BUILDING INFRASTRUCTURE - BUILDING THE NATION

National Highways & Infrastructure Development Corporation Limited

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR REHABILITATION AND UPGRADING TO 2 LANE/2 LANE WITH PAVED SHOULDERS CONFIGURATION AND STRENGTHENING OF PORTBLAIR – MAYABUNDER - DIGLIPUR SECTION (KM 0.00 TO KM 61, KM 104 TO KM 142 & KM 155 TO KM 333) OF NH-223 IN THE UNION TERRITORY OF ANDAMAN & NICOBAR ISLANDS (PACKAGE NO. SP/B/1)

Cost Estimate

Karala to Kalipur Section
(Km 298 to 330.662)

September-2018

C E C Projects Pvt. Ltd.
In JV with Chaitanya Projects Consultancy Pvt. Ltd
2nd Floor, Plot No. 21-22, R.K.Tower,
Sector-4, Vaishali,
Ghaziabad – 201010
Ph:- 0120-4120472, Fax:- 0120-4110472
Email:- chaitanya.projects@gmail.com

Abstract of Cost - Bill Wise

Sl. No.	Bill No.	Items	Amount (Rs)
A		**ROAD WORKS**	
1	Bill No.1	Site Clearance & Dismantling	1,438,824.43
2	Bill No.2	Earthworks (including subgrade)	-
3	Bill No.3	Sub-base (including hard shoulder)	90,456,775.99
4	Bill No.4	Bituminous Works	187,214,953.92
B		**BRIDGES AND STRUCTURES**	
6	Bill No.5	Culverts(Box)	135,340,697.25
7	Bill No.6	Bridges	32,563,178.30
C		**OTHER APPURENENCE/MISCELLANEOUS ITEMS**	
8	Bill No.7	Drainage and Protection works	73,039,745.27
9	Bill No.8A ,8B	Junctions	39,698,726.21
10	Bill No.8D	Bus Shelter	10,500,000.00
11	Bill No.8E	Passing Places	6,140,614.67
12	Bill No.8C	Parking Space	1,381,453.15
13	Bill No.8F	Premix Carpet with Seal Coat for patch repair work	1,351,501.20
14	Bill No.9	Traffic Sign,Marking and other Appurtenances	31,712,103.48
15	Bill No.10	**Cost of strenghtening of section Km 316.0 to Km 330.662**	270,277,847.11
		Total Construction Cost excluding GST,(Bill No.1 to Bill No.10)	881,116,421.00
		GST @ 6%	52,866,985.26
		Total Construction cost including GST @ 6% (A)	933,983,406.26
		Maintenance Charge for 4Year @5% on (A)	46,699,170.31
		TOTAL (In Crores) =	980,682,576.57
		Cost put to bid	98.07

Abstract of Cost - TCS Wise

Bill No.	Items	Amount (Rs)
I	**Reconstruction of Existing Alignment**	
	TCS (Type-I,II,III)	
	Site Clearance and Dismantling	1,338,253.17
	Earthworks	
	Sub-base	87,850,691.63
	Treated RAP	123,519,117.85
	Bituminous Pavement	46,797,455.12
	Traffic Sign,Marking and Other Appurtenances	29,495,483.98
	Total	**289,001,001.75**
	TCS (Type-IV)	
	Site Clearance and Dismantling	100,571.26
	Earthworks	-
	Sub-base	2,606,084.37
	Treated RAP	5,027,646.89
	Bituminous Pavement	11,870,734.06
	Traffic Sign,Marking and Other Appurtenances	2,216,619.50
	Total	**21,821,656.07**
5	**Culverts (Pipe/ Box)**	
	Box Culvert (Reconstruction)	133,290,697.25
	Culvert (General Maintenance)@50000/Culvert	2,050,000.00
	Total	**135,340,697.25**
6	**Bridges**	
6A	Minor Bridge (Reconstruction)	31,963,178.30
6B	Bridge (Minor Repairs)	600,000.00
	Total	**32,563,178.30**

Abstract of Cost - TCS Wise

Bill No.	Items	Amount (Rs)
7	**Drainage and Protection Works**	
7A	Drainage	37,450,011.10
7B	Protection Works	35,589,734.17
	Total	**73,039,745.27**
III	**OTHER ITEMS**	
8A	**Major Junction (2 No.)**	
	Earthworks	-
	Sub-base and Base Courses	-
	Bituminous Pavement	3,259,835.60
	Traffic Sign,Marking and Other Appurtenances	3,238,821.00
	Total	**6,498,656.60**
8B	**Minor Junction (52 Nos.)**	
	Earthworks	5,522,820.04
	Sub-base and Base Courses	6,402,975.80
	Bituminous Pavement	17,065,728.00
	Traffic Sign,Marking and Other Appurtenances	4,208,545.77
	Total	**33,200,069.61**
8C	**Parking Space (2 Nos.)**	
	Earthworks	236,100.02
	Sub-base and Base Courses	232,956.50
	Bituminous Pavement	620,894.47
	Traffic Sign,Marking and Other Appurtenances	291,502.16
	Total	**1,381,453.15**
8D	**Bus Shelter (21 Nos.)**	
	Bus Shelter @ 500000/no	10,500,000.00
	Total	**10,500,000.00**
8E	**Passing Palces (30 Nos)**	
	Earthworks	863,883.30
	Sub-base and Base Courses	1,357,803.60
	Bituminous Pavement	3,618,927.77
	CC Benches- 30 nos. @ Rs. 10,000/No	300,000.00
	Total	**6,140,614.67**
8F	**Premix Carpet with Seal Coat for patch repair work**	**1,351,501.20**
A	**Civil Construction Cost for the Year 2018-19**	**610,838,573.88**
	In Rs. Crores(Excluding GST)	**61.084**
	Per Km Cost (in Crores)	**3.394**
	GST @6%	**36,650,314.43**
	Total Cost	**647,488,888.32**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
Bill No 1: SITE CLEARANCE					
1.01	**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.	Ha	12.60	65846.95	829671.57
1.02	**Cutting of Trees, including cutting of Trunks, Branches and Removal**	no.			
	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.				
i	**Girth from 300 mm to 600 mm**	No.	0.00	337.34	0.00
ii	**Girth from 600 mm to 900 mm**	No.	0.00	586.81	0.00
iii	**Girth from 900 mm to 1800 mm**	No.	0.00	1164.53	0.00
iv	**Girth above 1800 mm**	No.	0.00	2228.06	0.00
1.03	**Dismantling of Structures**				
i	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				
a	Cement Concrete Grade M-15 & M-20 in culverts	cum	824.98	558.53	460,777.20
e	Removing all type of hume pipes and stacking within a lead of 1000 metres including earthwork and dismantling of masonry works.		-		
	(I) Above 600 mm to 900 mm dia	m	397.55	337.34	134,109.52
vii	**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				
a	Bituminous courses	Cum	18.90	344.41	6509.3
1.07	**Dismantling of Kilometre Stone**				
	Dismantling of kilometre stone including cutting of earth, foundation and disposal of dismantled material with all lifts and lead upto 1000 m and back filling of pit.	no.			
i	5th KM stone		4.00	484.80	1939.2
ii	Ordinary KM Stone		20.00	290.88	5817.6
				Sub Total =	**1438824.4**

COST ESTIMATE- RECONSTRUCTION OF EXISTING ALIGNMENT

Item No.	Description	Unit	Quantity		Rate (in Rs.)	Amount (in Rs)	
			TCS Type-I ,II,III	TCS Type-IV		TCS Type-I ,II,III	TCS Type-IV
	Length of TCS (Km)		**16.540**	**1.243**		**16.540**	**1.243**
	Bill No 3: SUB BASE COURSES						
3.01	**Granular Sub-Base with Cement Treated Crushed Rock**						
	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.)	Cum	22577.10	783.09	3327.95	75135459.95	2606084.37
3.02	**Hard Shoulder with CT Subbase**						
	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.)	Cum	3820.74	0.00	3327.95	12715231.68	0.00
					SubTotal =	**87850691.6**	**2606084.4**
	Bill No 4: BITUMINOUS COURSES (FLEXIBLE PAVEMENT)						
4.01	**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 0.6 kg/sqm using mechanical means as per clause 502.	Sqm	95518.50	19577.25	24.24	2315368.44	474552.54
4.02	**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	95518.50	0.00	9.09	868263.17	0.00
4.02	**Treated RAP**						
	RAP (Using 60% of existing qty @ 2.2% bitumen & 40% of new qty @4.5% bitumen)	cumec	17193.33	704.78	7133.63	122650854.69	5027646.89
4.03	**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 grading-I, premixed with bituminous binder grade VG-30 @ 5.5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects	Cum	3820.74	978.86	11642.27	44482086.68	11396181.52
					SubTotal =	**170316573.0**	**16898380.9**
					TOTAL =	**259209681.6**	**19504465.3**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
Bill No. 7: DRAINAGE & PROTECTIVE WORKS					
	Bill No. 7A :Drainage				
7.01	**Surface Drains in Soil**				
	Construction of unlined surface drains of average cross sectional area 0.48 sqm in soil to specified lines, grades, levels and dimensions to the requirement of clause 301 and 309. Excavated material to be used in embankment within a lead of 50 meters (average lead 25 meters.	Rm	7975.80	71.71	571944.62
7.01	**Lined Drain (RRM Drains)**				
	A.) Random Rubble Masonry	cum	626.76	6119.00	3835144.44
7.02	**Lined RCC Drains**				
i	Earth work in excavation				
	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.	cum	10200.00	186.85	1905870.00
ii	PCC Grade M15	cum	510.00	7839.62	3998206.20
iii	RCC Grade M20	cum	1980.00	8442.59	16716328.20
iv	HYSD Steel	MT	118.80	87731.63	10422517.64
				Sub Total =	**37450011.10**

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COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
	Bill No. 7B : Protection Work				
7.04	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications.				
i	Earth work in excavation				
	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.				
	Breast Wall and Retaining wall	Cum	2613.60	68.68	179502.05
ii	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications.				
	A.) Random Rubble Masonry				
	Retaining wall	Cum	2343.60	6119.00	14340488.40
	Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications				
ii	A.) PCC M15				
	Breast Wall	Cum	1620.00	7839.62	12700184.40
vi	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				
	Breast Wall and Retaining wall	No.	1476.00	147.46	217650.96
vii	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification				
	Breast Wall and Retaining wall	cum	1441.80	2853.25	4113815.85
viii	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.				
	Breast Wall and Retaining wall	cum	1441.80	2800.73	4038092.51
				Sub Total =	**35589734.17**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
	Bill No. 8A: MAJOR JUNCTIONS				
	Earthwork Items				
2.01	**Excavation in Soil using Hydraulic Excavator**				
	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	cum	0.00	52.52	0.0
2.02	**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	-	149.48	0.0
2.03	**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.	cum	0.00	1048.38	0.0
2.04	**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	cum	0.00	352.49	0.0
				Sub Total =	**0.0**
	Granular Sub Base and Base Courses				
3.01	**Granular Sub-Base with Cement Treated Crushed Rock**				
	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.)	Cum	0.0	3328.0	0.0

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
3.02	**Granular Base with Cement Treated Crushed Rock**				
	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.)	Cum	0.0	3512.8	0.0
				Sub Total =	**0.0**
	Bituminous Courses (Flexible Pavement)				
4A.01	**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 0.6 kg/sqm using mechanical means as per clause 502.	Sqm	0.0	24.2	0.0
4A.02	**Treated RAP**				
	Reclaimed Aspalt Pavement	cum	0.0	7133.6	0.0
4A.03	**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 grading-I, premixed with bituminous binder grade VG-30 @ 5.5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects	Cum	280.0	11642.3	3259835.6
				Sub Total =	**3259835.6**

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COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
	Traffic Appurtenances				
9.1	**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	Rm	1800.00	401.00	721800.00
9.2	**Construction of Median**				
	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	100.0	384.81	38481.00
9.3	**Construction of Footpath/ Separator**				
	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	2000.0	1239.27	2478540.00
				Sub Total =	**3238821.0**
				Total	**6498656.60**

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COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
	Bill No. 8B: MINOR JUNCTIONS				
	Earthwork Items				
2.01	**Excavation in Soil using Hydraulic Excavator**				
	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	cum	3607.50	52.52	189465.9
2.02	**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	1,803.75	149.48	269624.6
2.03	**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.	cum	3607.50	477.73	1723411.0
2.04	**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	cum	9476.35	352.49	3340318.6
				Sub Total =	**5522820.0**
	Sub Base and Base Courses				
3.01	**Granular Sub-Base with Cement Treated Crushed Rock**				
	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.)	Cum	1924.0	3328.0	6402975.8

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
				Sub Total =	**6402975.8**
	Bituminous Courses (Flexible Pavement)				
4A.01	**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 0.6 kg/sqm using mechanical means as per clause 502.	Sqm	9620.0	24.2	233188.8
4A.03	**Treated RAP**				
		Cum	1731.6	7133.63	12352593.7
4A.04	**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 grading-I, premixed with bituminous binder grade VG-30 @ 5.5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects	Cum	384.8	11642.27	4479945.5
				Sub Total =	**17065728.0**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
	Traffic Appurtenances				
9.1	**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	Rm	3120.00	405.01	1263631.20
9.2	**Construction of Median**				
	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	117.0	384.81	45022.77
9.3	**Construction of Footpath/ Separator**				
	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	2340.0	1239.3	2899891.80
				Sub Total =	**4208545.8**
				Total	**33200069.61**

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COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
	Bill No. 8C: PARKING SPACE				
	Earthwork Items				
2.01	**Excavation in Soil using Hydraulic Excavator**				
	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	cum	108.00	52.52	5672.2
2.02	**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	54.00	149.48	8071.9
2.03	**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.	cum	108.00	1048.38	113225.0
2.04	**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	cum	309.60	352.49	109130.9
				Sub Total =	**236100.0**
	Sub Base and Base Courses				
3.01	**Granular Sub-Base with Cement Treated Crushed Rock**				
	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.)	Cum	70.0	3327.95	232956.5

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
				Sub Total =	**232956.5**
	Bituminous Courses (Flexible Pavement)				
4A.01	**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 0.6 kg/sqm using mechanical means as per clause 502.	Sqm	350.0	24.2	8484.0
4A.03	**Treated RAP**				
		Cum	63.0	7133.6	449418.7
4A.04	**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 grading-I, premixed with bituminous binder grade VG-30 @ 5.5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects	Cum	14.0	11642.27	162991.8
				Sub Total =	**620894.5**

CHAITANYA PROJECTS CONSULTANCY PVT. LTD.

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
	Traffic Appurtenances				
9.1	**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	Rm	140.00	417.13	58398.20
9.2	**Construction of Median**				
	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	27.0	371.68	10035.36
9.3	**Construction of Footpath/ Separator**				
	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	180.0	1239.27	223068.60
				Sub Total =	**291502.2**
				Total=	**1381453.2**

CHAITANYA PROJECTS CONSULTANCY PVT. LTD.

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
	Bill No. 8D: PASSING PLACES				
	Earthwork Items				
2.01	**Excavation in Soil using Hydraulic Excavator**				
	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	cum	420.00	52.52	22058.4
2.02	**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	210.00	149.48	31390.8
2.03	**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.	cum	420.00	1048.38	440319.6
2.04	**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	cum	1050.00	352.49	370114.5
				Sub Total =	**863883.3**
	Sub Base and Base Courses				
3.01	**Granular Sub-Base with Cement Treated Crushed Rock**				
	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.)	Cum	408.0	3327.95	1357803.6
				Sub Total =	**1357803.6**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
	Bituminous Courses (Flexible Pavement)				
4A.01	**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 0.6 kg/sqm using mechanical means as per clause 502.	Sqm	2040.0	24.2	49449.6
4A.03	**Treated RAP**				
		Cum	367.2	7133.6	2619468.9
4A.04	**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 grading-I, premixed with bituminous binder grade VG-30 @ 5.5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects	Cum	81.6	11642.27	950009.2
				Sub Total =	**3618927.8**
				Total	**5840614.67**

CHAITANYA PROJECTS CONSULTANCY PVT. LTD.

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
Bill No. 9: TRAFFIC APPURTENANCES					
9.1	**Road Marking**				
	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.				
	Lane/ Centre line/ Edge line/ Transverse marking and any other markings	Sqm	14226	859.5	12227733.1
9.2	**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				
i	90 cm equilateral triangle	No	140	6405.42	896758.8
ii	60 cm equilateral triangle	No	50	4317.75	215887.5
iii	60 cm circular	No	50	5684.28	284214.0
iv	80 mm x 60 mm rectangular	No	40	7803.26	312130.4
v	60 cm x 45 cm rectangular	No	90	5543.89	498950.1
vi	60 cm x 60 cm square	No	40	6512.48	260499.2
vii	90 cm high octagon	No	40	9868.71	394748.4
9.3	**Direction and Place Identification Signs 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				
i	up to 0.9 sqm size	Sqm	36	13670.4	492132.6
ii	more than 0.9 sqm size	Sqm	34	23674.4	795459.8

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
9.4	**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	Rm	3600.00	3707.71	13347756.0
9.5	**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	Nos	4000.00	237.00	948000.00
9.6	**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)**	Nos.	6	4940.92	29645.5
ii	**Ordinary kilometer stone (precast)**	Nos.	24	3025.96	72623.0
iii	**Hectometer stone (precast)**	Nos.	180	816.08	146894.4
9.7	**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	Nos.	140	1075.7	150591.0
9.8	**Overhead Signs (2 Nos)**				
	Supplying and fixing overhead signs complete as per drawing and Technical Specifications Section 800 including cost of posts, truss, erection, fitting and foundations. Sheeting will be retro reflective type of high intensity grade and message/borders will be screen-printed as per drawings.				
	a) Truss and Vertical Support (Portal type)	MT	10.00	61473.65	614736.5
	b) Aluminium alloy plate for over head sign	MT	2.00	11671.56	23343.1
				TOTAL =	**31712103.5**

QUANTITIY CALCULATION- SITE CLEARANCE & DISMANTLING							
Item No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Qty**
1.01	**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.	Ha		18000.0	7.0	-	12.60
1.02	**Cutting of Trees, including cutting of Trunks, Branches and Removal**	no.					
	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.						
i	Girth from 300 mm to 600 mm		0				0
ii	Girth from 600 mm to 900 mm		0				0
iii	Girth from 900 mm to 1800 mm		0				0
iv	Girth above 1800 mm		0				0
1.03	**Dismantling of Structures**						
i	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	cum					
a	Cement Concrete Grade M-15 & M-20 in culverts	cum					824.98
b	Cement Concrete Grade M-15 & M-20 in Bridges	cum					-
c	Dismantling of Brick work in cement mortar in substructure of Slab culverts	cum					-
d	Dismantling of Brick work in cement mortar	cum					-
e	Removing all type of hume pipes and stacking within a lead of 1000 metres including earthwork and dismantling of masonry works.						-
	(i)Above 600 mm to 900 mm dia	m					397.55
vii	**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						
b	Bituminous courses (3.5m Width)	cum	1.00	18.00	3.5	0.30	18.90
1.04	**Dismantling of Kilometre Stone**						
	Dismantling of kilometre stone including cutting of earth, foundation and disposal of dismantled material with all lifts and lead upto 1000 m and back filling of pit.	no.					
i	5th KM stone		4.00				4.00
ii	Ordinary KM Stone		20.00				20.00
iii	Hectometre Stone		100.00				100.00

QUANTITY CALCULATION OF PAVEMENT LAYERS FOR RECONSTRUCTION OF EXISTING ALIGNMENT

Type of TCS Applicable	Length (m)	Crust Details	Width of Layers	Thickness of Layers	Quantity	Increase in Qty due to Extra widening	Total Quantity
Type-I,II,III	16,540.0	BC	5.500	0.040	3,638.80	181.94	3,820.74
	16,540.0	Treated RAP	5.500	0.180	16,374.60	818.73	17,193.33
	16,540.0	-	0.000	0.180	-	-	-
	16,540.0	CT SUB BASE	6.500	0.200	21,502.00	1,075.10	22,577.10
	16,540.0	SUBGRADE	0.000	0.500	-	-	-
	16,540.0	EARTHEN SHOULDER	0.000		-	-	-
	16,540.0	Hard Shoulder with GSB material	1.000	0.220	3,638.80	181.94	3,820.74
	16,540.0	Prime Coat	5.500		90,970.00	4,548.50	95,518.50
	16,540.0	Tack Coat	5.500		90,970.00	4,548.50	95,518.50
Type -IV	1,243.0	BC	15.000	0.050	932.25	46.61	978.86
	1,243.0	Treated RAP	3.000	0.180	671.22	33.56	704.7810
	1,243.0	CT SUB BASE	3.000	0.200	745.80	37.29	783.09
	1,243.0	SUBGRADE	0.000	0.500	-	-	-
	1,243.0	Hard Shoulder with GSB material	0.000	0.220	-	-	-
	1,243.0	Prime Coat	15.000		18,645.00	932.25	19,577.25

QUANTITY CALCULATION- MISC ITEMS

Sl. No.	Description	Unit	Nos.	Area (Sqm.)	Thickness of Layers	Quantity
MAJOR JUNCTION						
10	BC	Cum	2	3,500.0	0.040	280.00
11	Cement Concrete M20 Kerb	Rm	2	900.0	-	1,800.00
12	Construction of Median with Soil from Roadway cutting	Cum	2	1,000.0	0.050	100.00
13	Providing & Laying Chequered Tiles	Sqm	2	1,000.0	-	2,000.00

MINOR JUNCTION						
1	Excavation in Soil using Hydraulic Excavator	Cum	52	346.9	0.200	3,607.50
2	Construction of Embankment with Material Deposited from Roadway Cutting	Cum		50% of Excavated Qty		1,803.75
3	Construction of Embankment with Material obtained from Borrowpits	Cum	52	346.9	0.200	3,607.50
4	SUBGRADE	Cum	52	346.9	0.500	9,018.75
5	SHOULDER	Cum	52	40.0	0.220	457.60
6	CT Sub Base	Cum	52	185.0	0.200	1,924.00
8	Prime Coat	Sqm	52	185.0	-	9,620.00
9	Treated RAP	Cum	52	185.0	0.180	1,731.60
10	BC	Cum	52	185.0	0.040	384.80
11	Cement Concrete M20 Kerb	Rm	52	60.0	-	3,120.00
12	Construction of Median with Soil from Roadway cutting	Cum	52	45.0	0.050	117.00
13	Providing & Laying Chequered Tiles	Sqm	52	45.0	-	2,340.00

QUANTITY CALCULATION- MISC ITEMS

Sl. No.	Description	Unit	Nos.	Area (Sqm.)	Thickness of Layers	Quantity
Parking Space						
1	Excavation in Soil using Hydraulic Excavator	Cum	2	270.0	0.200	108.00
2	Construction of Embankment with Material Deposited from Roadway Cutting	Cum		50% of Excavated Qty		54.00
3	Construction of Embankment with Material obtained from Borrowpits	Cum	2	270.0	0.200	108.00
4	SUBGRADE	Cum	2	270.0	0.500	270.00
5	SHOULDER	Cum	2	90.0	0.220	39.60
6	CT Sub Base	Cum	2	175.0	0.200	70.00
8	Prime Coat	Sqm	2	175.0	-	350.00
10	Treated RAP	Cum	2	175.0	0.180	63.00
11	BC	Cum	2	175.0	0.040	14.00
12	Cement Concrete M20 Kerb	Rm	2	70.0	-	140.00
13	Construction of Median with Soil from Roadway cutting	Cum	2	90.0	0.150	27.00
14	Providing & Laying Chequered Tiles	Sqm	2	90.0	-	180.00
PASSING PLACES						
1	Excavation in Soil using Hydraulic Excavator	Cum	30	70.0	0.200	420.00
2	Construction of Embankment with Material Deposited from Roadway Cutting	Cum		50% of Excavated Qty		210.00
3	Construction of Embankment with Material obtained from Borrowpits	Cum	30	70.0	0.200	420.00
4	SUBGRADE	Cum	30	70.0	0.500	1,050.00
6	CT Sub Base	Cum	30	68.0	0.200	408.00
8	Prime Coat	Sqm	30	68.0	-	2,040.00
10	Treated RAP	Cum	30	68.0	0.180	367.20
11	BC	Cum	30	68.0	0.040	81.60
12	Cement Concrete M20 Kerb	Rm	30	180.0	-	5,400.00
14	Providing & Laying Chequered Tiles	Sqm	30	456.5	-	13,695.00

Bill No 7: Drainage and Protective works							
Item No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Qty**
	PROTECTION WORK						
	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications.						
	Breast Wall (Avg ht-3m),Length =			**720**		**3.0**	
	Retaining Wall (Avg ht-3.5m) ,Length =			**756**		**3.5**	
i	Earth work in excavation						
	For Breast Wall	Cum	1	720	0.9	1.0	648.00
	For Retaining Wall	Cum	1	756	2.6	1.0	1965.60
ii	Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications						
	A.) PCC M15						
	For Breast Wall	Cum	1	720	0.75	3.0	1620.00
ii	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications.						
	B.) Random Rubble Masonry						
	For Retaining Wall	Cum	1	756	1.55	2.0	2343.60
iii	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						
	For Breast Wall	No.	1	720			720.00
	For Retaining Wall	No.	1	756			756.00
iv	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification						
	For Breast Wall	Cum	1	720	0.3	3.0	648.00
	For Retaining Wall	Cum	1	756	0.3	3.5	793.80
v	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.						
	For Breast Wall	Cum	1	720	0.3	3.0	648.00
	For Retaining Wall	Cum	1	756	0.3	3.5	793.80

Bill No 7: Drainage and Protective works

Item No.	SOR Ref No	Description	Unit	No.	Length (m)	Breadth (m)	Depth (m)	Quantity
		Drainage works						
7.01	3.6 (ii)	**Unlined Drains :-** Earth work in excavation in trenches in unlined drain 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.	cum	1.00	29,540.00		0.27	7,975.80
7.01	3.6 (ii)	**Lined Drain (Random Rubble Masonary drain)**						
			cum	1.00	720.00		0.10	72.36
			cum	1.00	720.00		0.77	554.40
7.03		**RCC Covered Drains:-** Providing covered RCC drain in urban areas excluding excavation as per drawing and technical specifications section 1500,1600,1700.						
(a)	3.6 (ii)	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.	cum	2.00	2,000.00	1.70	1.50	10,200.00
(b)	12.8 A	PCC Grade M15 in levelling course	cum	2.00	2,000.00	1.70	0.08	510.00
(c)	12.8 B	Top Slab	cum	2.00	2,000.00	1.50	0.10	600.00
(d)	12.8 C	Bottom Slab	cum	2.00	2,000.00	1.50	0.10	600.00
(e)	12.8 D	Wall	cum	2.00	2,000.00	0.15	1.30	780.00
(f)	12.40	HYSD Steel	MT	1.00		x 60 kg per cum		118.80

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES FOR EXISTING ALIGNMENT

Item No	Description	Unit	Nos.	Length	Width	Depth	Quantity
9.1	**Road Marking**						
	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.						
	For Edge Marking	Sqm	4	17783	0.150		10669.80
	For Centre line Marking	Sqm	2	17783	0.100		3556.60
9.2	**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						
i	90 cm equilateral triangle	No	140				140.00
ii	60 cm equilateral triangle	No	50				50.00
iii	60 cm circular	No	50				50.00
iv	80 mm x 60 mm rectangular	No	40				40.00
v	60 cm x 45 cm rectangular	No	90				90.00
vi	60 cm x 60 cm square	No	40				40.00
vii	90 cm high octagon	No	40				40.00
9.3	**Direction and Place Identification Signs 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						
i	up to 0.9 sqm size	Sqm	40	1.50	0.60	-	36.00
ii	more than 0.9 sqm size	Sqm	28	1.50	0.80	-	33.60
9.4	**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	Nos	4000.00				4000.00

Item No	Description	Unit	Nos.	Length	Width	Depth	Quantity
9.5	**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						
	For High Embankment	Rm	1	0.0			0.00
	For Curved Portion	Rm	1	3600.0			3600.00
9.6	**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)**	Nos.	6				6
ii	**Ordinary kilometer stone (precast)**	Nos.	24				24
iii	**Hectometer stone (precast)**	Nos.	180				180
9.7	**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	Nos.	140				140
9.8	**Overhead Signs**						
	Supplying and fixing overhead signs complete as per drawing and Technical Specifications Section 800 including cost of posts, truss, erection, fitting and foundations. Sheeting will be retro reflective type of high intensity grade and message/borders will be screen-printed as per drawings.						
	a) Truss and Vertical Support (Portal	MT.	10.00				10.00
	b) Aluminium alloy plate for over head	MT.	2.00				2.00

	Bill No.1 : for strenghtening of CRZ Section on NH-4 in A&N Islands (Total Length=14.484 Km)					
Sl. No	**Item No.**	**Description**	**Unit**	**Quantity**	**Rate in Rs (Including Labour cess)**	**Amount in Rs.**
1	**2.5**	**Scarifying existing bituminous surface**				
		Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately				
		Bituminous courses	cum	2,574.00	914.05	2,352,764.70
		Granular courses	cum	10,701.79	648.42	6,939,255.97
2	**4.5**	**CT Subbase**				
		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.)				
			cum	19,632.80	3327.95	65,336,960.12
2	**5.19**	**Treated RAP**				
		RAP (Using 60% of existing qty @ 2.2% bitumen & 40% of new qty @4.5% bitumen)				
			cum	14,553.00	7133.63	103,815,717.39
3	**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	161,700.00	9.09	1,469,853.00
4	**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	83,639.33	24.24	2,027,417.24

6	**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 grading-I, premixed with bituminous binder grade 60/70 @ 5.5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH Specification (5th edition) complete in all respect.				
		for GradingII (10 mm nominal size)	cum	3,345.57	11642.27	38,950,064.17
7	**4.5**	**Hard Shoulder with CT Subbase**				
		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.)				
			cum	3,186.26	3327.95	10,603,713.97
9	**4.12**	**Drainage**				
		Unlined Drain	m	6,740.82	71.71	483,384.20
		Lined RRM drain (2 x 2000m)	m	4,000.00	1763.49	7,053,955.20
10	**4.13**	**3 Box Culverts at few locations**	No	-	8511075.03	8,511,075.03
11	**4.14**	**Repair & Maintenance of existing culverts@ 50000/culvert**	No	80.00	50000	4,000,000.00
12	**4.14**	**Repair & Maintenance of existing Minor Bridge @ 200000 per bridge**	No	1.00	200000	200,000.00
13	**8.00**	**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES FOR EXISTING ALIGNMENT**				
		Road Markings & Signages				5,873,162.32
		Road Markers/Road Stud with Lense Reflector				442,479.00
		Metal Beam Crash Barrier		3,000.00	3707.71	11,123,130.00
14		Premix Carpet with Seal Coat for Patch Repair Work	Sqm	5,213.88	210.00	1,094,914.80
					Sub-Total (In Rs)	**270,277,847.11**
					GST @ 6%	**16,216,670.83**
					Total Construction cost including GST @ 6% (A)	**286,494,517.94**

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Drainage works

Item No.	SOR Ref No	Description	Unit	No.	Length (m)	Breadth (m)	Depth (m)	Quantity	Rate (Rs.)	Amount (Rs.)
		Drainage works								
7.01	3.6 (ii)	**Unlined Drains :-** Earth work in excavation in trenches in unlined drain 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.	cum	1.00	24,966.0		0.27	6,740.82	71.71	483,384.20
7.02		**Lined RRM Drains**								
(a)	3.6 (ii)	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.	cum	1.00	4,000.0		0.29	1,140.00	68.68	78,295.20
(b)		RRM	cum	1.00	4,000.0		0.29	1,140.00	6119.00	6,975,660.00

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES FOR EXISTING ALIGNMENT

S.NO	Description	Unit	Nos.	Length	Width	Depth	Quantity	Rate	Amount
1	**Road Marking**								
	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.								
	For Edge Marking	Sqm	2	14483	0.150		4344.90	859.51	3734484.999
	For Centre line Marking	Sqm	1	14483	0.100		1448.30	859.51	1244828.333
2	**Direction and Place Identification Signs 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								
i	up to 0.9 sqm size	Sqm	10	1.50	0.60	-	9.00	13670.35	123033.15
ii	more than 0.9 sqm size	Sqm	9	1.50	0.80	-	10.80	23674.40	255683.52
3	**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								
	For Curved Portion	Rm	1	2500.0			2500.00	3707.71	9269275.0
4	**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	Nos.	1867					237.00	442479.0

S.NO	Description	Unit	Nos.	Length	Width	Depth	Quantity	Rate	Amount
5	**Overhead Signs**								
	Supplying and fixing overhead signs complete as per drawing and Technical Specifications Section 800 including cost of posts, truss, erection, fitting and foundations. Sheeting will be retro reflective type of high intensity grade and message/borders will be screen-printed as per drawings.								
	a) Truss and Vertical Support (Portal type)	MT.	8.0				8.00	61,473.65	491,789.20
	b) Aluminium alloy plate for over head sign	MT.	2.00				2.00	11,671.56	23,343.12
								Total Cost	**15584916.32**

Quantity Calculation- Dismantling of Flexible Pavement

Sl. No	Stretch		Bituminous Layer				Granular Layer		
	From	to	Length (m)	Width (m)	Thickness (m)	Volume (cum)	Width (m)	Thickness (m)	Volume (cum)
1	**315.874**	**316**	**126**	**3.6**	**0.09**	40.8	3.6	0.220	99.79
2	316	317	1000	3.6	0.090	324.0	3.6	0.220	792.00
3	317	318	1000	3	0.060	180.0	3	0.220	660.00
4	318	319	1000	3	0.070	210.0	3	0.250	750.00
5	319	320	1000	3	0.040	120.0	3	0.280	840.00
6	320	321	1000	3	0.040	120.0	3	0.270	810.00
7	321	322	1000	3	0.070	210.0	3	0.220	660.00
8	322	323	1000	3	0.060	180.0	3	0.240	720.00
9	323	324	1000	3	0.080	240.0	3	0.270	810.00
10	324	325	1000	3	0.070	210.0	3	0.230	690.00
11	325	326	1000	3	0.050	150.0	3	0.270	810.00
12	326	327	1000	3	0.070	210.0	3	0.220	660.00
13	327	328	1000	3	0.040	120.0	3	0.280	840.00
14	328	329	1000	3	0.060	180.0	3	0.250	750.00
15	329	330	1000	3	0.040	120.0	3	0.270	810.00
16	330	330.357	357	3	0.040	42.8	3	0.270	289.17
					Total =	**2574**			**10701.79**

Quantity of RAP & CT Subbase

Sl. No	Stretch		Length (m)	Treated RAP			CT Subbase		
	From	to		Width (m)	Thickness (m)	Volume (incl 5% for Extra Widening) (cum)	Width (m)	Thickness (m)	Volume (incl 5% for Extra Widening) (cum)
1	315+874	316	26	5.50	0.180	27.027	6.50	0.200	35.49
2	316	317	1000	5.50	0.180	1039.5	6.50	0.200	1365
3	317	318	1000	5.50	0.180	1039.5	6.50	0.200	1365
4	318	319	1000	5.50	0.180	1039.5	6.50	0.200	1365
5	319	320	1000	5.50	0.180	1039.5	6.50	0.200	1365
6	320	321	1000	5.50	0.180	1039.5	6.50	0.200	1365
7	321	322	1000	5.50	0.180	1039.5	6.50	0.200	1365
8	322	323	1000	5.50	0.180	1039.5	6.50	0.200	1365
9	323	324	1000	5.50	0.180	1039.5	6.50	0.200	1365
10	324	325	1000	5.50	0.180	1039.5	6.50	0.200	1365
11	325	326	1000	5.50	0.180	1039.5	6.50	0.200	1365
12	326	327	1000	5.50	0.180	1039.5	6.50	0.200	1365
13	327	328	1000	5.50	0.180	1039.5	6.50	0.200	1365
14	328	329	1000	5.50	0.180	1039.5	6.50	0.200	1365
15	329	330	1000	5.50	0.180	1039.5	6.50	0.200	1365
16	330	330.357	357	5.50	0.180	371.1015	6.50	0.200	487.305
					Total=	**14553**			**19632.795**

Quantity of Tack Coat					
Sl. No	Stretch		Length (m)	Width (m)	Area (incl 5% for Extra Widening) (sqm)
	From	to			
1	315.874	316	126	5.5	727.65
2	316	317	1000	5.5	5775
3	317	318	1000	5.5	5775
4	318	319	1000	5.5	5775
5	319	320	1000	5.5	5775
6	320	321	1000	5.5	5775
7	321	322	1000	5.5	5775
8	322	323	1000	5.5	5775
9	323	324	1000	5.5	5775
10	324	325	1000	5.5	5775
11	325	326	1000	5.5	5775
12	326	327	1000	5.5	5775
13	327	328	1000	5.5	5775
14	328	329	1000	5.5	5775
15	329	330	1000	5.5	5775
16	330	330.357	357	5.5	2061.675
Total Quantity of Tack Coat (single layer)					**80850**
Total Quantity of Tack Coat (2 layer)					**161700**

b/w CT Subbase & RAP
coat b/w RAP & BC

Quantity of Prime Coat					
Sl. No	Stretch		Length (m)	Width (m)	Area (incl 5% for Extra Widening) (sqm)
	From	to			
1	315.874	316	126	5.5	727.65
2	316	317	1000	5.5	5775
3	317	318	1000	5.5	5775
4	318	319	1000	5.5	5775
5	319	320	1000	5.5	5775
6	320	321	1000	5.5	5775
7	321	322	1000	5.5	5775
8	322	323	1000	5.5	5775
9	323	324	1000	5.5	5775
10	324	325	1000	5.5	5775
11	325	326	1000	5.5	5775
12	326	327	1000	5.5	5775
13	327	328	1000	5.5	5775
14	328	329	1000	5.5	5775
15	329	330	1000	5.5	5775
16	330	330.357	357	5.5	2061.675
Total Quantity of Prime Coat (single layer)					**83639.325**

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Quantity of BC						
Sl. No	Stretch		Length (m)	Width (m)	Thickness (m)	Volume (incl 5% for Extra Widening) (cum)
	From	to				
	315.874	**316**	**126**	**5.5**	**0.04**	29.106
1	316	317	1000	5.5	0.04	231
2	317	318	1000	5.5	0.04	231
3	318	319	1000	5.5	0.04	231
4	319	320	1000	5.5	0.04	231
5	320	321	1000	5.5	0.04	231
6	321	322	1000	5.5	0.04	231
7	322	323	1000	5.5	0.04	231
8	323	324	1000	5.5	0.04	231
9	324	325	1000	5.5	0.04	231
10	325	326	1000	5.5	0.04	231
11	326	327	1000	5.5	0.04	231
12	327	328	1000	5.5	0.04	231
13	328	329	1000	5.5	0.04	231
14	329	330	1000	5.5	0.04	231
15	330	330.357	357	5.5	0.04	82.467
Total Quantity of BC =						**3345.573**

Quantity of Hard Shoulder						
Sl. No	Stretch		Length (m)	Width (m)	Thickness (m)	Volume (cum)
	From	to				
	315.874	**316**	**126**	1.00	0.220	27.72
1	316	317	1000	1.00	0.220	220
2	317	318	1000	1.00	0.220	220
3	318	319	1000	1.00	0.220	220
4	319	320	1000	1.00	0.220	220
5	320	321	1000	1.00	0.220	220
6	321	322	1000	1.00	0.220	220
7	322	323	1000	1.00	0.220	220
8	323	324	1000	1.00	0.220	220
9	324	325	1000	1.00	0.220	220
10	325	326	1000	1.00	0.220	220
11	326	327	1000	1.00	0.220	220
12	327	328	1000	1.00	0.220	220
13	328	329	1000	1.00	0.220	220
14	329	330	1000	1.00	0.220	220
15	330	330.357	357	1.00	0.220	78.54
Total Quantity of Hard Shoulder =						**3186.26**