



राष्ट्रीय राजमार्ग एवं अवसंरचना विकास निगम लिमिटेड

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

FINAL DETAILED PROJECT REPORT

APRIL 2020

CONSULTANCY SERVICES FOR PREPERATION OF DETAILED PROJECT REPORT AND PROVIDING PRE-CONSTRUCTION ACTIVITIES IN RESPECT OF THE FOLLOWING STRETCH ON NH-244 (OLD NH-1B) IN THE STATE OF JAMMU AND KASHMIR.

- (1) SUDHMAHADEV- DRANGA TUNNEL OF APPROX. LENGTH 4.5 KM AND ITS APPROACH ROAD ON CHENANI - SUDHMAHADEV-GOHA ROAD PORTION.
- (2) VAILOO TUNNEL OF APPROX. LENGTH 10.0 KM UNDER SINTHAN PASS AND ITS APPROACH ROAD ON GOHA-KHELLANI- KHANABAL ROAD PORTION.
- (3) ROAD PORTION FROM 82.675 TO 82.925 AT KM 83 ON BATOTE-KISHTWAR ROAD SECTION OF NH-244.
- (4) EXTENDED ROAD SECTION FROM GOHA TO KHELLANI OF 30 KM LENGTH



GOHA - KHELLANI ROAD PACKAGE-IA (KM 12.850 to KM 20.300) VOLUME - VIII - BILL OF QUANTITY

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SUMMARY OF ESTIMATE

<i>SUMMARY OF COST PACKAGE-I(A) INCLUDING LINK ROAD-1</i>		
Item No.	Description	Total Amount (Rs. in Crores)
BILL NO. 1	SITE CLEARANCE	0.14
BILL NO. 2	EARTH WORKS	37.14
BILL NO. 3	SUB-BASES AND BASES COURSES	7.87
BILL NO. 4	BITUMINOUS COURSES	8.12
BILL NO. 5	CROSS DRAINAGE WORKS(CULVERTS)	6.21
BILL NO. 6	BRIDGE,VIADUCT	18.66
BILL NO. 7.1	TRAFFIC SIGNS, MARKINGS	0.93
BILL NO. 7.2	PROTECTION WORK AND DRAINAGE (RRM Toe Wall, Breast Wall,Gabion Wall,Drains,Rock Bolts, Shotcreting & Drainage Holes)	68.31
BILL NO. 7.3	Other Works (Tree Plantation, Rain water Harvesting)	0.58
BILL NO. 8	JUNCTION	0.05
A	Civil Cost	148.01
B	GST @ 12% Payable on Civil Cost only (A)	17.76
C	SUB TOTAL (A+B)	165.77
D	Contingencies @ 2.8% of A	4.14
E	Construction Supervision Charges @ 3% of A	4.44
F	Agency Charge @ 3% of A	4.44
G	Escalation @ 5% per annum for 2nd and Half years during construction payable to Contractor on C	8.29
H	Total Cost including centages (C+D+E+F+G)	187.09
I	Maintenance During 5 years @ 0.5 for 2nd, 3rd and 4th year and @ 1% for the 5th year on C	4.14
J	Total Project Cost (TPC) (H+I)	191.23
K	Cost of Land Acquisition Cost (including Muck Disposal land cost) & Structure Compensation & FC	35.69
L	Cost towards Utility Shifting	1.40
M	Environmental Impact Assessment	1.40
TOTAL CAPITAL COST (TCC) (J+K+L+M)		229.72

SUMMARY OF COST MAIN ROAD

Item No.	Description	Total Amount (Rs. in Crores)
BILL NO. 1	SITE CLEARANCE	0.11
BILL NO. 2	EARTH WORKS	29.95
BILL NO. 3	SUB-BASES AND BASES COURSES	6.61
BILL NO. 4	BITUMINOUS COURSES	6.81
BILL NO. 5	CROSS DRAINAGE WORKS(CULVERTS)	3.41
BILL NO. 6	BRIDGES	18.66
BILL NO. 7.1	TRAFFIC SIGNS, MARKINGS	0.73
BILL NO. 7.2	PROTECTION WORK AND DRAINAGE (RRM Toe Wall, Breast Wall,Gabion Wall,Drains,Rock Bolts, Shotcreting & Drainage Holes)	44.54
BILL NO. 7.3	Other Works (Tree Plantation, Rain water Harvesting)	0.50
Civil Cost		111.30

BILL NO. 1

BILL NO. 1 SITE CLEARANCE								
Item No.	Description		Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.	Ref. to MoRTH Spec.	Refrence to Rate Analysis
					In Figures	In Figures		
1.1	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.							
	A	From 300 mm to 600 mm	Nos	169.44	164.00	27,788.16		
	B	From 600 mm to 900 mm	Nos	561.27	271.00	152,104.17		
	C	From 900 mm to 1800 mm	Nos	328.29	560.00	183,842.40		
1.2	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.	8.93	83,750.00	747,887.50	201	CHAPTER-SITE CLEARANCE, SR. NO.-2.3
TOTAL FOR BILL NO 1						1,111,622.23		

BILL NO. 2

BILL NO. 2 <u>EARTHWORKS</u>							
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.	Ref. to MoRTH Spec.	Reference to Rate Analysis
				In Figures	In Figures		
2.1 (A)	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 (including royalty @ Rs. 15.00 per cum but excluding watering, rolling & compaction)	cu.m.	248855.00	510.00	126,916,050.00	301	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.32
2.1 (B)	E/W in Excavation in rock - not required blasting	cu.m.	149313.00	619.00	92,424,747.00	301	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.33
2.1 (C)	E/W in Excavation in hard rock required blasting	cu.m.	99542.00	718.00	71,471,156.00	301	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.34
2.2	Construction of embankment with approved materials deposited at site from Roadway cutting and excavation from drain and foundation of the structures, graded and compacted to meet requirement of Table 300-2, complete as per Technical Specifications Clause 305.	cu.m.	47202.000	148.00	6,985,896.00	305	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.17
2.3	Construction of sub-grade and earthen shoulders with approved material obtained from excavated earth, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2	cu.m.	11220.15	148.00	1,660,581.76	305	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.17
TOTAL FOR BILL NO 2					299,458,430.76		

BILL NO. 3

BILL NO. 3
SUB-BASE AND BASE COURSES

Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.	Ref. to MoRTH Spec.	Reference to Rate Analysis
				In Figures	In Figures		
3.1	Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401	cu.m.	15220.41	1,711.00	26,042,114.67	401	CHAPTER-SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS, SR. NO-4.1B
3.2	Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cu.m.	18836.26	2,126.00	40,045,882.38	406	CHAPTER-SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS, SR. NO-4.12
TOTAL FOR BILL NO 3					66,087,997.05		

BILL NO. 4

BILL NO.4 BITUMINOUS COURSES							
Item No.	Description	Unit	Estimated Quantity	Unit Rate In Figures	Amount in Rs. In Figures	Ref. to MoRTH Spec.	Reference to Rate Analysis
4.1	Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.	sq.m.	75441.08	11.00	829,851.92	502	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.1
4.2	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at rate of 0.20 kg per sqm on the prepared bituminus/granular surface cleaned with mechanical broom.	sq.m.	150463.65	6.00	902,781.91	503	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.2
4.3	Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder (VG-40) @ 4.0 to 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.	cu.m.	5048.41	8,016.00	40,468,070.59	507	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.6
4.4	Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects	cu.m.	2883.65	8,971.00	25,869,242.09	509	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.8
TOTAL FOR BILL NO 4					68,069,946.52		

BILL NO. 5

BILL NO. 5**Culverts without fill**

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Total Quantity	Rate	Cost
		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.				
		All kind of soil	Cum	1327.91	111.00	147,397.54
		Ordinary rock (not required Blasting)	Cum	0.00		0.00
		Ordinary rock (required Blasting)	Cum	0.00		0.00
2	1500, 1700 & 2100	Providing and laying of PCC M15 levelling course below bottom Slab & Retaining wall & Curtain wall.	Cum	292.67	5314.00	1,555,251.30
		SUBSTRUCTURE				
3	1500, 1700 & 2200	R.C.C. grade M 20 in Sub Structure complete as per Dwg & Tech Specification.	Cum	853.58	6101.00	5,207,702.10
4	1600 & 2200	Supplying, fitting and placing HYSD bar reinforcement (Fe-500) in substructure complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	76.82	68906.00	5,293,521.21
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	690.00	456	314,640.00
6	2200	Backfilling behind abutment, wing wall and retaining wall complete as per drawings & technical specification Clause 1204.3.8				
		I) Sandy Material	Cum	1906.14	1241.00	2,365,513.78
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	574.82	1876.00	1,078,358.57
		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-20				
		RCC M20 Grade	Cum	268.48	6587	1,768,451.41
9	1600	Supplying, fitting and placing HYSD bar reinforcement (Fe 500) in superstructure complete as per drawings and technical specification Clauses 1002, 1010 & 1202	t	24.16	70576.00	1,705,316.60

10	2703, 1500, 1600 & 1700	Construction of R.C.C. railing of M 30 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	174.60	1854.00	323,708.40
11	2705	Drainage Spouts complete as per drawing and technical specifications Clause 1209	No	15.00	2910.00	43,650.00
12	2700	P.C.C. M-15 ordinary grade (1:2.5:5) levelling course below approach slab complete as per drawing and technical specifications Clauses 800 & 1211.	cum	0.00		0.00
13	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	0.00		0.00
		PROTECTION WORK				
14	1500, 1700 & 2100	P.C.C. grade M-15 in Curtain Wall complete as per Dwg & Tech Specification.	cum	110.97	5314	589,717.16
15		Gabion Wall	cum	103.41	2261.00	233,810.01
16	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	24.00	5877.00	141,048.00
		Total Cost for BILL NO. 5				20,768,086.10
		Total Cost in cr.				2.077

BILL NO. 5**Culverts With Fill**

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Total Quantity	Rate	Cost
		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.				
		All kind of soil	Cum	638.83	111.00	70,909.90
		Ordinary rock (not required Blasting)	Cum	0.00		0.00
		Ordinary rock (required Blasting)	Cum	0.00		0.00
2	1500, 1700 & 2100	Providing and laying of PCC M15 levelling course below bottom Slab & Retaining wall & Curtain wall.	Cum	167.76	5314.00	891,459.10
		SUBSTRUCTURE				
3	1500, 1700 & 2200	R.C.C. grade M 20 in Sub Structure complete as per Dwg & Tech Specification.	Cum	556.03	6101.00	3,392,317.52
4	1600 & 2200	Supplying, fitting and placing HYSD bar reinforcement (Fe-500) in substructure complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	50.04	68906.00	3,448,220.43
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	368.00	456	167,808.00
6	2200	Backfilling behind abutment, wing wall and retaining wall complete as per drawings & technical specification Clause 1204.3.8				
		I) Sandy Material	Cum	1240.93	1241.00	1,539,993.01
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	311.24	1876.00	583,882.49
		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-20				
		RCC M20 Grade	Cum	163.33	6587	1,075,828.36

9	1600	Supplying, fitting and placing HYSD bar reinforcement (Fe 500) in superstructure complete as per drawings and technical specification Clauses 1002, 1010 & 1202	t	14.70	70576.00	1,037,420.62
10	2703, 1500, 1600 & 1700	Construction of R.C.C. railing of M 30 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	83.00	1854.00	153,882.00
11	2705	Drainage Spouts complete as per drawing and technical specifications Clause 1209	No	8.00	2910.00	23,280.00
12	2700	P.C.C. M-15 ordinary grade (1:2.5:5) levelling course below approach slab complete as per drawing and technical specifications Clauses 800 & 1211.	cum	0.00		0.00
13	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	0.00		0.00
PROTECTION WORK						
14	1500, 1700 & 2100	P.C.C. grade M-15 in Curtain Wall complete as per Dwg & Tech Specification.	cum	20.50	5314	108,937.00
15		Gabion Wall	cum	332.35	2261.00	751,443.35
16	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	12.80	5877.00	75,225.60
Total Cost for BILL NO. 5						13,320,607.38
Total Cost in cr.						1.332

BILL NO. 6

Bill No-6
Minor Bridge

Item No.	Description	Unit	Quantity	Rate	Cost in Rs	Cost in Cr	SOR Reference
6.01	Earthwork in excavation of foundations for structures in all kinds of soils including all leads and lifts complete as per drawings and Technical Specifications Clause 304						
a)	Depth up to 3.0 m						
	i) all types of soils	cum	158	123	19373	0.002	12.1 (I) B (i)
	ii) Hard Rock	cum					
	iii) Soft/ordinary rock	cum					
b)	Depth up to 3.0 m to 6.0 m						
	i) all types of soils	cum	4353	141	613777	0.061	12.1 I.B.(ii)
	iii) Soft/ordinary rock	cum	2902	158	458519	0.046	12.1 II.B.(ii)
6.02	Back filling behind abutments, wing walls and return walls with selected imported granular material of approved quality, including all leads and lifts, complete as per drawings and Technical Specifications Clause 305 and Clause 710.1.4 of IRC:78	cum	4919	1782	8766061	0.877	13.9 A
6.03	Providing and laying filter media behind abutments, wing walls & return walls with well packed material to the specified thickness with smaller size towards the soil and bigger size towards the wall complete with all leads and lifts as per drawings and Technical Specifications Clauses 305 and Clause 710.1.4 of IRC:78	cum	663	2085	1382140	0.138	13.10
6.04	Plain Cement Concrete / Reinforced Cement Concrete in foundation/ leveling course/annular filling upto rock level excluding reinforcement complete as per drawings and Technical Specifications Sections 1500, 1700 and 2100						
a)	M-15 grade	cum	609	5904	3594674	0.359	12.8 A
b)	M-20 grade	cum					
c)	M-30 grade	cum					
d)	M-35 grade	cum	1067	7130	7608486	0.761	12.8 H Case II
6.05	Plain Cement Concrete/ Reinforced Cement Concrete in substructure excluding reinforcement complete as per drawings and Technical Specifications Sections 1500, 1700 and 2200.						
a)	M-20 grade	cum					
b)	M-25 grade	cum					
c)	M-30 grade	cum	233	8607	2008336	0.201	13.5 G (q) Case II
d)	M-35 grade	cum	1367	8360	11430519	1.143	13.5 H (r) Case II
6.06	Reinforced/Prestressed Cement Concrete in superstructure excluding reinforcement complete as per drawings and Technical Specifications Sections 1500, 1700 and 2300						
b)	RCC I-beam and slab						
ii)	M-40 grade	cum	452	9351	4224988	0.422	14.1 D Case (II) (ii) r
c)	PSC I Beam and Slab						
ii)	M-45 grade	cum	446	10067	4486867	0.449	14.1 F (ii) r
6.07	Supplying, fixing and placing TMT/HYSD bar reinforcement complete as per drawings and Technical Specification Section 1600						
a)	For Foundation	t	158	69973	11076917	1.108	12.40
b)	For Sub structure	t	249	76562	19071578	1.907	13.6
c)	For Superstructure/Friction Slab/Facia Panels	t	162	78417	12668584	1.267	14.2
d)	Strands in superstructures	t	20	118094	2368555	0.237	14.3
6.08	Providing 65 mm thick wearing course consisting of 40 mm thick asphaltic concrete covered by 25 mm thick mastic asphalt on top complete as per Technical Specification Section 2700	sqm	2208	1751	3867091	0.387	14.4 & 14.5

Bill No-6
Minor Bridge

Item No.	Description	Unit	Quantity	Rate	Cost in Rs	Cost in Cr	SOR Reference
6.09	Providing and fixing drainage spouts as per drawings and Technical Specifications Clause 2705	no	62	3233	200446	0.020	14.9
6.10	Supplying and fixing of Spherical bearings complete as per drawings and IRC:83(Part III) - 2002						
	Capacity 2000 kN	no	56	120000	6720000	0.67	13.16
6.11	Supplying and fixing of expansion joints complete as per drawings and Technical Specifications Section 2600.						
a)	20 mm Filler joint	m	25	235	5875	0.001	
b)	50 mm wide strip seal joints	m	150	10458	1568700	0.157	14.22
6.12	Reinforced Cement Concrete Crash Barrier including reinforcement and MS pipe complete as per drawings and Technical Specifications Sections 1500, 1600, 1700, 2200 and Clause 809						
b)	M-40 grade	m	384	5212	2001385	0.200	14.15
6.13	Plain Cement Concrete in leveling course under the approach slabs complete as per drawings and Technical Specifications Section 1700, 2100 & 2700.						
	M-15 grade	cum	72	4301	311607	0.031	14.10
6.14	Reinforced Cement Concrete in approach slabs including reinforcement and form work complete as per drawings and Technical Specifications Sections 1500, 1600, 1700 and 2100 and Clause 2704.						
	M-30 grade	cum	145	10824	1568398	0.157	14.11
6.15	Providing and laying filter material underneath stone boulder pitching on slopes complete as per drawings and Technical Specifications Section 2500	cum	201	2360	474612	0.047	15.5
6.16	Providing and laying stone boulder pitching on slopes with cement mortar filled joints 1:3 complete as per drawings and Technical Specifications Section 2500	cum	402	1968	791556	0.079	15.4 A
6.17	Providing weep holes in abutments, wing walls, retaining walls, return walls etc. complete as per drawings and Technical Specifications Clause 2706	no	1105	506	559043	0.056	13.8
6.18	Providing and constructing gabion structures for erosion control with wire creates of size 2 m x 1 m x 0.3 m each divided into 1 m compartments by cross netting , made from 4 mm gavanised steel wire @ 32 kg per 10 sqm conforming to IS:280	cum	131	2261	295370	0.030	
Cost For Bill No-6					108143455	10.81	

Bill No-6
Major Bridge

Item No.	Description	Unit	Quantity	Rate	Cost in Rs	Cost in Cr	SOR Reference
6.01	Earthwork in excavation of foundations for structures in all kinds of soils including all leads and lifts complete as per drawings and Technical Specifications Clause 304						
b)	Depth up to 3.0 m to 6.0 m						
	i) all types of soils	cum	1942	141	273850	0.027	12.1 I.B.(ii)
	iii) Soft/ordinary rock	cum	1295	158	204578	0.020	12.1 II.B.(ii)
6.02	Back filling behind abutments, wing walls and return walls with selected imported granular material of approved quality, including all leads and lifts, complete as per drawings and Technical Specifications Clause 305 and Clause 710.1.4 of IRC:78	cum	1467	1782	2614907	0.261	13.9 A
6.03	Providing and laying filter media behind abutments, wing walls & return walls with well packed material to the specified thickness with smaller size towards the soil and bigger size towards the wall complete with all leads and lifts as per drawings and Technical Specifications Clauses 305 and Clause 710.1.4 of IRC:78	cum	258	2085	537930	0.054	13.10
6.04	Plain Cement Concrete / Reinforced Cement Concrete in foundation/ leveling course/annular filling upto rock level excluding reinforcement complete as per drawings and Technical Specifications Sections 1500, 1700 and 2100						
a)	M-15 grade	cum	307	5904	1814632	0.181	12.8 A
b)	M-20 grade	cum					
c)	M-30 grade	cum					
d)	M-35 grade	cum	1001	7130	7139388	0.714	12.8 H Case II
6.05	Plain Cement Concrete/ Reinforced Cement Concrete in substructure excluding reinforcement complete as per drawings and Technical Specifications Sections 1500, 1700 and 2200.						
d)	M-35 grade	cum	796	8360	6652611	0.665	13.5 H (r) Case II
6.06	Reinforced/Prestressed Cement Concrete in superstructure excluding reinforcement complete as per drawings and Technical Specifications Sections 1500, 1700 and 2300						
b)	RCC I-beam and slab						
ii)	M-35 grade	cum	475	9213	4374480	0.437	14.1 D Case (II) (ii) r
c)	PSC I Beam and Slab						
ii)	M-45 grade	cum	528	10067	5316856	0.532	14.1 F (ii) r
6.07	Supplying, fixing and placing TMT/HYSD bar reinforcement complete as per drawings and Technical Specification Section 1600						
a)	For Foundation	t	143	69973	10003293	1.000	12.40
b)	For Sub structure	t	127	76562	9748080	0.975	13.6
c)	For Superstructure/Friction Slab/Facia Panels	t	181	78417	14156883	1.416	14.2
d)	Strands in superstructures	t	24	118094.00	2806695	0.281	14.3
e)	Structural Steel	t	0		0	0.000	
6.08	Providing 65 mm thick wearing course consisting of 40 mm thick asphaltic concrete covered by 25 mm thick mastic asphalt on top complete as per Technical Specification Section 2700	sqm	1806	1751	3162153	0.316	14.4 & 14.5
6.09	Providing and fixing drainage spouts as per drawings and Technical Specifications Clause 2705	no	60	3233	193980	0.019	14.9
6.10	Supplying and fixing of Spherical bearings complete as per drawings and IRC:83(Part III) - 2002						
	Capacity 2000 kN	no	48	120000	5760000	0.58	13.16

Bill No-6
Major Bridge

Item No.	Description	Unit	Quantity	Rate	Cost in Rs	Cost in Cr	SOR Reference
6.11	Supplying and fixing of expansion joints complete as per drawings and Technical Specifications Section 2600.						
	b) 50 mm wide strip seal joints	m	88	10458	915075	0.092	14.22
6.12	Reinforced Cement Concrete Crash Barrier including reinforcement and MS pipe complete as per drawings and Technical Specifications Sections 1500, 1600, 1700, 2200 and Clause 809						
	b) M-40 grade	m	314	5212	1636549	0.164	14.15
6.13	Plain Cement Concrete in leveling course under the approach slabs complete as per drawings and Technical Specifications Section 1700, 2100 & 2700.						
	M-15 grade	cum	12	4301	51935	0.005	14.10
6.14	Reinforced Cement Concrete in approach slabs including reinforcement and form work complete as per drawings and Technical Specifications Sections 1500, 1600, 1700 and 2100 and Clause 2704.						
	M-30 grade	cum	24	10824	261400	0.026	14.11
6.15	Providing and laying filter material underneath stone boulder pitching on slopes complete as per drawings and Technical Specifications Section 2500	cum	94	2360	222425	0.022	15.5
6.16	Providing and laying stone boulder pitching on slopes with cement mortar filled joints 1:3 complete as per drawings and Technical Specifications Section 2500	cum	188	1968	370959	0.037	15.4 A
6.17	Providing weep holes in abutments, wing walls, retaining walls, return walls etc. complete as per drawings and Technical Specifications Clause 2706	no	430	506	217580	0.022	13.8
Cost For Bill No-6					78436237	7.84	

BILL NO. 7.1

BILL NO. 7.1
TRAFFIC SIGNS, MARKINGS

Item No.	Description		Unit	Estimated Quantity	Unit Rate in	Amount in Rs.	Ref. to MoRTH Spec.	Reference to Rate Analysis
					In Figures	In Figures		
7.01	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							
	a)	Triangular 900 mm	Nos.	9.00	5815.00	52,335.00	801	CHAPTER- TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.6
	b)	Circular 900 mm	Nos.	0.00	8845.00	-	801	CHAPTER- TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.6
	c)	Rectangular 920x1620	Nos.	0.00	17888.00	-		
	d)	Rectangular 600x500	Nos.	496.00	4968.00	2,464,128.00	801	CHAPTER- TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.4
	e)	Rectangular 900x450	Nos.	22.00	6397.00	140,734.00		
7.02	Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.		Sqm	2584.00	609.00	1,573,656.00	803	CHAPTER- TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.11
7.03	Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc							
	A	5th kilometre stone (precast)	Nos.	1.00	3966.00	3,966.00	804	CHAPTER- TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.14(i)
	B	Ordinary kilometer stone (precast)	Nos.	7.00	2415.00	16,905.00	804	CHAPTER- TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.14(ii)
	C	Hectometer stone (precast)	Nos.	30.00	674.00	20,220.00	804	CHAPTER- TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.14(iii)
7.04	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.	60.00	782.00	46,920.00	806	CHAPTER- TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.16
7.05	Providing and fixing of road stud 100x 100 mm, die-cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973		Nos.	2264	834.00	1,888,176.00	suggestive	CHAPTER- TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.35
7.06	Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming toIRC-79 and the drawings.		Nos.	1052	1055.00	1,109,860.00	805	CHAPTER- TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.15
TOTAL FOR BILL NO 7.1						7,316,900.00		

BILL NO. 7.2

BILL NO. 7.2
PROTECTION AND DRAINAGE WORK

Toe Wall/RRM Retaining Wall

Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i)	Excavation for Foundation	cum	7214.48	111.00	800807.28
ii)	PCC M-15 (Levelling Course)	cum	2138.60	5314.00	11364520.40
iii)	RRM in substructure of Toe/Retaining Wall	cum	11764.84	4653.00	54741800.52
iv)	Filter Media	cum	3279.50	1876.00	6152342.00
v)	PCC Coping	cum	783.00	5314.00	4160862.00
Sub Total Cost of Toe Wall/RRM Retaining Wall					77220332.20

"W" metal beam crash barrier

Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i	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, ISMB150 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	697.00	3097.00	2158609.00
Sub Total Cost of "W" metal beam crash barrier					2158609.00

Rock Bolts, Shotcreting aand Drainage Holes

Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i)	Rock Bolt, 32mm dia (4 m and 10 m in length)	Rm	0.00	1480.00	0.00
ii)	Rock Bolt, 25mm dia (4 m and 8 m in length)	Rm	26040.00	1296.00	33747840.00
iii)	Shotcrete	cum	904.76	11785.00	10662545.59
iv)	Drainage Holes including PVC Pipe	Rm	9047.56	1069.00	9671838.13
Sub Total Cost of Rock Bolts, Shotcreting aand Drainage Holes					54082223.73

RRM Breast Wall

Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i	Excavation for Foundation	cum	19667.30	111.00	2183070.47
ii	PCC M-15 (Levelling Course)	cum	4568.28	5314.00	24275834.28
iii	RRM in substructure of BreastWall	cum	46309.52	4653.00	215478178.03
iv	Filter Media	cum	8871.00	1876.00	16641996.00
v	Weep holes	Nos.	1080.00	456.00	492480.00
vi	PCC Coping	cum	185.60	5314.00	986278.40
vii	Back filling behind walls	cum	364.50	1241.00	452344.50
Sub Total Cost of RRM Breast Wall					260510181.69

Gabion wall

Item No.	Description	Amount in Rs.
i)	Gabion wall	41214985.30
Sub Total Cost of Gabion wall		41214985.30

Road side PCC Drain

Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i)	Excavation for drain work	cum	3427.55	111.00	380458.05
ii)	PCC for drain	cum	1762.74	5314.00	9367200.36
Sub Total Cost of Road side PCC Drain					9747658.41

Catch Drain

Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i)	Excavation for Catch Drain	cum	3770.00	111.00	418470.00
Sub Total Cost of Catch Drain					418470.00

TOTAL FOR BILL NO 7.2

445352460.32

BILL NO. 7.3

BILL NO. 7.3					
MISCELLANEOUS					
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
1	Planting of trees by the road side in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year.	NO	2118.00	1136.00	2406048.00
2	Making tree guard 53 cm dia. And 1.3 m high as per design from empty bitumen drums including providing and fixing 2 nos. M.S. sheet rings 50 X 0.5 mm with rivets, complete in all respects.	NO	2118.00	479.00	1014522.00
3	Rain water harvesting (Recharge shaft of 0.5 m dia for 10 to 15 m depth one on each side of the carriageway along the side drain at the the lowest point/where water stagnates, in each km)	NO	15.00	100000.00	1500000.00
4	Turfing with Sods (Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the engineer including preparation of ground, fetching of rods and watering)	Cu.m	1440.00	33.00	47520.00
TOTAL FOR BILL NO 7.3					4968090.00