

FINAL REPORT



ADB



Asian Development Bank
National Capital Region Planning Board

Capacity Development of the
National Capital Region Planning Board
Package 2 Component B
TA No. 7055-IND

**Volume V-B3: Detailed Estimates
DPR for Road Widening Component
in Ghaziabad**



WilburSmith
ASSOCIATES

July 2010

NCR Planning Board
Asian Development Bank

Capacity Development of the National Capital Region Planning Board (NCRPB) – Component B (TA No. 7055-IND)

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Volume V-B3: DPR for Road Widening Component in Ghaziabad
Detailed Estimates

July 2010



Contents

Appendix E-1	:	Summary Cost Estimate
Appendix E-2	:	Detailed Item-wise Cost Estimates
Appendix E-3	:	Detailed Quantity Estimates
Appendix E-4	:	Rate Analysis

Appendix E-1: Summary Cost Estimate

SUMMARY OF COST

BILL NO.	BILL NAME	AMOUNT (Rs.)	
1	SITE CLEARANCE AND DISMANTLING	172,291.00	
2	EARTH WORK	2,966,719.00	
3	SUB-BASE AND BASE COURSES	21,962,774.00	
4	BITUMINOUS WORKS	113,912,989.00	
5	TRAFFIC SIGNAGES, ROAD MARKING AND OTHER APPURTENANCES	1,490,488.00	
6	DRAINAGE AND PROTECTIVE WORKS, DUCTS & OTHER SERVICES	95,472,019.00	
	TOTAL CONSTRUCTION COST	235,977,280.00	
	CONTIGENCIES & PETTY SUPERVISION CHARGES	3%	7,079,318.00
	UTILITY SHIFTING	2%	4,719,546.00
	GRAND TOTAL	247,776,144.00	

Appendix E-2: Detailed Item-wise Cost Estimates

1. SITE CLEARANCE AND DISMANTLING

Item No.	Description	Ref. to MoRTH Spec.	Unit	Quantity	Rate MoRTH	Amount MoRTH
1.01	Clearing and grubbing road land in an area of light jungle by mechanical means 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 as per Technical specifications and as directed by the Engineer-in-charge.	201	ha	3.59	48,044.00	172,290.55
	Total					172,290.55

2. EARTH WORK

Item No.	Description	Ref. to MoRTH Spec.	Unit	Quantity	Rate MoRTH	Amount MoRTH
2.01	Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m	301	cum	20,319.99	46.00	934,719.61
2.02	Supplying and filling in with good earth for construction of subgrade and earthen shoulder in regular layers of 150mm thick etc including watering, consolidation by power road roller etc complete.	305	cum	9,194.57	221.00	2,031,999.16
2.03	Supplying and filling in with good earth for formation of traffic island, median strips, footpaths etc., including watering and consolidation by hand roller etc., complete.	407	cum	-	83.00	-
	Total					2,966,718.77

3. GRANULAR BASE COURSE AND SUB-BASE

Item No.	Description	Ref. to MoRTH	Unit	Quantity	Rate MoRTH	Amount MoRTH
3.01	Construction of granular sub-base by providing close graded material (Grading I), mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, all complete as per Technical specifications and as directed by the Engineer-in-charge.	401	cum	3.677.83	2,219.00	8,161,097.07
3.02	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.	406	cum	6,005.95	2,298.00	13,801,677.41
	Total					21,962,774.48

4. BITUMINOUS COURSE

Item No.	Description	Ref. to	Unit	Quantity	Rate MoRTH	Amount MoRTH
		MoRTH Spec.				
4.01	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.	502	sqm	24,023.81	28.00	672,666.61
4.02	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.6 kg per sqm on concrete surface treated with primer cleaned with mechanical broom all complete as per Technical specifications and as directed by the Engineer-in-charge.	503	sqm	24,023.81	12.00	288,285.69
4.03	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 kg per sqm on the prepared nominal bituminous surface cleaned with mechanical broom all complete as per Technical specifications and as directed by the Engineer-in-charge.	503	sqm	91,727.27	10.00	917,272.65
4.04	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.	507	cum	10,548.64	7,650.00	80,697,061.38
4.05	Providing and laying bituminous concrete Grading II 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.	509	cum	3,669.09	8,541.00	31,337,702.81
	Total					113,912,989.15

6. TRAFFIC SIGNAGES, ROAD MARKING AND OTHER APPURTENANCES

Item No.	Description	Ref. to	Unit	Quantity	Rate MoRTH	Amount MoRTH
5.01	Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC	MoRTH Spec. 801				
	: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 all complete as per Technical specifications and as directed by the Engineer-in-charge.					
5.01a	90 cm equilateral triangle		No	36.00	3,267.00	117,612.00
5.01b	90 cm high octagon		No	17.00	4,838.00	82,246.00
5.02	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 all complete as per Technical specifications and as directed by the Engineer-in-charge.	803				
5.02a	Lane, Centreline, Edge and other marking along strips		sq.m.	1,484.99	271.00	402,432.15
5.02b	Directional arrows and letters		sq.m.	-	271.00	-
5.03	Providing Gantry sign board over a designed support system of aluminium alloy or galvanised steel		No	1.00	150,000.00	150,000.00
5.04	Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67	801				
	made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting of 2 mm thick 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 and all complete as per Technical specifications and as directed by the Engineer-in-charge.					
5.04a	Direction and Place Identification Signs with size more than 0.9 sqm size Board.		sq.m.	6.30	6,930.00	43,659.00
5.04b	Direction and Place Identification Signs upto 0.9 sqm Size Board.		sq.m.	3.84	6,608.00	25,374.72
5.05	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		No	1,912.00	230.00	439,760.00

6. TRAFFIC SIGNAGES, ROAD MARKING AND OTHER APPURTENANCES

Item No.	Description	Ref. to	Unit	Quantity	Rate MoRTH	Amount MoRTH
5.06	Reinforced cement concrete M15 grade kilometre stone of standard design as per IRC:8-1980.	MoRTH Spec. 804				
	fixing in position including painting and printing etc all complete as per Technical specifications and as directed by the Engineer-in-charge.					
5.06a	Ordinary kilometer stone (precast)		No	5.00	496.00	2,480.00
5.06b	Hectometer stone (precast)		No	34.00	1,846.00	62,764.00
5.07	Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25-1967.	806	No	288.00	570.00	164,160.00
	fixed in position including finishing and lettering but excluding painting all complete as per Technical specifications and as directed by the Engineer-in-charge.					
	Total					1,490,488.00

6. DRAINAGE WORKS

Item No.	Description	Ref. to MoRTH	Unit	Quantity	Rate MoRTH	Amount MoRTH
6.01	Earth work in excavation for foundation of Drains in ordinary rock (not requiring blasting) 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 all complete as per Technical specifications and as directed by the Engineer-in-charge.	304	cum	21,315.67	49.00	1,044,467.79
6.02	Providing Plain Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.	1500, 1700 & 2100				
6.02a	PCC Grade M15		cum	1,747.19	4,966.00	8,676,525.68
6.03	Providing Reinforced Cement Concrete M25 in Open Foundation complete as per Drawing and Technical Specifications.	1500, 1700 & 2100	cum	7,425.20	5,695.00	42,286,516.85
6.04	Supplying, fitting and placing HYSD bar reinforcement complete as per drawing and all complete as per Technical specifications and as directed by the Engineer-in-charge.	1600	MT	624.59	53,679.00	33,527,387.81
6.05	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	408	Rm	17,471.86	544.00	9,504,691.84
6.06	Painting two coats on kerbs in black and white or yellow after filling the surface with synthetic enamel paint complete as per drawing and Technical specifications and as directed by the Engineer-in-charge.	800	sqm	7,862.34	55.00	432,428.54
	Total					95,472,019.00

Appendix E-3: Detailed Quantity Estimates

ESTIMATE

Item No	Description	Dimensions					Unit	Total Quantity
		Nos	Length	Breadth	Depth	Area		
1	Bill No:- 1 SITE CLEARANCE AND DISMANTLING							
1.01	Clearing and Grubbing						Ha	3.59
	Ch:0+000 - 4+367.965	1	4,367.97	8.21				3.59
	Average Existing Road Width = 19.79m							
	Total							3.59
2	Bill No:- 2 EARTH WORK							
2.01	Earth work Excavation							20,319.99
	Ch:0+000 - 4+367.965	1.00	4,367.97	4.21	1.11			20,319.99
	Total							20,319.99
2.02	Sub-grade and Earthern Shoulders						cum	9,194.57
	Subgrade							
	Main Road							
	Ch:0+000 - 4+367.965	1	4,367.97	4.21	0.50			9,194.57
	Average Existing Road Width = 19.79m							
	Total							9,194.57
2.03	Soil filling- Median and Island						cum	-
	Median							
	Ch:0+000 - 4+367.965	1	4,367.97	1.00	-			-
	Total							-
3	Bill No:- 3 GRANULAR BASE COURSE AND SUB-BASE							
3.01	Granular Sub Base						cum	3,677.83
	GSB-Drainage Layer - I							
	Main Road							
	Ch:0+000 - 4+367.965	1	4,367.97	4.21	0.10			1,838.91
	Average Existing Road Width = 19.79m							
	GSB-Drainage Layer - II							
	Main Road							
	Ch:0+000 - 4+367.965	1	4,367.97	4.21	0.10			1,838.91
	Average Existing Road Width = 19.79m							
	Total							3,677.83
3.02	Wet Mix Macadam						cum	6,005.95
	WMM Layer- I							
	Main Road							
	Ch:0+000 - 4+367.965	1	4,367.97	5.50	0.125			3,002.98
	Average Existing Road Width = 19.79m							
	WMM Layer - II							
	Main Road							
	Ch:0+000 - 4+367.965	1	4,367.97	5.50	0.125			3,002.98
	Average Existing Road Width = 19.79m							
	Total							6,005.95
4	Bill No:- 4 BITUMINOUS COURSE							
4.01	Prime coat Over WMM						sqm	24,023.81
	Main Road							
	Ch:0+000 - 4+367.965	1	4,367.97	5.50				24,023.81
	Average Existing Road Width = 19.79m							

ESTIMATE

Item No	Description	Dimensions					Unit	Total Quantity
		Nos	Length	Breadth	Depth	Area		
	Total						24,023.81	
4.02	Tack coat Over Primed Surface					sqm	24,023.81	
	Main Road						-	
	Ch:0+000 - 4+367.965	1	4,367.97	5.50			24,023.81	
	Average Existing Road Width = 19.79m							
	Total						24,023.81	
4.03	Tack coat - Bituminous Surface					sqm	91,727.27	
	Main Road						-	
	Ch:0+000 - 4+367.965	1	4,367.97	5.50			24,023.81	
	Average Existing Road Width = 19.79m							
	Ch:0+000 - 4+367.965 (Existing road)	1	4,367.97	15.50			67,703.46	
	Total						91,727.27	
4.04	Dense Bituminous Macadam					cum	10,548.64	
	Main Road						-	
	Ch:0+000 - 4+367.965	1	4,367.97	5.50	0.115		2,762.74	
	Average Existing Road Width = 19.79m							
	Ch:0+000 - 4+367.965 (Existing road)	1	4,367.97	15.50	0.115		7,785.90	
	Total						10,548.64	
4.05	Bituminous concrete					cum	3,669.09	
	Grading-II						-	
	Main Road						-	
	Ch:0+000 - 4+367.965	1	4,367.97	5.50	0.04		960.95	
	Average Existing Road Width = 19.79m							
	Ch:0+000 - 4+367.965 (Existing road)	1	4,367.97	15.50	0.04		2,708.14	
	Total						3,669.09	
5	Bill No:-5 Traffic Signages, Road Marking and other Appurtenances							
5.01	Cautionary,Mandatory and Informatory sign							
5.01a	90 cm equilateral triangle					No.	36.00	
	Triangular Regulatory Signs	18					18.00	
	Cautionary Sign Boards	18					18.00	
5.01b	900 Octagon sign					No.	17.00	
	Stop sign	17					17.00	
5.02	Hot applied thermoplastic compound							
5.02a	Lane, Centreline, Edge and other marking along strips					sq.m.	1,484.99	
	Edge line MCW	2	4,367.97	0.15			1,310.39	
	Cariage way Center line	582	3.00	0.10			174.60	
5.02b	Directional arrows ,Pedestrian Crossings and					sq.m.	-	
5.03	Gantry mounted variable message sign board	1				No.	1.00	
5.04	Direction and Place identification							
5.04a	Signs with size more than 0.9 sqm size Board.	4	1.50	1.05		sq.m.	6.30	
5.04b	Signs with size upto 0.9 sqm size Board.	8	0.60	0.80		sq.m.	3.84	
5.05	Road stud 100x 100 mm	1912				No	1,912.00	
5.06	RCC M15 grade kilometre stone							
5.06a	Ordinary kilometer stone (precast)	5				Each	5.00	
5.06b	Hectometer stone (precast)	34				Each	34.00	
5.07	RCC M15 grade boundary pillars	288				Each	288.00	

ESTIMATE

Item No	Description	Dimensions				Unit	Total Quantity
		Nos	Length	Breadth	Depth		
6	Bill No:- 7 DRAINAGE & PROTECTION WORK						
6.01	Earthwork Excavation					cum	21,315.67
		2	4,367.97	1.20	1.50		15,724.67
	For service duct	2	4,367.97	0.80	0.80		5,591.00
6.02	Plain cement concrete,						
6.02a	Levelling Course PCC M15					cum	1,747.19
	For Covered Lined Drain	2	4,367.97	1.20	0.10		1,048.31
	For service duct	2	4,367.97	0.80	0.10		698.87
	Total						1,747.19
6.03	RCC M25 grade					cum	7,425.20
	For Drain						
	Cover Slab	2	4,367.77	1.20	0.10		1,048.26
	Bottom Slab	2	4,367.77	1.00	0.20		1,747.11
	Wall	4	4,367.77	0.15	1.00		2,620.66
	For Service duct						
	Cover Slab	2	4,367.77	0.80	0.10		698.84
	Bottom Slab	2	4,367.77	1.00	0.10		873.55
	Wall	2	4,367.77	0.10	0.50		436.78
	Total						7,425.20
6.04	HYS					MT	624.59
6.05	Kerb Stone					Lm	17,471.86
	Median and near drains	4.00	4,367.97				17,471.86
							17,471.86
6.06	Painting on kerbs					sq.m	7,862.34
	For Kerb Painting						
		1.00	17,471.86		0.45		7,862.34
	Total						7,862.34

Appendix E-4: Rate Analysis

SUMMARY OF RATES				
Item No.	Description	Unit	Rate Analysis Reference	Rate
SITE CLEARANCE AND DISMANTLING				
1.01	Clearing and grubbing road land in an area of light jungle	ha	1.2	48,044.00
EARTH WORK				
2.01	Earth work Excavation	cum	2.1	46.00
2.02	Construction of sub-grade and earthen shoulders with approved material obtained from borrow pits	cum	2.6	221.00
2.03	Construction of Median and Island with approved material	cum	2.8	83.00
GRANULAR BASE COURSE AND SUB-BASE				
3.01	Construction of granular sub-base	cum	3.1	2,219.00
3.02	WMM	cum	3.2	2,298.00
BITUMINOUS COURSE				
4.01	Primer coat	sqm	4.1	28.00
4.02	Tack coat with 0.25kg/ sqm over primed surface	sqm	4.2.2	12.00
4.03	Tack coat with 0.20kg/ sqm over bituminous surface	sqm	4.2.3	10.00
4.04	DBM	cum	4.3	7,650.00
4.05	BC (Grading-II)	cum	4.4.2	8,541.00
Traffic Signages, Road Marking and other Appurtenances				
5.01	Cautionary, Mandatory and Informatory sign			
5.01a	90 cm equilateral triangle	No	6.2.1	3,267.00
5.01b	900 Octagon sign	No	6.2.6	4,838.00
5.02	Hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads			
5.02a	Lane, Centreline, Edge and other marking along strips	sq.m.	6.5	271.00
5.02b	Directional arrows and letters	sq.m.	6.5	271.00
5.03	Gantry mounted variable message sign board	No		150,000.00
5.04	Direction and Place identification			
5.04a	Signs with size more than 0.9 sqm size Board.	sqm	6.3.2	6,930.00
5.04b	Signs with size upto 0.9 sqm size Board.	sqm	6.3.1	6,608.00
5.05	Road stud 100x 100 mm	No	6.12	230.00
5.06a	200m stones	No	6.6.3	496.00
5.06b	Kilometer Stones	No	6.6.2	1,846.00
5.07	Boundary Stones	No	6.8	570.00
DRAINAGE & PROTECTION WORK				
6.01	Earthwork Excavation	cum	7.1.1	49.00
6.02	Plain cement concrete,			
6.02a	Levelling Course PCC M15	cum	7.2.1	4,966.00
6.03	RCC M25 grade	cum	7.2.3	5,695.00
6.04	HYSD	MT	7.3	53,679.00
6.05	Kerb Stone	m	10.1	544.00
6.06	Painting on kerbs	sqm	6.4	55.00

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
1.2	201	Clearing and Grubbing Road Land .				
		Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.				
		Unit = Hectare				
		By Mechanical Means				
		In area of light jungle				
		a) Labour				
		Mate	day	0.160	140.00	22.40
		Mazdoor	day	4.000	125.00	500.00
		b) Machinery				
		Dozer 80 HP with attachment for removal of trees & stumps	hour	10.000	3546.00	35,460.00
		Tractor-trolley	hour	1.000	346.00	346.00
		c) Overhead charges @ 15% on (a+b)				5,449.26
		d) Contractor's profit @ 15% on (a+b+c)				6,266.65
		Rate per Hectare = a+b+c+d				48,044.31
					say	48,044.00
2.1	301	Excavation in Soil using Hydraulic Excavator CK 90 and Tipper with Disposal upto 1000 metres.				
		Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tipper, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m				
		Unit = cum				
		Taking output = 360 cum				
		a) Labour				
		Mate	day	0.080	140.00	11.20
		Mazdoor	day	2.000	125.00	250.00
		b) Machinery				
		Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	6.000	1241.00	7,446.00
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.000	295.00	4,720.00
		c) Overhead charges @ 15% on (a+b)				1,864.08
		d) Contractor's profit @ 15% on (a+b+c)				2,143.69
		Cost for 360 cum = a+b+c+d				16,434.97
		Rate per cum = (a+b+c+d)/360				45.65
					say	46.00
2.6	305	Construction of Subgrade and Earthen Shoulders				
		Construction of sub-grade and earthen shoulders with approved material obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2				
		Unit = cum				
		Taking output = 100 cum				
		a) Labour				
		Mate	day	0.040	140.00	5.60
		Mazdoor	day	1.000	125.00	125.00
		b) Machinery				
		Hydraulic excavator 1 cum bucket capacity @ 60 cum per hour	hour	1.670	1241.00	2,072.47

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		Tipper 10 tonne capacity	tonne.km	175xL	2.00	-
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				-
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	3546.00	1,773.00
		Motor grader for grading @ 50 cum per hour	hour	2.000	2283.00	4,566.00
		Water tanker with 6 km lead	hour	4.000	100.00	400.00
		Vibratory roller 8-10 tonnes @ 80 cum per hour	hour	1.250	1469.00	1,836.25
		c) Material				
		Cost of water	KL	24.000	40.00	960.00
		Compensation for earth taken from private land	cum	100.000	50.00	5,000.00
		d) Overhead charges @ 15% on (a+b+c)				2,510.75
		e) Contractor's profit @ 15% on (a+b+c+d)				2,887.36
		Cost for 100 cum = a+b+c+d+e				22,136.43
		Rate per cum = (a+b+c+d+e)/100				221.36
					say	221.00
2.8	407	Construction of Median and Island with Soil Taken from Roadway Cutting				
		Construction of Median and Island with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted as per clause 407				
		Unit = cum				
		Taking output =21 cum				
		a) Labour				
		Mate	day	0.240	140.00	33.60
		Mazdoor	day	6.000	125.00	750.00
		b) Machinery				
		Water tanker 6 KL with 5 km lead and 1 trip per hour	hour	1.000	100.00	100.00
		Plate compactor @ 3.5 cum per hour	hour	6.000	32.00	192.00
		c) Material				
		Cost of water	KL	6.000	40.00	240.00
		d) Overhead charges @ 15% on (a+b+c)				197.34
		e) Contractor's profit @ 15% on (a+b+c+d)				226.94
		Cost for 21 cum = a+b+c+d+e				1,739.88
		Rate per cum = (a+b+c+d+e)/21				82.85
					say	83.00
3.1	401	Granular Sub-Base with Close Graded Material (Table:- 400-1)				
		Plant Mix Method				
		Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401				
		Unit = cum				
		Taking output = 225 cum (450 tonne)				
		a) Labour				
		Mate	day	0.400	140.00	56.00
		Mazdoor skilled	day	2.000	140.00	280.00
		Mazdoor	day	8.000	125.00	1,000.00
		b) Machinery				
		Wet mix plant @ 75 tonne capacity per hour	hour	6.000	1148.00	6,888.00
		Electric generator 125 KVA	hour	6.000	665.00	3,990.00
		Water tanker 6 KL capacity 5 km lead with one trip per hour	hour	4.500	100.00	450.00
		Front end loader 1 cum bucket capacity	hour	6.000	768.00	4,608.00

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		Tipper 10 tonne	tonne.km	450 x L	2.00	-
		Add 10 per cent of cost of carriage to cover loading and unloading				-
		Motor Grader 110 HP	hour	6.000	2283.00	13,698.00
		Vibratory roller 8-10 t	hour	6.000	1469.00	8,814.00
		c) Material				
		Close graded Granular sub-base Material as per table 400-1				
		For Grading-I Material				
		53 mm to 9.5 mm @ 50 per cent	cum	144.000	1151.10	165,758.40
		9.5 mm to 2.36 mm @ 20 per cent	cum	57.000	1151.10	65,612.70
		2.36 mm below @ 30 per cent	cum	86.400	1217.90	105,226.56
		Cost of water	KL	27.000	40.00	1,080.00
		Rate per cum for grading-I Material				
		d) Overhead charges @ 15% on (a+b+c)				56,619.25
		e) Contractor's profit @ 15% on (a+b+c+d)				65,112.14
		Cost for 225 cum = a+b+c+d+e				499,193.05
		Rate per cum = (a+b+c+d+e)/225				2,218.64
					say	2,219.00
3.2	406	Wet Mix Macadam				
		Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.				
		Unit = cum				
		Taking output = 225 cum (495 tonnes)				
		a) Labour				
		Mate	day	0.480	140.00	67.20
		Mazdoor skilled	day	2.000	140.00	280.00
		Mazdoor	day	10.000	125.00	1,250.00
		b) Machinery				
		Wet mix plant of 75 tonne hourly capacity	hour	6.600	1148.00	7,576.80
		Electric generator 125 KVA	hour	6.000	665.00	3,990.00
		Front end loader 1 cum capacity	hour	6.000	768.00	4,608.00
		Paver finisher	hour	6.000	929.00	5,574.00
		Vibratory roller 8 - 10 tonne	hour	6x0.65	1469.00	5,729.10
		or				
		Smooth 3 wheeled steel roller @ 8-10 tonnes.	hour	12.000		
		Water tanker 6 KL capacity	hour	3.000	100.00	300.00
		Tipper	tonne.km	495 x L	2.00	-
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				-
		c) Material (Table 400-11)				
		45 mm to 22.4 mm@ 30 per cent	cum	89.100	1184.90	105,574.59
		22.4 mm to 2.36 mm @ 40 per cent	cum	118.800	1235.00	146,718.00
		2.36 mm to 75 micron@ 30 per cent	cum	89.100	1217.90	108,514.89
		Cost of water	KL	18.000	40.00	720.00
		d) Overhead charges @ 15% on (a+b+c)				58,635.39
		e) Contractor's profit @ 15% on (a+b+c+d)				67,430.70
		Cost for 225 cum = a+b+c+d+e				516,968.66
		Rate per cum = (a+b+c+d+e)/225				2,297.64
					say	2,298.00
4.1	502	Prime Coat				

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.				
		Unit = sqm				
		Taking output = 3500 sqm				
		a) Labour				
		Mate	day	0.080	140.00	11.20
		Mazdoor	day	2.000	125.00	250.00
		b) Machinery				
		Mechanical broom @ 1250 sqm per hour	hour	2.800	340.00	952.00
		Air compressor 250 cfm	hour	2.800	304.00	851.20
		Bitumen pressure distributor @ 1750 sqm per hour	hour	2.000	1022.00	2,044.00
		Water tanker 6 KL capacity @ 1 trip per hour	hour	1.000	100.00	100.00
		c) Material				
		Bitumen emulsion @ 0.6 kg per sqm	tonne	2.100	33045.40	69,395.34
		Cost of water	KL	6.000	40.00	240.00
		d) Overhead charges @ 15% on (a+b+c)				11,076.56
		e) Contractor's profit @ 15% on (a+b+c+d)				12,738.05
		Cost for 3500 sqm = a+b+c+d+e				97,658.35
		Rate per sqm = (a+b+c+d+e)/3500				27.90
					say	28.00
4.2.2	503	Tack Coat				
		Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 kg per sqm on the prepared granular surface treated with primer cleaned with mechanical broom all complete as per Technical specifications and as directed by the Engineer-in-charge.				
		Unit = sqm				
		Taking output = 3500 sqm				
		a) Labour				
		Mate	day	0.080	140.00	11.20
		Mazdoor	day	2.000	125.00	250.00
		b) Machinery				
		Mechanical broom @ 1250 sqm per hour	hour	2.800	340.00	952.00
		Air compressor 250 cfm	hour	2.800	304.00	851.20
		Emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	1022.00	2,044.00
		c) Material				
		Bitumen emulsion @ 0.2 kg per sqm	tonne	0.875	33045.40	28,914.73
		d) Overhead charges @ 15% on (a+b+c)				4,953.47
		e) Contractor's profit @ 15% on (a+b+c+d)				5,696.49
		Cost for 3500 sqm = a+b+c+d+e				43,673.08
		Rate per sqm = (a+b+c+d+e)/3500				12.48
					say	12.00
4.2.3	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 nominal bituminous surface cleaned with mechanical broom all complete as per Technical specifications and as directed by the Engineer-in-charge.				
		Unit = sqm				
		Taking output = 3500 sqm				
		a) Labour				
		Mate	day	0.080	140.00	11.20
		Mazdoor	day	2.000	125.00	250.00
		b) Machinery				

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		Mechanical broom @ 1250 sqm per hour	hour	2.800	340.00	952.00
		Air compressor 250 cfm	hour	2.800	304.00	851.20
		Emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	1022.00	2,044.00
		c) Material				
		Bitumen emulsion @ 0.2 kg per sqm	tonne	0.700	33045.40	23,131.78
		d) Overhead charges @ 15% on (a+b+c)				4,086.03
		e) Contractor's profit @ 15% on (a+b+c+d)				4,698.93
		Cost for 3500 sqm = a+b+c+d+e				36,025.14
		Rate per sqm = (a+b+c+d+e)/3500				10.29
					say	10.00
4.3	507	Dense Graded Bituminous Macadam				
		Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.				
		Unit = cum				
		Taking output = 195 cum (450 tonnes)				
		a) Labour				
		Mate	day	0.840	140.00	117.60
		Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	125.00	2,000.00
		Skilled mazdoor for checking line & levels	day	5.000	140.00	700.00
		b) Machinery				
		Batch mix HMP @ 75 tonne per hour	hour	6.000	16499.00	98,994.00
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2549.00	15,294.00
		Generator 250 KVA	hour	6.000	1350.00	8,100.00
		Front end loader 1 cum bucket capacity	hour	6.000	768.00	4,608.00
		Tipper 10 tonne capacity	tonne.km	450 x L	2.00	-
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				-
		smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	439.00	1,712.10
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	1469.00	5,729.10
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1090.00	4,251.00
		c) Materials				
		Bitumen @ 4.25 per cent of weight of mix	tonne	19.130	32146.18	614,956.42
		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 - II19 mm (Nominal Size)				
		25 - 10 mm 30 per cent	cum	86.160	1235.00	106,407.60
		10 - 5 mm 28 per cent	cum	80.430	1235.00	99,331.05
		5 mm and below 40 per cent	cum	114.900	1217.90	139,936.71

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3000.00	25,860.00
		For Grading II (19 mm nominal size)				
		d) Overhead charges @ 15% on (a+b+c)				169,199.64
		e) Contractor's profit @ 15% on (a+b+c+d)				194,579.58
		Cost for 195 cum = a+b+c+d+e				1,491,776.80
		Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				7,650.14
					say	7,650.00
4.4	509	Bituminous Concrete				
		Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects				
		Unit = cum				
		Taking output = 191 cum (450 tonnes)				
		a) Labour				
		Mate	day	0.840	140.00	117.60
		Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	125.00	2,000.00
		Skilled mazdoor for checking line & levels	day	5.000	140.00	700.00
		b) Machinery				
		Batch mix HMP @ 75 tonne per hour	hour	6.000	16499.00	98,994.00
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2549.00	15,294.00
		Generator 250 KVA	hour	6.000	1350.00	8,100.00
		Front end loader 1 cum bucket capacity	hour	6.000	768.00	4,608.00
		Tipper 10 tonne capacity	tonne.km	450 x L	2.00	-
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				-
		Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	439.00	1,712.10
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	1469.00	5,729.10
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1090.00	4,251.00
		c) Material				
		i) Bitumen @ 5 per cent of weight of mix	tonne	22.500	32146.18	723,289.05
		ii) Aggregate				
		Total weight of mix = 450 tonnes				
		Weight of bitumen = 22.5 tonnes				
		Weight of aggregate = 450 - 22.50 = 427.50 tonnes				
		Taking density of aggregate = 1.5 ton/cum				
		Volume of aggregate = 285 cum				
		* Grading - I-19 mm (Nominal Size)				
		20 - 10 mm 35 per cent	cum	99.750	1235.00	123,191.25
		10 - 5 mm 23 per cent	cum	65.550	1235.00	80,954.25
		5 mm and below 40 per cent	cum	114.000	1217.90	138,840.60
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3000.00	25,860.00
		or				
		Grading - II-13 mm (Nominal Size)				
		13.2 - 10 mm 30 per cent	cum	85.500	1235.00	105,592.50

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		10 - 5 mm 25 per cent	cum	71.250	1235.00	87,993.75
		5 mm and below 43 per cent	cum	122.550	1217.90	149,253.65
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3000.00	25,860.00
		*Any one of the alternative may be adopted as per approved design				
4.4.2		for Grading-II (10 mm nominal size)				
		d) Overhead charges @ 15% on (a+b+c)				185,024.21
		e) Contractor's profit @ 15% on (a+b+c+d)				212,777.84
		Cost for 191 cum = a+b+c+d+e				1,631,296.80
		Rate per cum = (a+b+c+d+e)/191 (For Grading-II)				8,540.82
					say	8,541.00
6.2	801	Retro-Reflectorised Traffic Signs				
		Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing				
		Unit = Each				
		Taking output = one traffic sign				
		i) Excavation for foundation	cum	0.216	138.00	29.81
		ii) Cement concrete M15 grade	cum	0.120	4966.00	595.92
		iii) Painting angle iron post two coats	sqm	0.430	45.00	19.35
		a) Labour (For fixing at site)				
		Mate	day	0.010	140.00	1.40
		Mazdoor	day	0.250	125.00	31.25
		b) Material				
		Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	34.50	655.50
		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.				
		90 cm equilateral triangle	sqm	0.350	3689.00	1,291.15
		or				
		60 cm equilateral triangle	sqm	0.156	3689.00	575.48
		or				
		60 cm circular	sqm	0.283	3689.00	1,043.99
		or				
		80 mm x 60 mm rectangular	sqm	0.480	3689.00	1,770.72
		or				
		60 cm x 45 cm rectangular	sqm	0.270	3689.00	996.03
		or				
		60 cm x 60 cm square	sqm	0.360	3689.00	1,328.04
		or				
		90 cm high octagon	sqm	0.672	3689.00	2,479.01
		or				
		60 cm x 75 cm rectangular	sqm	0.450	3689.00	1,660.05
		c) Machinery				
		Tractor-trolley	hour	0.010	346.00	3.46
6.2.1		90 cm equilateral triangle				
		d) Overhead charges @ 15% on (a+b+c)				297.41
		e) Contractor's profit @ 15% on (a+b+c+d)				342.03
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				3,267.28
					say	3,267.00
6.2.2		60 cm equilateral triangle				
		d) Overhead charges @ 15% on (a+b+c)				190.06

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		e) Contractor's profit @ 15% on (a+b+c+d)				218.57
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				2,320.81
					say	2,321.00
6.2.3		60 cm circular				
		d) Overhead charges @ 15% on (a+b+c)				260.34
		e) Contractor's profit @ 15% on (a+b+c+d)				299.39
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				2,940.41
					say	2,940.00
6.2.4		80 mm x 60 mm rectangular				
		d) Overhead charges @ 15% on (a+b+c)				369.35
		e) Contractor's profit @ 15% on (a+b+c+d)				424.75
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				3,901.51
					say	3,902.00
6.2.5		60 cm x 75 cm rectangular				
		d) Overhead charges @ 15% on (a+b+c)				352.75
		e) Contractor's profit @ 15% on (a+b+c+d)				405.66
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				3,091.13
					say	3,091.00
6.2.6		60 cm x 60 cm square				
		d) Overhead charges @ 15% on (a+b+c)				302.95
		e) Contractor's profit @ 15% on (a+b+c+d)				348.39
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				3,316.07
					say	3,316.00
6.2.6		90 cm high octagon				
		d) Overhead charges @ 15% on (a+b+c)				475.59
		e) Contractor's profit @ 15% on (a+b+c+d)				546.93
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				4,838.22
					say	4,838.00
6.3.1	801	Direction and Place Identification Signs upto 0.9 sqm Size Board.				
		Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing				
		Unit = sqm				
		Taking output = 0.9 sqm				
		i) Excavation for foundation	cum	0.216	138.00	29.81
		ii) Cement concrete M15 grade	cum	0.120	4966.00	595.92
		iii) Painting angle iron post two coats	sqm	0.430	45.00	19.35
		a) Labour (For fixing at site)				
		Mate	day	0.010	140.00	1.40
		Mazdoor	day	0.200	125.00	25.00
		b) Material				
		Mild steel angle iron 75 mm x 75 mm x 6 mm, 2.85 metres long	kg	19.000	34.50	655.50
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size 0.9 sqm	sqm	0.900	3689.00	3,320.10
		Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.				
		c) Machinery				
		Tractor-trolley	hour	0.020	346.00	6.92
		d) Overhead charges @ 15% on (a+b+c)				601.34
		e) Contractor's profit @ 15% on (a+b+c+d)				691.54
		Cost for 0.9 sqm = i+ii+iii+ a+b+c+d+e				5,946.87

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		Rate per sqm (for sign having area upto 0.9 sqm) = (I+ii+iii+a+b+c+d+e)/0.90				6,607.64
					say	6,608.00
6.3.2	801	Direction and Place Identification Signs with size more than 0.9 sqm size Board.				
		Providing and erecting direction and place identification retro- reflectorised sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing				
		Unit = sqm				
		Taking output = 1.50 sqm				
		i) Excavation for foundation	cum	0.430	138.00	59.34
		ii) Cement concrete M15 grade	cum	0.240	4966.00	1,191.84
		iii) Painting angle iron post 2 coats	sqm	0.860	45.00	38.70
		a) Labour (For fixing at site)				
		Mate	day	0.010	140.00	1.40
		Mazdoor	day	0.300	125.00	37.50
		b) Material				
		Mild steel angle iron 75 mm x 75 mm x 6 mm, 2.85 metres long, 2 nos	kg	38.000	34.50	1,311.00
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting	sqm	1.500	3689.00	5,533.50
		Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.				
		c) Machinery				
		Tractor-trolley	hour	0.020	346.00	6.92
		d) Overhead charges @ 15% on (a+b+c)				1,027.71
		e) Contractor's profit @ 15% on (a+b+c+d)				1,187.70
		Cost for 1.5 sqm = i+ii+iii+ a+b+c+d+e				10,395.62
		Rate per sqm (for sign having area more than 0.9 sqm) = (i+ii+iii+a+b+c+d+e)/1.50				6,930.41
					say	6,930.00
6.5	803	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface				
		Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.				
		Unit = sqm				
		Taking output = 640 sqm				
		a) Labour				
		Mate	day	0.500	140.00	70.00
		Mazdoor	day	2.000	125.00	250.00
		b) Machinery				
		Road marking machine @ 80 sqm per hour	hour	8.000	89.00	712.00
		Tractor-trolley	hour	8.000	346.00	2,768.00
		c) Material				
		Hot applied thermoplastic compound	Litre	2000.000	55.00	110,000.00
		Reflectorising glass beads	kg	200.000	45.00	9,000.00
		d) Overhead charges @ 15% on (a+b+c)				18,420.00

Ref. to						
	MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		e) Contractor's profit @ 15% on (a+b+c+d)				21,183.00
		Cost for 640 sqm = a+b+c+d+e				162,403.00
		Rate per sqm = a+b+c+d+e/640				270.67
					say	271.00
	804	Kilometre Stone				
6.6		Reinforced cement concrete M15 grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc				
6.6.1		5th kilometre stone (precast)				
		Unit = Nos.				
		Taking output = 6 Nos.				
		a) M-15 grade of concrete	cum	2.350	4966.00	11,670.10
		b) Steel reinforcement @ 5 kg per sqm	kg	22.080	53.76	1,186.98
		c) Excavation in soil for foundation	cum	1.680	138.00	231.84
		d) Painting two coats on concrete surface	sqm	9.850	52.00	512.20
		e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	1800.000	0.30	540.00
		Transportation and fixing				
		f) Labour				
		Mate	day	0.260	140.00	36.40
		Mason	day	0.600	200.00	120.00
		Mazdoor including loading/unloading	day	6.000	125.00	750.00
		g) Machinery				
		Tractor-trolley	hour	6.000	346.00	2,076.00
		h) Overhead charges @ 15% on (f+g)				447.36
		i) Contractor's profit @ 15% on (f+g+h)				514.46
		Cost for 6 Nos. 5th km stone = a+b+c+ d+e +f+g+h +i				18,085.34
		Rate for each 5th km stone = (a+b+c+ d+e +f+g+h +i) /6				3,014.22
					say	3,014.00
6.6.2		Ordinary kilometer stone (precast)				
		Unit = Nos.				
		Taking output = 14 Nos.				
		a) M-15 grade of concrete	cum	3.770	4966.00	18,721.82
		b) Steel reinforcement @ 5 kg per sqm	kg	26.320	53.76	1,414.91
		c) Excavation in soil for foundation	cum	2.770	138.00	382.26
		d) Painting two coats on concrete surface	sqm	11.410	52.00	593.32
		e) Lettering on km post (average 12 letters of 10 cm height each)	per cm per letter	1680.000	0.30	504.00
		Transportation and fixing				
		f) Labour				
		Mate	day	0.320	140.00	44.80
		Mason	day	1.000	200.00	200.00
		Mazdoor	day	7.000	125.00	875.00
		g) Machinery				
		Tractor-trolley	hour	6.000	346.00	2,076.00
		h) Overhead charges @ 15% on (f+g)				479.37
		i) Contractor's profit @ 15% on (f+g+h)				551.28
		Cost for 14 Nos. ordinary km stone = (a+b+ c +d+e+f+g+h+i)				25,842.76
		Rate for each ordinary km stone = (a+b+ c +d+e+f+g+h+j) /14				1,845.91
					say	1,846.00
6.6.3		Hectometer stone (precast)				
		Unit = Nos.				
		Taking output = 33 Nos.				
		a) M-15 grade of concrete	cum	1.580	4966.00	7,846.28

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		b) Steel reinforcement @ 5 kg per sqm	kg	66.000	53.76	3,548.03
		c) Excavation in soil for foundation	cum	1.390	138.00	191.82
		d) Painting two coats on concrete surface	sqm	6.270	52.00	326.04
		e) Lettering on km post (average 1 letter of 10 cm height each)	per cm per letter	330.000	0.30	99.00
		Transportation and fixing				
		f) Labour				
		Mate	day	0.340	140.00	47.60
		Mason	day	1.500	200.00	300.00
		Mazdoor	day	7.000	125.00	875.00
		g) Machinery				
		Tractor-trolley	hour	6.000	346.00	2,076.00
		h) Overhead charges @ 15% on (f+g)				494.79
		i) Contractor's profit @ 15% on (f+g+h)				569.01
		Cost for 33 Nos. Hectometer stone = (a+b +c +d+e+f+g+h+i)				16,373.57
		Rate for each Hectometer stone = (a+b +c +d+e+f+g+h+i) 33				496.17
					say	496.00
6.8	806	Boundary pillar				
		Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25-1967, fixed in position including finishing and lettering but excluding painting				
		Unit = Each				
		Taking output = 57 Nos.				
		a) M-15 grade of the boundary stone	cum	1.250	4966.00	6,207.50
		b) Steel reinforcement	kg	79.800	53.76	4,289.89
		c) Excavation in soil	cum	10.720	138.00	1,479.36
		d) Lettering, each 10 cm high	per letter per cm high	2280.000	0.30	684.00
		Transportation and fixing				
		e) Labour				
		Mate	day	0.570	140.00	79.80
		Mazdoor	day	14.250	125.00	1,781.25
		f) Machinery				
		Tractor-trolley	hour	6.000	346.00	2,076.00
		g) Material				
		Stone spall	cum	11.970	924.70	11,068.66
		h) Overhead charges @ 15% on (e+f+g)				2,250.86
		i) Contractor's profit @ 15% on (e+f+g+h)				2,588.48
		Cost for 57 Nos. boundary pillar = (a+b +c+d +e+ f+g+h+i)				32,505.80
		Rate for each boundary pillar = (a+b+c+d+e+f+g+h+i)/57				570.28
					say	570.00
6.12	Suggestive	Road Markers/Road Stud with Lense Reflector				
		Providing and fixing of road stud 100 x 100 mm, die-cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973				
		Unit = Nos				
		Taking output = 50Nos				
		a) Labour				
		Mate	day	0.040	140.00	5.60

Ref. to		Description	Unit	Quantity	Rate Rs	Cost Rs
MoRTH	Spec.					
		Mazdoor	day	1.000	125.00	125.00
		b) Material				
		Aluminium studs 100 x 100 mm fitted with lense reflectors	each	50.000	155.63	7,781.50
		Add 10 per cent of cost of material for fixing and installation				778.15
		c) Overhead charges @ 15% on (a+b)				1,303.54
		d) Contractor's profit @ 15% on (a+b+c)				1,499.07
		Cost for 50 studs = a+b+c+d				11,492.86
		Rate per studs = (a+b+c+d)/50				229.86
					say	230.00
7.1	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.				
7.1.1		Ordinary soil				
		Unit = cum				
		Taking output = 10 cum				
		Mechanical Means				
		Depth upto 3 m				
		Unit = cum				
		Taking output = 240 cum				
		a) Labour				
		Mate	day	0.32	140.00	44.80
		Mazdoor	day	8.00	125.00	1,000.00
		b) Machinery				
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1241.00	7,446.00
		c) Overhead charges @ 20% on (a+b)				1,698.16
		d) Contractor's profit @ 15% on (a+b+c)				1,528.34
		Cost for 240 cum = a+b+c+d				11,717.30
		Rate per cum = (a+b+c+d)/240				48.82
					say	49.00
7.1.2		Ordinary Rock (not requiring blasting)				
		Mechanical Means				
		Unit = cum				
		Taking output = 180 cum				
		a) Labour				
		Mate	day	0.24	140.00	33.60
		Mazdoor	day	6.00	125.00	750.00
		b) Machinery				
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1241.00	7,446.00
		c) Overhead charges @ 20% on (a+b)				1,645.92
		d) Contractor's profit @ 15% on (a+b+c)				1,481.33
		Cost for 180 cum = a+b+c+d				11,356.85
		Rate per cum = (a+b+c+d)/180				63.09
					say	63.00
7.2	1500, 1700 & 2100	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.				
7.2.1		PCC Grade M15				
		Unit = cum				
		Taking output = 15 cum				
		a) Material				
		Cement	tonne	4.13	4620.00	19,080.60

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		Coarse sand	cum	6.75	1506.65	10,169.89
		40 mm Aggregate	cum	8.10	1184.90	9,597.69
		20 mm Aggregate	cum	4.05	1235.00	5,001.75
		10 mm Aggregate	cum	1.35	1235.00	1,667.25
		b) Labour				
		Mate	day	0.86	140.00	120.40
		Mason	day	1.50	200.00	300.00
		Mazdoor	day	20.00	125.00	2,500.00
		c) Machinery				
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	222.00	1,332.00
		Generator 63 KVA	hour	6.00	355.00	2,130.00
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3460.00		
		d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				2,075.98
		e) Overhead charges @ 20% on (a+b+c+d)				10,795.11
		f) Contractor's profit @ 15% on (a+b+c+d+e)				9,715.60
		Cost for 15 cum = a+b+c+d+e+f				74,486.27
		Rate per cum = (a+b+c+d+e+f)/15				4,965.75
					say	4,966.00
7.2.3		RCC Grade M25				
		With Batching Plant, Transit Mixer and Concrete Pump				
		Unit: cum				
		Taking Output = 120 cum				
		a) Material				
		Cement	tonne	48.38	4620.00	223,515.60
		Coarse sand	cum	54.00	1506.65	81,359.10
		20 mm Aggregate	cum	64.80	1235.00	80,028.00
		10 mm Aggregate	cum	43.20	1235.00	53,352.00
		b) Labour				
		Mate	day	0.84	140.00	117.60
		Mason	day	3.00	200.00	600.00
		Mazdoor	day	18.00	125.00	2,250.00
		c) Machinery				
		Batching Plant @ 20 cum/hour	hour	6.00	2128.00	12,768.00
		Generator 100 KVA	hour	6.00	665.00	3,990.00
		Loader 1 cum capacity 1 cum	hour	6.00	768.00	4,608.00
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	886.00	13,290.00
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	2.35	-
		Concrete Pump	hour	6.00	244.00	1,464.00
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3978.00		
		d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery				17,900.34
		e) Overhead charges @ 20% on (a+b+c+d)				99,048.53
		f) Contractor's profit @ 15% on (a+b+c+d+e)				89,143.67
		cost of 120 cum = a+b+c+d+e+f				683,434.84
		Rate per cum (a+b+c+d+e+f)/120				5,695.29
					say	5,695.00
7.3	1600	Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.				
		Unit = 1 MT				
		Taking output = 1 MT				
		a) Material				
		HYSD bars including 5 per cent overlaps and wastage	tonne	1.05	35700.00	37,485.00

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		Binding wire	Kg	6.00	34.50	207.00
		b) Labour for cutting, bending, shifting to site, tying and placing in position				
		Mate	day	0.40	140.00	56.00
		Blacksmith	day	2.00	200.00	400.00
		Mazdoor	day	6.00	125.00	750.00
		c) Overhead charges @ 20% on (a+b)				7,779.60
		d) Contractor's profit @ 15% on (a+b+c)				7,001.64
						53,679.24
					say	53,679.00
10.12	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				
		Using Concrete Mixer				
		Unit = Running metre				
		Taking output = 300 metre length				
		Cement Concrete				
		Cement concrete of grade M20= 17.48 cum				
		Cement concrete of grade M10 for base = 23.18 cum				
		Total Concrete = 40.66 cum				
		Using Concrete Batching and Mixing Plant				
		Unit = Running metre				
		Taking output = 300 metre length				
		Cement Concrete				
		Cement concrete of grade M20= 17.48 cum				
		Cement concrete of grade M10 for base = 23.18 cum				
		Total Concrete = 40.66 cum				
		a) Labour				
		Mate	day	0.120	140.00	16.80
		Mason	day	1.000	200.00	200.00
		Mazdoor	day	2.000	125.00	250.00
		b) Machinery				
		Kerb casting machine @ 50 metres/hour for laying kerb and channel	hour	6.000	295.00	1770.00
		Concrete batching and mixing plant @ 15 cum/hr.	hour	2.700	1773.00	4787.10
		Water tanker 6 KL capacity	hour	6.000	100.00	600.00
		Tipper of 5.5 cum capacity	hour	6.000	3.00	18.00
		c) Material				
		Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	1235.00	45188.65
		Coarse sand 30 per cent	cum	18.300	1506.65	27571.70
		Cement 10 per cent	tonne	9.010	4620.00	41626.20
		Cost of water	KL	36.000	40.00	1440.00
		d) Overhead charges @ 15% on (a+b+c)				18520.27
		e) Contractor's profit @ 15% on (a+b+c+d)				21298.31
		Cost for 300 meter = a+b+c+d+e				163287.02
		Rate per metre = (a+b+c+d+e)/300				544.29
					say	544.00
6.4	803	Painting Two Coats on New Concrete Surfaces				

	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces				
		Unit = sqm				
		Taking output = 40 sqm				
		a) Labour				
		Mate	day	0.120	140.00	16.80
		Painter	day	2.000	200.00	400.00
		Mazdoor	day	1.000	125.00	125.00
		b) Material				
		Paint conforming to requirement of clause 803.3.	Litre	6.000	172.00	1,032.00
		Add for scaffolding @ 1 per cent of labour cost where required				10.32
		Add @ 5 per cent cost of labour and materials to prepare the surface by filling minuts roughness on the surface and priming the surface before laying 2 coats of painting.				78.69
		c) Overhead charges @ 15% on (a+b)				249.42
		d) Contractor's profit @ 15% on (a+b+c)				286.83
		Cost for 40 sqm = a+b+c+d				2,199.07
		Rate per sqm = (a+b+c+d)/40				54.98
					say	55.00

(A) Usage Rates of Plant and Machinery						
Sl. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate
1	Air Compressor	General Purpose	capacity in cfm	170/250	hour	304
2	Batching and Mixing Plant (a) 30 cum capacity	Concrete Mixing	cum/hour	20	hour	2128
3	Batching and Mixing Plant (b) 15 - 20 cum capacity	Concrete Mixing	cum/hour	13	hour	1773
4	Bitumen Pressure Distributor	Applying bitumen tack coat	sqm/hour	1750	hour	1022
5	Bitumen Boiler oil fired	Bitumen Spraying	capacity in litre	1500	hour	189
6	Concrete Paver Finisher with 40 HP Motor	Paving of concrete surface	cum / hour	20	hour	2733
7	Concrete Pump of 45 & 30 cum capacity	Pumping of concrete	cum / hour	33 / 22	hour	244
8	Concrete Bucket	For Pouring concrete	capacity in cum	1	hour	15
9	Concrete Mixer (a) 0.4/0.28 cum	Concrete Mixing	cum/hour	2.5	hour	222
10	Concrete Mixer (b) 1 cum	Concrete Mixing	cum/hour	7.5	hour	222
11	Crane (a) 80 tonnes	Lifting Purpose			hour	1219
12	Cranes b) 35 tonnes	Lifting Purpose			hour	813
13	Cranes c) 3 tonnes	Lifting Purpose			hour	340
14	Dozer D - 80 - A 12	Spreading /Cutting / Clearing	cum/hour	300/ 150/250	hour	3546
15	Dozer D - 50 - A 15	Spreading /Cutting / Clearing	cum/hour	200/ 120/150	hour	2102
16	Emulsion Pressure Distributor	Applying emulsion tack coat	sqm/hour	1750	hour	762
17	Front End loader 1 cum bucket capacity	Soil loading / Aggregate loading	cum/hour	60 /25	hour	768
18	Generator (a) 125 KVA	Genration of electric Energy	KVA	100	hour	665
19	Generator(b) 63 KVA	Genration of electric Energy	KVA	50	hour	355
20	GSB Plant 50 cum	Producing GSB	cum/hour	40	hour	990
21	Hotmix Plant - 120 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	40	hour	22310
22	Hotmix Plant - 100 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	30	hour	16499
23	Hotmix Plant - 60 to 90 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	25	hour	13194
24	Hotmix Plant - 40 to 60 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	17	hour	10564
25	Hydraulic Chip Spreader	Surface Dressing	sqm/hour	1500	hour	2512
26	Hydraulic Excavator of 1 cum bucket	Soil Ordinary/Soil Marshy / Soil Unsuitable	cum/hour	60 /60 /60	hour	1241
27	Integrated Stone Crusher 100THP	Crushing of Spalls	TPH	100	hour	8259
28	Integrated Stone Crusher 200 HP	Crushing of Spalls	TPH	200	hour	17375
29	Kerb Casting Machine	Kerb Making	Rm/hour	80	hour	295
30	Mastic Cooker	Mastic Wearing coat	capacity in tonne	1	hour	59
31	Mechanical Broom Hydraulic	Surface Cleaning	sqm/hour	1250	hour	340
32	Motor Grader 3.35 mtr blade	Clearing /Spreading /GSB /WBM	cum/hour	200/200/50/50	hour	2283
33	Mobile slurry seal equipment	Mixing and laying slurry seal	sqm/hour	2700	hour	960
34	Paver Finisher Hydrostatic with sensor control 100 TPH	Paving of DBM/ BM/SDC/ Premix	cum/hour	40	hour	2549
35	Paver Finisher Mechanical 100 TPH	Paving of WMM /Paving of DLC	cum/hour	40/30	hour	929

(A) Usage Rates of Plant and Machinery						
Sl. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate
36	Piling Rig with Bantonite Pump	0.75 m dia to 1.2 m dia Boring attachment	Rm/hour	2 to 3	hour	5,208.00
37	Pneumatic Road Roller	Rolling of Asphalt Surface	cum/hour	25	hour	1,185.00
38	Pneumatic Sinking Plant	Pneumatic Sinking of wells	cum/hour	1.5 to 2.00	hour	3,974.00
39	Pot Hole Repair Machine	Repair of potholes	cum/hour	4	hour	864.00
40	Prestressing Jack with Pump & access	Stressing of steel wires/stands			hour	123.00
41	Ripper	Scarifying	cum/hour	60	hour	27.00
42	Rotavator	Scarifying	cum/hour	25	hour	16.00
43	Road marking machine	Road marking	Sqm/hour	100	hour	89.00
44	Smooth Wheeled Roller 8 tonne	Soil Compaction /BM Compaction	cum/hour	70/25	hour	439.00
45	Tandem Road Roller	Rolling of Aspalt Surface	cum/hour	30	hour	1,090.00
46	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	km	23.00
47	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	tonne.km	3.00
48	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	hour	295.00
49	Transit Mixer 4.0/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	hour	886.00
50	Transit Mixer 4/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	tonne.km	2.35
51	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	hour	813.00
52	Tractor	Pulling	capacity in HP	50	hour	346.00
53	Tractor with Rotevator	Rate of Tractor + Rotevator			hour	344.48
54	Tractor with Ripper	Rate of Tractor 6+ Ripper			hour	354.33
55	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	km	21.00
56	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	tonne.km	2.00
57	Vibratory Roller 8 tonne	Earth or soil / GSB / WBM	cum/hour	100/60/60	hour	1,469.00
58	Water Tanker	Water Transport	capacity in KL	5	hour	100.00
59	Water Tanker	Water Transport	capacity in KL	6	km	23.00
Sl. No.	Description of Machine				Unit	Rate
60	Air compressor with pneumatic chisel attachment for cutting hard clay.				hour	304
61	Cement concrete batch mix plant @ 175 cum per hour (effective output)				hour	7,200.00
62	Cement concrete batch mix plant @ 75 cum per hour				hour	2,880.00
63	Generator 33 KVA				hour	355.00
64	Generator 100 KVA				hour	665.00
65	Generator 250 KVA				hour	1,350.00
66	Joint Cutting Machine with 2-3 blades (for rigid pavement)				hour	1,423.00
67	Plate compactor				hour	32.00
68	Texturing machine (for rigid pavement)				hour	1,770.00
69	Wet Mix Plant 75 TPH				hour	1,148.00
70	Crane with grab 0.75 cum capacity				hour	240.00

(B) Labour			
Sl. No.	Description of Labour	Unit	Rate
1	Blacksmith (IInd class)	day	190.00
2	Blacksmith (Ist class)/ Welder/ Plumber/ Electrician	day	200.00
3	Blaster (Stone cutter)	day	140.00
4	Carpenter I Class	day	200.00
5	Chiseller (Head Mazdoor)	day	140.00
6	Driller (Jumper)	day	125.00
7	Diver	day	140.00
8	Fitter	day	150.00
9	Mali	day	125.00
10	Mason (IInd class)	day	190.00
11	Mason (Ist class)	day	200.00
12	Mate / Supervisor (Bituminous Work Labour)	day	140.00
13	Mazdoor (Bituminous Work Labour)	day	125.00
14	Mazdoor/Dresser (Semi Skilled) (Bituminous Work Labour)	day	135.00
15	Mazdoor/Dresser/Sinker (Skilled) (Bituminous Work Labour)	day	140.00
16	Mate / Supervisor	day	140.00
17	Mazdoor	day	125.00
18	Mazdoor/Dresser (Semi Skilled)	day	135.00
19	Mazdoor/Dresser/Sinker (Skilled)	day	140.00
20	Painter I class	day	200.00
21	Plumber I class	day	200.00
22	Electrician Grade I	day	200.00

(C) Materials				
Sl. No.	Description	Unit	Rate	
3	Boulder with minimum size of 300 mm for Pitching at Site	cum	1,159.70	
4	Coarse sand at Mixing Plant	cum	1,506.65	
5	Coarse sand at Site	cum	1,506.65	
6	Fine sand at Site	cum	483.25	
7	Gravel/Quarry spall at Site	Cum	924.70	
8	Filter media/Filter Material as per Table 300-3 (MoRT&H Specification)	Cum	1,149.03	
	Description	Unit	Rate at Plant (HMP/Batching)	Rate at Site
9	Close graded Granular sub-base Material 53 mm to 9.5 mm	cum	1,151.10	1,151.10
10	Close graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	1,151.10	1,151.10
11	Close graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	1,151.10	1,151.10
12	Close graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	1,151.10	1,151.10
13	Close graded Granular sub-base Material 9.5 mm to 2.36 mm	cum	1,151.10	1,151.10
14	Close graded Granular sub-base Material 4.75mm to 2.36 mm	cum	1,217.90	1,217.90
15	Close graded Granular sub-base Material 4.75mm to 75 micron		1,217.90	1,217.90
16	Close graded Granular sub-base Material 2.36 mm	cum	1,217.90	1,217.90
17	Stone crusher dust finer than 3mm with not more than 10% passing 0.075 sieve.	cum	1,166.70	1,166.70
18	Coarse graded Granular sub-base Material 2.36 mm & below	cum	1,217.90	1,217.90
19	Coarse graded Granular sub-base Material 4.75mm to 75 micron		1,217.90	1,217.90
20	Coarse graded Granular sub-base Material 4.75 mm to 2.36 mm	cum	1,217.90	1,217.90
21	Coarse graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	1,151.10	1,151.10
22	Coarse graded Granular sub-base Material 26.5 mm to 4.75 mm	cum	1,151.10	1,151.10
23	Coarse graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	1,151.10	1,151.10
24	Coarse graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	1,151.10	1,151.10
25	Coarse graded Granular sub-base Material 53 mm to 26.5mm	cum	1,151.10	1,151.10
26	Aggregates below 5.6 mm	cum	1,217.90	1,217.90
27	Aggregates 22.4 mm to 2.36 mm	cum	1,235.00	1,235.00
28	Aggregates 22.4 mm to 5.6 mm	cum	1,235.00	1,235.00
29	Aggregates 45 mm to 2.8 mm	cum	1,235.00	1,235.00
30	Aggregates 45 mm to 22.4 mm	cum	1,184.90	1,184.90
31	Aggregates 53 mm to 2.8 mm	cum	1,184.90	1,184.90
32	Aggregates 53 mm to 22.4 mm	cum	1,184.90	1,184.90
33	Aggregates 63 mm to 2.8 mm	cum	1,157.40	1,157.40
34	Aggregates 63 mm to 45 mm	cum	1,157.40	1,157.40
35	Aggregates 90 mm to 45 mm	cum	1,135.30	1,135.30
36	Aggregates 10 mm to 5 mm	cum	1,235.00	1,235.00

(C) Materials				
	Description	Unit	Rate at Plant (HMP/Batching)	Rate at Site
37	Aggregates 11.2 mm to 0.09 mm	cum	1,235.00	1,235.00
38	Aggregates 13.2 mm to 0.09 mm	cum	1,235.00	1,235.00
39	Aggregates 13.2 mm to 5.6 mm	cum	1,235.00	1,235.00
40	Aggregates 13.2 mm to 10 mm	cum	1,235.00	1,235.00
41	Aggregates 20 mm to 10 mm	cum	1,235.00	1,235.00
42	Aggregates 25 mm to 10 mm	cum	1,235.00	1,235.00
43	Aggregates 19 mm to 6 mm	cum	1,235.00	1,235.00
44	Aggregates 37.5 mm to 19 mm	cum	1,184.90	1,184.90
45	Aggregates 37.5 mm to 25 mm	cum	1,184.90	1,184.90
46	Aggregates 6 mm nominal size	cum	1,217.90	1,217.90
47	Aggregates 10 mm nominal size	cum	1,235.00	1,235.00
48	Aggregates 13.2/12.5 mm nominal size	cum	1,235.00	1,235.00
49	Aggregates 20 mm nominal size	cum	1,235.00	1,235.00
50	Aggregates 25 mm nominal size	cum	1,184.90	1,184.90
51	Aggregates 40 mm nominal size	cum	1,184.90	1,184.90
Sl. No.	Description	Unit	Rate	
52	AC pipe 100 mm dia	metre	50.00	
53	Aluminium sheeting fixed with encapsulated lens type reflective sheeting including 2% towards lettering, cost of angle iron, cost of drilling holes, nuts, bolts etc.and signs as applicable	sqm	3,689.00	
54	Aluminium studs 100 x 100 mm fitted with lense reflectors	nos	155.63	
55	Bearing (Elastomeric bearing assembly consisting of 7 internal layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process of vulcanisation.)	nos	10,500.00	
52	Bearing (POT-PTFE consisting of metal piston supported by disc or unreinforced elastomer confined within a metal cylinder) for 614.8 T	nos	92,792.00	
56	Bentonite	kg	4.80	
57	Binding wire	kg	34.50	
58	Bitumen (Cationic Emulsion)	tonne	22,157.57	
59	Bitumen (60-70 grade)	tonne	32,146.18	
62	Bitumen (emulsion)	tonne	33045.4	
64	Brick	each	3.02	
65	Cement	tonne	4,620.00	
66	Cold twisted bars (HYSD Bars)	tonne	35700	
67	Coller for joints 300 mm dia	nos	400.00	
68	Compressible Fibre Board(20mm thick)	sqm	30.00	
69	Copper Plate(12m long x 250mmwide)	kg	277.00	
70	Corrosion resistant Structural steel	tonne	56,000.00	
71	Curing compound	liter	200.00	
72	Delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	425.00	
73	Earth Cost or compensation for earth taken from private land	cum	50.00	
74	Epoxy compound with accessories for preparing epoxy mortar	kg	450.00	

(C) Materials			
Sl. No.	Description	Unit	Rate
75	Epoxy primer	kg	200.00
76	Galvanised MS flat clamp	nos	40.00
77	GI bolt 10 mm Dia	nos	15.00
78	Grouting pump with agitator	hour	300.00
79	Grass (Doob)	kg	1.00
80	Grass (Fine)	kg	1.50
81	Hot applied thermoplastic compound	litre	55.00
82	HTS strand	tonne	50,000.00
83	Joint Sealant Compound	kg	350.00
84	M.S. Clamps	nos	40.00
85	M.S. Clamps	kg	34.50
86	M.S.shoes @ 35 Kg per pile of 15 m	kg	34.50
87	Mild Steel bars	tonne	34,500.00
88	Nuts and bolts	kg	34.50
89	Paint	litre	172.00
90	Pavement Marking Paint	litre	172.00
91	Pesticide	kg	315.00
92	Pipes 200 mm dia, 2.5 m long for drainage	metre	378.00
93	Plastic sheath, 1.25 mm thick for dowel bars	sqm	206.00
94	Pre moulded Joint filler,25 mm thick for expansion joint.	sqm	578.00
95	Pre-coated stone chips of 13.2 mm nominal size	cum	1,296.75
96	Pre-moulded asphalt filler board	sqm	25.00
97	RCC Pipe NP 4 heavy duty non presure pipe 900 mm dia	metre	3,500.00
98	RCC Pipe NP 4 heavy duty non presure pipe 1000 mm dia	metre	3,900.00
99	RCC Pipe NP 4 heavy duty non presure pipe 1200 mm dia	metre	4,500.00
100	RCC Pipe NP 4 heavy duty non presure pipe 300 mm dia	metre	1,200.00
101	Reflectorising glass beads	kg	45.00
103	Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	10.00
104	Sheathing duct	metre	80.00
105	Sludge / Farm yard manure @ 0.18 cum per 100 sqm at site of work for turfing	cum	350.00
106	Strip seal expansion joint	metre	20,000.00
107	Structural Steel	tonne	34,500.00
108	Super plastisizer admixture IS marked as per 9103-1999	kg	150.00
109	Synthetic Geogrids as per clause 3102.8 and approved design and specifications.	sqm	50.00
111	Tiles size 300 x 300 mm and 25 mm thick	each	5.00
112	Tube anchorage set complete with bearing plate, permanent wedges etc	nos	2,450.00
113	Unstaked lime	tonne	3,000.00
114	Water	KL	40.00

	Overheads for Road Works	15%					
	Contractors profit for Road Works	15%					
	Overheads for Bridge Works	20%					
	Overheads for Bridge Works (Rehabilitation)	30%					
	Contractors profit for Bridge Works	15%					
	Lead from Mixing Plant to working site		0.00 km				
	Lead for E/W borrow area to site		0.00 km				

Items No.	Summary of Rates calculated and used for analysis of rates of other items	Unit	Rate
1	Printing new letter and figures of any shade (ii) English Roman	per cm height per	0.30
2	Painting Two Coats on New Concrete Surfaces	sqm	52.00
3	Painting angle iron post two coats	sqm	45.00
4	Cement mortar 1:2 (Excluding OH & CP)	cum	4,629.00
5	Cement mortar 1:3 (Excluding OH & CP)	cum	4,056.00
6	Cement mortar 1:6 (Excluding OH & CP)	cum	3,257.00
7	PCC Grade M15 including OH & CP for Open Foundation by Mixer	cum	4,966.00
8	PCC Grade M15 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3,460.00
9	PCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3,787.00
10	RCC Grade M20 including OH & CP for Open Foundation by Batching Plant	cum	5,338.00
11	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	3,720.00
12	PCC Grade M25 including OH & CP for Open Foundation by Batching Plant	cum	5,646.00
13	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	3,944.00
14	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	4,220.00
15	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	3,969.00
16	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	4,236.00
16	RCC Grade M50 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	4,674.00
17	RCC Grade M35 including OH & CP for Open Foundation by Batching Plant	cum	4,448.00
18	RCC Grade M35 excluding OH & CP for Open Foundation by Batching Plant	cum	6,138.00
19	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	4,319.00
20	PCC Grade M30 excluding OH & CP	cum	3,969.00
21	Excavation for Structures (Manual Means)	cum	138.00
22	Excavation for Structures (Mechanical Meanse)	cum	37.00
23	RCC Grade M20 for super-structure including OH & CP by Batching Plant	cum	6,112.00
24	RCC Grade M30 for super-structure including formwork and excluding OH & CP by Batching Plant	cum	4,429.00
25	RCC Grade M30 for super-structure excluding formwork and excluding OH & CP by Batching Plant	cum	3,691.00
26	RCC Grade M20 for super-structure including OH & CP by Batching Plant	cum	6,564.00
27	RCC Grade M20 for super-structure excluding formwork and excluding OH & CP by Batching Plant	cum	3,964.00
28	RCC Grade M40 for super-structure including OH & CP by Batching Plant	cum	7,544.00
29	RCC Grade M30 for super-structure including formwork and excluding OH & CP by Batching Plant	cum	4,803.00
30	RCC Grade M30 for super-structure excluding formwork and excluding OH & CP by Batching Plant	cum	4,002.00
31	Supplying ,fitting and placing HYSD bar reinforcement in super-structure excluding OH & CP	tonne	39,427.00
32	Supplying, fitting and placing HYSD including OH & CP for sub-structure	tonne	53,758.00
33	PCC Grade M40 excluding OH & CP	cum	4,322.00

Sl.No	Description	Unit	Cost at Quarry	Lead in Km	Lead charges in Rs	Cost at CMP
1	Close graded Granular sub-base Material 53 mm to 9.5 mm	cum		198.00	827.70	1,151.10
2	Close graded Granular sub-base Material 37.5 mm to 9.5 mm	cum		198.00	827.70	1,151.10
3	Close graded Granular sub-base Material 26.5 mm to 9.5 mm	cum		198.00	827.70	1,151.10
4	Close graded Granular sub-base Material 9.5 mm to 4.75 mm	cum		198.00	827.70	1,151.10
5	Close graded Granular sub-base Material 9.5 mm to 2.36 mm	cum		198.00	827.70	1,151.10
6	Close graded Granular sub-base Material 4.75mm to 2.36 mm	cum		198.00	827.70	1,217.90
7	Close graded Granular sub-base Material 4.75mm to 75 micron mm	cum		198.00	827.70	1,217.90
8	Close graded Granular sub-base Material 2.36 mm	cum		198.00	827.70	1,217.90
9	Stone crusher dust finer than 3mm with not more than 10% passing 0.075 sieve.	cum		198.00	827.70	1,166.70
10	Coarse graded Granular sub-base Material 2.36 mm & below	cum		198.00	827.70	1,217.90
11	Coarse graded Granular sub-base Material 4.75mm to 75 micron mm	cum		198.00	827.70	1,217.90
12	Coarse graded Granular sub-base Material 4.75 mm to 2.36 mm	cum		198.00	827.70	1,217.90
13	Coarse graded Granular sub-base Material 9.5 mm to 4.75 mm	cum		198.00	827.70	1,151.10
14	Coarse graded Granular sub-base Material 26.5 mm to 4.75 mm	cum		198.00	827.70	1,151.10
15	Coarse graded Granular sub-base Material 26.5 mm to 9.5 mm	cum		198.00	827.70	1,151.10
16	Coarse graded Granular sub-base Material 37.5 mm to 9.5 mm	cum		198.00	827.70	1,151.10
17	Coarse graded Granular sub-base Material 53 mm to 26.5mm	cum		198.00	827.70	1,151.10
18	Aggregates below 5.6 mm	cum		198.00	827.70	1,217.90
19	Aggregates 22.4 mm to 2.36 mm	cum		198.00	827.70	1,235.00
20	Aggregates 22.4 mm to 5.6 mm	cum		198.00	827.70	1,235.00
21	Aggregates 45 mm to 2.8 mm	cum		198.00	827.70	1,235.00
22	Aggregates 45 mm to 22.4 mm	cum		198.00	827.70	1,184.90
23	Aggregates 53 mm to 2.8 mm	cum		198.00	827.70	1,184.90
24	Aggregates 53 mm to 22.4 mm	cum		198.00	827.70	1,184.90
25	Aggregates 63 mm to 2.8 mm	cum		198.00	827.70	1,157.40
26	Aggregates 63 mm to 45 mm	cum		198.00	827.70	1,157.40
27	Aggregates 90 mm to 45 mm	cum		198.00	827.70	1,135.30
28	Aggregates 10 mm to 5 mm	cum		198.00	827.70	1,235.00
29	Aggregates 11.2 mm to 0.09 mm	cum		198.00	827.70	1,235.00
30	Aggregates 13.2 mm to 0.09 mm	cum		198.00	827.70	1,235.00
31	Aggregates 13.2 mm to 5.6 mm	cum		198.00	827.70	1,235.00
32	Aggregates 13.2 mm to 10 mm	cum		198.00	827.70	1,235.00
33	Aggregates 20 mm to 10 mm	cum		198.00	827.70	1,235.00
34	Aggregates 25 mm to 10 mm	cum		198.00	827.70	1,235.00
35	Aggregates 19 mm to 6 mm	cum		198.00	827.70	1,235.00
36	Aggregates 37.5 mm to 19 mm	cum		198.00	827.70	1,184.90
37	Aggregates 37.5 mm to 25 mm	cum		198.00	827.70	1,184.90
38	Aggregates 6 mm nominal size	cum		198.00	827.70	1,217.90
39	Aggregates 10 mm nominal size	cum		198.00	827.70	1,235.00
40	Aggregates 13.2/12.5 mm nominal size	cum		198.00	827.70	1,235.00
41	Aggregates 20 mm nominal size	cum		198.00	827.70	1,235.00
42	Aggregates 25 mm nominal size	cum		198.00	827.70	1,184.90
43	Aggregates 40 mm nominal size	cum		198.00	827.70	1,184.90
44	Sand for Mortar	cum	1,000.00	170.00	506.65	1,506.65

COST AND CONVEYANCE OF MATERIALS AT CMP

Material Rates

Sl.No	Description	Unit	Cost at Quarry	Lead in Km	Lead charges in Rs	Cost at SITE
COST AND CONVEYANCE OF MATERIALS AT SITE						
1	Close graded Granular sub-base Material 53 mm to 9.5 mm	cum	-	198.00	827.70	1,151.10
2	Close graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	-	198.00	827.70	1,151.10
3	Close graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	-	198.00	827.70	1,151.10
4	Close graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	-	198.00	827.70	1,151.10
5	Close graded Granular sub-base Material 9.5 mm to 2.36 mm	cum	-	198.00	827.70	1,151.10
6	Close graded Granular sub-base Material 4.75mm to 2.36 mm	cum	-	198.00	827.70	1,217.90
7	Close graded Granular sub-base Material 4.75mm to 75 micron mm	cum	-	198.00	827.70	1,217.90
8	Close graded Granular sub-base Material 2.36 mm	cum	-	198.00	827.70	1,217.90
9	Stone crusher dust finer than 3mm with not more than 10% passing 0.075 sieve.	cum	-	198.00	827.70	1,166.70
10	Coarse graded Granular sub-base Material 2.36 mm & below	cum	-	198.00	827.70	1,217.90
11	Coarse graded Granular sub-base Material 4.75mm to 75 micron mm	cum	-	198.00	827.70	1,217.90
12	Coarse graded Granular sub-base Material 4.75 mm to 2.36 mm	cum	-	198.00	827.70	1,217.90
13	Coarse graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	-	198.00	827.70	1,151.10
14	Coarse graded Granular sub-base Material 26.5 mm to 4.75 mm	cum	-	198.00	827.70	1,151.10
15	Coarse graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	-	198.00	827.70	1,151.10
16	Coarse graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	-	198.00	827.70	1,151.10
17	Coarse graded Granular sub-base Material 53 mm to 26 .5mm	cum	-	198.00	827.70	1,151.10
18	Aggregates below 5.6 mm	cum	-	198.00	827.70	1,217.90
19	Aggregates 22.4 mm to 2.36 mm	cum	-	198.00	827.70	1,235.00
20	Aggregates 22.4 mm to 5.6 mm	cum	-	198.00	827.70	1,235.00
21	Aggregates 45 mm to 2.8 mm	cum	-	198.00	827.70	1,235.00
22	Aggregates 45 mm to 22.4 mm	cum	-	198.00	827.70	1,184.90
23	Aggregates 53 mm to 2.8 mm	cum	-	198.00	827.70	1,184.90
24	Aggregates 53 mm to 22.4 mm	cum	-	198.00	827.70	1,184.90
25	Aggregates 63 mm to 2.8 mm	cum	-	198.00	827.70	1,157.40
26	Aggregates 63 mm to 45 mm	cum	-	198.00	827.70	1,157.40
27	Aggregates 90 mm to 45 mm	cum	-	198.00	827.70	1,135.30
28	Aggregates 10 mm to 5 mm	cum	-	198.00	827.70	1,235.00
29	Aggregates 11.2 mm to 0.09 mm	cum	-	198.00	827.70	1,235.00
30	Aggregates 13.2 mm to 0.09 mm	cum	-	198.00	827.70	1,235.00
31	Aggregates 13.2 mm to 5.6 mm	cum	-	198.00	827.70	1,235.00
32	Aggregates 13.2 mm to 10 mm	cum	-	198.00	827.70	1,235.00
33	Aggregates 20 mm to 10 mm	cum	-	198.00	827.70	1,235.00
34	Aggregates 25 mm to 10 mm	cum	-	198.00	827.70	1,235.00
35	Aggregates 19 mm to 6 mm	cum	-	198.00	827.70	1,235.00
36	Aggregates 37.5 mm to 19 mm	cum	-	198.00	827.70	1,184.90
37	Aggregates 37.5 mm to 25 mm	cum	-	198.00	827.70	1,184.90
38	Aggregates 6 mm nominal size	cum	-	198.00	827.70	1,217.90
39	Aggregates 10 mm nominal size	cum	-	198.00	827.70	1,235.00
40	Aggregates 13.2/12.5 mm nominal size	cum	-	198.00	827.70	1,235.00
41	Aggregates 20 mm nominal size	cum	-	198.00	827.70	1,235.00
42	Aggregates 25 mm nominal size	cum	-	198.00	827.70	1,184.90
43	Aggregates 40 mm nominal size	cum	-	198.00	827.70	1,184.90
44	Sand for Mortar	cum	1,000.00	170.00	506.65	1,506.65
45	Sand for filling	cum	320.00	30.00	163.25	483.25
46	Stone Spalls	cum	97.00	198.00	827.70	924.70
47	Random Rubble Stone	cum	332.00	198.00	827.70	1,159.70
48	Filter Material	cum	321.33	198.00	827.70	1,149.03

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