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

Ferrargunj to Jirkatang Section
(Km 45 to 59.2)

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,
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Abstract of Cost - Bill Wise(Km 45-60)			
Sl. No.	**Bill No.**	**Items**	**Amount (Rs)**
A		**ROAD WORKS**	
1	Bill No.1	Site Clearance & Dismantling	6,222,902.36
2	Bill No.2	Earthworks (including subgrade)	-
3	Bill No.3	Sub-base (including hard shoulder)	84,185,689.97
4	Bill No.4	Treated RAP	93,605,339.25
5	Bill No.4	Bituminous Works	36,210,441.79
B		**BRIDGES AND STRUCTURES**	
5	Bill No.5	Culverts (Box)	82,819,886.74
6	Bill No.5A	Culverts maintainance @ 50000 per culvert	550,000.00
7	Bill No.6	Bridge Repair Cost	200,000.00
C		**OTHER APPURENENCE/MISCELLANEOUS ITEMS**	
8	Bill No.7	Drainage and Protection works	32,419,132.38
9	Bill No.8A	Junctions	1,845,388.34
10	Bill No.8B	Bus Shelter	4,000,000.00
	Bill No.8C	Passing Places	3,417,915.06
	Bill No.8D	Premix Carpet with Seal Coat for patch repair work	1,451,520.00
11	Bill No.9	Traffic Sign,Marking and other Appurtenances	19,401,058.21
Total Construction Cost excluding GST,(Bill No.1 to Bill No.9)			366,329,274.11
		GST @ 6%	21,979,756.45
	Total Construction cost including GST @ 6% (A)		388,309,030.56
		Maintenance Charge for 4Year @5% on (A)	19,415,451.53
		Cost put to bid	407,724,482.09

Abstract of Cost - TCS Wise		
Bill No.	**Items**	**Amount (Rs)**
I	**Reconstruction of Existing Alignment**	
	TCS (Type-I)	
	Site Clearance and Dismantling	1,647,784.28
	Earthworks	-
	Sub-base	22,291,825.95
	Treated RAP	24,786,088.13
	Bituminous Pavement	9,588,290.68
	Traffic Sign,Marking and Other Appurtenances	5,137,274.67
	Total	**63,451,263.71**
	TCS (Type-II)	
	Site Clearance and Dismantling	3,718,552.84
	Earthworks	-
	Sub-base	50,305,937.34
	Treated RAP	55,934,735.86
	Bituminous Pavement	21,637,884.26
	Traffic Sign,Marking and Other Appurtenances	11,593,281.70
	Total	**143,190,392.00**

Abstract of Cost - TCS Wise		
Bill No.	**Items**	**Amount (Rs)**
	TCS (Type-III)	
	Site Clearance and Dismantling	596,063.44
	Earthworks	-
	Sub-base	8,063,763.41
	Treated RAP	8,966,028.66
	Bituminous Pavement	3,468,433.12
	Traffic Sign,Marking and Other Appurtenances	1,858,338.91
	Total	**22,952,627.55**
	TCS (Type-IV)	
	Site Clearance and Dismantling	260,501.80
	Earthworks	-
	Sub-base	3,524,163.27
	Treated RAP	3,918,486.60
	Bituminous Pavement	1,515,833.73
	Traffic Sign,Marking and Other Appurtenances	812,162.93
	Total	**10,031,148.33**

Abstract of Cost - TCS Wise		
Bill No.	**Items**	**Amount (Rs)**
5	**Culverts (Pipe/ Box)**	
	Box Culvert(Reconstruction)	82,819,886.74
	Culvert (General Maintenance)- 15nos@50000/culvert	550,000.00
	Total	**83,369,886.74**
6	**Bridges**	
	Bridge (Minor Repairs)	200,000.00
	Total	**200,000.00**
7	**Drainage and Protection Works**	
7A	Drainage	1,492,450.78
7B	Protection Works	30,926,681.60
	Total	**32,419,132.38**
III	**OTHER ITEMS**	
8A	**Minor Junction (2 Nos.)**	
	Earthworks	361,870.88
	Sub-base and Base Courses	446,813.90
	Bituminous Pavement	1,036,703.56
	Traffic Sign,Marking and Other Appurtenances	-
	Total	**1,845,388.34**
8B	**Bus Shelter- 8 nos @ Rs. 500000/- each**	4000000
	Total	**4,000,000.00**
8C	**Passing Palces**	
	Earthworks	624,337.56
	Sub-base and Base Courses	841,384.94
	Bituminous Pavement	1,952,192.56
	Total	**3,417,915.06**
8D	**Premix Carpet with Seal Coat for patch repair work**	**1,451,520.00**
A	**Civil Construction Cost for the Year 2017-18**	**366,329,274.11**
	In Rs. Crores(Excluding GST)	**36.633**
	Per Km Cost (in Crores)	2.599
	GST @6%	21,979,756.45
	Total Construction cost inclusive of GST(A)	388,309,030.56
	Maintenance Charge for 4Year @5% on (A)	19,415,451.53
	Cost put to bid	407,724,482.09

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	14.09	65846.95	928046.91
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.	3000.00	337.34	1012020.00
ii	**Girth from 600 mm to 900 mm**	No.	1400.00	586.81	821534.00
iii	**Girth from 900 mm to 1800 mm**	No.	1300.00	1164.53	1513889.00
iv	**Girth above 1800 mm**	No.	600.00	2228.06	1336836.00
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	19.66	344.41	6769.4
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		24.00	290.88	6981.1
				Sub Total =	**6222902.4**

COST ESTIMATE- RECONSTRUCTION OF EXISTING ALIGNMENT

Item No.	Description	Unit	Quantity				Rate (in Rs.)	Amount (in Rs)			
			TCS Type-I	TCS Type-II	TCS Type-III	TCS Type-IV		TCS Type-I	TCS Type-II	TCS Type-III	TCS Type-IV
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	5940.60	13406.14	2148.93	939.16	3437.03	20418012.17	46077303.99	7385936.88	3227927.97
3.02	**Construction of hard shoulder with CT Sub-Base with Close Graded Material**										
	Construction of Hard Shoulder by 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	666.16	1503.33	240.98	105.32	2812.85	1873813.78	4228633.35	677826.53	296235.30
							SubTotal =	**22291826.0**	**50305937.3**	**8063763.4**	**3524163.3**

COST ESTIMATE- RECONSTRUCTION OF EXISTING ALIGNMENT

Item No.	Description	Unit	Quantity				Rate (in Rs.)	Amount (in Rs)			
			TCS Type-I	TCS Type-II	TCS Type-III	TCS Type-IV		TCS Type-I	TCS Type-II	TCS Type-III	TCS Type-IV
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	21552.30	48637.05	7796.25	3407.25	24.24	522427.75	1178962.09	188981.10	82591.74
4.02	**Treated RAP**										
	RAP (Using 60% of existing qty @ 2.2% bitumen & 40% of new qty @4.5% bitumen)	cumec	3879.41	8754.67	1403.33	613.31	6389.13	24786088.13	55934735.86	8966028.66	3918486.60
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	862.09	1945.48	311.85	136.29	10516.12	9065862.92	20458922.17	3279452.02	1433241.99
							SubTotal =	**34374378.8**	**77572620.1**	**12434461.8**	**5434320.3**
							TOTAL =	**56666204.8**	**127878557.5**	**20498225.2**	**8958483.6**

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	3906.09	71.71	280105.71
7.01	**RRM Drains**				
	A.) Random Rubble Masonry	cum	197.48	6139.00	1212345.07
				Sub Total =	**1492450.78**

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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				
7.02	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	3120.00	68.68	214281.60
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	3750.00	6139.00	23021250.00
	Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications				
ii	A.) PCC M15				
	Breast Wall	Cum	300.00	7364.92	2209476.00
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.	1700.00	147.46	250682.00
vii	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification				
	Breast Wall and Retaining wall	cum	1245.00	1672.56	2082337.20
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	1245.00	2529.04	3148654.80
				Sub Total =	**30926681.60**

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COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
Bill No. 8A: 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	320.00	52.52	16806.4
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	160.00	149.48	23916.8
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	170.00	601.96	102333.2
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	459.00	476.72	218814.5
				Sub Total =	**361870.9**
	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	130.0	3437.0	446813.9

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
				Sub Total =	**446813.9**
	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	650.0	24.2	15756.0
4A.03	**Treated RAP**				
		Cum	117.0	6389.13	747528.4
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	26.0	10516.12	273419.1
				Sub Total =	**1036703.6**

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COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
				Total	**1845388.34**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
	Bill No. 8C: 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	252.00	52.52	13235.0
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	126.00	149.48	18834.5
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	252.00	1158.47	291934.4
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	630.00	476.72	300333.6
				Sub Total =	**624337.6**
	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	244.8	3437.03	841384.9
				Sub Total =	**841384.9**

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	1224.0	24.2	29669.8
4A.03	**Treated RAP**				
		Cum	220.3	6389.1	1407653.6
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	49.0	10516.12	514869.2
				Sub Total =	**1952192.6**
				Total	**3417915.06**

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	11275	859.5	9691147.2
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	75	6345.83	475937.3
ii	60 cm equilateral triangle	No	75	4258.16	319362.0
iii	60 cm circular	No	75	5624.69	421851.8
iv	80 mm x 60 mm rectangular	No	10	7743.67	77436.7
v	60 cm x 45 cm rectangular	No	0	5484.30	0.0
vi	60 cm x 60 cm square	No	0	6452.89	0.0
vii	90 cm high octagon	No	0	9809.12	0.0
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	9	13604.7	122442.3
ii	more than 0.9 sqm size	Sqm	12	23542.1	282505.1

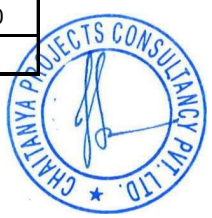
COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

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	1800.00	3700.64	6661152.0
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	1667.00	237.00	395079.00
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.	4	4766.19	19064.8
ii	**Ordinary kilometer stone (precast)**	Nos.	12	2903.75	34845.0
iii	**Hectometer stone (precast)**	Nos.	140	799.92	111988.8
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	1072.6	150166.8
9.8	**Overhead Signs (3 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 =	**19401058.2**

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	3,732.0	BC	5.500	0.040	821.04	41.05	862.09
	3,732.0	Treated RAP	5.500	0.180	3,694.68	184.73	3,879.41
	3,732.0	CT SUB BASE	7.580	0.200	5,657.71	282.89	5,940.60
	-	SUBGRADE	5.480	0.500	-	-	-
	3,732.0	EARTHEN SHOULDER	0.000		-	-	-
	3,732.0	Hard Shoulder with GSB material	1.000	0.170	634.44	31.72	666.16
	3,732.0	Prime Coat	5.500		20,526.00	1,026.30	21,552.30
Type-II	8,422.0	BC	5.500	0.040	1,852.84	92.64	1,945.48
	8,422.0	Treated RAP	5.500	0.180	8,337.78	416.89	8,754.6690
	8,422.0	CT SUB BASE	7.580	0.200	12,767.75	638.39	13,406.14
	-	SUBGRADE	5.480	0.500	-	-	-
	8,422.0	EARTHEN SHOULDER	0.000		-	-	-
	8,422.0	Hard Shoulder with GSB material	1.000	0.170	1,431.74	71.59	1,503.33
	8,422.0	Prime Coat	5.500		46,321.00	2,316.05	48,637.05
Type-III	1,350.0	BC	5.500	0.040	297.00	14.85	311.85
	1,350.0	Treated RAP	5.500	0.180	1,336.50	66.83	1,403.33
	1,350.0	CT SUB BASE	7.580	0.200	2,046.60	102.33	2,148.93
	-	SUBGRADE	5.480	0.500	-	-	-
	1,350.0	EARTHEN SHOULDER	0.000		-	-	-
	1,350.0	Hard Shoulder with GSB material	1.000	0.170	229.50	11.48	240.98
	1,350.0	Prime Coat	5.500		7,425.00	371.25	7,796.25
Type-IV	590.0	BC	5.500	0.040	129.80	6.49	136.29
	590.0	Treated RAP	5.500	0.180	584.10	29.21	613.31
	590.0	CT SUB BASE	7.580	0.200	894.44	44.72	939.16
	-	SUBGRADE	5.480	0.500	-	-	-
	590.0	EARTHEN SHOULDER	0.000		-	-	-
	590.0	Hard Shoulder with GSB material	1.000	0.170	100.30	5.02	105.32
	590.0	Prime Coat	5.500		3,245.00	162.25	3,407.25

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		14094.0	10.0	-	14.09
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		3000				3000
ii	Girth from 600 mm to 900 mm		1400				1400
iii	Girth from 900 mm to 1800 mm		1300				1300
iv	Girth above 1800 mm		600				600
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	cum					
a	Bituminous courses (5.5m Width)		1.00	8.094	5.5	0.30	13.36
b	Bituminous courses (3.5m Width)		1.00	6.00	3.5	0.30	6.30
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		24.00				24.00
iii	Hectometre Stone		0.00				0.00



QUANTITY CALCULATION- MISC ITEMS

Sl. No.	Description	Unit	Nos.	Area (Sqm.)	Thickness of Layers	Quantity
MINOR JUNCTION						
1	Excavation in Soil using Hydraulic Excavator	Cum	2	800.0	0.200	320.00
2	Construction of Embankment with Material Deposited from Roadway Cutting	Cum		50% of Excavated Qty		160.00
3	Construction of Embankment with Material obtained from Borrowpits	Cum	2	425.0	0.200	170.00
4	SUBGRADE	Cum	2	425.0	0.500	425.00
5	SHOULDER	Cum	2	100.0	0.170	34.00
6	CT Sub Base	Cum	2	325.0	0.200	130.00
8	Prime Coat	Sqm	2	325.0	-	650.00
9	Treated RAP	Cum	2	325.0	0.180	117.00
10	BC	Cum	2	325.0	0.040	26.00

PASSING PLACES						
1	Excavation in Soil using Hydraulic Excavator	Cum	18	70.0	0.200	252.00
2	Construction of Embankment with Material Deposited from Roadway Cutting	Cum		50% of Excavated Qty		126.00
3	Construction of Embankment with Material obtained from Borrowpits	Cum	18	70.0	0.200	252.00
4	SUBGRADE	Cum	18	70.0	0.500	630.00
6	CT Sub Base	Cum	18	68.0	0.200	244.80
8	Prime Coat	Sqm	18	68.0	-	1,224.00
10	Treated RAP	Cum	18	68.0	0.180	220.32
11	BC	Cum	18	68.0	0.040	48.96

Bill No 7: Drainage and Protective works							
Item No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Qty**
7.02	**PROTECTION WORK**						
	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications.						
	Breast Wall (Avg ht-2m),Length =			**200**		**2.0**	
	Retaining Wall (Avg ht-2.5m) ,Length =			**1500**		**2.5**	
i	Earth work in excavation						
	For Breast Wall	Cum	1	200	0.6	1.0	120.00
	For Retaining Wall	Cum	1	1500	2	1.0	3000.00
ii	Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications						
	A.) PCC M15						
	For Breast Wall	Cum	1	200	0.75	2.0	300.00
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	1500	1.25	2.0	3750.00
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	200			200.00
	For Retaining Wall	No.	1	1500			1500.00
iv	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification						
	For Breast Wall	Cum	1	200	0.3	2.0	120.00
	For Retaining Wall	Cum	1	1500	0.3	2.5	1125.00
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	200	0.3	2.0	120.00
	For Retaining Wall	Cum	1	1500	0.3	2.5	1125.00

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	14,467.00		0.27	3,906.09
7.01	3.6 (ii)	**Lined Drain (Random Rubble Masonary drain)**						
			cum	1.00	1,965.00		0.10	197.48
			cum	1.00	-		0.67	-

CHAITANYA PROJECTS CONSULTANCY PVT. LTD.

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	14094	0.150		8456.40
	For Centre line Marking	Sqm	2	14094	0.100		2818.80
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	75				75.00
ii	60 cm equilateral triangle	No	75				75.00
iii	60 cm circular	No	75				75.00
iv	80 mm x 60 mm rectangular	No	10				10.00
v	60 cm x 45 cm rectangular	No	0				0.00
vi	60 cm x 60 cm square	No	0				0.00
vii	90 cm high octagon	No	0				0.00
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	10	1.50	0.60	-	9.00
ii	more than 0.9 sqm size	Sqm	10	1.50	0.80	-	12.00

Item No	Description	Unit	Nos.	Length	Width	Depth	Quantity
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						
	For High Embankment	Rm	1	0.0			0.00
	For Curved Portion	Rm	1	1800.0			1800.00
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.	4				4
ii	**Ordinary kilometer stone (precast)**	Nos.	12				12
iii	**Hectometer stone (precast)**	Nos.	140				140
9.7	**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.	1667				1667.00
9.8	**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
9.9	**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.	10.00				10.00
	b) Aluminium alloy plate for over head	MT.	2.00				2.00