32603.00	32445.00	32572.00	32887.00	32035.00	32351.00
12.14	**Sinking of 8 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.										
A	**Sandy soil**										
(i)	***Depth below bed level upto 3.0 M***	metre	7730.00	7730.00	7730.00	7730.00	7730.00	7730.00	7730.00	7730.00	7730.00
(ii)	***Beyond 3m upto 10m depth***	metre	9365.00	9365.00	9365.00	9365.00	9365.00	9365.00	9365.00	9365.00	9365.00
(iii)	***Beyond 10m upto 20m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	12368.00	12368.00	12368.00	12368.00	12368.00	12368.00	12368.00	12368.00	12368.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	23200.00	23200.00	23200.00	23200.00	23200.00	23200.00	23200.00	23200.00	23200.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour .***	metre	27840.00	27840.00	27840.00	27840.00	27840.00	27840.00	27840.00	27840.00	27840.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	8155.00	8155.00	8155.00	8155.00	8155.00	8155.00	8155.00	8155.00	8155.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.***	metre	9787.00	9787.00	9787.00	9787.00	9787.00	9787.00	9787.00	9787.00	9787.00
B	**Clayey soil (8m dia. Well)**										
(i)	***Depth upto 3.0 M***	metre	10049.00	10049.00	10049.00	10049.00	10049.00	10049.00	10049.00	10049.00	10049.00
(ii)	***Beyond 3m upto 10m depth***	metre	13389.00	13389.00	13389.00	13389.00	13389.00	13389.00	13389.00	13389.00	13389.00
(iii)	***Beyond 10 m upto 20 m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	17682.00	17682.00	17682.00	17682.00	17682.00	17682.00	17682.00	17682.00	17682.00
b	***Add for dewatering @ 5% of cost, if required.***	metre	18566.00	18566.00	18566.00	18566.00	18566.00	18566.00	18566.00	18566.00	18566.00

Code No	Descriptions	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	33167.00	33167.00	33167.00	33167.00	33167.00	33167.00	33167.00	33167.00	33167.00
b	***Add 5% of cost for dewatering on the cost, if required***	metre	43531.00	43531.00	43531.00	43531.00	43531.00	43531.00	43531.00	43531.00	43531.00
c	***Add 25% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	41458.00	41458.00	41458.00	41458.00	41458.00	41458.00	41458.00	41458.00	41458.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	78800.00	78800.00	78800.00	78800.00	78800.00	78800.00	78800.00	78800.00	78800.00
b	***Add 5% of cost for dewatering, if required***	metre	99288.00	99288.00	99288.00	99288.00	99288.00	99288.00	99288.00	99288.00	99288.00
c	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	94560.00	94560.00	94560.00	94560.00	94560.00	94560.00	94560.00	94560.00	94560.00
C	**Soft rock (8m dia well)**										
(i)	***Depth in soft rock strata upto 3m***	metre	22388.00	22388.00	22388.00	22388.00	22388.00	22388.00	22388.00	22388.00	22388.00
D	**Hard rock (8m dia well)**										
(i)	***Depth in hard rock strata upto 3 m***	metre	34103.00	34391.00	34607.00	35075.00	34895.00	35039.00	35399.00	34427.00	34787.00
12.15	**Sinking of 9 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.										
A	**Sandy soil**										
(i)	***Depth below bed level upto 3.0 M***	metre	7937.00	7937.00	7937.00	7937.00	7937.00	7937.00	7937.00	7937.00	7937.00
(ii)	***Beyond 3m upto 10m depth***	metre	10252.00	10252.00	10252.00	10252.00	10252.00	10252.00	10252.00	10252.00	10252.00
(iii)	***Beyond 10m upto 20m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	13539.00	13539.00	13539.00	13539.00	13539.00	13539.00	13539.00	13539.00	13539.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	25395.00	25395.00	25395.00	25395.00	25395.00	25395.00	25395.00	25395.00	25395.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour .***	metre	30474.00	30474.00	30474.00	30474.00	30474.00	30474.00	30474.00	30474.00	30474.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	60338.00	60338.00	60338.00	60338.00	60338.00	60338.00	60338.00	60338.00	60338.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.***	metre	72406.00	72406.00	72406.00	72406.00	72406.00	72406.00	72406.00	72406.00	72406.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
B	**Clayey soil (9m dia. Well)**										
(i)	***Depth below bed level upto 3.0 M***	metre	10737.00	10737.00	10737.00	10737.00	10737.00	10737.00	10737.00	10737.00	10737.00
(ii)	***Beyond 3m upto 10m depth***	metre	14384.00	14384.00	14384.00	14384.00	14384.00	14384.00	14384.00	14384.00	14384.00
(iii)	***Beyond 10 m upto 20 m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	18997.00	18997.00	18997.00	18997.00	18997.00	18997.00	18997.00	18997.00	18997.00
b	***Add for dewatering @ 5% of cost, if required.***	metre	19947.00	19947.00	19947.00	19947.00	19947.00	19947.00	19947.00	19947.00	19947.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	35634.00	35634.00	35634.00	35634.00	35634.00	35634.00	35634.00	35634.00	35634.00
b	***Add 5% of cost for dewatering on the cost, if required***	metre	46769.00	46769.00	46769.00	46769.00	46769.00	46769.00	46769.00	46769.00	46769.00
c	***Add 25% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	44542.00	44542.00	44542.00	44542.00	44542.00	44542.00	44542.00	44542.00	44542.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	84660.00	84660.00	84660.00	84660.00	84660.00	84660.00	84660.00	84660.00	84660.00
b	***Add 5% of cost for dewatering, if required***	metre	106671.00	106671.00	106671.00	106671.00	106671.00	106671.00	106671.00	106671.00	106671.00
c	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	101592.00	101592.00	101592.00	101592.00	101592.00	101592.00	101592.00	101592.00	101592.00
C	**Soft rock (9m dia well)**										
(i)	***Depth upto 3m***	metre	27196.00	27196.00	27196.00	27196.00	27196.00	27196.00	27196.00	27196.00	27196.00
D	**Hard rock (9m dia well)**										
(i)	***Depth of hard rock strata upto 3 m***	metre	39103.00	39463.00	39733.00	40318.00	40093.00	40273.00	40724.00	39508.00	39958.00
12.16	**Sinking of 10 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.										
A	**Sandy soil**										
(i)	***Depth below bed level upto 3.0 M***	metre	9090.00	9090.00	9090.00	9090.00	9090.00	9090.00	9090.00	9090.00	9090.00
(ii)	***Beyond 3m upto 10m depth***	metre	10956.00	10956.00	10956.00	10956.00	10956.00	10956.00	10956.00	10956.00	10956.00
(iii)	***Beyond 10m upto 20m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	14468.00	14468.00	14468.00	14468.00	14468.00	14468.00	14468.00	14468.00	14468.00

Code No	Descriptions	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(iv)	Beyond 20m upto 30 m										
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	27139.00	27139.00	27139.00	27139.00	27139.00	27139.00	27139.00	27139.00	27139.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	32567.00	32567.00	32567.00	32567.00	32567.00	32567.00	32567.00	32567.00	32567.00
(v)	Beyond 30m upto 40 m										
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	64478.00	64478.00	64478.00	64478.00	64478.00	64478.00	64478.00	64478.00	64478.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	77374.00	77374.00	77374.00	77374.00	77374.00	77374.00	77374.00	77374.00	77374.00
B	Clayey soil (10m dia. Well)										
(i)	Depth below bed level upto 3.0 M	metre	12612.00	12612.00	12612.00	12612.00	12612.00	12612.00	12612.00	12612.00	12612.00
(ii)	Beyond 3m upto 10m depth	metre	14938.00	14938.00	14938.00	14938.00	14938.00	14938.00	14938.00	14938.00	14938.00
(iii)	Beyond 10 m upto 20 m										
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	19728.00	19728.00	19728.00	19728.00	19728.00	19728.00	19728.00	19728.00	19728.00
b	Add for dewatering @ 5% of cost, if required.	metre	20715.00	20715.00	20715.00	20715.00	20715.00	20715.00	20715.00	20715.00	20715.00
(iv)	Beyond 20m upto 30 m										
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	37006.00	37006.00	37006.00	37006.00	37006.00	37006.00	37006.00	37006.00	37006.00
'b	Add 5% of cost for dewatering on the cost, if required	metre	48570.00	48570.00	48570.00	48570.00	48570.00	48570.00	48570.00	48570.00	48570.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	46257.00	46257.00	46257.00	46257.00	46257.00	46257.00	46257.00	46257.00	46257.00
(v)	Beyond 30m upto 40 m										
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the	metre	87921.00	87921.00	87921.00	87921.00	87921.00	87921.00	87921.00	87921.00	87921.00
b	Add 5% of cost for dewatering, if required	metre	110780.00	110780.00	110780.00	110780.00	110780.00	110780.00	110780.00	110780.00	110780.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	105505.00	105505.00	105505.00	105505.00	105505.00	105505.00	105505.00	105505.00	105505.00
C	Soft rock (10m dia well)										
(i)	Depth of soft rock strata upto 3m	metre	27620.00	27620.00	27620.00	27620.00	27620.00	27620.00	27620.00	27620.00	27620.00
D	Hard rock (10m dia well)										
(i)	Depth of hard rock strata upto 3 m	metre	41306.00	41702.00	41999.00	42643.00	42395.00	42593.00	43088.00	41752.00	42247.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
12.17	**Sinking of 11 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.										
A	**Sandy soil**										
(i)	***Depth from bed level upto 3.0 M***	metre	19766.00	19766.00	19766.00	19766.00	19766.00	19766.00	19766.00	19766.00	19766.00
(ii)	***Beyond 3m upto 10m depth***	metre	19018.00	19018.00	19018.00	19018.00	19018.00	19018.00	19018.00	19018.00	19018.00
(iii)	***Beyond 10m upto 20m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	25116.00	25116.00	25116.00	25116.00	25116.00	25116.00	25116.00	25116.00	25116.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	47112.00	47112.00	47112.00	47112.00	47112.00	47112.00	47112.00	47112.00	47112.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour .***	metre	56534.00	56534.00	56534.00	56534.00	56534.00	56534.00	56534.00	56534.00	56534.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	111932.00	111932.00	111932.00	111932.00	111932.00	111932.00	111932.00	111932.00	111932.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.***	metre	134319.00	134319.00	134319.00	134319.00	134319.00	134319.00	134319.00	134319.00	134319.00
B	**Clayey soil (11 m dia. Well)**										
(i)	***Depth from bed level upto 3.0 M***	metre	20958.00	20958.00	20958.00	20958.00	20958.00	20958.00	20958.00	20958.00	20958.00
(ii)	***Beyond 3m upto 10m depth***	metre	31482.00	31482.00	31482.00	31482.00	31482.00	31482.00	31482.00	31482.00	31482.00
(iii)	***Beyond 10 m upto 20 m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	41577.00	41577.00	41577.00	41577.00	41577.00	41577.00	41577.00	41577.00	41577.00
b	***Add for dewatering @ 5% of cost, if required.***	metre	43656.00	43656.00	43656.00	43656.00	43656.00	43656.00	43656.00	43656.00	43656.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	77987.00	77987.00	77987.00	77987.00	77987.00	77987.00	77987.00	77987.00	77987.00
b	***Add 5% of cost for dewatering on the cost, if required***	metre	102358.00	102358.00	102358.00	102358.00	102358.00	102358.00	102358.00	102358.00	102358.00
c	***Add 25% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	97484.00	97484.00	97484.00	97484.00	97484.00	97484.00	97484.00	97484.00	97484.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	185288.00	185288.00	185288.00	185288.00	185288.00	185288.00	185288.00	185288.00	185288.00
b	***Add 5% of cost for dewatering, if required***	metre	233462.00	233462.00	233462.00	233462.00	233462.00	233462.00	233462.00	233462.00	233462.00
c	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	222345.00	222345.00	222345.00	222345.00	222345.00	222345.00	222345.00	222345.00	222345.00

Code No	Descriptions	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
C	**Soft rock (11m dia well)**										
(i)	***Depth of soft rock strata upto 3m***	metre	61475.00	61475.00	61475.00	61475.00	61475.00	61475.00	61475.00	61475.00	61475.00
D	**Hard rock (11m dia well)**										
(i)	***Depth of hard rock upto 3 m***	metre	90175.00	91039.00	91687.00	93092.00	92552.00	92984.00	94064.00	91147.00	92228.00
12.18	**Sinking of 12 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.										
A	**Sandy soil**										
(i)	***I) Depth below bed level upto 3.0 M***	metre	42740.00	42740.00	42740.00	42740.00	42740.00	42740.00	42740.00	42740.00	42740.00
(ii)	***Beyond 3m upto 10m depth***	metre	50329.00	50329.00	50329.00	50329.00	50329.00	50329.00	50329.00	50329.00	50329.00
(iii)	***Beyond 10m upto 20m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	66468.00	66468.00	66468.00	66468.00	66468.00	66468.00	66468.00	66468.00	66468.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	124676.00	124676.00	124676.00	124676.00	124676.00	124676.00	124676.00	124676.00	124676.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour .***	metre	149611.00	149611.00	149611.00	149611.00	149611.00	149611.00	149611.00	149611.00	149611.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	296212.00	296212.00	296212.00	296212.00	296212.00	296212.00	296212.00	296212.00	296212.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.***	metre	355455.00	355455.00	355455.00	355455.00	355455.00	355455.00	355455.00	355455.00	355455.00
B	**Clayey soil (12 m dia. Well)**										
(i)	***Depth below bed level upto 3.0 M***	metre	50248.00	50248.00	50248.00	50248.00	50248.00	50248.00	50248.00	50248.00	50248.00
(ii)	***Beyond 3m upto 10m depth***	metre	74105.00	74105.00	74105.00	74105.00	74105.00	74105.00	74105.00	74105.00	74105.00
(iii)	***Beyond 10 m upto 20 m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	97869.00	97869.00	97869.00	97869.00	97869.00	97869.00	97869.00	97869.00	97869.00
b	***Add for dewatering @ 5% of cost, if required.***	metre	102762.00	102762.00	102762.00	102762.00	102762.00	102762.00	102762.00	102762.00	102762.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	183576.00	183576.00	183576.00	183576.00	183576.00	183576.00	183576.00	183576.00	183576.00
b	***Add 5% of cost for dewatering on the cost, if required***	metre	240943.00	240943.00	240943.00	240943.00	240943.00	240943.00	240943.00	240943.00	240943.00
c	***Add 25% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	229470.00	229470.00	229470.00	229470.00	229470.00	229470.00	229470.00	229470.00	229470.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	436149.00	436149.00	436149.00	436149.00	436149.00	436149.00	436149.00	436149.00	436149.00
b	***Add 5% of cost for dewatering, if required***	metre	549548.00	549548.00	549548.00	549548.00	549548.00	549548.00	549548.00	549548.00	549548.00
c	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	523379.00	523379.00	523379.00	523379.00	523379.00	523379.00	523379.00	523379.00	523379.00
C	**Soft rock (12m dia well)**										
(i)	***Depth of soft rock strata upto 3m***	metre	140104.00	140104.00	140104.00	140104.00	140104.00	140104.00	140104.00	140104.00	140104.00
D	**Hard rock (12m dia well)**										
(i)	***Depth of hard rock strata upto 3 m***	metre	192695.00	194711.00	196223.00	199500.00	198240.00	199248.00	201768.00	194963.00	197484.00
12.19	**Sinking of Twin D Type well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.										
A	**Sandy soil**										
(i)	***Depth from bed level upto 3.0 M***	metre	9526.00	9526.00	9526.00	9526.00	9526.00	9526.00	9526.00	9526.00	9526.00
(ii)	***Beyond 3m upto 10m depth***	metre	10400.00	10400.00	10400.00	10400.00	10400.00	10400.00	10400.00	10400.00	10400.00
(iii)	***Beyond 10m upto 20m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	13735.00	13735.00	13735.00	13735.00	13735.00	13735.00	13735.00	13735.00	13735.00
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	25764.00	25764.00	25764.00	25764.00	25764.00	25764.00	25764.00	25764.00	25764.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour .***	metre	30917.00	30917.00	30917.00	30917.00	30917.00	30917.00	30917.00	30917.00	30917.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	61212.00	61212.00	61212.00	61212.00	61212.00	61212.00	61212.00	61212.00	61212.00
b	***Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.***	metre	73455.00	73455.00	73455.00	73455.00	73455.00	73455.00	73455.00	73455.00	73455.00
B	**Clayey soil (Twin D Type Well)**										
(i)	***Depth below bed level upto 3.0 M***	metre	11660.00	11660.00	11660.00	11660.00	11660.00	11660.00	11660.00	11660.00	11660.00
(ii)	***Beyond 3m upto 10m depth***	metre	16462.00	16462.00	16462.00	16462.00	16462.00	16462.00	16462.00	16462.00	16462.00
(iii)	***Beyond 10 m upto 20 m***										
a	***Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	21740.00	21740.00	21740.00	21740.00	21740.00	21740.00	21740.00	21740.00	21740.00
b	***Add for dewatering @ 5% of cost, if required.***	metre	22827.00	22827.00	22827.00	22827.00	22827.00	22827.00	22827.00	22827.00	22827.00

Code No	Descriptions	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(iv)	***Beyond 20m upto 30 m***										
a	***Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	40778.00	40778.00	40778.00	40778.00	40778.00	40778.00	40778.00	40778.00	40778.00
b	***Add 5% of cost for dewatering on the cost, if required***	metre	53521.00	53521.00	53521.00	53521.00	53521.00	53521.00	53521.00	53521.00	53521.00
c	***Add 25% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	50973.00	50973.00	50973.00	50973.00	50973.00	50973.00	50973.00	50973.00	50973.00
(v)	***Beyond 30m upto 40 m***										
a	***Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter***	metre	96884.00	96884.00	96884.00	96884.00	96884.00	96884.00	96884.00	96884.00	96884.00
b	***Add 5% of cost for dewatering, if required***	metre	122073.00	122073.00	122073.00	122073.00	122073.00	122073.00	122073.00	122073.00	122073.00
c	***Add 20% of cost for Kentledge including supports, loading arrangement and Labour).***	metre	116260.00	116260.00	116260.00	116260.00	116260.00	116260.00	116260.00	116260.00	116260.00
C	**Soft rock (Twin D Type well)**										
(i)	***Depth of soft rock strata upto 3m***	metre	29519.00	29519.00	29519.00	29519.00	29519.00	29519.00	29519.00	29519.00	29519.00
D	**Hard rock (Twin D Type well)**										
(i)	***Depth of hard rock strata upto 3 m***	metre	42330.00	42691.00	42961.00	43546.00	43321.00	43501.00	43951.00	42736.00	43186.00
12.20	Pneumatic sinking of wells with equipment of approved design, drawing and specifications worked by competent and trained personnel and comprising of compression and decompression chambers, reducers, two air locks separately for men and plant & materials, arrangement for supply of fresh air to working chambers, check valves, exhaust valves, shafts made from steel plates of riveted construction not less than 6 mm thick to withstand an air pressure of 0.50 MPa, controlled blasting of hard rock where required, staircases and 1 m wide landing plate forms with railing, arrangement for compression and decompression, electric lighting of 50 V maximum, proper rooms for rest and medical examinations and compliance with safety precautions as per IS:4138, all as per clause1207.6 of MoRTH Specifications.										
12.21	Sand filling in wells complete as per drawing and technical specifications	cum	2441.00	4359.00	7064.00	12963.00	9795.00	12369.00	16361.00	4359.00	7116.00
12.22	Providing steel liner 10 mm thick for curbs and 6mm thick for steining of wells including fabricating and setting out as per detailed drawing	tonne	106644.00	108178.00	110257.00	113365.00	112356.00	114334.00	117402.00	108178.00	110297.00
12.23	Bored cast-in-situ M35 grade R.C.C. pile excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. (Pile diameter-750 mm)	metre	13493.00	14382.00	15357.00	14509.00	14169.00	17282.00	18313.00	14435.00	15635.00
12.24	Bored cast-in-situ M35 grade R.C.C. pile excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. (Pile diameter-1000 mm)	metre	23036.00	24607.00	26332.00	24805.00	24208.00	29738.00	31557.00	24699.00	26819.00
12.25	Bored cast-in-situ M35 grade R.C.C. pile excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. (Pile diameter-1200 mm)	metre	29739.00	31847.00	34216.00	34069.00	36831.00	38890.00	41318.00	31962.00	34822.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
12.26	Driven cast-in-place vertical M35 grade R.C.C. pile excluding reinforcement complete as per drawing and & Technical Specification (Pile diameter - 750 mm)	metre	6192.00	6743.00	7464.00	6963.00	8213.00	8881.00	9488.00	6754.00	7530.00
12.27	Driven cast-in-place vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile diameter - 1000 mm)	metre	10657.00	11608.00	12869.00	11933.00	14172.00	15346.00	16391.00	11624.00	12969.00
12.28	Driven cast-in-place vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile diameter - 1200 mm)	metre	15413.00	16788.00	18608.00	17267.00	20490.00	22183.00	23694.00	16811.00	18755.00
12.29	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile Diameter=500 mm)	metre	3128.00	3382.00	3709.00	3504.00	4051.00	4352.00	4841.00	3388.00	3744.00
12.30	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile Diameter=750 mm)	metre	6018.00	6528.00	7219.00	6660.00	7927.00	8575.00	9601.00	6534.00	7261.00
12.31	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile Diameter=1000 mm)	metre	10453.00	11342.00	12555.00	11530.00	13795.00	14937.00	16736.00	11350.00	12617.00
12.32	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Size of pile - 300 mm x 300 mm)	metre	1884.00	2026.00	2195.00	2142.00	2377.00	2528.00	2784.00	2032.00	2227.00
12.33	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Size of pile - 500 mm x 500 mm)	metre	3751.00	4056.00	4459.00	4168.00	4875.00	5250.00	5850.00	4061.00	4492.00
12.34	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Size of pile - 750 mm x 750 mm)	metre	7562.00	8206.00	9081.00	8359.00	9977.00	10799.00	12098.00	8213.00	9130.00
12.35	Driven vertical steel piles complete as per drawing and & Technical Specification (Section of the pile - H Section steel column 400 x 250 mm (ISHB Series))	metre	6901.00	7021.00	7185.00	7429.00	7350.00	7506.00	7747.00	7021.00	7188.00
12.36	Driven vertical steel piles complete as per drawing and & Technical Specification (Section of the pile - H Section steel column 450 x 250 mm (ISHB Series))	metre	7787.00	7922.00	8107.00	8382.00	8292.00	8468.00	8739.00	7922.00	8110.00
12.37	Pile load test on single vertical pile in accordance with IS:2911(Part-IV)										
12.38	Cement concrete for reinforced concrete in pile cap complete as per drawing and Technical Specification										
A	**RCC Grade M20**										
(i)	***Using Concrete Mixer***	cum	10463.00	11514.00	12998.00	14719.00	14495.00	15907.00	18096.00	11514.00	13026.00
(ii)	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	10534.00	11511.00	12889.00	11309.00	14280.00	15591.00	17624.00	11511.00	12915.00
B	**RCC Grade M25**										
(i)	***Using concrete mixer.***	cum	11132.00	12235.00	13791.00	15621.00	15363.00	16843.00	19140.00	12235.00	13821.00
(ii)	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	11165.00	12193.00	13644.00	12173.00	15108.00	16489.00	18629.00	12193.00	13672.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
C	**RCC Grade M30**										
(i)	***Using concrete mixer.***	cum	11217.00	12326.00	13892.00	15735.00	15472.00	16962.00	19272.00	12326.00	13922.00
(ii)	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	11288.00	12323.00	13783.00	12326.00	15257.00	16646.00	18800.00	12323.00	13811.00
D	**RCC Grade M35**										
(i)	***Using concrete mixer.***	cum	11394.00	12517.00	14101.00	15974.00	15701.00	17209.00	19548.00	12517.00	14132.00
(ii)	***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	11426.00	12475.00	13954.00	12526.00	15447.00	16854.00	19037.00	12475.00	13982.00
12.39	Levelling course for Pile cap	cum	9023.00	9977.00	11324.00	12859.00	12683.00	13965.00	15952.00	9977.00	11350.00
12.40	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation complete as per drawing and technical specifications	tonne	83169.00	84675.00	86689.00	89722.00	88733.00	90639.00	93617.00	84681.00	86755.00
12.41	Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification	tonne	84535.00	86055.00	88089.00	91152.00	90153.00	92078.00	95086.00	86061.00	88156.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-13 SUB-STRUCTURE											
13.1	Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and technical specifications	cum	9646.00	12031.00	15396.00	20477.00	19101.00	21996.00	26962.00	12031.00	15462.00
13.2	Pointing with cement mortar (1:3) on brick work in substructure as per Technical specifications	sqm	112.70	119.00	127.90	141.90	140.60	145.00	159.00	119.00	128.00
13.3	Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical specifications	sqm	225.60	256.00	299.00	347.10	359.90	383.00	447.00	256.00	300.00
13.4	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications										
A	***Random Rubble Masonry***	cum	7848.00	8580.00	9613.00	11226.00	11079.00	11640.00	13165.00	8580.00	9634.00
B	***Coursed rubble masonry (first sort)***	cum	8242.00	8908.00	9847.00	11313.00	11179.00	11689.00	13075.00	8908.00	9865.00
C	***Ashlar masonry (first sort)***	cum	11508.00	12240.00	13273.00	14886.00	14739.00	15300.00	16825.00	12240.00	13293.00
13.5	Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications										
A	**PCC Grade M15**										
(p)	***Height upto 5m***	cum	9522.00	10572.00	12053.00	13743.00	13550.00	14958.00	17145.00	10572.00	12082.00
B	**PCC Grade M20**										
(p)	***Height upto 5m***	cum	10873.00	11988.00	13561.00	15385.00	15148.00	16644.00	18965.00	11988.00	13591.00
C	**PCC Grade M25**										
(p)	***Height upto 5m***										
Case I	***Using concrete Mixer***	cum	11548.00	12715.00	14361.00	16296.00	16023.00	17590.00	19477.00	12715.00	14393.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	11580.00	12667.00	14202.00	12647.00	15752.00	17212.00	20730.00	12667.00	14232.00
(q)	***Height 5m to 10m***										
Case I	***Using concrete Mixer***	cum	11968.00	13178.00	14884.00	16889.00	16606.00	18229.00	20185.00	13178.00	14917.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	12001.00	13128.00	14718.00	13107.00	16325.00	17838.00	21484.00	13128.00	14750.00
(r)	***Height above 10m***										
Case I	***Using concrete Mixer***	cum	12493.00	13756.00	15536.00	17629.00	17334.00	19029.00	21070.00	13756.00	15571.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	12527.00	13704.00	15364.00	13681.00	17041.00	18620.00	22426.00	13704.00	15397.00
D	**PCC Grade M30**										
(p)	***Height upto 5m***										
Case I	***Using concrete Mixer***	cum	11621.00	12793.00	14448.00	16395.00	16117.00	17692.00	20344.00	12793.00	14479.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	11645.00	12739.00	14280.00	12736.00	15837.00	17304.00	19818.00	12739.00	14310.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(q)	*Height 5m to 10m*										
Case I	*Using concrete Mixer*	cum	12044.00	13259.00	14973.00	16991.00	16704.00	18335.00	20864.00	13259.00	15006.00
Case II	*With Batching Plant, Transit Mixer and Concrete Pump*	cum	12069.00	13203.00	14799.00	13199.00	16413.00	17933.00	20292.00	13203.00	14831.00
(r)	*Height above 10m*										
Case I	*Using concrete Mixer*	cum	12572.00	13840.00	15630.00	17736.00	17436.00	19139.00	21779.00	13840.00	15664.00
Case II	*With Batching Plant, Transit Mixer and Concrete Pump*	cum	12598.00	13782.00	15448.00	13778.00	17132.00	18720.00	21182.00	13782.00	15481.00
E	**RCC Grade M20**										
(p)	*Height upto 5m*										
Case I	*Using concrete Mixer*	cum	11101.00	12219.00	13795.00	15628.00	15389.00	16888.00	19215.00	12219.00	13825.00
Case II	*With Batching Plant, Transit Mixer and Concrete Pump*	cum	11146.00	12184.00	13650.00	11991.00	15129.00	16523.00	18685.00	12184.00	13677.00
(q)	*Height 5m to 10m*										
Case I	*Using concrete Mixer*	cum	11505.00	12664.00	14297.00	16196.00	15948.00	17502.00	19914.00	12664.00	14328.00
Case II	*With Batching Plant, Transit Mixer and Concrete Pump*	cum	11551.00	12627.00	14146.00	12427.00	15679.00	17123.00	19365.00	12627.00	14174.00
(r)	*Height above 10m*										
Case I	*Using concrete Mixer*	cum	12009.00	13219.00	14924.00	16906.00	16648.00	18270.00	20787.00	13219.00	14957.00
Case II	*With Batching Plant, Transit Mixer and Concrete Pump*	cum	12058.00	13181.00	14767.00	12972.00	16366.00	17874.00	20214.00	13181.00	14796.00
F	**RCC Grade M25**										
(p)	*Height upto 5m*										
Case I	*Using concrete Mixer*	cum	11784.00	12955.00	14605.00	16550.00	16274.00	17845.00	20280.00	12955.00	14639.00
Case II	*With Batching Plant, Transit Mixer and Concrete Pump*	cum	12549.00	13698.00	15282.00	13827.00	16893.00	18387.00	20730.00	13706.00	15347.00
(q)	*Height 5m to 10m*										
Case I	*Using concrete Mixer*	cum	12170.00	13379.00	15083.00	17091.00	16806.00	18429.00	20944.00	13379.00	15118.00
Case II	*With Batching Plant, Transit Mixer and Concrete Pump*	cum	12960.00	14146.00	15782.00	14280.00	17445.00	18989.00	21409.00	14154.00	15849.00
(r)	*Height above 10m*										
Case I	*Using concrete Mixer*	cum	12748.00	14015.00	15800.00	17904.00	17605.00	19305.00	21940.00	14015.00	15837.00
Case II	*With Batching Plant, Transit Mixer and Concrete Pump*	cum	13576.00	14819.00	16532.00	14958.00	18275.00	19892.00	22426.00	14827.00	16603.00
G	**RCC Grade M30**										
(p)	*Height upto 5m*										
Case I	*Using concrete Mixer*	cum	11825.00	12999.00	14655.00	16604.00	16326.00	17901.00	20344.00	12999.00	14687.00
Case II	*With Batching Plant, Transit Mixer and Concrete Pump*	cum	11872.00	12967.00	14511.00	12971.00	16070.00	17539.00	19818.00	12967.00	14540.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(q)	***Height 5m to 10m***										
Case I	***Using concrete Mixer***	cum	12159.00	13366.00	15068.00	17072.00	16787.00	18405.00	20918.00	13366.00	15101.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	12206.00	13333.00	14920.00	13336.00	16522.00	18033.00	20376.00	13333.00	14950.00
(r)	***Height above 10m***										
Case I	***Using concrete Mixer***	cum	12632.00	13886.00	15654.00	17736.00	17440.00	19121.00	21731.00	13886.00	15688.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	12681.00	13851.00	15501.00	13855.00	17165.00	18734.00	21169.00	13851.00	15531.00
H	***RCC Grade M35***										
(p)	***Height upto 5m***										
Case I	***Using concrete Mixer***	cum	12012.00	13200.00	14877.00	16856.00	16569.00	18164.00	20636.00	13200.00	14908.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	12813.00	13982.00	15591.00	14180.00	17232.00	18751.00	21135.00	13990.00	15660.00
(q)	***Height 5m to 10m***										
Case I	***Using concrete Mixer***	cum	12274.00	13488.00	15201.00	17224.00	16930.00	18560.00	21086.00	13488.00	15234.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	13092.00	14287.00	15931.00	14489.00	17608.00	19160.00	21596.00	14295.00	16001.00
(r)	***Height above 10m***										
Case I	***Using concrete Mixer***	cum	12667.00	13920.00	15688.00	17775.00	17473.00	19155.00	21762.00	13920.00	15722.00
Case II	***With Batching Plant, Transit Mixer and Concrete Pump***	cum	13512.00	14744.00	16442.00	14953.00	18172.00	19774.00	22288.00	14753.00	16514.00
13.6	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications	tonne	83483.00	84990.00	87003.00	90037.00	89048.00	90954.00	93932.00	84995.00	87070.00
13.7	Supplying, fitting and placing Mild steel reinforcement complete in sub-structure as per drawing and technical specification	tonne	83038.00	84558.00	86592.00	89655.00	88656.00	90581.00	93589.00	84564.00	86659.00
13.8	Providing weep holes in Brick masonry/Plain/Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical specifications	R.metre	570.00	617.00	654.00	730.00	703.00	727.00	788.00	622.00	680.00
13.9	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification										
A	***Granular material***	cum	3091.00	3091.00	3091.00	3091.00	3091.00	3091.00	3091.00	3091.00	3091.00
B	***Sandy material***	cum	2817.00	4734.00	7439.00	11484.00	10170.00	12744.00	16736.00	4734.00	7492.00
13.10	Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and technical specification.	cum	3787.00	3787.00	3787.00	3787.00	3787.00	3787.00	3787.00	3787.00	3787.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
13.11	Supplying, fitting and fixing in position true to line and level cast steel rocker bearing conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	tonne capacity	528.00	570.00	601.00	669.00	643.00	664.00	716.00	575.00	627.00
13.12	Supplying, fitting and fixing in position true to line and level forged steel roller bearing conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	tonne capacity	494.00	533.00	563.00	626.00	602.00	622.00	670.00	538.00	587.00
13.13	Supplying, fitting and fixing in position true to line and level sliding plate bearing with PTFE surface sliding on stainless steel complete including all accessories as per drawing and Technical Specifications and BS: 5400, section 9.1 & 9.2 (for PTFE) and clause 2004 of MoRTH Specifications.	tonne capacity	2774.00	2994.00	3160.00	3518.00	3380.00	3491.00	3766.00	3022.00	3298.00
13.14	Supplying, fitting and fixing in position true to line and level elastomeric bearing conforming to IRC: 83 (Part-II) section IX and clause 2005 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	cubic centimetre	6.70	7.20	7.60	8.40	8.10	8.40	9.00	7.20	7.90
13.15	Supplying, fitting and fixing in position true to line and level sliding plate bearing with stainless steel plate sliding on stainless steel plate with mild steel matrix complete including all accessories as per drawing and Technical Specifications.	tonne capacity	2769.00	2990.00	3155.00	3514.00	3376.00	3486.00	3762.00	3018.00	3293.00
13.16	Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, completre assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete asper drawing and approved technical specifications.	tonne capacity	496.00	535.00	564.00	628.00	603.00	623.00	672.00	540.00	589.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-14 SUPER-STRUCTURE											
14.1	Furnishing and Placing Reinforced/Prestressed cement concrete in super-structure as per drawing and Technical Specification										
A	**RCC Grade M20**										
Case I	***Using Concrete Mixer***										
(i)	***For solid slab super-structure, 20-30% of (a+b+c)***										
(p)	***Height upto 5m***	cum	12030.00	13243.00	14954.00	16940.00	16682.00	18311.00	20837.00	13243.00	14987.00
(q)	***Height 5m to 10m***	cum	12531.00	13794.00	15577.00	17646.00	17378.00	19074.00	21705.00	13794.00	15612.00
(r)	***Height above 10m***	cum	13032.00	14346.00	16200.00	18351.00	18073.00	19837.00	22573.00	14346.00	16236.00
(ii)	***For T-beam & slab, 25-35% of (a+b+c)***										
(p)	***Height upto 5m***	cum	12531.00	13794.00	15577.00	17646.00	17378.00	19074.00	21705.00	13794.00	15612.00
(q)	***Height 5m to 10m***	cum	13032.00	14346.00	16200.00	18351.00	18073.00	19837.00	22573.00	14346.00	16236.00
(r)	***Height above 10m***	cum	13533.00	14898.00	16823.00	19057.00	18768.00	20600.00	23441.00	14898.00	16861.00
Case II	***Using Batching Plant, Transit Mixer and Concrete Pump***										
(i)	***For solid slab super-structure, 20-30% of (a+b+c)***										
(p)	***Height upto 5m***	cum	12076.00	13203.00	14792.00	12969.00	16397.00	17909.00	20255.00	13203.00	14823.00
(q)	***Height 5m to 10m***	cum	12579.00	13753.00	15408.00	13510.00	17080.00	18655.00	21099.00	13753.00	15440.00
(r)	***Height above 10m***	cum	13082.00	14303.00	16025.00	14050.00	17763.00	19401.00	21943.00	14303.00	16058.00
(ii)	***For T-beam & slab, 25-35% of (a+b+c)***										
(p)	***Height upto 5m***	cum	12579.00	13753.00	15408.00	13510.00	17080.00	18655.00	21099.00	13753.00	15440.00
(q)	***Height 5m to 10m***	cum	13082.00	14303.00	16025.00	14050.00	17763.00	19401.00	21943.00	14303.00	16058.00
(r)	***Height above 10m***	cum	13586.00	14853.00	16641.00	14590.00	18447.00	20148.00	22786.00	14853.00	16676.00
B	**RCC Grade M25**										
Case I	***Using Concrete Mixer***										
(i)	***For solid slab super-structure, 20-30% of (a+b+c)***										
(p)	***Height upto 5m***	cum	12802.00	14074.00	15870.00	17981.00	17683.00	19391.00	22041.00	14074.00	15905.00
(q)	***Height 5m to 10m***	cum	13335.00	14661.00	16531.00	18730.00	18420.00	20199.00	22959.00	14661.00	16567.00
(r)	***Height above 10m***	cum	13869.00	15247.00	17192.00	19480.00	19157.00	21007.00	23878.00	15247.00	17230.00
(ii)	***For T-beam & slab, 25-35% of (a+b+c)***										
(p)	***Height upto 5m***	cum	13335.00	14661.00	16531.00	18730.00	18420.00	20199.00	22959.00	14661.00	16567.00
(q)	***Height 5m to 10m***	cum	13869.00	15247.00	17192.00	19480.00	19157.00	21007.00	23878.00	15247.00	17230.00
(r)	***Height above 10m***	cum	14402.00	15834.00	17854.00	20229.00	19893.00	21815.00	24796.00	15834.00	17893.00

Code No	Descriptions	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
Case II	*Using Batching Plant, Transit Mixer and Concrete Pump*										
(i)	*For solid slab super-structure, 20-30% of (a+b+c)*										
(p)	*Height upto 5m*	cum	12862.00	14052.00	15730.00	14024.00	17425.00	19021.00	21498.00	14052.00	15762.00
(q)	*Height 5m to 10m*	cum	13398.00	14637.00	16385.00	14609.00	18151.00	19814.00	22394.00	14637.00	16419.00
(r)	*Height above 10m*	cum	13934.00	15223.00	17041.00	15193.00	18877.00	20606.00	23290.00	15223.00	17076.00
(ii)	*For T-beam & slab, 25-35% of (a+b+c)*										
(p)	*Height upto 5m*	cum	13398.00	14637.00	16385.00	14609.00	18151.00	19814.00	22394.00	14637.00	16419.00
(q)	*Height 5m to 10m*	cum	13934.00	15223.00	17041.00	15193.00	18877.00	20606.00	23290.00	15223.00	17076.00
(r)	*Height above 10m*	cum	14470.00	15808.00	17696.00	15778.00	19603.00	21399.00	24185.00	15808.00	17733.00
C	**RCC Grade M 30**										
Case I	*Using Concrete Mixer*										
(i)	*For solid slab super-structure, 20-30% of (a+b+c)*										
(p)	*Height upto 5m*	cum	12960.00	14240.00	16046.00	18173.00	17870.00	19588.00	22254.00	14240.00	16081.00
(q)	*Height 5m to 10m*	cum	13500.00	14833.00	16715.00	18931.00	18614.00	20405.00	23181.00	14833.00	16751.00
(r)	*Height above 10m*	cum	14040.00	15427.00	17383.00	19688.00	19359.00	21221.00	24108.00	15427.00	17421.00
(ii)	*For T-beam & slab, 25-35% of (a+b+c)*										
(p)	*Height upto 5m*	cum	13500.00	14833.00	16715.00	18931.00	18614.00	20405.00	23181.00	14833.00	16751.00
(q)	*Height 5m to 10m*	cum	14040.00	15427.00	17383.00	19688.00	19359.00	21221.00	24108.00	15427.00	17421.00
(r)	*Height above 10m*	cum	14580.00	16020.00	18052.00	20445.00	20104.00	22037.00	25036.00	16020.00	18091.00
Case II	*Using Batching Plant, Transit Mixer and Concrete Pump.*										
(i)	*For solid slab super-structure, 20-30% of (a+b+c)*										
(p)	*Height upto 5m*	cum	12975.00	14178.00	15874.00	14165.00	17587.00	19201.00	21705.00	14178.00	15907.00
(q)	*Height 5m to 10m*	cum	13516.00	14769.00	16536.00	14755.00	18320.00	20001.00	22609.00	14769.00	16570.00
(r)	*Height above 10m*	cum	14056.00	15359.00	17197.00	15345.00	19053.00	20801.00	23514.00	15359.00	17233.00
(ii)	*For T-beam & slab, 25-35% of (a+b+c)*										
(p)	*Height upto 5m*	cum	13516.00	14769.00	16536.00	14755.00	18320.00	20001.00	22609.00	14769.00	16570.00
(q)	*Height 5m to 10m*	cum	14056.00	15359.00	17197.00	15345.00	19053.00	20801.00	23514.00	15359.00	17233.00
(r)	*Height above 10m*	cum	14597.00	15950.00	17858.00	15935.00	19786.00	21601.00	24418.00	15950.00	17895.00

Code No	Descriptions	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
D	RCC/PSC Grade M35										
Case 1	Using concrete mixer.										
(i)	For solid slab super-structure, 18-28% of (a+b+c)										
(p)	Height upto 5m	cum	12945.00	14219.00	16017.00	18141.00	17832.00	19543.00	22196.00	14219.00	16052.00
(q)	Height 5m to 10m	cum	13493.00	14821.00	16696.00	18910.00	18588.00	20371.00	23137.00	14821.00	16732.00
(r)	Height above 10m	cum	14042.00	15424.00	17374.00	19679.00	19343.00	21199.00	24077.00	15424.00	17412.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)										
(p)	Height upto 5m	cum	13493.00	14821.00	16696.00	18910.00	18588.00	20371.00	23137.00	14821.00	16732.00
(q)	Height 5m to 10m	cum	14042.00	15424.00	17374.00	19679.00	19343.00	21199.00	24077.00	15424.00	17412.00
(r)	Height above 10m	cum	14590.00	16026.00	18053.00	20447.00	20099.00	22027.00	25018.00	16026.00	18092.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.										
(p)	Height upto 5m	cum	15139.00	16629.00	18732.00	21216.00	20855.00	22855.00	25958.00	16629.00	18772.00
(q)	Height 5m to 10m	cum	16236.00	17834.00	20089.00	22753.00	22366.00	24511.00	27839.00	17834.00	20133.00
(r)	Height above 10m	cum	17333.00	19039.00	21446.00	24291.00	23877.00	26168.00	29720.00	19039.00	21493.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump										
(i)	For solid slab super-structure, 18-28% of (a+b+c)										
(p)	Height upto 5m	cum	12943.00	14132.00	15811.00	14190.00	17505.00	19102.00	21578.00	14132.00	15843.00
(q)	Height 5m to 10m	cum	13491.00	14731.00	16480.00	14792.00	18247.00	19911.00	22493.00	14731.00	16514.00
(r)	Height above 10m	cum	14040.00	15330.00	17150.00	15393.00	18989.00	20721.00	23407.00	15330.00	17186.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)										
(p)	Height upto 5m	cum	13491.00	14731.00	16480.00	14792.00	18247.00	19911.00	22493.00	14731.00	16514.00
(q)	Height 5m to 10m	cum	14040.00	15330.00	17150.00	15393.00	18989.00	20721.00	23407.00	15330.00	17186.00
(r)	Height above 10m	cum	14588.00	15929.00	17820.00	15994.00	19730.00	21530.00	24321.00	15929.00	17857.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.										
(p)	Height upto 5m	cum	15136.00	16528.00	18490.00	16596.00	20472.00	22339.00	25236.00	16528.00	18528.00
(q)	Height 5m to 10m	cum	16233.00	17725.00	19830.00	17798.00	21956.00	23958.00	27065.00	17725.00	19871.00
(r)	Height above 10m	cum	17330.00	18923.00	21170.00	19001.00	23439.00	25577.00	28893.00	18923.00	21213.00
E	PSC Grade M-40										
Case 1	Using concrete mixer.										
(i)	For solid slab super-structure, 20-30% of (a+b+c)										
(p)	Height upto 5m	cum	14205.00	15576.00	17467.00	19753.00	19391.00	21176.00	23975.00	15585.00	17544.00
(q)	Height 5m to 10m	cum	14797.00	16225.00	18194.00	20576.00	20199.00	22058.00	24974.00	16234.00	18275.00
(r)	Height above 10m	cum	15389.00	16874.00	18922.00	21399.00	21007.00	22940.00	25973.00	16883.00	19006.00

Code No	Descriptions	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
(ii)	***For T-beam & slab, 25-35% of (a+b+c)***										
(p)	***Height upto 5m***	cum	14797.00	16225.00	18194.00	20576.00	20199.00	22058.00	24974.00	16234.00	18275.00
(q)	***Height 5m to 10m***	cum	15389.00	16874.00	18922.00	21399.00	21007.00	22940.00	25973.00	16883.00	19006.00
(r)	***Height above 10m***	cum	15981.00	17523.00	19650.00	22222.00	21815.00	23823.00	26972.00	17533.00	19737.00
Case II	***Using Batching Plant, Transit Mixer and Concrete Pump***										
(i)	***For solid slab super-structure, 18-28% of (a+b+c)***										
(p)	***Height upto 5m***	cum	13883.00	15147.00	16886.00	15390.00	18658.00	20298.00	22874.00	15155.00	16960.00
(q)	***Height 5m to 10m***	cum	14472.00	15789.00	17601.00	16042.00	19449.00	21159.00	23844.00	15797.00	17678.00
(r)	***Height above 10m***	cum	15060.00	16431.00	18317.00	16694.00	20239.00	22019.00	24813.00	16440.00	18397.00
(ii)	***For T-beam & slab, 23-33% of (a+b+c)***										
(p)	***Height upto 5m***	cum	14472.00	15789.00	17601.00	16042.00	19449.00	21159.00	23844.00	15797.00	17678.00
(q)	***Height 5m to 10m***	cum	15060.00	16431.00	18317.00	16694.00	20239.00	22019.00	24813.00	16440.00	18397.00
(r)	***Height above 10m***	cum	15648.00	17073.00	19032.00	17346.00	21030.00	22879.00	25782.00	17082.00	19116.00
(iii)	***For box girder and balanced cantilever, 38-58% of cost of concrete.***										
(p)	***Height upto 5m***	cum	16236.00	17714.00	19748.00	17999.00	21820.00	23739.00	26751.00	17724.00	19834.00
(q)	***Height 5m to 10m***	cum	17413.00	18998.00	21179.00	19303.00	23402.00	25459.00	28690.00	19008.00	21272.00
(r)	***Height above 10m***	cum	18590.00	20282.00	22610.00	20607.00	24983.00	27179.00	30628.00	20293.00	22709.00
F	**PSC Grade M-45**										
(i)	***For solid slab/voided slab super-structure, 16-26% of cost of concrete (a+b+c)***										
(p)	***Height upto 5m***	cum	14164.00	15447.00	17209.00	15820.00	19006.00	20668.00	23279.00	15455.00	17286.00
(q)	***Height 5m to 10m***	cum	14775.00	16113.00	17951.00	16502.00	19825.00	21559.00	24282.00	16122.00	18031.00
(r)	***Height above 10m***	cum	15386.00	16778.00	18693.00	17184.00	20644.00	22449.00	25286.00	16788.00	18776.00
(ii)	***For I-beam & slab including launching of precast girders by launching truss upto 40 m span, 21-31% of cost of concrete.***										
(p)	***Height upto 5m***	cum	14775.00	16113.00	17951.00	16502.00	19825.00	21559.00	24282.00	16122.00	18031.00
(q)	***Height 5m to 10m***	cum	15386.00	16778.00	18693.00	17184.00	20644.00	22449.00	25286.00	16788.00	18776.00
(r)	***Height above 10m***	cum	15996.00	17444.00	19434.00	17866.00	21464.00	23340.00	26289.00	17454.00	19521.00
(iii)	***For cast-in-situ box girder, segmental construction and balanced cantilever, 36-56% of cost of concrete.***										
(p)	***Height upto 5m***	cum	16607.00	18110.00	20176.00	18548.00	22283.00	24231.00	27292.00	18120.00	20266.00
(q)	***Height 5m to 10m***	cum	17828.00	19442.00	21660.00	19912.00	23921.00	26013.00	29299.00	19453.00	21756.00
(r)	***Height above 10m***	cum	19049.00	20773.00	23143.00	21276.00	25560.00	27795.00	31306.00	20785.00	23247.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
G	**PSC Grade M-50**										
(i)	***For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55% of cost of concrete***										
(p)	***Height upto 5m***	cum	16914.00	18439.00	20534.00	18986.00	22671.00	24646.00	27750.00	18450.00	20627.00
(q)	***Height 5m to 10m***	cum	18167.00	19805.00	22055.00	20393.00	24350.00	26472.00	29806.00	19817.00	22155.00
(r)	***Height above 10m***	cum	19420.00	21171.00	23576.00	21799.00	26030.00	28297.00	31862.00	21183.00	23683.00
H	**PSC Grade M- 55**										
(i)	***For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55% of cost of concrete***										
(p)	***Height upto 5m***	cum	17586.00	19164.00	21328.00	19886.00	23536.00	25575.00	28782.00	19176.00	21426.00
(q)	***Height 5m to 10m***	cum	18889.00	20583.00	22908.00	21359.00	25279.00	27469.00	30914.00	20596.00	23014.00
(r)	***Height above 10m***	cum	20192.00	22003.00	24488.00	22832.00	27023.00	29364.00	33046.00	22016.00	24601.00
14.2	a) Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications	tonne	85709.00	87230.00	89255.00	92314.00	91315.00	93229.00	96226.00	87238.00	89332.00
14.3	High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications	tonne	138918.00	147744.00	154500.00	168943.00	163414.00	168000.00	179204.00	148822.00	159894.00
14.4	Providing and laying Cement concrete wearing coat M-30 grade including reinforcement complete as per drawing and Technical Specifications	cum	17350.00	18466.00	20031.00	18837.00	21614.00	23102.00	25413.00	18466.00	20064.00
14.5	Mastic Asphalt (Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.)	sqm	523.00	532.00	540.00	556.00	550.00	557.00	570.00	532.00	544.00
14.6	Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolurence of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	metre	2638.00	2761.00	2932.00	2856.00	3105.00	3268.00	3521.00	2761.00	2936.00
14.7	Construction of RCC railing of M30 Grade in-situ with 20 mm nominal size aggregate, true to line and grade, tolurence of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	metre	2577.00	2700.00	2871.00	2791.00	3045.00	3208.00	3461.00	2700.00	2875.00
14.8	Providing, fitting and fixing mild steel railing complete as per drawing and Technical Specification	metre	4175.00	4251.00	4345.00	4492.00	4443.00	4529.00	4670.00	4253.00	4355.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
14.9	Drainage Spouts complete as per drawing and Technical specification	each	3811.00	4078.00	4281.00	4716.00	4550.00	4688.00	5025.00	4110.00	4444.00
14.10	PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specification	cum	8657.00	9611.00	10958.00	12493.00	12318.00	13598.00	15586.00	9611.00	10984.00
14.11	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification	cum	15294.00	16386.00	17919.00	16643.00	19467.00	20925.00	23188.00	16386.00	17949.00
14.12	Providing anti-corrosive treatment to HYSD reinforcement with Fusion Bonded Epoxy Coating (FBEC) (To be taken as per the prevailing market rates.)	tonne									
14.13	Precast - pretensioned Girders (Providing, precasting, transportation and placing in position precast pretensioned concrete girders as per drawing and technical specifications)	cum	47233.00	49773.00	52502.00	53517.00	55569.00	57892.00	62104.00	49933.00	53336.00
14.14	Providing and fixing Helical pipes in voided concrete slabs	metre	2880.00	3095.00	3256.00	3604.00	3470.00	3578.00	3846.00	3121.00	3390.00
14.15	Crash Barriers (The rate analysis for rigid crash barrier in reinforced cement concrete, semi-rigid crash barrier with metal beam and flexible crash barrier with wire ropes have been made and included in chapter-8 on Traffic and Transportation.)										
14.16	Painting on concrete surface (Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease, efflorescence and applying paint @ of 1 litre for 2 Sq.m.)	metre	236.00	252.00	263.00	288.00	278.00	286.00	305.00	254.00	273.00
14.17	Burried Joint (Providing and laying a burried expansion joint, expansion gap being 20 mm, covered with 12 mm thick, 200 mm wide galvanised wieldable structural steel plate as per IS: 2062, placed symmetrical to centre line of the joint, resting freely over the top surface of the deck concrete, welding of 8 mm dia. 100 mm long galvanised nails spaced 300 mm c/c along the centre line of the plate, all as specified in clause 2604.)	metre	1764.00	1795.00	1838.00	1901.00	1880.00	1920.00	1983.00	1795.00	1838.00
14.18	Filler joint										
(i)	***Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.***	metre	5389.00	5814.00	6133.00	6824.00	6558.00	6771.00	7303.00	5867.00	6399.00
(ii)	***Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.***	metre	558.00	602.00	634.00	705.00	678.00	700.00	754.00	607.00	661.00
(iii)	***Providing and fixing in position 20 mm thick premoulded joint filler in expansion joint for fixed ends of simply supported spans not exceeding 10 m to cater for a horizontal movement upto 20 mm, covered with sealant complete as per drawing and technical specifications.***	metre	183.00	196.00	206.00	227.00	219.00	226.00	242.00	198.00	214.00
(iv)	***Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6% bitumen by weight***	metre	48.00	50.00	52.00	55.00	54.00	57.00	60.00	50.00	52.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
14.19	Asphaltic Plug joint (Providing and laying of asphaltic plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm, depth of joint varying from 75 mm to 100 mm, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate of 200mm x 6mm of wieldable structural steel conforming to IS: 2062, asphaltic plug to consist of polymer modified bitumen binder, carefully selected single size aggregate of 12.5 mm nominal size and a heat resistant foam caulking/backer rod, all as per approved drawings and specifications.)	metre	1633.00	1706.00	1765.00	1887.00	1841.00	1883.00	1981.00	1714.00	1806.00
14.20	Elastomeric Slab Steel Expansion Joint (Providing and laying of an elastomeric slab steel expansion joint, catering to right or skew (less than 20 deg., moderately curved with maximum horizontal movement upto 50 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation and clause 2606 of MoRTH specifications for road & bridge works.)	metre	17437.00	18824.00	19864.00	22117.00	21251.00	21944.00	23677.00	18997.00	20731.00
14.21	Compression Seal Joint (Providing and laying of compression seal joint consisting of steel armoured nosing at two edges of the joint gap suitably anchored to the deck concrete and a preformed chloroprene elastomer or closed cell foam joint sealer compressed and fixed into the joint gap with special adhesive binder to cater for a horizontal movement upto 40 mm and vertical movement of 3 mm.)	metre	4100.00	4423.00	4665.00	5190.00	4988.00	5150.00	5553.00	4464.00	4867.00
14.22	Strip Seal Expansion Joint (Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	metre	120.00	122.00	124.00	128.00	127.00	128.00	131.00	122.00	126.00
14.23	Modular Strip / Box Seal Joint (Providing and laying of a modular strip Box steel expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	metre	925.00	992.00	1041.00	1149.00	1108.00	1141.00	1224.00	1000.00	1083.00
14.24	Modular Strip / Box Seal Joint (Providing and laying of a modular strip box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	metre	1197.00	1284.00	1348.00	1488.00	1435.00	1478.00	1585.00	1294.00	1402.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-15 RIVER TRAINING AND PROTECTION WORKS											
15.1	Providing and laying boulders apron on river bed for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification.										
A	***Boulder laid dry without wire crates.***	cum	3456.00	3463.00	3463.00	3463.00	3463.00	3463.00	3463.00	3463.00	3246.00
15.2	Boulder apron laid in wire crates (Providing and laying of boulder apron laid in wire crates made with 4mm dia GI wire conforming to IS: 280 & IS:4826 in 100mm x 100mm mesh (weaved diagonally) including 10% extra for laps and joints laid with stone boulders weighing not less than 40 kg each.)	cum	5224.00	5391.00	5510.00	5768.00	5668.00	5748.00	5946.00	5411.00	5391.00
15.3	Cement concrete blocks (size 0.5 x 0.5 x 0.5 m) (Providing and laying of apron with cement concrete blocks of size 0.5x0.5x0.5 m cast in-situ and made with nominal mix of M-15 grade cement concrete with a minimum cement content of 250 kg/cum as per IRC: 21-2000.)	cum	9182.00	10195.00	11623.00	13252.00	13065.00	14425.00	16533.00	10195.00	11650.00
15.4	Providing and laying Pitching on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications										
A	***Stone/Boulder***	cum	3456.00	3463.00	3463.00	3463.00	3463.00	3463.00	3463.00	3463.00	3246.00
B	***Cement Concrete blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15***	cum	9182.00	10195.00	11623.00	13252.00	13065.00	14425.00	16533.00	10195.00	11650.00
15.5	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	cum	4153.00	4153.00	4153.00	4153.00	4153.00	4153.00	4153.00	4153.00	4153.00
15.6	Geotextile Filter (Laying of a geotextile filter between pitching and embankment slopes on which pitching is laid to prevent escape of the embankment material through the voids of the stone pitching/cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching.)	sqm	639.00	687.00	724.00	803.00	772.00	796.00	857.00	693.00	754.00
15.7	Toe protection (A toe wall for toe protection can either be in dry rubble masonry in case of dry rubble pitching or pitching with stones in wire crates or it can be in PCC M15 nominal mix if cement concrete block have been used for pitching . Rates for toe wall can be adopted from respective clauses depending upon approved design. The rate for excavation for foundation, dry rubble masonry and PCC M15 have been analysed and given in respective chapters.)										
15.8	Providing and laying Flooring complete as per drawing and Technical specifications laid over cement concrete bedding.										
A	***Rubble stone laid in cement mortar 1:3***	cum	9443.00	10372.00	11672.00	14306.00	14828.00	14223.00	16142.00	10372.00	11480.00
B	***Cement Concrete blocks Grade M15***	cum	12092.00	13426.00	15307.00	17452.00	17206.00	18997.00	21774.00	13426.00	15343.00
15.9	Dry rubble Flooring	cum	4194.00	4201.00	4201.00	3477.00	4201.00	4201.00	4201.00	4201.00	3984.00
15.10	Curtain wall complete as per drawing and Technical specification										
A	***Stone masonry in cement mortar (1:3)***	cum	9203.00	9837.00	10731.00	11735.00	11635.00	12486.00	13806.00	9837.00	10749.00
B	***Cement concrete Grade M15***	cum	9002.00	9995.00	11395.00	12992.00	12809.00	14142.00	16209.00	9995.00	11422.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
15.11	Flexible Apron :Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.	cum	3594.00	3601.00	3601.00	2869.00	3601.00	3601.00	3601.00	3601.00	3382.00
15.12	Gabian Structure for Retaining Earth (Providing and construction of a gabain structure for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5 m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire)	cum	5488.00	5692.00	5839.00	6159.00	6036.00	6134.00	6380.00	5716.00	5744.00
15.13	Gabian Structure for Erosion Control, River Training Works and Protection works (Providing and constructing gabain structures for erosion control, river training works and protection works with wire crates of size 2 m x 1 m x 0.3 m each divided into 1m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be securely tied with 4 mm galvanised steel wire.)	cum	8551.00	8999.00	9329.00	10043.00	9768.00	9988.00	10538.00	9054.00	9386.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
CHAPTER-16 REPAIR AND REHABILITATION											
16.1	Removal of existing cement concrete wearing coat including its disposal complete as per Technical specification without causing any detrimental effect to any part of the bridge structure and removal of dismantled material with all lifts and lead upto 1000m(Thickness 75	sqm	232.00	232.00	232.00	232.00	232.00	232.00	232.00	232.00	232.00
16.2	Removal of existing asphaltic wearing coat comprising of 50 mm thick asphaltic concrete laid over 12 mm thick mastic asphalt including disposal with all lift and lead upto 1000m.	sqm	174.00	174.00	174.00	174.00	174.00	174.00	174.00	174.00	174.00
16.3	Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical specification	sqm	1727.00	1894.00	2075.00	2387.00	2277.00	2430.00	2708.00	1905.00	2130.00
16.4	Providing and inserting nipples with approved fixing compound after drilling holes for grouting as per Technical specifications including subsequent cutting/removal and sealing of the hole as necessary of nipples after completion of grouting with Cement/Epoxy	each	230.00	232.00	233.00	235.00	234.00	234.00	236.00	232.00	233.00
16.5	Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per Technical specification.										
A	***Cement Grout***	kg	137.00	142.00	145.00	153.00	150.00	153.00	159.00	142.00	148.00
B	***Cement mortar (1:1) Grouting***	kg	300.00	305.00	310.00	319.00	316.00	319.00	327.00	306.00	313.00
16.6	Patching of damaged concrete surface with polymer concrete and curing compounds, initiator and promoter, available in present formulations, to be applied as per instructions of manufacturer and as approved by the Engineer.	sqm	3800.00	4093.00	4313.00	4790.00	4607.00	4753.00	5120.00	4130.00	4497.00
16.7	Sealing of crack / porous concrete with Epoxy Grout by injection through nipples complete as per clause 2803.1.	kg	1196.00	1270.00	1324.00	1444.00	1398.00	1434.00	1526.00	1279.00	1370.00
16.8	Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical specification	sqm	494.00	527.00	551.00	604.00	583.00	599.00	640.00	531.00	571.00
16.9	Removal of defective concrete, cleaning the surface thoroughly, applying the shotcrete mixture mechanically with compressed air under pressure, comprising of cement, sand, coarse aggregates, water and quick setting compound in the proportion as per clause 2807.1., sand and coarse aggregates conforming to IS: 383 and table 1 of IS: 9012 respectively, water cement ratio ranging from 0.35 to 0.50, density of gunite not less than 2000 kg/cum, strength not less than 25 Mpa and workmanship conforming to clause 2807.6.	sqm	659.00	697.00	748.00	810.00	801.00	850.00	926.00	697.00	750.00
16.10	Applying pre-packed cement based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete	sqm	312.00	330.00	343.00	372.00	361.00	370.00	392.00	332.00	355.00
16.11	Eproxy bonding of new concrete to old concrete	sqm	512.00	546.00	571.00	626.00	605.00	622.00	664.00	550.00	592.00
16.12	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification	tonne	548617.00	578378.00	603188.00	653220.00	634474.00	652592.00	692883.00	581589.00	619350.00

Code No	*Descriptions*	Unit	DMR	KMA / MKG / PRN	WKA	PHEK	ZBTO	TSG	KPE	MON	LLG
16.13	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification	tonne	526910.00	554338.00	577511.00	623822.00	606530.00	623632.00	661146.00	557232.00	592098.00
16.14	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification	tonne	486676.00	512273.00	533835.00	577013.00	560878.00	576754.00	611684.00	514989.00	547514.00
16.15	Replacement of bearings complete as per Technical specification	each	141402.00	152170.00	160380.00	177878.00	171148.00	176532.00	189993.00	153649.00	167110.00
16.16	Rectification of bearings as per Technical specifications	each	132765.00	142843.00	150534.00	166910.00	160612.00	165650.00	178247.00	144235.00	156832.00
16.17	Replacement of Expansion Joints complete as per drawings	metre	5150.00	5579.00	6148.00	5701.00	6735.00	7266.00	8113.00	5585.00	6191.00
16.18	Replacement of damaged concrete railing.	metre	445.00	445.00	445.00	445.00	445.00	445.00	445.00	445.00	445.00
16.19	Replacement of crash barrier.	metre	838.00	838.00	838.00	838.00	838.00	838.00	838.00	838.00	838.00
16.20	Replacement of damaged mild steel railing	metre	366.00	366.00	366.00	366.00	366.00	366.00	366.00	366.00	366.00
16.21	Repair of crash barrier (Repair of concrete crash barrier with cement concrete of M-30 grade by cutting and trimming the damaged portion to a regular shape, cleaning the area to be repaired thoroughly, applying cement concrete after erection of proper form work.)	metre	347.00	372.00	407.00	372.00	443.00	476.00	528.00	372.00	408.00
16.22	Repair of RCC Railing (Carrying out repair of RCC M30 railing to bring it to the original shape.)	metre	183.00	192.00	206.00	197.00	220.00	232.00	252.00	192.00	206.00
16.23	Repair of steel Railing (Repair of steel railing to bring it to the original shape)	metre	376.00	382.00	391.00	405.00	400.00	408.00	421.00	383.00	392.00

Appendix 01

Requirement of materials in Bituminous works

Sl. No.	MORT&H No.	Description of Item	Unit	Aggregate		Bitumen	Cement	Sand
				Size in mm	cum	Kg	Bags	Cum
1	502	Prime Coat with Emulsion	10sqm			6.00		
2	503	Tack Coat with emulsion	10sqm			2.00		
3	504	Bituminous Macadam	cum	25.0-10.0	0.57	72.44		
				10-05	0.57			
				5 and below	0.28			
4	505	Bituminous Penetration Macadam						
		Type-A 50mm thick	10sqm					
				45-2.86	0.60	50.00		
		Key aggregate		22.4 -2.8	0.15			
		Type-B 75mm thick	10sqm					
				63-2.86	0.90	50.00		
		Key aggregate		26.5 -2.8	0.18	68.00		
5	506	Built-up Spray Grout (BUSG)	10sqm	53-2.8	1.00	30.00		
		Key aggregate		22.4-2.8	0.13			
6	507	Dense Graded Bituminous Macadam	cum	25-10	0.44	98.10		
				10-05	0.41			
				5 and below	0.59			
7	508	Semi-Dense Graded Bituminous Concrete	cum	9.5-4.75	0.83	115.385		
				4.75 and below	0.60			
8	509	Bituminous Concrete	cum	13.2-10.0	0.45	117.80		
				10.0-5.0	0.37			
				5 and below	0.64			
9	510	Surface Dressing	10sqm	13.0-0.00	0.10	10.00		
10	511	Open-Graded Premix Surfacing	10sqm	13.2-5.60	0.27	14.60		
11	512	Close-Graded Premix Surfacing/Mixed Seal Surfacing						
		Type - A	10sqm	11.2-0.09	0.27	21.95		
		Type - B	10sqm	13.2-0.09	0.27	21.95		
12	513	Seal Coat						
		Type - A	10sqm	6.70-0.00	0.09	9.80		
		Type - B	10sqm	6.70-0.01	0.06	6.80		
13	515	Mastic Asphalt with 85/25 or 30/40	10sqm			57.14		
				2.36-0.075	0.111			
		Lime stone dust filler with calcium content			0.103			
				13.2-6.3	0.157			
		Pre-coated stone chips		13.2-0.00	0.006	0.143		
14	516	Slurry Seal	10sqm					
		Case-I 5mm thick						
		Residual Binder				12.10		
		Fine Aggregate		4.75-0.00	0.064			
		Filler		(Cement)	2.20 Kg.			
		Case-II 3mm thick						
		Residual Binder				8.58		
		Fine Aggregate		3.00 and below	0.037			
		Filler		(Cement)	1.32 Kg			

Appendix 02

Requirement of materials in WBM works

Sl. No.	MORT&H No.	Description of Item	Unit	Aggregate		Bitumen	Cement	Sand
				Size in mm	cum	Kg	Bags	Cum
1	401	GSB (Plant mix metheod)						
		Grading No I	Cum	53 mm to 9.5 mm @ 50 %	0.64			
				9.5 mm to 2.36 mm @ 20 %	0.25			
				2.36 mm below @ 30 %	0.38			
		Grading No II	Cum	26.5 mm to 9.5 mm @ 35 %	0.44			
				9.5 mm to 2.36 mm @ 25 %	0.32			
				2.36 mm below @ 30 %	0.38			
		Grading No III	Cum	9.5 mm to 4.75 mm @ 35 %	0.44			
				4.75 mm to 2.36 mm @ 12.5 %	0.16			
				2.36 mm below @ 52.5 %	0.67			
		GSB (Mix in place metheod)						
		Grading No I	Cum	53 mm to 9.5 mm @ 50 %	0.64			
				9.5 mm to 2.36 mm @ 20 %	0.25			
				2.36 mm below @ 30 %	0.38			
		Grading No II	Cum	26.5 mm to 9.5 mm @ 35 %	0.44			
				9.5 mm to 2.36 mm @ 25 %	0.32			
				2.36 mm below @ 30 %	0.38			
		Grading No III	Cum	9.5 mm to 4.75 mm @ 35 %	0.44			
				4.75 mm to 2.36 mm @ 12.5 %	0.16			
				2.36 mm below @ 52.5 %	0.67			
2	401	GSB (with close graded material)						
		Grading No I	Cum	53 mm to 26.5 mm @ 35 %	0.44			
				26.5 mm to 4.75 mm @ 45 %	0.57			
				2.36 mm below @ 20 %	0.25			
		Grading No II	Cum	26.5 mm to 4.75 mm @ 75 %	0.96			
				2.36 mm below @ 25 %	0.32			
		Grading No III	Cum	9.5 mm to 4.75 mm @ 66 %	0.85			
				2.36 mm below @ 34 %	0.43			
3	402	Lime stabilization for improving sub grade	Cum	Lime	0.05 M.tonne			
4	402	Lime treated soil sub grade	Cum	Lime	0.05 M.tonne			
5	404	WBM						
		Grading No II of minimum thickness of 75 mm	10 Sqm	63 mm to 45 mm	1.21			
		Grading No III of minimum thickness of 75 mm	10 Sqm	53 mm to 22.4 mm	1.21			
		Stone Screening						
		Type A for Gr. I	Cum	13.2 mm	0.27			
		Type A for Gr. II	Cum	13.2 mm	0.12			

		Type B for Gr. I	*Cum*	*11.2 mm*	*0.20*			
		Type A for Gr. II	*Cum*	*11.2 mm*	*0.18*			
		Moorum for Grading I	*Cum*		*0.30*			
		Moorum for Grading II & III	*Cum*		*0.22*			
		Binding material						
		Grading No I	*Cum*		*0.08*			
		Grading No II	*Cum*		*0.06*			
6	*406*	*Wet Mix Mecadam*	*Cum*	*45 mm to 22.4 mm @ 30 %*	*0.396*			
				22.4 mm to 2.36 mm @ 40 %	*0.528*			
				2.36 mm to 75 micron@ 30 %	*0.396*			
				Total	*1.32*			
7		*PCC 1:3:6*	*Cum*	*40 mm*	*0.90*	*0.00*	*4.60*	*0.45*
8		*Brick Masonry with Cement Mortar 1:3*	*Cum*	*Bricks in Nos*	*500.00*	*0.00*	*2.44*	*0.252*
9		*Coarse rubble stone Masonry*	*Cum*	*Stone*	*1.10*			
				Size stone 0.24mx0.24mx0.39m	*7 Nos*	*0.00*	*3.06*	*0.315*
10		*Random rubble stone masonry*	*Cum*	*Stone*	*1.257*	*0.00*	*3.16*	*0.325*
11		*PCC M-15*	*Cum*	*40 mm*	*0.54*			
				20 mm	*0.27*			
				10 mm	*0.09*	*0.00*	*5.506*	*0.45*
12		*PCC M-20*	*Cum*	*40 mm*	*0.36*			
				20 mm	*0.36*			
				10 mm	*0.18*	*0.00*	*6.880*	*0.45*
13		*RCC M- 20*	*Cum*	*20 mm*	*0.54*			
				10 mm	*0.36*	*0.00*	*6.946*	*0.45*
14		*PCC M -25*	*Cum*	*40 mm*	*0.36*			
				20 mm	*0.36*			
				10 mm	*0.18*	*0.00*	*7.986*	*0.45*
15		*RCC M- 25*	*Cum*	*20 mm*	*0.54*			
				10 mm	*0.36*	*0.00*	*8.066*	*0.45*
16		*Plastering with Cement Mortar 1 :3*	*10 Sqm*				*1.469*	*0.151*

Convertional factor for Round bars for Re-inforcement

	Bar Size (mm)	Area in Sq.cm	Perimeter in Cm	Weight per Meter in Kg	Length per tonne	Area in Sq.mm
	6	0.283	1.885	0.222	4505	28.26
	8	0.503	2.513	0.395	2532	50.24
	10	0.785	3.142	0.616	1623	78.50
	12	1.131	3.770	0.888	1126	113.04
	16	2.011	5.027	1.579	633	200.96
	20	3.142	6.283	2.466	406	314.00
	25	4.909	7.854	3.854	259	490.63
	32	8.042	10.05	6.313	158	803.84
	40	12.57	11.57	9.864	101	1258.00

Convertional factor for other materials

	Sl No	Description	Unit	Weight per Cum in M.tonne		
	1	Boulder	Cum	2.40		
	2	Stone Metal 90 mm size	Cum	2.40		
	3	Stone metal 63 mm size	Cum	2.40		
	4	Stone metal 53 mm size	Cum	2.40		
	5	Stone metal 40 mm size	Cum	2.40		
	6	Stone metal 22.4 mm size	Cum	2.20		
	7	Stone metal 20 mm size	Cum	2.20		
	8	Stone metal 13.2 mm size	Cum	2.10		
	9	Stone metal 12 mm size	Cum	2.10		
	10	Stone metal 10 mm size	Cum	2.10		
	11	Sand	Cum	1.80		
	12	Loose Earth	Cum	1.80		