BUILDING INFRASTRUCTURE - BUILDING THE NATION

National Highways & Infrastructure Development Corporation Limited

REHABILITATION AND UPGRADATION OF SECTION FROM KM 206.000 TO 239.425 (NIMBUTALA TO AUSTIN CREEK) OF NH-223 TO 2-LANE WITH HARD SHOULDER IN THE UNION TERRITORY OF ANDAMAN & NICOBAR ISLANDS (PACKAGE NO. 4)

COST ESTIMATE

(Package-4)

November-2017

C E C Projects Pvt. Ltd.
In JV with Chaitanya Projects Consultancy Pvt. Ltd
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ABSTRACT OF COST

Abstract of Cost - Bill Wise			
Sl. No.	**Bill No.**	**Items**	**Amount (Rs)**
A		**ROAD WORKS**	
1	Bill No.1	Site Clearance & Dismantling	8,254,653.30
2	Bill No.2	Earthworks	150,905,356.62
3	Bill No.3	Sub-base and Base Courses	590,600,523.58
4	Bill No.4	Bituminous Works	210,171,570.34
B		**BRIDGES AND STRUCTURES**	
5	Bill No.5A &5B	Culverts(Pipe/Slab,Box)	470,301,124.36
6	Bill No.5C & 5D	Culverts Widening @60000 per Sqm & Culvert General Maintenance	455,520.00
7	Bill No.6	Bridges	49,456,552.08
C		**OTHER APPURENENCE/MISCELLANEOUS ITEMS**	
8	Bill No.7	Drainage and Protection works	374,598,409.93
9	Bill No.8A &8B	Junctions	68,735,364.11
10	Bill No.8C	Bus Shelter	6,588,900.07
11	Bill No.9	Traffic Sign,Marking and other Appurtenances	59,205,611.17
		Total of Construction Cost,(Bill No.1 to Bill No.9)	1,989,273,585.56
		Total Project cost (A)	1,989,273,585.56

COST ESTIMATE

Abstract of Cost - TCS Wise		
Bill No.	**Items**	**Amount (Rs)**
I	**Widening of Existing Alignment**	
	TCS (Type-I)	
	Site Clearance and Dismantling	3,602,839.25
	Earthworks	63,721,734.19
	Sub-base and Base Courses	269,793,737.93
	Pavement	
	Bituminous Pavement	80,315,249.49
	Traffic Sign,Marking and Other Appurtenances	25,840,976.23
	Total	**443,274,537.08**
	TCS (Type-II-A)	
	Site Clearance and Dismantling	2,033,948.55
	Earthworks	23,989,861.17
	Sub-base and Base Courses	128,758,207.94
	Pavement	
	Bituminous Pavement	64,773,154.87
	Traffic Sign,Marking and Other Appurtenances	14,588,276.77
	Total	**234,143,449.30**
	TCS (Type-II-B)	
	Site Clearance and Dismantling	332,607.79
	Earthworks	3,213,582.82
	Sub-base and Base Courses	17,897,250.12
	Pavement	
	Bituminous Pavement	9,044,181.50
	Traffic Sign,Marking and Other Appurtenances	2,385,593.55
	Total	**32,873,215.79**
	TCS (Type-II-C)	
	Site Clearance and Dismantling	153,701.37
	Earthworks	1,930,892.06
	Sub-base and Base Courses	17,027,494.76
	Pavement	
	Bituminous Pavement	8,521,882.83
	Traffic Sign,Marking and Other Appurtenances	1,102,406.53
	Total	**28,736,377.54**

Abstract of Cost - TCS Wise		
Bill No.	**Items**	**Amount (Rs)**
	TCS (Type-III)	
	Site Clearance and Dismantling	356,330.19
	Earthworks	6,368,294.24
	Sub-base and Base Courses	24,188,427.26
	Pavement	
	Bituminous Pavement	7,943,387.50
	Traffic Sign,Marking and Other Appurtenances	2,555,739.90
	Total	**41,412,179.09**
	TCS (Type-IV)	
	Site Clearance and Dismantling	878,222.96
	Earthworks	23,035,485.79
	Sub-base and Base Courses	65,764,536.67
	Pavement	
	Bituminous Pavement	19,577,530.64
	Traffic Sign,Marking and Other Appurtenances	6,298,959.50
	Total	**115,554,735.55**
	TCS (Type-V)	
	Site Clearance and Dismantling	897,003.19
	Earthworks	28,645,506.35
	Sub-base and Base Courses	67,170,868.91
	Pavement	
	Bituminous Pavement	19,996,183.52
	Traffic Sign,Marking and Other Appurtenances	6,433,658.69
	Total	**123,143,220.65**

Abstract of Cost - TCS Wise		
Bill No.	**Items**	**Amount (Rs)**
5	**Culverts (Pipe/ Box)**	
5A	Hume Pipe Culvert	6,511,265.47
5B	Box Culvert	463,789,858.89
5C	Culvert Widening @60000 Per Sqm	180,000.00
5D	Culvert (General Maintenance)	275,520.00
	Total	**470,756,644.36**
6	**Bridges**	
6A	Minor Bridge (Reconstruction)	23,232,952.08
6B	Minor Bridge (Widening)	22,862,700.00
6C	Bridge (Minor Repairs)	3,360,900.00
	Total	**49,456,552.08**
7	**Drainage and Protection Works**	
7A	Drainage	230,386,807.99
7B	Protection Works	144,211,601.94
	Total	**374,598,409.93**
III	**OTHER ITEMS**	
8A	**Major Junction (1 No.)**	
	Earthworks	2,903,709.60
	Sub-base and Base Courses	8,134,402.64
	Bituminous Pavement	4,092,095.80
	Traffic Sign,Marking and Other Appurtenances	1,704,298.95
	Total	**16,834,506.99**
8A	**Minor Junction (27 Nos.)**	
	Earthworks	10,929,816.00
	Sub-base and Base Courses	25,341,792.84
	Bituminous Pavement	12,748,452.30
	Traffic Sign,Marking and Other Appurtenances	2,880,795.98
	Total	**51,900,857.12**
8B	**Bus Shelter**	
	Earthworks	1,399,449.13
	Sub-base and Base Courses	1,895,941.54
	Bituminous Pavement	953,773.10
	Traffic Sign,Marking and Other Appurtenances	2,339,736.31
	Total	**6,588,900.07**
A	**Civil Construction Cost for the Year 2016-17**	**1,989,273,585.56**
	In Rs. Crores	**198.927**
	Per Km Cost (in Crores)	5.955

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	40.09	65584.35	2629014.25
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.	3500.00	311.08	1088780.00
ii	**Girth from 600 mm to 900 mm**	No.	1800.00	547.42	985356.00
iii	**Girth from 900 mm to 1800 mm**	No.	1600.00	1076.66	1722656.00
iv	**Girth above 1800 mm**	No.	600.00	2053.33	1231998.00
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	539.34	444,945.79
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	307.04	122,063.75
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	7.71	331.28	2553.3
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		20.00	447.43	8948.6
ii	Ordinary KM Stone		68.00	269.67	18337.6
				Sub Total =	**8254653.3**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Quantity							Rate (in Rs.)	Amount (in Rs)						
			TCS Type-I	TCS Type-II-A	TCS Type-II-B	TCS Type-II-C	TCS Type-III	TCS Type-IV	TCS Type-V		TCS Type-I	TCS Type-II-A	TCS Type-II-B	TCS Type-II-C	TCS Type-III	TCS Type-IV	TCS Type-V
Length of TCS (Km)			**14.580**	**8.231**	**1.346**	**0.622**	**1.442**	**3.554**	**3.630**		**14.580**	**8.231**	**1.346**	**0.622**	**1.442**	**3.554**	**3.630**
Bill No 2: EARTH WORK																	
2.01	**Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with Disposal upto 1000 metres.**																
i	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	61236	82310	11306	11196	19900	53310	0	51.51	3154266.36	4239788.10	582392.66	576705.96	1025028.40	2745998.10	0.00
2.02	**Construction of Embankment below sub grade 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	0	0	0	0	5768	7108	60984	147.46	0.00	0.00	0.00	0.00	850549.28	1048145.68	8992700.64
2.03	**Construction of Sub grade with approved 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-	cum	77784.30	23664.13	2860.25	1555.00	5573.33	26512.84	27079.80	592.87	46115977.94	14029749.79	1695756.42	921912.85	3304260.16	15718667.45	16054801.03
2.04	**Construction of Earthen Shoulders**																
	Construction of Median 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	6852.60	0.00	0.00	0.00	295.61	1670.38	1706.10	630.24	4318782.62	0.00	0.00	0.00	186305.25	1052740.29	1075252.46
										SubTotal =	**53589026.9**	**18269537.9**	**2278149.1**	**1498618.8**	**5366143.1**	**20565551.5**	**26122754.1**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Quantity							Rate (in Rs.)	Amount (in Rs)						
			TCS Type-I	TCS Type-II-A	TCS Type-II-B	TCS Type-II-C	TCS Type-III	TCS Type-IV	TCS Type-V		TCS Type-I	TCS Type-II-A	TCS Type-II-B	TCS Type-II-C	TCS Type-III	TCS Type-IV	TCS Type-V
Bill No 3: SUB BASE & 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	48915.90	20577.50	2860.25	2721.25	4138.54	11923.67	12178.65	3567.32	174498668.39	73406527.30	10203427.03	9707569.55	14763496.51	42535546.46	43445141.72
3.02	**Construction of hard shoulder with Granular Sub-Base with Close Graded Material (Table:- 400-1)**																
	Construction of Hard shoulder by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401 (Grading-III of Table 400-2)	Cum	10060.20	0.00	0.00	0.00	994.98	2452.26	2504.70	2650.24	26661944.45	0.00	0.00	0.00	2636935.80	6499077.54	6638056.13
3.03	**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	18370.80	14815.80	2059.38	1959.30	1816.92	4478.04	4573.80	3735.99	68633125.09	55351680.64	7693823.09	7319925.21	6787994.95	16729912.66	17087671.06
										SubTotal =	**269793737.9**	**128758207.9**	**17897250.1**	**17027494.8**	**24188427.3**	**65764536.7**	**67170868.9**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Quantity							Rate (in Rs.)	Amount (in Rs)						
			TCS Type-I	TCS Type-II-A	TCS Type-II-B	TCS Type-II-C	TCS Type-III	TCS Type-IV	TCS Type-V		TCS Type-I	TCS Type-II-A	TCS Type-II-B	TCS Type-II-C	TCS Type-III	TCS Type-IV	TCS Type-V
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	102060.00	82310.00	13460.00	8708.00	10094.00	24878.00	25410.00	20.20	2061612.00	1662662.00	271892.00	175901.60	203898.80	502535.60	513282.00
4.02	**SAMI Interface**																
	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	Sqm	102060.00	82310.00	11441.00	10885.00	10094.00	24878.00	25410.00	97.97	9998818.20	8063910.70	1120874.77	1066403.45	988909.18	2437297.66	2489417.70
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	Cum	5103.00	4115.50	572.05	544.25	504.70	1243.90	1270.50	13375.43	68254819.29	55046582.17	7651414.73	7279577.78	6750579.52	16637697.38	16993483.82
										SubTotal =	**80315249.5**	**64773154.9**	**9044181.5**	**8521882.8**	**7943387.5**	**19577530.6**	**19996183.5**
										TOTAL =	**403698014.3**	**211800900.7**	**29219580.7**	**27047996.4**	**37497957.8**	**105907618.8**	**113289806.6**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
Bill No. 5A: PIPE CULVERT					
5A.01	**Excavation for Structures**				
	Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.	cum	466.03	169.68	79075.65
5A.02	**1st Class Bedding below Pipe**				
	Providing 1 st class bedding below pipes with graded sand or other granular materials passing through 5.6 mm sieve as per vlause 2904	cum	216.19	7103.33	1535651.15
5A.03	**PCC/ RCC in Open foundation**				
	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.				
	PCC Grade M15	cum	31.77	10727.21	340782.54
5A.04	**PCC/ RCC in Substructure**				
	Plain cement concrete in sub-structure complete as per drawing and Technical Specifications				
	PCC Grade M20	cum	213.98	13910.73	2976613.44
5A.05	**Laying NP4 Pipe**				
	Laying Reinforced cement concrete pipe NP4/prestressed concrete pipe for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .				
	Single Row	Rm	75.00	6356.94	476770.50
	Double Row	Rm	45.00	13415.83	603712.35
5A.06	**Pitching on Slopes**				
	Providing and laying Pitching on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications	cum	67.05	3967.28	266007.08
5A.07	**Laying Filter Material underneath Pitching**				
	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	cum	33.53	3005.76	100768.46
5A.08	**Laying Boulder Apron**				
	Providing and laying boulders apron on river bed for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification.	cum	33.24	3967.28	131884.29
				Sub Total =	**6511265.5**

DETAILED ESTIMATE OF
BOX CULVERT

Bill No. 5B : Box Culvert						
Sl. No.	**Ref. to MoRTH Spec.**	**Item Description**	**Unit**	**Quantity**	**Rate**	**Amount (in Rs.)**
		FOUNDATION				
1	**304**	**Excavation for Structures** Earthwork in excavation for structures as per drawing and technical specifications Clause 305.1 including setting out, construction of shoring and bracing, removal of stumps and other deleterious material and disposal upto a lead of 50 m, dressing of sides and bottom and backfilling in trenches with excavated suitable material.				
		I. Ordinary Soil				
		i) Upto 3m depth	Cum	21,657.977	66.66	1443720.74
2	**1500, 1700 & 2100**	Providing and laying of PCC M15 levelling course below bottom Slab & Retaning wall & Curtain wall.	Cum	1,337.258	11,888.71	15898271.26
						17341992.00
		SUBSTRUCTURE				
3	**1500, 1700 & 2200**	R.C.C. grade M 25 in Sub Structure complete as per Dwg & Tech Specification.				
		i) Upto 5m height (Using Concrete Mixer)	Cum	5,150.594	15,706.51	80897861.57
		ii) From 5m upto 10m height (Using Concrete Mixer)	Cum	0.000	16,220.60	0.00
4	**1600 & 2200**	Supplying, fitting and placing HYSD bar reinforcement (Fe-500) in substructrue complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	483.359	73,330.04	35444770.87
5	**2706 & 2200**	**Providing weepholes** in brick masonry/stone masonry, plain/reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and technical specification Clauses 614, 709, 1204.3.7	Nos	5,930	154.53	916362.90
6	**2200**	**Backfilling** behind abutment, wing wall and retaining wall complete as per drawings & technical specification Clause 1204.3.8				
		I) Sandy Material	Cum	17,892.65	7,103.33	127097404.63
7	**2200**	**Providing and laying filter media** with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and technical specification Clause 1204.3.8	Cum	6,536.537	2760.33	18042997.80
						262399397.76

DETAILED ESTIMATE OF
BOX CULVERT

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Quantity	Rate	Amount (in Rs.)
		SUPERSTRUCTURE				
8	**1500 &1600 1700**	Providing and laying reinforced cement concrete in superstructure complete as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5. **RCC M-25**				
		Up to 5m height	Cum	484.268	17,064.96	8264005.52
		Height from 5m to 10m	Cum	0.000	17,776.00	0.00
9	**1600**	Supplying, fitting and placing HYSD bar reinforcement (Fe 500) in superstructrue complete as per drawings and technical specification Clauses 1002, 1010 & 1202	t	48.427	74,887.46	3626556.30
10	**2702**	Providing and laying cement concrete **wearing course M30 grade** including reinforcement complete as per drawing and technical specifications Clauses 800 and 1206.3	Cum	163.073	20,176.77	3290276.33
11	**2703, 1500, 1600 & 1700**	**Construction of R.C.C. railing** of M 25 grade in cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical railing post not to exceed 1 in 500, centre-to-centre spacing between vertical posts not to exceed 2000 mm as per drawing and technical specifications Clauses 800, 900 and 1208.3	m	370.100	2733.06	1011505.51
12	**2705**	**Drainage Spouts** complete as per drawing and technical specifications Clause 1209	No	88	1010.00	88880.00
						16281223.65

DETAILED ESTIMATE OF
BOX CULVERT

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Quantity	Rate	Amount (in Rs.)
		PROTECTION WORK				
13	**1500, 1700 & 2100**	P.C.C. grade M-15 in Curtain Wall complete as per Dwg & Tech Specification.	cum	1,637.285	13,146.16	21524013.86
14	**2505**	Providing and laying flooring laid over cement concrete bedding complete as per drawing and technical specification Clause 1303. **Rubble Stone laid in Cement Mortar 1:3**	Cum	1,204.141	12210.90	14703649.73
15	**2503**	Providing and laying boulder apron for bed protection with stone boulders of minimum size and weight as per Table 1300.1, no fragment weighing less than 25 kg laid dry complete as per drawing and technical specifications Clause 1301.	Cum	2,245.834	3967.28	8909851.32
16	**2504**	Providing and laying **boulder pitching on slopes** laid over prepared filter media as per drawing and technical specifications Clause 1302	cum	1,521.835	3967.28	6037544.65
17	**2504**	Providing and laying **filter material underneath pitching** in slopes complete as per drawing and technical specifications Clause 1302	cum	760.917	3005.76	2287135.04
					Sub Total of Protection Items =	**53462194.60**
					Total Cost of Box Structure =	**349484808.02**

DETAILED ESTIMATE OF BOX CULVERT WITH CUSHION

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Quantity	Rate	Amount (in Rs.)
		FOUNDATION				
1	304	**Excavation for Structures** Earthwork in excavation for structures as per drawing and technical specifications Clause 305.1 including setting out, construction of shoring and bracing, removal of stumps and other deleterious material and disposal upto a lead of 50 m, dressing of sides and bottom and backfilling in trenches with excavated suitable material.				
		I. Ordinary Soil				
		i) Upto 3m depth	Cum	9,390.577	66.00	619778.06
2	1500, 1700 & 2100	Providing and laying of PCC M15 levelling course below bottom Slab & Retaning wall & Curtain wall.	Cum	402.549	11,888.71	4785783.49
						5405561.56
		SUBSTRUCTURE				
3	1500, 1700 & 2200	R.C.C. grade M 35 in Sub Structure complete as per Dwg & Tech Specification.				
		i) Upto 5m height (Using Concrete Mixer)	Cum	1,675.031	16,376.00	27430311.62
		ii) From 5m upto 10m height (Using Concrete Mixer)	Cum	4.143	16,733.00	69328.83
4	1600 & 2200	Supplying, fitting and placing HYSD bar reinforcement (Fe-500) in substructrue complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	158.994	73,330.04	11659009.38
5	2706 & 2200	**Providing weepholes** in brick masonry/stone masonry, plain/reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and technical specification Clauses 614, 709, 1204.3.7	Nos	2,010	154.53	310605.30
6	2200	**Backfilling** behind abutment, wing wall and retaining wall complete as per drawings & technical specification Clause 1204.3.8				
		I) Sandy Material	Cum	5,370.14	7,103.33	38145898.27
7	2200	**Providing and laying filter media** with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and technical specification Clause 1204.3.8	Cum	1,582.214	2760.33	4367431.89
						81982585.29

DETAILED ESTIMATE OF BOX CULVERT WITH CUSHION

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Quantity	Rate	Amount (in Rs.)
		SUPERSTRUCTURE				
8	**1500 &1600 1700**	Providing and laying reinforced cement concrete in superstructure complete as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5. **RCC M-35**				
		Up to 5m height	Cum	250.152	18,661.77	4668276.29
		Height from 5m to 10m	Cum	0.000	19,390.99	0.00
9	**1600**	Supplying, fitting and placing HYSD bar reinforcement (Fe 500) in superstructrue complete as per drawings and technical specification Clauses 1002, 1010 & 1202	t	25.015	74,887.46	1873323.67
10	**2702**	Providing and laying cement concrete **wearing course M30 grade** including reinforcement complete as per drawing and technical specifications Clauses 800 and 1206.3	Cum	65.287	20,176.77	1317275.74
11	**2703, 1500, 1600 & 1700**	**Construction of R.C.C. railing** of M 25 grade in cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical railing post not to exceed 1 in 500, centre-to-centre spacing between vertical posts not to exceed 2000 mm as per drawing and technical specifications Clauses 800, 900 and 1208.3	m	520.180	2778.51	1445325.33

DETAILED ESTIMATE OF BOX CULVERT WITH CUSHION

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Quantity	Rate	Amount (in Rs.)
17	800	**White Washing of Parapet Walls** White washing two coats on parapet walls and tree trunks including preparation of surface by cleaning, scapping, etc. as pre technical specification Clause 1915	sqm	180.000	87.00	15660.00
						9319861.03
		PROTECTION WORK				
18	1500, 1700 & 2100	P.C.C. grade M-15 in Curtain Wall complete as per Dwg & Tech Specification.	cum	548.744	13146.16	7213879.55
19	2505	Providing and laying flooring laid over cement concrete bedding complete as per drawing and technical specification Clause 1303. **Rubble Stone laid in Cement Mortar 1:3**	Cum	385.945	12210.90	4712734.81
20	2503	Providing and laying boulder apron for bed protection with stone boulders of minimum size and weight as per Table 1300.1, no fragment weighing less than 25 kg laid dry complete as per drawing and technical specifications Clause 1301.	Cum	758.299	4323.81	3278739.72
21	2504	Providing and laying **boulder pitching on slopes** laid over prepared filter media as per drawing and technical specifications Clause 1302	cum	437.225	3967.28	1734592.70
22	2504	Providing and laying **filter material underneath pitching** in slopes complete as per drawing and technical specifications Clause 1302	cum	218.612	3005.76	657096.22
					Sub Total of Protection Items =	**17597043.00**
					Total Cost of Structure =	**114305050.88**

Bill No. 6B

S.No.	Design Chainage	Span Arrangement (m)	Type	Existing Width (m)	Total proposed width	Extent of Widening	Length(m)	Area of widening	Rate	Total Cost
1	212+064	3 x 6.2 + 6 x 6.0	RC Solid Slab	5.3	8.5	3.8	54.6	207.48	@95000	19710600
2	232+000	1 x 7.9	RC Solid Slab	5.5	8.5	4.2	7.9	33.18	@95000	3152100
									Total cost of widening =	**22862700**

Bill No-6C Bridge Cost(Minor repairs)

S.No.	Design Chainage	Span Arrangement (m)	Type	Carriageway Width (m)	Length(m)	Area	Rate	Total Cost
2	217+400	1 x 6.7	RC Solid Slab	7.5	6.7	50.25	@6000	301500
3	218+932	2 x 5.7 + 2 x 6.1	RC Solid Slab	6.7	23.6	158.12	@6000	948720
4	219+477	4 x 6.0	RC Solid Slab	6.8	24.0	163.2	@6000	979200
5	236+434	2 x 10.9	RC Solid Slab	6.6	21.8	143.88	@6000	863280
6	238+792	1x6.00	RC Solid Slab	7.45	6	44.7	@6000	268200
							Total cost of widening =	**3360900**

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	20931.84	70.70	1479881.09
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	52014.90	169.68	8825888.23
ii	PCC Grade M15	cum	2600.75	13146.16	34189809.89
iii	RCC Grade M20	cum	10097.01	14010.72	141466379.95
iv	HYSD Steel	MT	605.82	73330.04	44424848.83
				Sub Total =	**230386807.99**

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	6339.40	66.66	422584.40
ii	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications.				
	A.) Random Rubble Masonry				
	Breast Wall and Retaining wall	Cum	14006.60	8027.00	112430978.20
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.	3268.00	154.53	505004.04
vii	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification				
	Breast Wall and Retaining wall	cum	3127.95	7103.33	22218861.07
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	3127.95	2760.33	8634174.22
				Sub Total =	**144211601.94**

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	1200.00	51.51	61812.0
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	600.00	147.46	88476.0
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	1200.00	592.87	711444.0
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	3240.00	630.24	2041977.6
				Sub Total =	**2903709.6**
	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	1300.0	3567.3	4637516.0

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	936.0	3736.0	3496886.6
				Sub Total =	**8134402.6**
	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	5200.0	20.2	105040.0
4A.02	**SAMI Interface**				
	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	Sqm	5200.0	98.0	509444.0
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	260.0	13375.4	3477611.8
				Sub Total =	**4092095.8**

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	600.00	702.00	421200.00
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	45.0	374.71	16861.95
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	900.0	1406.93	1266237.00
				Sub Total =	**1704299.0**
				Total	**16834506.99**

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	4320.00	51.51	222523.2
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	2,160.00	147.46	318513.6
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	4320.00	592.87	2561198.4
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	12420.00	630.24	7827580.8
				Sub Total =	**10929816.0**
	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	4050.0	3567.3	14447646.0

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	2916.0	3736.0	10894146.8
				Sub Total =	**25341792.8**
	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	16200.0	20.2	327240.0
4A.03	**SAMI Interface**				
	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	Sqm	16200.0	97.97	1587114.0
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	810.0	13375.43	10834098.3
				Sub Total =	**12748452.3**

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	1620.00	709.02	1148612.40
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	60.8	374.71	22763.63
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	1215.0	1406.9	1709419.95
				Sub Total =	**2880796.0**
				Total	**51900857.12**

COST ESTIMATE- WIDENING OF EXISTING ALIGNMENT

Item No.	Description	Unit	Qty	Rate (in Rs.)	Amount (Rs.)
Bill No. 8C: BUS SHELTER					
	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	502.80	51.51	25899.2
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	251.40	147.46	37071.4
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	502.80	592.87	298095.0
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	1647.60	630.24	1038383.4
				Sub Total =	**1399449.1**
	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	303.0	3567.32	1080898.0

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	218.2	3735.99	815043.6
				Sub Total =	**1895941.5**
	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	1212.0	20.2	24482.4
4A.03	**SAMI Interface**				
	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	Sqm	1212.0	98.0	118739.6
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	60.6	13375.43	810551.1
				Sub Total =	**953773.1**

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	540.00	719.12	388324.80
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	68.5	359.56	24620.87
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	1369.5	1406.93	1926790.64
				Sub Total =	**2339736.3**
				Total	**6588900.07**

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	26724	859.5	22969545.2
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	230	7031.62	1617272.6
ii	60 cm equilateral triangle	No	30	4943.95	148318.5
iii	60 cm circular	No	30	6310.48	189314.4
iv	80 mm x 60 mm rectangular	No	30	8429.46	252883.8
v	60 cm x 45 cm rectangular	No	130	6170.09	802111.7
vi	60 cm x 60 cm square	No	30	7138.68	214160.4
vii	90 cm high octagon	No	30	10494.91	314847.3
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	63	14369.3	905264.0
ii	more than 0.9 sqm size	Sqm	24	25077.3	601855.0

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	8100.00	3727.91	30196071.0
9.5	**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.	12	6870.02	82440.2
ii	**Ordinary kilometer stone (precast)**	Nos.	42	4379.36	183933.1
iii	**Hectometer stone (precast)**	Nos.	330	1026.16	338632.8
9.6	**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.	330	1178.7	388961.1
9.7	**Reinforced Cement Concrete Crash Barrier**				
	Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified	Rm	0.00	6587.22	0.0
				TOTAL =	**59205611.2**

BOQ

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		33405.0	12.0	-	40.09
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		3500				3500
ii	Girth from 600 mm to 900 mm		1800				1800
iii	Girth from 900 mm to 1800 mm		1600				1600
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	16.900	5.5	0.05	4.65
b	Bituminous courses (3.5m Width)		1.00	15.60	3.5	0.05	2.73
c	Bituminous courses (5.5m Width)		1.00	0.60	11.0	0.05	0.33
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		20.00				20.00
ii	Ordinary KM Stone		68.00				68.00
iii	Hectometre Stone		0.00				0.00

QUANTITY CALCULATION OF PAVEMENT LAYERS FOR WIDENING OF EXISTING ALIGNMENT

Type of TCS Applicable	Length (m)	Crust Details	Width of Layers	Thickness of Layers	Quantity	Total Quantity
Type-I	14,580.0	BC	7.000	0.050	5,103.00	5,103.00
	14,580.0	SAMI Interface	7.000		102,060.00	102,060.00
	14,580.0	CT BASE	7.000	0.180	18,370.80	18,370.80
	14,580.0	CT SUB BASE	13.420	0.250	48,915.90	48,915.90
	14,580.0	SUBGRADE	10.670	0.500	77,784.30	77,784.30
	14,580.0	EARTHEN SHOULDER	0.470		6,852.60	6,852.60
	14,580.0	Hard Shoulder with GSB material	3.000	0.230	10,060.20	10,060.20
	14,580.0	Prime Coat	7.000		102,060.00	102,060.00
Type-II-A	8,231.0	BC	10.000	0.050	4,115.50	4,115.50
	8,231.0	SAMI Interface	10.000		82,310.00	82,310.00
	8,231.0	CT BASE	10.000	0.180	14,815.80	14,815.80
	8,231.0	CT SUB BASE	10.000	0.250	20,577.50	20,577.50
	8,231.0	SUBGRADE	5.750	0.500	23,664.13	23,664.13
	8,231.0	EARTHEN SHOULDER	0.000		-	-
	8,231.0	Hard Shoulder with GSB material	0.000	0.000	-	-
	8,231.0	Prime Coat	10.000		82,310.00	82,310.00
Type-II-B	1,346.0	BC	8.500	0.050	572.05	572.05
	1,346.0	SAMI Interface	8.500		11,441.00	11,441.00
	1,346.0	CT BASE	8.500	0.180	2,059.38	2,059.38
	1,346.0	CT SUB BASE	8.500	0.250	2,860.25	2,860.25
	1,346.0	SUBGRADE	4.250	0.500	2,860.25	2,860.25
	1,346.0	EARTHEN SHOULDER	0.000		-	-
	1,346.0	Hard Shoulder with GSB material	0.000	0.000	-	-
	1,346.0	Prime Coat	10.000		13,460.00	13,460.00
Type-II-C	622.0	BC	17.500	0.050	544.25	544.25
	622.0	SAMI Interface	17.500		10,885.00	10,885.00
	622.0	CT BASE	17.500	0.180	1,959.30	1,959.30
	622.0	CT SUB BASE	17.500	0.250	2,721.25	2,721.25
	622.0	SUBGRADE	5.000	0.500	1,555.00	1,555.00
	622.0	EARTHEN SHOULDER	0.000		-	-
	622.0	Hard Shoulder with GSB material	0.000	0.000	-	-
	622.0	Prime Coat	14.000		8,708.00	8,708.00

QUANTITY CALCULATION OF PAVEMENT LAYERS FOR WIDENING OF EXISTING ALIGNMENT

Type of TCS Applicable	Length (m)	Crust Details	Width of Layers	Thickness of Layers	Quantity	Total Quantity
Type-III	1,442.0	BC	7.000	0.050	504.70	504.70
	1,442.0	SAMI Interface	7.000		10,094.00	10,094.00
	1,442.0	CT BASE	7.000	0.180	1,816.92	1,816.92
	1,442.0	CT SUB BASE	11.480	0.250	4,138.54	4,138.54
	1,442.0	SUBGRADE	7.730	0.500	5,573.33	5,573.33
	1,442.0	EARTHEN SHOULDER	0.205		295.61	295.61
	1,442.0	Hard Shoulder with GSB material	3.000	0.230	994.98	994.98
	1,442.0	Prime Coat	7.000		10,094.00	10,094.00
Type-IV	3,554.0	BC	7.000	0.050	1,243.90	1,243.90
	3,554.0	SAMI Interface	7.000		24,878.00	24,878.00
	3,554.0	CT BASE	7.000	0.180	4,478.04	4,478.04
	3,554.0	CT SUB BASE	13.420	0.250	11,923.67	11,923.67
	3,554.0	SUBGRADE	14.920	0.500	26,512.84	26,512.84
	3,554.0	EARTHEN SHOULDER	0.470		1,670.38	1,670.38
	3,554.0	Hard Shoulder with GSB material	3.000	0.230	2,452.26	2,452.26
	3,554.0	Prime Coat	7.000		24,878.00	24,878.00
Type-V	3,630.0	BC	7.000	0.050	1,270.50	1,270.50
	3,630.0	SAMI Interface	7.000		25,410.00	25,410.00
	3,630.0	CT BASE	7.000	0.180	4,573.80	4,573.80
	3,630.0	CT SUB BASE	13.420	0.250	12,178.65	12,178.65
	3,630.0	SUBGRADE	14.920	0.500	27,079.80	27,079.80
	3,630.0	EARTHEN SHOULDER	0.470		1,706.10	1,706.10
	3,630.0	Hard Shoulder with GSB material	3.000	0.230	2,504.70	2,504.70
	3,630.0	Prime Coat	7.000		25,410.00	25,410.00

QUANTITY CALCULATION OF PIPE CULVERTS

Number of Culverts			5	3	
Item No.	**Description**	**Unit**	**1x1200**	**2x1200**	**Total Qty.**
1.01	**Excavation for Structures**				
	Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.	Cum	49.07	73.57	**466.03**
1.02	Providing 1 st class bedding below pipes with graded sand or other granular materials passing through 5.6 mm sieve as per vlause 2904	Cum	20.96	37.13	**216.19**
1.03	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.				
	PCC Grade M15	Cum	3.59	4.61	**31.77**
1.04	Plain cement concrete in sub-structure complete as per drawing and Technical Specifications				
	PCC Grade M20	Cum	24.44	30.59	**213.98**
1.05	Laying Reinforced Cement Concrete Pipe NP4 on First Class Bedding				
	Single Row	Rm	15	-	**75.0**
	Double Row	Rm	-	15	**45**
1.06	Providing and laying Pitching on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications	Cum	8.38	8.38	**67.05**
1.07	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	Cum	4.19	4.19	**33.53**
1.08	Providing and laying boulders apron on river bed for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification.	Cum	3.72	4.88	**33.24**

DETAILED ESTIMATE OF BOX CULVERT

QUANTITY CALCULATION OF BOX CULVERT																				
		Number of Culvert =		**10**	**20**	**18**	**1**	**1**	**1**	**1**	**1**	**1**	**15**	**1**	**1**	**2**	**4**	**1**	**1**	
Sl. No.	**Ref. to MoRTH Spec.**	**Item Description**	**Unit**	**1x1.5 x1.5**	**1x1.5x2.0**	**1x1.5x2.5**	**1x2.0x1.5**	**1x2.5x2.5**	**1x3.0x3.0**	**1x3.0x4.0**	**1x4.0x4.0**	**1x4.5x4.0**	**1x1.5x3.0**	**1x2.0x2.5**	**1x2.5x3.5**	**1x3.5x3.0**	**1x4.0x3.0**	**1x5.0x3.5**	**1x2.0x3.0**	**Total Quantity**
		FOUNDATION																		
1	**304**	**Excavation for Structures** Earthwork in excavation for structures as per drawing and technical specifications Clause 305.1 including setting out, construction of shoring and bracing, removal of stumps and other deleterious material and disposal upto a lead of 50 m, dressing of sides and bottom and backfilling in trenches with excavated suitable material.																		
		I. Ordinary Soil																		
		i) Upto 3m depth	Cum	172.284	211.521	260.148	184.923	267.852	373.886	507.472	542.037	559.320	303.511	264.212	355.979	391.389	441.116	558.663	307.810	**21657.98**
2	**1500, 1700 & 2100**	Providing and laying of PCC M15 levelling course below bottom Slab & Retaning wall & Curtain wall.	Cum	10.128	12.575	15.575	11.040	16.753	24.245	33.359	37.064	38.917	18.492	16.253	23.039	25.687	29.441	37.632	19.303	**1337.26**
		SUBSTRUCTURE																		
3	**1500, 1700 & 2200**	R.C.C. grade M 25 in Sub Structure complete as per Dwg & Tech Specification.																		
		i) Upto 5m height (Using Concrete Mixer)	Cum	35.337	45.829	58.560	35.280	61.415	90.696	157.306	162.016	164.372	73.349	57.575	88.568	95.233	121.821	161.186	70.155	**5150.59**
		ii) From 5m upto 10m height (Using Concrete	Cum	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
4	**1600 & 2200**	Supplying, fitting and placing HYSD bar reinforcement (Fe-500) in substructrue complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	3.349	4.321	5.493	3.340	5.795	8.480	14.594	15.065	15.301	6.876	5.411	8.298	8.934	11.413	15.057	6.568	**483.36**
5	**2706 & 2200**	**Providing weepholes** in brick masonry/stone masonry, plain/reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and technical specification Clauses 614, 709, 1204.3.7	Nos	30	62	62	26	62	102	164	164	164	108	54	120	96	102	102	96	**5930.00**

DETAILED ESTIMATE OF BOX CULVERT

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	1x1.5 x1.5	1x1.5x2.0	1x1.5x2.5	1x2.0x1.5	1x2.5x2.5	1x3.0x3.0	1x3.0x4.0	1x4.0x4.0	1x4.5x4.0	1x1.5x3.0	1x2.0x2.5	1x2.5x3.5	1x3.5x3.0	1x4.0x3.0	1x5.0x3.5	1x2.0x3.0	Total Quantity
6	2200	**Backfilling** behind abutment, wing wall and retaining wall complete as per drawings & technical specification Clause 1204.3.8																		
		I) Sandy Material	Cum	86.22	148.95	226.98	71.54	225.22	289.80	533.50	533.50	533.50	318.29	181.06	438.35	258.41	318.21	335.62	259.95	**17892.65**
7	2200	**Providing and laying filter media** with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and technical specification. Clause	Cum	51.678	66.708	83.538	45.367	83.304	97.455	143.226	143.226	143.226	101.904	73.944	124.443	92.498	102.600	111.504	92.261	**6536.54**
		SUPERSTRUCTURE																		
8	1500 &1600 1700	Providing and laying reinforced cement concrete in superstructure complete as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5.																		
		Up to 5m height	Cum	4.680	4.680	4.680	5.513	6.000	9.625	10.650	13.650	15.150	4.800	5.000	7.500	11.275	16.560	20.125	5.625	**484.27**
		Height from 5m to 10m	Cum	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
9	1600	Supplying, fitting and placing HYSD bar reinforcement (Fe 500) in superstructrue complete as per drawings and technical	t	0.468	0.468	0.468	0.551	0.600	0.963	1.065	1.365	1.515	0.480	0.500	0.750	1.128	1.656	2.013	0.563	**48.43**
10	2702	Providing and laying cement concrete **wearing course M30 grade** including reinforcement complete as per drawing and technical specifications Clauses 800 and 1206.3	Cum	1.755	1.755	1.755	1.838	2.250	2.888	3.195	4.095	4.545	1.800	1.875	2.250	3.075	4.140	4.313	1.875	**163.07**
11	2703, 1500, 1600 & 1700	**Construction of R.C.C. railing** of M 25 grade in cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical railing post not to exceed 1 in 500, centre-to-centre spacing between vertical posts not to exceed 2000 mm as per drawing and technical specifications Clauses 800, 900 and 1208.3	m	3.900	3.900	3.900	4.900	5.000	7.000	7.100	9.100	10.100	4.000	5.000	5.000	8.200	9.200	11.500	5.000	**370.10**

DETAILED ESTIMATE OF BOX CULVERT

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	1x1.5 x1.5	1x1.5x2.0	1x1.5x2.5	1x2.0x1.5	1x2.5x2.5	1x3.0x3.0	1x3.0x4.0	1x4.0x4.0	1x4.5x4.0	1x1.5x3.0	1x2.0x2.5	1x2.5x3.5	1x3.5x3.0	1x4.0x3.0	1x5.0x3.5	1x2.0x3.0	Total Quantity
12	2705	**Drainage Spouts** complete as per drawing and technical specifications Clause 1209	No	1	1	1	1	1	1	1	2	2	1	1	1	2	2	2	1	**88.00**
		PROTECTION WORK																		
13	1500, 1700 & 2100	P.C.C. grade M-15 in Curtain Wall complete as per Dwg & Tech Specification.	cum	14.492	17.035	19.577	16.314	21.357	27.544	32.714	36.104	37.799	22.205	21.357	26.696	29.535	31.358	37.799	24.027	**1637.29**
14	2505	Providing and laying flooring laid over cement concrete bedding complete as per drawing and technical specification Clause 1303. **Rubble Stone laid in Cement Mortar 1:3**	Cum	6.627	9.690	13.259	7.932	15.127	24.405	36.290	42.027	44.896	17.388	15.127	24.996	26.997	29.514	41.970	19.782	**1204.14**
15	2503	Providing and laying boulder apron for bed protection with stone boulders of minimum size and weight as per Table 1300.1, no fragment weighing less than 25 kg laid dry complete as per drawing and technical specifications Clause 1301.	Cum	19.879	23.366	26.854	22.378	29.295	37.781	44.873	49.523	51.848	30.458	29.295	36.619	40.513	43.013	51.848	32.957	**2245.83**
16	2504	Providing and laying **boulder pitching on slopes** laid over prepared filter media as per drawing and technical specifications Clause 1302	cum	7.365	12.335	18.579	7.584	18.579	26.920	46.034	46.034	46.034	26.098	18.579	35.840	27.335	27.754	37.777	26.507	**1521.83**
17	2504	Providing and laying **filter material underneath pitching** in slopes complete as per drawing and technical specifications Clause 1302	cum	3.683	6.168	9.290	3.792	9.290	13.460	23.017	23.017	23.017	13.049	9.290	17.920	13.668	13.877	18.888	13.254	**760.92**

DETAILED ESTIMATE OF BOX CULVERT WITH CUSHION

QUANTITY CALCULATION OF BOX CULVERT										
		No of Culverts=		9	9	4	3	1	1	
Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	1x2.0x2.0(2m fill)	1x2.0x2.0(1.5m fill)	1x2.0x2.0(2.5m fill)	1x2.0x2.5(2m fill)	1x2.0x2.5(2.5m fill)	1x5.0x5.0(1m fill)	Amount (in Rs.)
		FOUNDATION								
1	304	**Excavation for Structures** Earthwork in excavation for structures as per drawing and technical specifications Clause 305.1 including setting out, construction of shoring and bracing, removal of stumps and other deleterious material and disposal upto a lead of 50 m, dressing of sides and bottom and backfilling in trenches with excavated suitable material.								
		I. Ordinary Soil								
		i) Upto 3m depth	Cum	301.982	299.252	329.015	433.697	424.078	938.238	9390.58
2	1500, 1700 & 2100	Providing and laying of PCC M15 levelling course below bottom Slab & Retaning wall & Curtain wall.	Cum	13.762	13.387	13.012	15.683	14.408	44.711	402.55
										9793.13
		SUBSTRUCTURE								
3	1500, 1700 & 2200	R.C.C. grade M 35 in Sub Structure complete as per Dwg & Tech Specification.								
		i) Upto 5m height (Using Concrete Mixer)	Cum	57.169	54.664	54.034	66.877	58.604	193.168	1675.03
		ii) From 5m upto 10m height (Using Concrete	Cum	0.000	0.000	0.000	0.000	0.000	4.143	4.14
4	1600 & 2200	Supplying, fitting and placing HYSD bar reinforcement (Fe-500) in substructrue complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	5.433	5.182	5.100	6.309	5.459	18.675	158.99
5	2706 & 2200	**Providing weepholes** in brick masonry/stone masonry, plain/reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and technical specification Clauses 614, 709, 1204.3.7	Nos	74	70	62	62	42	238	2010.00
6	2200	**Backfilling** behind abutment, wing wall and retaining wall complete as per drawings & technical specification Clause 1204.3.8								
		I) Sandy Material	Cum	172.67	153.67	193.49	212.61	149.99	871.32	5370.14
7	2200	**Providing and laying filter media** with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and technical specification Clause 1204.3.8	Cum	54.849	50.619	56.259	62.014	52.549	169.376	1582.21
										10800.52

DETAILED ESTIMATE OF BOX CULVERT WITH CUSHION

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	1x2.0x2.0(2m fill)	1x2.0x2.0(1.5m fill)	1x2.0x2.0(2.5m fill)	1x2.0x2.5(2m fill)	1x2.0x2.5(2.5m fill)	1x5.0x5.0(1m fill)	Amount (in Rs.)
		SUPERSTRUCTURE								
8	**1500 &1600 1700**	Providing and laying reinforced cement concrete in superstructure complete as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5.								
		Up to 5m height	Cum	9.375	8.438	7.500	8.415	4.909	29.686	250.15
		Height from 5m to 10m	Cum	0.000	0.000	0.000	0.000	0.000	0.000	0.00
9	**1600**	Supplying, fitting and placing HYSD bar reinforcement (Fe 500) in superstructrue complete as per drawings and technical	t	0.938	0.844	0.750	0.842	0.491	2.969	25.02
10	**2702**	Providing and laying cement concrete **wearing course M30 grade** including reinforcement complete as per drawing and technical specifications Clauses 800 and 1206.3	Cum	2.625	2.344	2.063	2.104	1.148	4.859	65.29
11	**2703, 1500, 1600 & 1700**	**Construction of R.C.C. railing** of M 25 grade in cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical railing post not to exceed 1 in 500, centre-to-centre spacing between vertical posts not to exceed 2000 mm as per drawing and technical specifications Clauses 800, 900 and	m	19.000	19.000	19.000	19.100	19.100	25.780	520.18
17	**800**	**White Washing of Parapet Walls** White washing two coats on parapet walls and tree trunks including preparation of surface by cleaning, scapping, etc. as pre technical specification Clause 1915	sqm	10.000	10.000	0.000	0.000	0.000	0.000	180.00
										1040.63

DETAILED ESTIMATE OF BOX CULVERT WITH CUSHION

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	1x2.0x2.0(2m fill)	1x2.0x2.0(1.5m fill)	1x2.0x2.0(2.5m fill)	1x2.0x2.5(2m fill)	1x2.0x2.5(2.5m fill)	1x5.0x5.0(1m fill)	Amount (in Rs.)
		PROTECTION WORK								
18	**1500, 1700 & 2100**	P.C.C. grade M-15 in Curtain Wall complete as per Dwg & Tech Specification.	cum	18.928	18.928	18.928	21.662	21.662	45.680	548.74
19	**2505**	Providing and laying flooring laid over cement concrete bedding complete as per drawing and technical specification Clause 1303. **Rubble Stone laid in Cement Mortar 1:3**	Cum	11.580	11.580	11.580	15.804	15.804	67.957	385.94
20	**2503**	Providing and laying boulder apron for bed protection with stone boulders of minimum size and weight as per Table 1300.1, no fragment weighing less than 25 kg laid dry complete as per drawing and technical specifications Clause 1301.	Cum	26.156	26.156	26.156	29.934	29.934	63.124	758.30
21	**2504**	Providing and laying **boulder pitching on slopes** laid over prepared filter media as per drawing and technical specifications Clause 1302	cum	12.902	12.902	12.902	19.626	19.626	74.869	437.22
22	**2504**	Providing and laying **filter material underneath pitching** in slopes complete as per drawing and technical specifications Clause 1302	cum	6.451	6.451	6.451	9.813	9.813	37.435	218.61
										2348.82
										23983.11

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	2.00	21,764.00		0.48	20,893.44
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	cum	1.00	80.00		0.48	38.40
7.02		**Lined PCC 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	1.00	-	1.20	1.40	-
		PCC Grade M15						
(b)	12.8 A	Bottom Slab	cum	1.00	-	0.70	0.10	-
(c)	12.8 B	Side Wall	cum	1.00	-	0.10	1.30	-
7.03		**Lined RCC Open 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	10,199.00	1.70	1.50	52,014.90
(b)	12.8 A	PCC Grade M15 in levelling course	cum	2.00	10,199.00	1.70	0.08	2,600.75
(c)	12.8 B	Top Slab	cum	2.00	10,199.00	1.50	0.10	3,059.70
(d)	12.8 C	Bottom Slab	cum	2.00	10,199.00	1.50	0.10	3,059.70
(e)	12.8 D	Wall	cum	2.00	10,199.00	0.15	1.30	3,977.61
(f)	12.40	HYSD Steel	MT	1.00		x 60 kg per cum		605.82

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-2m),Length =			**765**		**2.0**	
	Breast Wall (Avg ht-5.5) ,Length =			**325**		**5.0**	
	Retaining Wall (Avg ht-3.5m) ,Length =			**1883**		**3.0**	
	Retaining Wall (Avg ht-5.5m) ,Length =			**295**		**5.5**	
i	Earth work in excavation						
	For Breast Wall	Cum	1	765	0.6	1.0	459.00
	For Breast Wall	Cum	1	325	1.5	1.0	487.50
	For Retaining Wall	Cum	1	1883	2.3	1.0	4330.90
	For Retaining Wall	Cum	1	295	3.6	1.0	1062.00
ii	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications.						
	A.) Random Rubble Masonry						
	For Breast Wall	Cum	1	765	0.75	2.0	1147.50
	For Breast Wall	Cum	1	325	0.75	5.0	1218.75
	For Retaining Wall	Cum	1	1883	1.4	3.0	7908.60
	For Retaining Wall	Cum	1	295	2.3	5.5	3731.75
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	765			765.00
	For Breast Wall	No.	1	325			325.00
	For Retaining Wall	No.	1	1883			1883.00
	For Retaining Wall	No.	1	295			295.00
iv	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification						
	For Breast Wall	Cum	1	765	0.3	2.0	459.00
	For Breast Wall	Cum	1	325	0.3	5.0	487.50
	For Retaining Wall	Cum	1	1883	0.3	3.0	1694.70
	For Retaining Wall	Cum	1	295	0.3	5.5	486.75
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	765	0.3	2.0	459.00
	For Breast Wall	Cum	1	325	0.3	5.0	487.50
	For Retaining Wall	Cum	1	1883	0.3	3.0	1694.70
	For Retaining Wall	Cum	1	295	0.3	5.5	486.75

QUANTITY CALCULATION- MISC ITEMS

Sl. No.	Description	Unit	Nos.	Area (Sqm.)	Thickness of Layers	Quantity
MAJOR JUNCTION						
1	Excavation in Soil using Hydraulic Excavator	Cum	1	6,000.0	0.200	1,200.00
2	Construction of Embankment with Material Deposited from Roadway Cutting	Cum		50% of Excavated Qty		600.00
3	Construction of Embankment with Material obtained from Borrowpits	Cum	1	6,000.0	0.200	1,200.00
4	SUBGRADE	Cum	1	6,000.0	0.500	3,000.00
5	SHOULDER	Cum	1	800.0	0.300	240.00
6	CT Sub Base	Cum	1	5,200.0	0.250	1,300.00
7	CT Base	Cum	1	5,200.0	0.180	936.00
8	Prime Coat	Sqm	1	5,200.0	-	5,200.00
9	Sami Interface	Sqm	1	5,200.0	-	5,200.00
10	BC	Cum	1	5,200.0	0.050	260.00
11	Cement Concrete M20 Kerb	Rm	1	600.0	-	600.00
12	Construction of Median with Soil from Roadway cutting	Cum	1	900.0	0.050	45.00
13	Providing & Laying Chequered Tiles	Sqm	1	900.0	-	900.00

MINOR JUNCTION						
1	Excavation in Soil using Hydraulic Excavator	Cum	27	800.0	0.200	4,320.00
2	Construction of Embankment with Material Deposited from Roadway Cutting	Cum		50% of Excavated Qty		2,160.00
3	Construction of Embankment with Material obtained from Borrowpits	Cum	27	800.0	0.200	4,320.00
4	SUBGRADE	Cum	27	800.0	0.500	10,800.00
5	SHOULDER	Cum	27	200.0	0.300	1,620.00
6	CT Sub Base	Cum	27	600.0	0.250	4,050.00
7	CT Base	Cum	27	600.0	0.180	2,916.00
8	Prime Coat	Sqm	27	600.0	-	16,200.00
9	Sami Interface	Sqm	27	600.0		16,200.00
10	BC	Cum	27	600.0	0.050	810.00
11	Cement Concrete M20 Kerb	Rm	27	60.0	-	1,620.00
12	Construction of Median with Soil from Roadway cutting	Cum	27	45.0	0.050	60.75
13	Providing & Laying Chequered Tiles	Sqm	27	45.0	-	1,215.00

QUANTITY CALCULATION- MISC ITEMS

Sl. No.	Description	Unit	Nos.	Area (Sqm.)	Thickness of Layers	Quantity
BUS SHELTER						
1	Excavation in Soil using Hydraulic Excavator	Cum	3	838.0	0.200	502.80
2	Construction of Embankment with Material Deposited from Roadway Cutting	Cum		50% of Excavated Qty		251.40
3	Construction of Embankment with Material obtained from Borrowpits	Cum	3	838.0	0.200	502.80
4	SUBGRADE	Cum	3	838.0	0.500	1,257.00
5	SHOULDER	Cum	3	434.0	0.300	390.60
6	CT Sub Base	Cum	3	404.0	0.250	303.00
7	CT Base	Cum	3	404.0	0.180	218.16
8	Prime Coat	Sqm	3	404.0	-	1,212.00
10	Sami Interface	Sqm	3	404.0		1,212.00
11	BC	Cum	3	404.0	0.050	60.60
12	Cement Concrete M20 Kerb	Rm	3	180.0	-	540.00
13	Construction of Median with Soil from Roadway cutting	Cum	3	456.5	0.050	68.48
14	Providing & Laying Chequered Tiles	Sqm	3	456.5	-	1,369.50

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	33405	0.150		20043.00
	For Centre line Marking	Sqm	2	33405	0.100		6681.00
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	230				230.00
ii	60 cm equilateral triangle	No	30				30.00
iii	60 cm circular	No	30				30.00
iv	80 mm x 60 mm rectangular	No	30				30.00
v	60 cm x 45 cm rectangular	No	130				130.00
vi	60 cm x 60 cm square	No	30				30.00
vii	90 cm high octagon	No	30				30.00
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	70	1.50	0.60	-	63.00
ii	more than 0.9 sqm size	Sqm	20	1.50	0.80	-	24.00

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	6750.0			6750.00
	For Curved Portion	Rm	1	1350.0			1350.00
9.5	**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.	12				12
ii	**Ordinary kilometer stone (precast)**	Nos.	42				42
iii	**Hectometer stone (precast)**	Nos.	330				330
9.6	**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.	330				330

BRIDGE AT Ch. 205+923

COST

DETAILED ESTIMATE OF BRIDGE

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Quantity	Rate	Amount (in Rs.)
		FOUNDATION				
1	304	**Excavation for Structures** Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.				
		I. Ordinary Soil				
		i) Mechanical Means (Depth upto 3 m)	Cum	0.000	66.00	0.00
		ii) Mechanical Means (3m to 6m depth)	Cum	632.580	75.00	47443.50
2	1100&1700	Providing and laying of PCC M15 levelling course 100mm thick below the Footing.				
		II. PCC Grade M-15 (Levelling Course)	Cum	21.086	13,016.00	274455.38
3	1100, 1500 &1700	R.C.C. grade M 35 in Footing complete as per Dwg & Tech Specification.				
		Footing in RCC M-35	Cum	125.163	14,971.00	1873807.79
4	1600	Supplying, fitting and placing **HYSD bar reinforcement in foundation** complete as per drawings and technical specifications Clauses 1000 and 1202	t	10.013	72,402.00	724961.23
						2920667.89
		SUBSTRUCTURE				
5	1500, 1700 & 2200	**R.C.C. grade M-35** in Substructure complete as per Dwg & Tech Specification				
		RCC M-35				
		i) Upto 5m height (Using Concrete Mixer)	Cum	194.499	16,376.00	3185107.45
		ii) From 5m upto 10m height (Using Concrete Mixer)	Cum	48.330	16,733.00	808705.89
6	1600 & 2200	Supplying, fitting and placing HYSD bar reinforcement (Fe 500) in substructrue complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	27.375	72,604.00	1987544.13
7	2000 & 2200	Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, completre assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete asper drawing and approved technical specifications.	Nos	2,700	475.00	1282500.00

DETAILED ESTIMATE OF BRIDGE

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Quantity	Rate	Amount (in Rs.)
8	2706 & 2200	**Providing weepholes** in brick masonry/stone masonry, plain/reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and technical specification Clauses 614, 709, 1204.3.7	Nos	64	153.00	9792.00
9	2200	**Backfilling** behind abutment, wing wall and return wall complete as per drawings & technical specification Clause 1204.3.8 **I) Sandy Material**	Cum	261.00	7,033.00	1835596.12
10	2200	**Providing and laying filter media** with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and technical specification Clause 1204.3.8	Cum	103.100	2733.00	281773.39
						9391018.98
		SUPERSTRUCTURE				
11	1500 &1600 1700	Providing and laying reinforced cement concrete in superstructure complete as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5 II. RCC M-35 (Height 5m to 10m)	Cum	235.977	18,477.00	4360142.35
12	1600	Supplying, fitting and placing HYSD bar reinforcement (Fe 500) in superstructrue complete as per drawings and technical specification Clauses 1002, 1010 & 1202	t	40.907	74,146.00	3033075.75
13	2702	Wearing Course (65 mm thick) comprising of 40 mm Bituminous Concrete overlaid with 25 mm thick Mastic asphalt as per Technical Specification Clauses 512, 515 & 2702.				
		Mastic Layer	sqm	424.125	339.00	143778.38
		Bituminous Layer	Cum	16.965	13,260.00	224955.90
14	809	**Construction of R.C.C. Crash Barrier** of M 40 grade in cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical railing post not to exceed 1 in 500, centre-to-centre spacing between vertical posts not to exceed 2000 mm as per drawing and technical specifications Clauses 800, 900 and 1208.3	m	127.100	6522.00	828946.20
15	2703, 1500, 1600, 1700	Construction of RCC railing of M30 Grade in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	m	127.100	2751.00	349652.10
16	1500, 1700 &	**Plain Cement Concrete in footpath** complete as per Drawing and Technical Specifications.	Cum	50.14	13768.00	690340.60

DETAILED ESTIMATE OF BRIDGE

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Quantity	Rate	Amount (in Rs.)
17	2705	**Drainage Spouts** complete as per drawing and technical specifications Clause 1209	No	23	1000.00	23000.00
18	2700	P.C.C. M-15 ordinary grade (1:2.5:5) levelling course below approach slab complete as per drawing and technical specificatios Clauses 800 & 1211.	cum	7.538	12516.00	94339.35
19	1500,1600,1700 & 2704	Reinforced Cement Concrete M-30 grade approach slab including reinforcement and formwork complete as per drawing and technical specifications Clauses 800 and 1211	cum	15.750	18310.00	288382.50
20	2607	Strip Seal Expansion Joint (Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	m	34.000	11710.00	398140.00
21	800	**White Washing of Parapet Walls** White washing two coats on parapet walls and tree trunks including preparation of surface by cleaning, scapping, etc. as pre technical specification Clause 1915	sqm	139.810	87.00	12163.47
						10446916.59
		PROTECTION WORK				
22	2504	Providing and laying **boulder pitching on slopes** laid over prepared filter media as per drawing and technical specifications Clause 1302	cum	87.583	3928.00	344025.36
23	2505	Providing and laying **filter material underneath pitching** in slopes complete as per drawing and technical specifications Clause 1302	cum	43.791	2976.00	130323.25
					Sub Total of Protection Items =	**474348.62**
					Total Cost of Bridge Structure =	**23232952.08**

BOQ

BOQ OF BRIDGE

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Nos	Length (m)	Width (m)	Depth/ Height (m)	AREA (Sqm.)	Quantity
		FOUNDATION							
1	304	**Excavation for Structures**							
		Earthwork in excavation for structures as per drawing and technical specifications Clause 305.1 including setting out, construction of shoring and bracing, removal of stumps and other deleterious material and disposal upto a lead of 50 m, dressing of sides and bottom and backfilling in trenches with excavated suitable material.							
	I.	Ordinary Soil							
		i) 3m to 6m depth							
		Abutment	Cum	2	8.70	4.2	3.000		219.24
		Pier	Cum	2 x	6.7	6.7	3.000		269.34
		ii) 3m to 6m depth							
		Below Retaining wall	Cum	4	3.00	4.00	3.000		144.00
		Sub-Total =	Cum						**632.58**
2	1100&1700	Providing and laying of PCC M15 levelling course 100mm thick below the footing.							
		II. PCC Grade M-15 (Levelling Course for footing)							
		Abutment	Cum	2	8.70	4.20	0.100		7.31
		Pier	Cum	2	6.70	6.70	0.100		8.98
		Independent Retaining Wall	Cum	4	3.00	4.00	0.100		4.80
		Sub-Total =	Cum						**21.09**
3	1100, 1500 &1700	R.C.C. grade M 35 in footing complete as per Dwg & Tech Specification. **Concrete in Pile Cap**							
		Abutment							
		1 st. Rectangular portion.	Cum	2	8.50	4.00	0.50		34.00
		2 nd. Rectangular portion.	Cum	2	8.50	1.20	0.50		10.20
		1 st. Trangular portion	Cum	2	8.50	1.80	0.25		7.65
		2 st. Trangular portion	Cum	2	8.50	1.00	0.25		4.25
									56.10
		Pier							
		1 st. Rectangular portion.	Cum	2	6.50	6.50	0.50		42.25
		2 nd. Rectangular portion.	Cum	2	6.50	1.75	0.50		11.38
		1 st. Trangular portion	Cum	2	6.50	2.38	0.25		7.72
		2 st. Trangular portion	Cum	2	6.50	2.38	0.25		7.72
									69.06
		Sub-Total =	Cum						**125.16**
4	1600	Supplying, fitting and placing **HYSD bar reinforcement in foundation** complete as per drawings and technical specifications Clauses 1000 and 1202							
	(i)	For Open Foundation @ 80Kg per cum of Concrete in Item 3	t			125.16			10.013
		Sub-Total =	t						**10.01**
		SUBSTRUCTURE							
5	1500, 1700 & 2200 A	**R.C.C. grade M-35** in Substructure complete as per Dwg & Tech Specification							
		For Abutments (A1 & A2)							
		From 5m upto 10m height							
	(a)	Dirt Wall	cum	2	8.50	0.3	1.919		9.787
	(b)	Bracket							
		(i) Bracket rectangle portion	cum	2	7.50	0.20	0.18		0.540
		(ii) Bracket triangle portion	cum	2	7.50	0.20	0.12		0.180
	(c)	Pedestals	cum	6	0.70	0.70	0.20		0.588
		Sub-Total =	cum						**11.09**

BOQ OF BRIDGE

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Nos	Length (m)	Width (m)	Depth/ Height (m)	AREA (Sqm.)	Quantity
		Upto 5m height							
	(d)	Abutment Cap							
		i) 1st Rect. portion	cum	2	8.50	1.950	0.50		16.575
		ii) 2nd Rect. Portion	cum	2	8.50	1.70	0.50		14.450
		iii) Triangular portion	cum	2	8.50	0.31	0.50		1.318
	(e)	Abutment Shaft	cum	2	8.50	1.20	2.646		53.978
		Sub-Total =	cum						**86.32**
	B	**For Piers**							
		From 5m upto 10m height							
	(a)	Pedestals	cum	12	0.70	0.70	0.20		1.176
		Sub-Total =	cum						**1.176**
		Upto 5m height							
	(b)	Pier Cap							
		i) 1st Rect. portion	cum	2	8.00	3.10	0.50		24.800
		ii) 2nd Rect. Portion	cum	2	7.00	3.10	0.50		21.700
		iii) Triangular portion	cum	4	2.00	3.10	0.50		6.200
	(c)	Pier Shaft (Rectangular portion)	cum	2	Area=		2.40		12.487
		Sub-Total =	cum						**65.19**
	C	Return Wall (**Upto 5m height**)	cum	4	1.80	0.50	5.880		21.17
	D	Independent Retaining Wall							
		Foundation							
		1 st. Rectangular portion.	cum	4	3.00	3.80	0.50		22.80
		2 nd. Rectangular portion.	cum	4	3.00	0.60	0.30		2.16
		1 st. Trangular portion	cum	4	3.00	2.10	0.30		3.78
		2 st. Trangular portion	cum	4	3.00	1.10	0.30		1.98
		Retaining Wall Stem	cum	4	3.00	0.45	5.03		27.16
		Sub-Total =	cum						**79.05**
6	**1600 & 2200**	Supplying, fitting and placing HYSD bar reinforcement (Fe 500D) in substructrue complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202							
	(i)	For Substructure @ 125Kg per cum of Concrete	t		163.78				20.472
	(ii)	For Return Wall @ 80 Kg per cum of Concrete	t		21.17				1.693
	(iii)	For Retaining Wall @ 90 Kg per cum of Concrete	t		57.88				5.209
		Sub-Total =	cum						**27.38**
7	**2000 & 2200**	Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, completre assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete asper drawing and approved technical specifications.	Tone	18	Capcity of Bearing = 150 tonne				2,700

BOQ OF BRIDGE

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Nos	Length (m)	Width (m)	Depth/ Height (m)	AREA (Sqm.)	Quantity
8	2706 & 2200	**Providing weepholes** in brick masonry/stone masonry, plain/reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and technical specification Clauses 614, 709, 1204.3.7	Nos	64	-	-	-	-	64
9	2200 II)	**Backfilling** behind abutment, wing wall and return wall complete as per drawings & technical specification Clause 1204.3.8 **With Sandy Material**							
	(i)	Behind Abutment	cum	2	6.3	1.20	5.63		85.126
	(ii)	Behind Independent Retaining Wall	cum	2	3.00	6.40	4.58		175.872
		Sub-Total =	cum						**261.00**
10	2200	**Providing and laying filter media** with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and technical specification Clause 1204.3.8							
	(i)	Behind Abutment	cum	2	7.50	0.60	5.63		50.670
	(ii)	Behind Return Wall	cum	4	1.20	0.60	5.63		16.214
	(iii)	Behind Independent Retaining Wall	cum	4	3.00	0.60	5.03		36.216
		Sub-Total =	cum						**103.10**
		SUPERSTRUCTURE							
11	1500 &1600 1700	Providing and laying reinforced cement concrete in superstructure complete as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5. **RCC M-35**							
	(i)	Deck Slab	cum	3	18.81	8.50	0.255		122.312
	(ii)	Longitudinal Girder							
		End Portion	cum	18	1.20	0.788			17.013
		Tapered Portion	cum	18	1.10	0.658			13.035
		Middle Portion	cum	9	14.0	0.529			66.422
	(iii)	Cross Girders							
		Intermediate Girders	cum	3	4.800	0.398			5.731
		End Girders	cum	6	4.800	0.398			11.462
		Sub-Total =	cum						**235.98**
12	1600	Supplying, fitting and placing HYSD bar reinforcement (Fe 500) in superstructrue complete as per drawings and technical specification Clauses 1002, 1010 & 1202							
		For Deck slab of T-Beam Superstructure @ 130Kg per cum of Concrete	t		122.312				15.90
		For Long girder and cross girder of T-Beam Superstructure @ 220Kg per cum of Concrete	t		113.66				25.01
		Sub-Total =	t						**40.91**
13	2702	Wearing Course (65 mm thick) comprising of 40 mm Bituminous Concrete overlaid with 25 mm thick Mastic asphalt as per Technical Specification Clauses 512, 515 & 2702.							
		Mastic Layer	sqm	1	56.55	7.5	-	424.125	**424.125**
		Bituminous Layer	Cum	1	56.55	7.5	0.04		**16.965**

BOQ OF BRIDGE

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Nos	Length (m)	Width (m)	Depth/ Height (m)	AREA (Sqm.)	Quantity
14	809	**Construction of R.C.C. Crash Barrier** of M 40 grade in cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical railing post not to exceed 1 in 500, centre-to-centre spacing between vertical posts not to exceed 2000 mm as per drawing and technical specifications Clauses 800, 900 and 1208.3	m	2	63.55	-	-		**127.100**
15	**2703, 1500, 1600, 1700**	Construction of RCC railing of M30 Grade in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	m	2	63.55	-	-		**127.100**
16	**1500, 1700 & 2100**	**Plain Cement Concrete in footpath** complete as per Drawing and Technical Specifications.	Cum	2	63.55	1.5	0.263		**50.14**
17	**2705**	**Drainage Spouts** complete as per drawing and technical specifications Clause 1209	No	23					**23.00**
18	**2700**	P.C.C. M-15 ordinary grade (1:2.5:5) levelling course below approach slab complete as per drawing and technical specificatios Clauses 800 & 1211.	cum	2	3.35	7.5	0.150		**7.538**
19	**1500,1600,1700 & 2704**	Reinforced Cement Concrete M-30 grade approach slab including reinforcement and formwork complete as per drawing and technical specifications Clauses 800 and 1211	cum	2	3.5	7.5	0.30		**15.750**
20	**2607**	Strip Seal Expansion Joint (Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	m	4	8.50				**34.000**
21	**800**	**White Washing of Parapet Walls** White washing two coats on parapet walls and tree trunks including preparation of surface by cleaning, scapping, etc. as pre technical specification Clause 1915	sqm	2	63.55		1.1		**139.810**
		PROTECTION WORK							
22	**2504**	Providing and laying **boulder pitching on slopes** laid over prepared filter media as per drawing and technical specifications Clause 1302							
	(i)	Behind Abutment (Quadrate Slope)	cum	4	27.99		0.30		33.583
	(ii)	On Embankment Slope of Approaches	cum		40	4.5	0.30		54.000
		Sub-Total =	cum						**87.58**
23	**2505**	Providing and laying **filter material underneath pitching** in slopes complete as per drawing and technical specifications Clause 1302							
	(i)	Behind Abutment (Quadrate Slope)	cum	4	27.99		0.15		16.791
	(ii)	On Embankment Slope of Approaches	cum		40	4.5	0.15		27.000
		Sub-Total =	cum						**43.79**