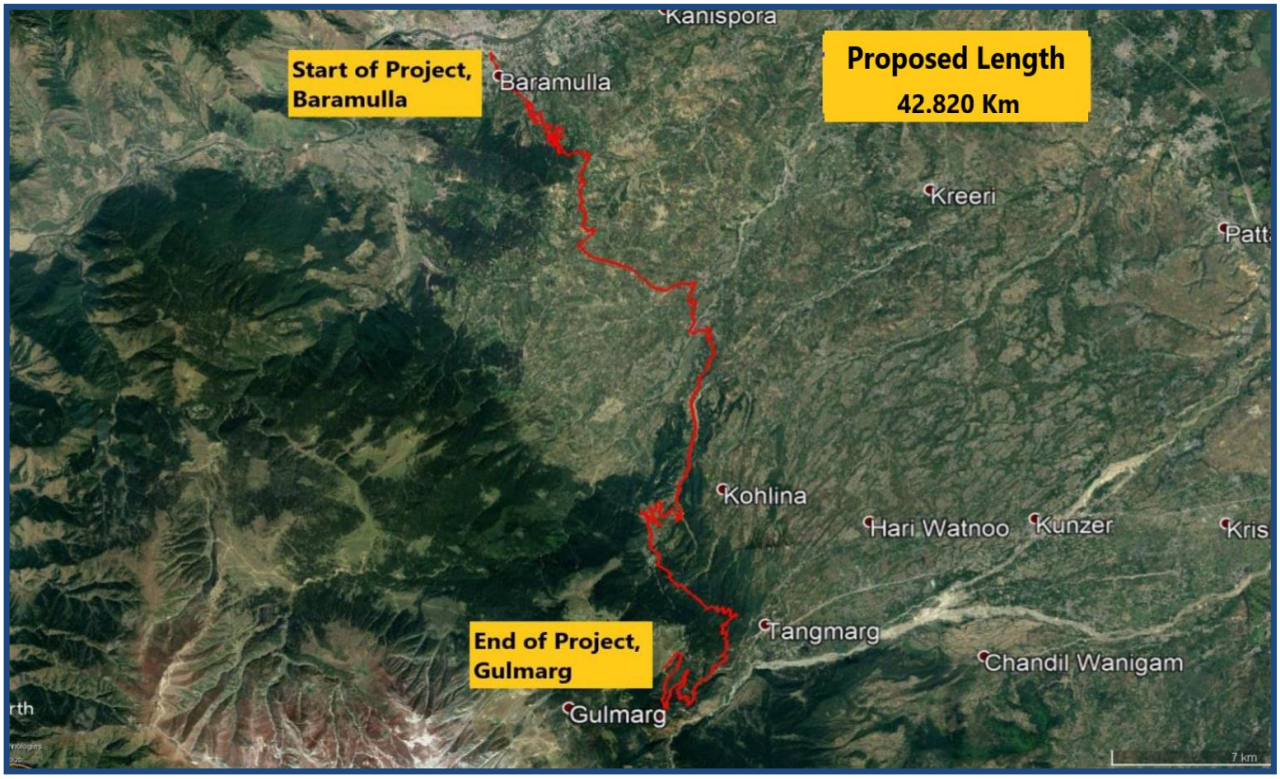
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

(MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF INDIA)
3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI – 110001

BUILDING INFRASTRUCTURE - BUILDING THE NATION

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2-lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road in the state of Jammu & Kashmir.



DRAFT DETAILED PROJECT REPORT

VOLUME-IA: ANNEXURE TO MAIN REPORT

June 2020

Rodic Consultants Pvt. Ltd. In JV with
Monarch Surveyors and Engineering Consultants Pvt. Ltd.

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Annexure to Main Report

Traffic Survey and Analysis

Annexure 3.1: Average Daily Traffic at Babareshi (Km 33+800)

7-DAYS TRAFFIC SUMMARY

(Up+Down)

Road : Gulmarg-Baramulla Road **District : Baramulla**

Location: Babareshi **Union Territory : Jammu and Kashmir**

Direction of Traffic : Down **From: Gulmarg** **To: Baramulla** Up **From: Baramulla** **To: Gulmarg**

		Motorised Vehicle																Non-motorised Vehicles			
		Two Wheeler		Three Wheeler / Auto Rickshaw		Car/ Jeep/ Van/ Taxi		Bus				LCV (Mini Truck)		Truck		Total Motorised Vehicles		Cycle		Total Non-motorised Vehicles	
								Mini		Full				2-Axle Rigid Truck							
Equivalency Factor		**0.5**		**1.0**		**1.0**		**3.0**		**3.0**		**1.5**		**3.0**				**0.5**			
Time Period		***No.***	***PCU***	***No.***	***PCU***	***No.***	***PCU***	***No.***	***PCU***	***No.***	***PCU***	***No.***	***PCU***	***No.***	***PCU***	***No.***	***PCU***	***No.***	***PCU***	***No.***	***PCU***
14-Jul-19	**(Day-1)**	541	271	52	52	2827	2827	65	195	121	363	80	120	36	108	**3722**	**3936**	354	178	**354**	**178**
15-Jul-19	**(Day-2)**	593	297	60	60	3048	3048	81	243	145	435	91	137	49	147	**4067**	**4367**	389	195	**389**	**195**
16-Jul-19	**(Day-3)**	580	291	74	74	3168	3168	73	219	151	453	76	114	57	171	**4179**	**4490**	411	206	**411**	**206**
17-Jul-19	**(Day-4)**	608	304	86	86	3347	3347	70	210	165	495	103	155	51	153	**4430**	**4750**	403	202	**403**	**202**
18-Jul-19	**(Day-5)**	573	287	92	92	3230	3230	93	279	179	537	85	128	58	174	**4310**	**4727**	372	186	**372**	**186**
19-Jul-19	**(Day-6)**	615	308	81	81	3025	3025	79	237	160	480	89	134	65	195	**4114**	**4460**	369	185	**369**	**185**
20-Jul-19	**(Day-7)**	556	279	55	55	2944	2944	60	180	131	393	68	103	42	126	**3856**	**4080**	338	170	**338**	**170**
Directional Split (%)	**Up**	**48**		**54**		**50**		**50**		**47**		**47**		**55**		**50**		**51**		**51**	
	Down	**52**		**46**		**50**		**50**		**53**		**53**		**45**		**50**		**49**		**49**	
Average Daily Traffic (Up+Down)	**No. & PCU**	**581**	**291**	**72**	**72**	**3084**	**3084**	**74**	**222**	**151**	**453**	**85**	**128**	**51**	**153**	**4098**	**4403**	**377**	**189**	**377**	**189**
	Total No.	**4475**																			
	Total PCU	**4592**																			

Annexure 3.2: Annual Average Daily Traffic at Babareshi (Km 33+800)

Project Name : **Baramulla - Gulmarg Section**
KM **33+800**

Annual Average Daily Traffic (AADT)

Road : **Gulmarg-Baramulla Road** **Starting Date :** **14-Jul-19**

Location : **Babareshi** **Ending Date :** **21-Jul-19**

Type of Vehicle			ADT (Up+Dn)		Annual Average Daily Traffic (AADT)	
			No.	PCU	No.	PCU
Fast / Motorised Vehicles		Two Wheeler	581	291	**523**	**262**
		Three Wheeler / Auto Rickshaw	72	72	**66**	**66**
		Motorized Van	0	0	**0**	**0**
		Car/ Jeep/ Van/ Taxi	3084	3084	**2837**	**2837**
	Bus	Mini	74	222	**66**	**198**
	Bus	Full	151	453	**134**	**403**
		LCV (Mini Truck)	85	128	**76**	**114**
	Truck	2-Axle Rigid Truck	51	153	**45**	**136**
	Truck	3-Axle Rigid Truck	0	0	**0**	**0**
	Truck	Multi-Axle Rigid Truck	0	0	**0**	**0**
	Truck	Truck Trailer (Artic/ Semi-artic)	0	0	**0**	**0**
		Tractor With Trailer	0	0	**0**	**0**
		Tractor Without Trailer	0	0	**0**	**0**
Slow / Non-motorisedVehicles		Cycle	377	189	**377**	**189**
		Cycle Rickshaw	0	0	**0**	**0**
		Bullock Cart	0	0	**0**	**0**
		Horse Drawn Vehicle	0	0	**0**	**0**

Total Motorised Vehicles	4098	4403	**3747**	**4016**
Total Non-motorised Vehicles	377	189	**377**	**189**
Total Vehicles	4475		**4124**	
Total PCU	4592		**4205**	
Commercial Vehicles per Day (CVPD)	361		**321**	

Average Seasonal Correction Factor

For vehicles operated on **Diesel** = **0.89** [For Bus, LCV, Truck & Tractor]

For vehicles operated on **Petrol** = **0.92** [For 3-wheeler, Motorised Van & 4-whee

For vehicle operated on both **Petrol & Diesel** = **0.90** [For 2-wheeler]

Annexure 3.3 (a) : VDF Analysis (LCV)

Survey Location: Babareshi at Design Ch. 33+800
Section : Baramulla - Gulamarg section

											VDF	1.345
Sr. No.	Vehicle Type	Commodity	Wheel Load (kg)			Axle Load (KN)		Equivalency Factors			Gross Vehicle Weight (GVW) in KN	Vehicle Damage Factor (VDF)
			1st	2nd	In Tonne	1st	2nd	SW-FSA	DW-SA	SW-RSA		
1	LCV	Empty	1011	2100	3.11	19.84	41.20	0.009		0.161	61.038	0.170
2	LCV	Food Items	2013	3587	5.60	39.50	70.38	0.136		1.374	109.872	1.511
3	LCV	Fruits	2123	3571	5.69	41.65	70.06	0.169		1.350	111.716	1.519
4	LCV	Cereals	2890	3587	6.48	56.70	70.38	0.579		1.374	127.079	1.953
5	LCV	Vegetables	2017	3578	5.60	39.57	70.20	0.137		1.361	109.774	1.498
6	LCV	Groceries	1941	2158	4.10	38.08	42.34	0.118		0.180	80.422	0.298
7	LCV	Cereals	2580	3789	6.37	50.62	74.34	0.368	0.746		124.960	1.113
8	LCV	Groceries	2014	2267	4.28	39.51	44.48	0.137	0.096		83.993	0.232
9	LCV	Vegetables	2018	3391	5.41	39.59	66.53	0.138		1.098	106.125	1.235
10	LCV	Bricks	3017	4127	7.14	59.19	80.97	0.688		2.408	140.165	3.096
11	LCV	Empty	1024	1598	2.62	20.09	31.35	0.009		0.054	51.444	0.063
12	LCV	Groceries	1922	3361	5.28	37.71	65.94	0.113		1.059	103.652	1.173
13	LCV	Animals	1978	3510	5.49	38.81	68.87	0.127	0.549		107.675	0.676
14	LCV	Bricks	3127	4228	7.36	61.35	82.95	0.794		2.653	144.305	3.446
15	LCV	Electronic Material	2011	3497	5.51	39.46	68.61	0.136		1.241	108.067	1.377
16	LCV	Vegetables	1880	3329	5.21	36.89	65.31	0.104		1.020	102.201	1.123
17	LCV	Sand	3369	4370	7.74	66.10	85.74	1.069	1.319		151.839	2.389

Annexure 3.3 (b) : VDF Analysis (Bus)

Survey Location: Babareshi at Design Ch. 33+800
Section : Baramulla - Gulamarg section

									VDF	2.584
Sl. No.	Vehicle Type	Commodity	Wheel Load (kg)		Axle Load (KN)		Equivalency Factors		Gross Vehicle Weight (GVW) in KN	Vehicle Damage Factor (VDF)
			1st	2nd	1st	2nd	SW-FSA	DW-SA		
1	Bus	Passenger	3175	4328	62.29	84.92	0.844	1.269	147.21	2.11
2	Bus	Passenger	3580	4821	70.24	94.59	1.364	1.954	164.83	3.32
3	Bus	Passenger	3690	4897	72.40	96.08	1.539	2.080	168.48	3.62
4	Bus	Empty	2214	3412	43.44	66.94	0.199	0.490	110.38	0.69
5	Bus	Passenger	3312	4470	64.98	87.70	0.999	1.444	152.68	2.44
6	Bus	Passenger	3690	4789	72.40	93.96	1.539	1.903	166.36	3.44
7	Bus	Passenger	3600	4788	70.63	93.94	1.394	1.901	164.57	3.30
8	Bus	Passenger	3570	4601	70.04	90.27	1.35	1.62	160.32	2.97
9	Bus	Empty	2012	3223	39.48	63.24	0.14	0.39	102.71	0.53
10	Bus	Passenger	3570	4800	70.04	94.18	1.35	1.92	164.22	3.27
11	Bus	Passenger	3697	4878	72.54	95.71	1.55	2.05	168.24	3.60
12	Bus	Passenger	3028	4012	59.41	78.72	0.70	0.94	138.12	1.64
13	Bus	Passenger	3710	4800	72.79	94.18	1.57	1.92	166.97	3.49
14	Bus	Empty	2013	3212	39.50	63.02	0.14	0.39	102.51	0.52
15	Bus	Passenger	3328	4590	65.30	90.06	1.02	1.61	155.35	2.62
16	Bus	Passenger	3652	4670	71.65	91.63	1.48	1.72	163.28	3.20
17	Bus	Passenger	3570	4837	70.04	94.90	1.35	1.98	164.95	3.33
18	Bus	Passenger	3514	4710	68.94	92.41	1.27	1.78	161.35	3.05
19	Bus	Passenger	3201	4102	62.80	80.48	0.87	1.02	143.28	1.90
20	Bus	Passenger	2978	4218	58.43	82.76	0.65	1.15	141.19	1.80
21	Bus	Passenger	3347	4217	65.67	82.74	1.04	1.14	148.41	2.19
22	Bus	Passenger	3523	4511	69.12	88.51	1.28	1.50	157.63	2.78
23	Bus	Passenger	3288	4387	64.51	86.07	0.97	1.34	150.58	2.31
24	Bus	Empty	2134	3378	41.87	66.28	0.17	0.47	108.15	0.64
25	Bus	Passenger	3471	4681	68.10	91.84	1.20	1.74	159.94	2.94
26	Bus	Passenger	3500	4780	68.67	93.78	1.25	1.89	162.45	3.13
27	Bus	Passenger	3536	4697	69.38	92.16	1.30	1.76	161.53	3.06
28	Bus	Passenger	3967	4870	77.83	95.55	2.06	2.03	173.38	4.09
29	Bus	Passenger	3670	4870	72.01	95.55	1.51	2.03	167.55	3.54
30	Bus	Passenger	3049	4017	59.82	78.81	0.72	0.94	138.63	1.66
31	Bus	Passenger	3601	4478	70.65	87.86	1.40	1.45	158.51	2.85
32	Bus	Passenger	3462	4597	67.92	90.19	1.19	1.62	158.12	2.81
33	Bus	Passenger	2978	4074	58.43	79.93	0.65	1.00	138.36	1.65
34	Bus	Passenger	3287	4387	64.49	86.07	0.97	1.34	150.56	2.31
35	Bus	Passenger	3369	4612	66.10	90.49	1.07	1.64	156.59	2.71
36	Bus	Passenger	3600	4789	70.63	93.96	1.39	1.90	164.59	3.30
37	Bus	Passenger	3870	4870	75.93	95.55	1.86	2.03	171.48	3.90
38	Bus	Passenger	3845	4823	75.44	94.63	1.81	1.96	170.07	3.77
39	Bus	Passenger	3028	4172	59.41	81.85	0.70	1.10	141.26	1.79
40	Bus	Passenger	2971	3912	58.29	76.75	0.65	0.85	135.04	1.49
41	Bus	Passenger	3690	4879	72.40	95.73	1.54	2.05	168.12	3.59
42	Bus	Passenger	3173	4289	62.25	84.15	0.84	1.22	146.40	2.07
43	Bus	Empty	2258	3365	44.30	66.02	0.22	0.46	110.32	0.68
44	Bus	Passenger	3568	4781	70.00	93.80	1.35	1.89	163.81	3.24
45	Bus	Passenger	3478	4697	68.24	92.16	1.21	1.76	160.39	2.98

Annexure 3.3 (c) : VDF Analysis (2-Axle)

Survey Location: **Babareshi at Design Ch. 33+800**
Section : **Baramulla - Gulamarg section**

										VDF	4.544
Sr. No.	Vehicle Type	Commodity	Wheel Load (kg)			Axle Load (KN)		Equivalency		Gross Vehicle Weight (GVW) in KN	Vehicle Damage Factor (VDF)
			1st	2nd	In tonn	1st	2nd	SW-FSA	DW-SA		
1	2 Axle Truck	Fruits	3021	4071	7.09	59.27	79.87	0.69	0.99	139.15	1.69
2	2 Axle Truck	Electronic Items	3124	3998	7.12	61.29	78.44	0.79	0.92	139.73	1.71
3	2 Axle Truck	Consruction Material	3897	5367	9.26	76.46	105.30	1.91	3.00	181.76	4.92
4	2 Axle Truck	Vegetables	3470	4430	7.90	68.08	86.92	1.20	1.39	155.00	2.60
5	2 Axle Truck	Food Items	3211	4068	7.28	63.00	79.81	0.88	0.99	142.81	1.87
6	2 Axle Truck	Bricks	4217	6026	10.24	82.74	118.23	2.63	4.77	200.97	7.40
7	2 Axle Truck	Cereals	3587	5120	8.71	70.38	100.45	1.37	2.49	170.83	3.86
8	2 Axle Truck	Consruction Material	3898	5284	9.18	76.48	103.67	1.92	2.82	180.15	4.74
9	2 Axle Truck	Consruction Material	3901	5174	9.08	76.54	101.51	1.92	2.59	178.05	4.52
10	2 Axle Truck	Bricks	4021	6133	10.15	78.89	120.33	2.17	5.12	199.22	7.29
11	2 Axle Truck	Sand	4217	6580	10.80	82.74	129.10	2.63	6.78	211.84	9.41

Annexure 3.4
Axle Load Survey Analysis Summary
(Location : Babareshi Km 33+800)

VDF for Baramulla - Gulmarg Section

Vehicle Type	VDF
LCV	1.345
Bus	2.584
2 Axle Truck	4.544

Annexure 3.5 (a) Origin and Destination Study

Distribution of Good Vehicles by Commodity Carried at Babareshi

	Commodity	LCV	2 Axle	Total	Average
1	Vegetables	11.76	7.69	10.00	9.73
2	Groceries	17.65	0.00	10.00	8.82
3	Polutry	5.88	0.00	3.33	2.94
4	Animals	0.00	7.69	3.33	3.85
5	Household Items	17.65	0.00	10.00	8.82
6	Cereals	35.29	0.00	20.00	17.65
7	Construction Materials	5.88	30.77	16.67	18.33
8	Bricks	0.00	23.08	10.00	11.54
9	Electronic Items	0.00	7.69	3.33	3.85
10	Empty	5.88	23.08	13.33	14.48
	TOTAL	100.0	100.0	100.0	100.0

Annexure 3.5 (b) Origin and Destination Study			
Distribution of Good Vehicles by Trip Length at Babareshi			
			(In Percentage)
Trip Length, Km		**LCV**	**2-Axle**
0	25.0	11.8	7.7
25	50.0	64.7	61.5
50	100.0	23.5	23.1
100	250.0	0.0	7.7
250	500.0	0.0	0.0
500	750.0	0.0	0.0
750	1000.0	0.0	0.0
1000	1500.0	0.0	0.0
1500 and above		0	0
Total		**100**	**100**

Annexure 3.5 (c) Origin and Destination Study			
Distribution of Good Vehicles by Weight Carried at Babareshi			
			(In Percentage)
Weights(Tonnes)		**LCV**	**2-Axle**
Empty		0.0	0.0
0	2.5	0.0	0.0
2.5	5.0	5.9	7.7
5	7.5	76.5	23.1
7.5	10.0	17.6	23.1
10	12.0	0.0	23.1
12	15.0	0.0	7.7
15	20.0	0.0	15.4
Total		**100**	**100**

Annexure 3.5 (d) Origin and Destination Study			
Distribution of Passengers Vehicles by Trip Length at Babareshi			
			(In percentage)
Trip Length	**Car**	**Bus**	**Total**
0-25	5.7	6.7	5.7
25-50	29.7	26.7	29.5
50-100	48.1	44.4	47.9
100-250	16.5	22.2	16.9
250-500	0.0	0.0	0.0
500-750	0.0	0.0	0.0
750-1000	0.0	0.0	0.0
1000-1500	0.0	0.0	0.0
>1500	0	0	0.0
Total	**100**	**100**	**100**

Distribution of Passenger Vehicles by Purpose at Babareshi			
			(In Percentage)
Purpose	**Car/Jeep**	**Bus**	**Total**
Work	42.0	46.7	42.3
Education	3.2	0.0	3.0
Business	30.8	48.9	32.0
Home Based	20.7	4.4	19.6
Others	3.2	0.0	3.0
Total	**100**	**100**	**100**

Distribution of Passenger Vehicles by Trip Frequency at Babareshi			
			(In Percentage)
Frequency	**Car**	**Bus**	**Total**
1	24.8	11.1	23.9
2	51.9	53.3	52.0
3	17.5	33.3	18.6
4	4.2	2.2	4.1
5	1.62	0.00	1.51
Total	**100**	**100**	**100**

Annexure 3.5 (e) Origin and Destination Study

Zone Combined	Zone Code	Zone Name	Production	Attraction	Total	%age
1-6	1	Along the Project Road	16	12	28	46.7
7-10	2	Northeast of the Project Road	4	2	6	10.0
11-15	3	Southeast of the Project Road	8	13	21	35.0
16-17	4	Northwest of the Project Road	2	1	3	5.0
18	5	East of the Project Road	0	2	2	3.3
		TOTAL	30	30	60	100.0

Matrix for freight vehicles at Babareshi

Freight Vehicles at Babareshi

O/D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Grand Total
1						2							2	1	1				6
2											2								2
3											2								2
4												1							1
5												1						2	3
6	1									1									2
7						1													1
8				1															1
9													1						1
10												1							1
11		1		1	1	2													5
12		1					1									1			3
13																			
14																			
15																			
16													1						1
17						1													1
18																			
Grand Total	**1**	**2**		**2**	**1**	**6**	**1**			**1**	**4**	**3**	**4**	**1**	**1**	**1**		**2**	**30**

Trip Direction	No. of Trips	%age
Internal - Internal	3	10.00
Internal - External	13	43.33
External - Internal	9	30.00
External - External	5	16.67
Total	**30**	**100.00**

Annexure 3.5 (f) Origin and Destination Study

Matrix for passenger vehicles at Babareshi

Zone Combined	Zone Code	Zone Name	Production	Attraction	Total	%age
1-6	1	Along the Project Road	392	408	800	60.4
7-10	2	Northeast of the Project Road	69	57	126	9.5
11-15	3	Southeast of the Project Road	166	163	329	24.8
16-17	4	Northwest of the Project Road	33	31	64	4.8
18	5	East of the Project Road	2	3	5	0.4
		TOTAL	**662**	**662**	**1324**	**100.0**

Origin	Destination																		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**Grand Total**
1		9	10	11	10	38						8	16	9	6				117
2	10			3		7				5	6	7	3	4	3		5		53
3	12					7	4		2	5	6	5	3	2	2		4		52
4	12	2				3	5	7		1	4	4	1	1	1		2		43
5	8					1	2	3		2	3	4	3						26
6	33	3	3	2			5	3	3	2	35	4	1			2	2	3	101
7		1	4	5	3	5							6						24
8				5	4	4							3						16
9			2			5													7
10		6	6	3	3	3							1						22
11		6	5	5	4	42										2			64
12	6	4	1	3	3	8										3	3		31
13	5	2	3		2	7	5	2		1						2	3		32
14	17	2		1		3													23
15	8	2	1	1		1										3			16
16		1				12					1	4	1		3				22
17		2		2		4						1	2						11
18						2													2
Grand Total	**111**	**40**	**35**	**41**	**29**	**152**	**21**	**15**	**5**	**16**	**55**	**37**	**40**	**16**	**15**	**12**	**19**	**3**	**662**

Trip Direction	No. of Trips	%age
Internal - Internal	184	27.8
Internal - External	208	31.4
External - Internal	224	33.8
External - External	46	6.9
Total	**662**	**100**

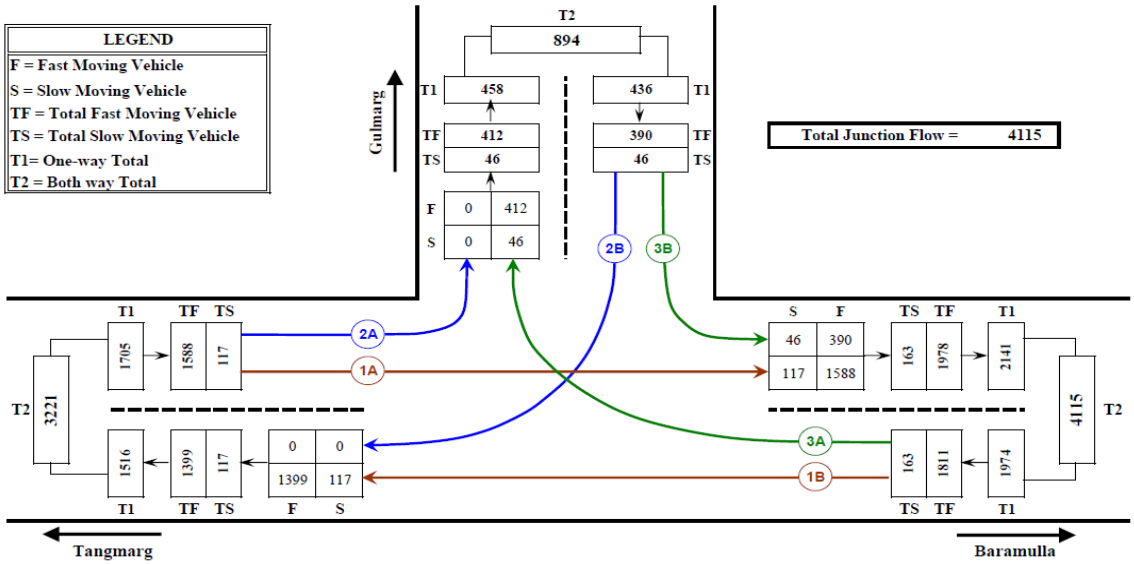
Annexure 3.6 (a) : TMC Analysis near Babareshi at km 33+830

Intersection Flow Diagram

Total Directional Traffic Volume
(In Number)

Road Name : Baramulla Gulmarg Road
Location of Intersection : Barareshi
Peak Hour : 8 to 20

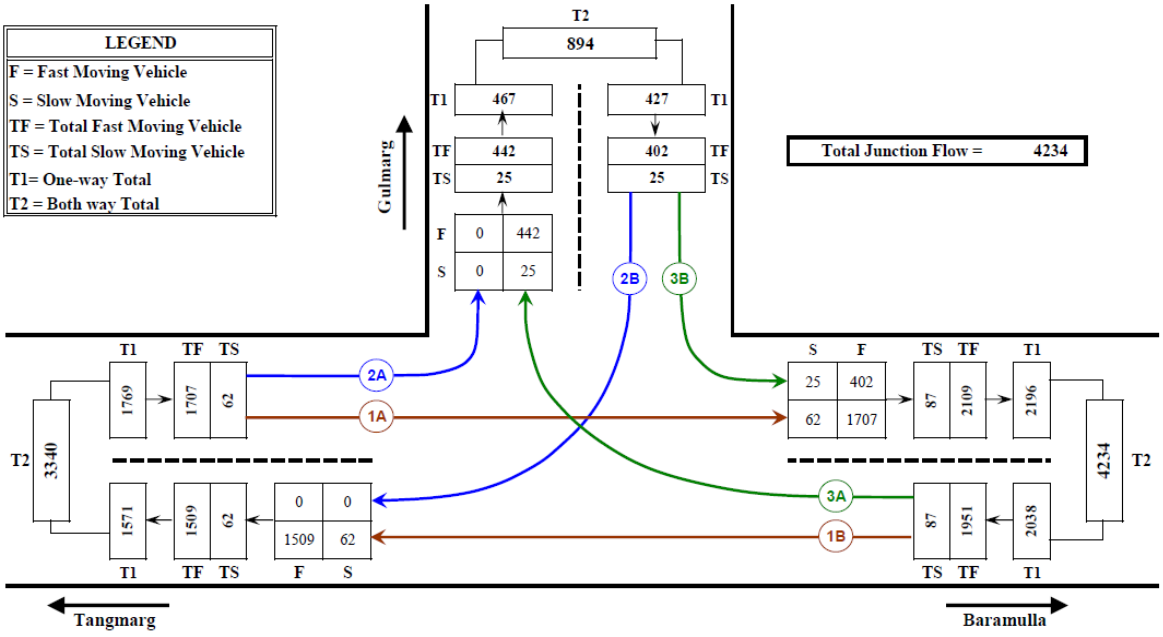
Date: 5-Jul-19
Day: Friday



Total Directional Traffic Volume
(In PCU)

Road Name : Baramulla Gulmarg Road
Location of Intersection : Barareshi
Peak Hour : 8 to 20

Date: 5-Jul-19
Day: Friday



Annexure 3.6 (b) : TMC Analysis near Babareshi Km 33+830

Peak Hour Traffic for All Directions

Location : Barareshi **Date :** 5-Jul-19

Road Name : Baramulla Gulmarg Road **Day :** Friday

Peak Hour		Direction		Total Motorised Vehicles		Total Non-motorised Vehicles		Total Motorised + Non-Motorised Vehicles	
		Code	Description						
From	*To*			No.	PCU	No.	PCU	No.	PCU
15	16	1A	Tangmarg to Baramulla	265	269	21	11	286	280
		1B	Baramulla to Tangmarg	179	174	21	11	200	185
		2A	Tangmarg to Gulmarg	0	0	0	0	0	0
		2B	Gulmarg to Tangmarg	0	0	0	0	0	0
		3A	Baramulla to Gulmarg	67	67	8	4	75	71
		3B	Gulmarg to Baramulla	57	55	8	4	65	59
Total Peak Hour Data								**626**	**595**

Total Traffic for All Directions

Location : Barareshi **Date :** 5-Jul-19

Road Name : Baramulla Gulmarg Road **Day :** Friday

Time (Hour)		Direction		Total Motorised Vehicles		Total Non-motorised Vehicles		Total Motorised + Non-Motorised Vehicles	
		Code	Description						
From	*To*			No.	PCU	No.	PCU	No.	PCU
8	20	1A	Tangmarg to Baramulla	1588	1707	117	62	1705	1769
		1B	Baramulla to Tangmarg	1399	1509	117	62	1516	1571
		2A	Tangmarg to Gulmarg	0	0	0	0	0	0
		2B	Gulmarg to Tangmarg	0	0	0	0	0	0
		3A	Baramulla to Gulmarg	412	442	46	25	458	467
		3B	Gulmarg to Baramulla	390	402	46	25	436	427
Total Data								**4115**	**4234**

Hourly Traffic for All Directions

Location : Barareshi **Date :** 5-Jul-19

Road Name : Baramulla Gulmarg Road **Day :** Friday

Direction		Tangmarg to Baramulla	Baramulla to Tangmarg	Tangmarg to Gulmarg	Gulmarg to Tangmarg	Baramulla to Gulmarg	Gulmarg to Baramulla	Total Intersection Vehicles
Time Period		Total Hourly Vehicles	Total Hourly Vehicles	Total Hourly Vehicles	Total Hourly Vehicles	Total Hourly Vehicles	Total Hourly Vehicles	
From	*To*							
8	9	78	66	0	0	15	14	**173**
9	10	107	95	0	0	30	36	**268**
10	11	166	105	0	0	25	45	**341**
11	12	199	222	0	0	69	35	**525**
12	13	160	199	0	0	50	42	**451**
13	14	109	122	0	0	42	46	**319**
14	15	230	198	0	0	66	62	**556**
15	16	286	200	0	0	75	65	**626**
16	17	244	196	0	0	45	30	**515**
17	18	60	48	0	0	12	16	**136**
18	19	40	43	0	0	15	32	**130**
19	20	26	22	0	0	14	13	**75**
Total		**3221**	**1516**	**0**	**458**	**894**	**4551**	**4115**

Engineering Surveys and Investigations

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
0+000	0+100	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
0+100	0+200	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
0+200	0+300	Hilly	Builtup	Builtup	5.7	BT	3.7	ER	1	ER	1	RRM
0+300	0+400	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
0+400	0+500	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
0+500	0+600	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
0+600	0+700	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
0+700	0+800	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
0+800	0+900	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
0+900	1+000	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
01+000	01+100	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
01+100	01+200	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
01+200	01+300	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
01+300	01+400	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
01+400	01+500	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
01+500	01+600	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
01+600	01+700	Hilly	Hill	Builtup	5.5	BT	3.5	ER	1	ER	1	-
01+700	01+800	Hilly	Hill	Builtup	5.5	BT	3.5	ER	1	ER	1	-
01+800	01+900	Hilly	Hill	Builtup	5.5	BT	3.5	ER	1	ER	1	-
01+900	02+000	Hilly	Hill	Builtup	5.5	BT	3.5	ER	1	ER	1	-
02+000	02+100	Hilly	Agricultural Land	Agricultural Land	6.0	BT	4.0	ER	1	ER	1	-
02+100	02+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
02+200	02+300	Hilly	Agricultural Land	Agricultural Land	6.0	BT	4.0	ER	1	ER	1	-
02+300	02+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
02+400	02+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
02+500	02+600	Hilly	Agricultural Land	Agricultural Land	6.0	BT	4.0	ER	1	ER	1	-
02+600	02+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
02+700	02+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
02+800	02+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
02+900	03+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
03+000	03+100	Hilly	Agricultural Land	Agricultural Land	6.0	BT	4.0	ER	1	ER	1	-
03+100	03+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
03+200	03+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
03+300	03+400	Hilly	Agricultural Land	Agricultural Land	6.0	BT	4.0	ER	1	ER	1	-
03+400	03+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
03+500	03+600	Hilly	Agricultural Land	Agricultural Land	5.8	BT	3.8	ER	1	ER	1	-
03+600	03+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
03+700	03+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
03+800	03+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
03+900	04+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
04+000	04+100	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
04+100	04+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
04+200	04+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
04+300	04+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
04+400	04+500	Hilly	Agricultural Land	Agricultural Land	5.8	BT	3.8	ER	1	ER	1	-
04+500	04+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
04+600	04+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
04+700	04+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
04+800	04+900	Hilly	Agricultural Land	Agricultural Land	6.0	BT	4.0	ER	1	ER	1	-
04+900	05+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
05+000	05+100	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
05+100	05+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
05+200	05+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
05+300	05+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
05+400	05+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
05+500	05+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

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KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
05+600	05+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
05+700	05+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
05+800	05+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
05+900	06+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
06+000	06+100	Hilly	Agricultural Land	Agricultural Land	5.7	BT	3.7	ER	1	ER	1	-
06+100	06+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
06+200	06+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
06+300	06+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
06+400	06+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
06+500	06+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
06+600	06+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
06+700	06+800	Hilly	Agricultural Land	Agricultural Land	6.0	BT	4.0	ER	1	ER	1	-
06+800	06+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
06+900	07+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
07+000	07+100	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
07+100	07+200	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
07+200	07+300	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
07+300	07+400	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
07+400	07+500	Hilly	Forest	Forest	6.0	BT	4.0	ER	1	ER	1	-
07+500	07+600	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
07+600	07+700	Hilly	Forest	Forest	5.7	BT	3.7	ER	1	ER	1	-
07+700	07+800	Hilly	Forest	Forest	6.0	BT	4.0	ER	1	ER	1	-
07+800	07+900	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
07+900	08+000	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
08+000	08+100	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
08+100	08+200	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
08+200	08+300	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
08+300	08+400	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-

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KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
08+400	08+500	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
08+500	08+600	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
08+600	08+700	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
08+700	08+800	Hilly	Forest	Forest	6.0	BT	4.0	ER	1	ER	1	-
08+800	08+900	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
08+900	09+000	Hilly	Agricultural Land	Builtup	6.0	BT	4.0	ER	1	ER	1	-
09+000	09+100	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	-
09+100	09+200	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	-
09+200	09+300	Hilly	Agricultural Land	Agricultural Land	5.9	BT	3.9	ER	1	ER	1	-
09+300	09+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
09+400	09+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
09+500	09+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
09+600	09+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
09+700	09+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
09+800	09+900	Hilly	Agricultural Land	Agricultural Land	6.2	BT	4.2	ER	1	ER	1	RRM
09+900	10+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
10+000	10+100	Hilly	Agricultural Land	Agricultural Land	5.7	BT	3.7	ER	1	ER	1	RRM
10+100	10+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
10+200	10+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
10+300	10+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
10+400	10+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
10+500	10+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
10+600	10+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
10+700	10+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
10+800	10+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
10+900	11+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
11+000	11+100	Hilly	Agricultural Land	Agricultural Land	6.1	BT	4.1	ER	1	ER	1	-
11+100	11+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

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Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
11+200	11+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
11+300	11+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
11+400	11+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
11+500	11+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
11+600	11+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
11+700	11+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
11+800	11+900	Hilly	Agricultural Land	Agricultural Land	5.8	BT	3.8	ER	1	ER	1	-
11+900	12+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
12+000	12+100	Hilly	Agricultural Land	Builtup	6.2	BT	4.2	ER	1	ER	1	-
12+100	12+200	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	-
12+200	12+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
12+300	12+400	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
12+400	12+500	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
12+500	12+600	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
12+600	12+700	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
12+700	12+800	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
12+800	12+900	Hilly	Builtup	Builtup	5.8	BT	3.8	ER	1	ER	1	-
12+900	13+000	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
13+000	13+100	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
13+100	13+200	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
13+200	13+300	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
13+300	13+400	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
13+400	13+500	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
13+500	13+600	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
13+600	13+700	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
13+700	13+800	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
13+800	13+900	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
13+900	14+000	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
14+000	14+100	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
14+100	14+200	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
14+200	14+300	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
14+300	14+400	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
14+400	14+500	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
14+500	14+600	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
14+600	14+700	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
14+700	14+800	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
14+800	14+900	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
14+900	15+000	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
15+000	15+100	Hilly	Builtup	Builtup	5.8	BT	3.8	ER	1	ER	1	-
15+100	15+200	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
15+200	15+300	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
15+300	15+400	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
15+400	15+500	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
15+500	15+600	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
15+600	15+700	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	RRM
15+700	15+800	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	RRM
15+800	15+900	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	RRM
15+900	16+000	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	RRM
16+000	16+100	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	RRM
16+100	16+200	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	RRM
16+200	16+300	Hilly	Valley	Hill	6.3	BT	4.3	ER	1	ER	1	-
16+300	16+400	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
16+400	16+500	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
16+500	16+600	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
16+600	16+700	Hilly	Valley	Hill	5.8	BT	3.8	ER	1	ER	1	RRM
16+700	16+800	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
16+800	16+900	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
16+900	17+000	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
17+000	17+100	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
17+100	17+200	Hilly	Valley	Hill	5.8	BT	3.8	ER	1	ER	1	-
17+200	17+300	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
17+300	17+400	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
17+400	17+500	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
17+500	17+600	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
17+600	17+700	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
17+700	17+800	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
17+800	17+900	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
17+900	18+000	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
18+000	18+100	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
18+100	18+200	Hilly	Valley	Hill	6.0	BT	4.0	ER	1	ER	1	-
18+200	18+300	Hilly	Valley	Hill	5.5	BT	3.5	ER	1	ER	1	-
18+300	18+400	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
18+400	18+500	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
18+500	18+600	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
18+600	18+700	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
18+700	18+800	Hilly	Builtup	Builtup	5.8	BT	3.8	ER	1	ER	1	-
18+800	18+900	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
18+900	19+000	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
19+000	19+100	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
19+100	19+200	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
19+200	19+300	Hilly	Agricultural Land	Agricultural Land	5.7	BT	3.7	ER	1	ER	1	-
19+300	19+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
19+400	19+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
19+500	19+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
19+600	19+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
19+700	19+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
19+800	19+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
19+900	20+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
20+000	20+100	Hilly	Agricultural Land	Agricultural Land	5.7	BT	3.7	ER	1	ER	1	-
20+100	20+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
20+200	20+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
20+300	20+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
20+400	20+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
20+500	20+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
20+600	20+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
20+700	20+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
20+800	20+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
20+900	21+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
21+000	21+100	Hilly	Agricultural Land	Agricultural Land	5.8	BT	3.8	ER	1	ER	1	RRM
21+100	21+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
21+200	21+300	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	-
21+300	21+400	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	-
21+400	21+500	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	-
21+500	21+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
21+600	21+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
21+700	21+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
21+800	21+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
21+900	22+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
22+000	22+100	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
22+100	22+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
22+200	22+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
22+300	22+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
22+400	22+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
22+500	22+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
22+600	22+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
22+700	22+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
22+800	22+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
22+900	23+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
23+000	23+100	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
23+100	23+200	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
23+200	23+300	Hilly	Builtup	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
23+300	23+400	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
23+400	23+500	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
23+500	23+600	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
23+600	23+700	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
23+700	23+800	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
23+800	23+900	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
23+900	24+000	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
24+000	24+100	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
24+100	24+200	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
24+200	24+300	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
24+300	24+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
24+400	24+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
24+500	24+600	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	RRM
24+600	24+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
24+700	24+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
24+800	24+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
24+900	25+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
25+000	25+100	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
25+100	25+200	Hilly	Hairpin Bend	Hairpin Bend	6.0	BT	4.0	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
25+200	25+300	Hilly	Hairpin Bend	Hairpin Bend	5.5	BT	3.5	ER	1	ER	1	-
25+300	25+400	Hilly	Hairpin Bend	Hairpin Bend	5.5	BT	3.5	ER	1	ER	1	-
25+400	25+500	Hilly	Agricultural Land	Agricultural Land	6.0	BT	4.0	ER	1	ER	1	-
25+500	25+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
25+600	25+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
25+700	25+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
25+800	25+900	Hilly	Agricultural Land	Agricultural Land	6.2	BT	4.2	ER	1	ER	1	-
25+900	26+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
26+000	26+100	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
26+100	26+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
26+200	26+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
26+300	26+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
26+400	26+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
26+500	26+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
26+600	26+700	Hilly	Agricultural Land	Agricultural Land	5.8	BT	3.8	ER	1	ER	1	RRM
26+700	26+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
26+800	26+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
26+900	27+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
27+000	27+100	Hilly	Agricultural Land	Agricultural Land	5.8	BT	3.8	ER	1	ER	1	-
27+100	27+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
27+200	27+300	Hilly	Agricultural Land	Agricultural Land	5.8	BT	3.8	ER	1	ER	1	-
27+300	27+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
27+400	27+500	Hilly	Builtup	Builtup	5.5	BT	3.5	ER	1	ER	1	-
27+500	27+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
27+600	27+700	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
27+700	27+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
27+800	27+900	Hilly	Agricultural Land	Builtup	6.2	BT	4.2	ER	1	ER	1	-
27+900	28+000	Hilly	Agricultural Land	Agricultural Land	6.0	BT	4.0	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
28+000	28+100	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
28+100	28+200	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
28+200	28+300	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
28+300	28+400	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
28+400	28+500	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
28+500	28+600	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
28+600	28+700	Hilly	Agricultural Land	Agricultural Land	6.2	BT	4.2	ER	1	ER	1	RRM
28+700	28+800	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
28+800	28+900	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
28+900	29+000	Hilly	Agricultural Land	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	RRM
29+000	29+100	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	-
29+100	29+200	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	-
29+200	29+300	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	-
29+300	29+400	Hilly	Agricultural Land	Builtup	5.5	BT	3.5	ER	1	ER	1	-
29+400	29+500	Hilly	Forest	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
29+500	29+600	Hilly	Forest	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
29+600	29+700	Hilly	Forest	Agricultural Land	5.5	BT	3.5	ER	1	ER	1	-
29+700	29+800	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
29+800	29+900	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
29+900	30+000	Hilly	Forest	Forest	5.5	BT	3.5	ER	1	ER	1	-
30+000	30+100	Hilly	Forest	Builtup	7.5	BT	5.5	ER	1	ER	1	RRM
30+100	30+200	Hilly	Forest	Builtup	7.5	BT	5.5	ER	1	ER	1	RRM
30+200	30+300	Hilly	Forest	Builtup	7.5	BT	5.5	ER	1	ER	1	-
30+300	30+400	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
30+400	30+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
30+500	30+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
30+600	30+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
30+700	30+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
30+800	30+900	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
30+900	31+000	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
31+000	31+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
31+100	31+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
31+200	31+300	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
31+300	31+400	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
31+400	31+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
31+500	31+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
31+600	31+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
31+700	31+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
31+800	31+900	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
31+900	32+000	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
32+000	32+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
32+100	32+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
32+200	32+300	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
32+300	32+400	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
32+400	32+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
32+500	32+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
32+600	32+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
32+700	32+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
32+800	32+900	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
32+900	33+000	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
33+000	33+100	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
33+100	33+200	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
33+200	33+300	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
33+300	33+400	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
33+400	33+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
33+500	33+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
33+600	33+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
33+700	33+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
33+800	33+900	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	RRM
33+900	34+000	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
34+000	34+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
34+100	34+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
34+200	34+300	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
34+300	34+400	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
34+400	34+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
34+500	34+600	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
34+600	34+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
34+700	34+800	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
34+800	34+900	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
34+900	35+000	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
35+000	35+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
35+100	35+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
35+200	35+300	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
35+300	35+400	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
35+400	35+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
35+500	35+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
35+600	35+700	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
35+700	35+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
35+800	35+900	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
35+900	36+000	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
36+000	36+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
36+100	36+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
36+200	36+300	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
36+300	36+400	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
36+400	36+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
36+500	36+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
36+600	36+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
36+700	36+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
36+800	36+900	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
36+900	37+000	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
37+000	37+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
37+100	37+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
37+200	37+300	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
37+300	37+400	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	RRM
37+400	37+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
37+500	37+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
37+600	37+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
37+700	37+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
37+800	37+900	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
37+900	38+000	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
38+000	38+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
38+100	38+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
38+200	38+300	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	RRM
38+300	38+400	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
38+400	38+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
38+500	38+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
38+600	38+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
38+700	38+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
38+800	38+900	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
38+900	39+000	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
39+000	39+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
39+100	39+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
39+200	39+300	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
39+300	39+400	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
39+400	39+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
39+500	39+600	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	RRM
39+600	39+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
39+700	39+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
39+800	39+900	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
39+900	40+000	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
40+000	40+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
40+100	40+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
40+200	40+300	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
40+300	40+400	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
40+400	40+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
40+500	40+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
40+600	40+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
40+700	40+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
40+800	40+900	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
40+900	41+000	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
41+000	41+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
41+100	41+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
41+200	41+300	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
41+300	41+400	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	-
41+400	41+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
41+500	41+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
41+600	41+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
41+700	41+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
41+800	41+900	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
41+900	42+000	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM

Annexure- IA

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

ROAD INVENTORY DATA SHEET

Name of the Road : **Baramulla-Gulmarg Road connecting Baramulla and Gulmarg**

KMS NO : **0+000 TO 42+820**

Chainage		Terrain	Adjacent Landuse Pattern		Road Way Width (m)	Carriageway		Shoulder				Drainage
From	To		Left	Right		Surface Type	Width (m)	Type	Width (m)	Type	Width (m)	(Lined / Earthen/RRM)
								Left		Right		
42+000	42+100	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-
42+100	42+200	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
42+200	42+300	Hilly	Forest	Forest	8.0	BT	6.0	ER	1	ER	1	RRM
42+300	42+400	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
42+400	42+500	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
42+500	42+600	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
42+600	42+700	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
42+700	42+800	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	RRM
42+800	42+820	Hilly	Forest	Forest	7.5	BT	5.5	ER	1	ER	1	-

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structures (pipe, slab, box, Arch)	Thickness of Slab (m)	Span arrangement		Total Ventway (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection works		Condition of									Overall Condition	Height above Bed Level		Presence of Scour	Adequacy of Waterway	Remarks
				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1	**00+000**	**Slab**	0.3	1	4.00	4.00	7.00	4.00	10.00	-	Fair	Fair	Fair		Fair			Fair	Not Provided		Fair	1.00	1.10	No	Yes	Sub structure is masonry
2	**01+272**	**Pipe**	-	1	0.45	0.45	5.50	0.45	9.00	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Not Provided	Poor	Poor	1.00	1.10	No	Yes	U/S fully chocked
3	**01+571**	**Slab**	0.40	1	0.60	0.60	5.50	0.60	10.00	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Not Provided	Poor	Poor	0.00	0.00	No		-
4	**01+725**	**Causeway**	-	-	-	-	5.50	-	10.00	-	-	-	-	-	-	-	-	-			Poor	0.00	0.00	No		-
5	**02+170**	**Pipe**	-	1	0.45	0.45	5.50	0.45	10.00	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Broken/ Poor	Poor	Poor	1.20	1.30	No		Vented Causeway
6	**02+190**	**Pipe**	-	1	0.45	0.45	5.50	0.45	10.00	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Broken/ Poor	Poor	Poor	1.20	1.30	No		Vented Causeway
7	**02+305**	**Pipe**	-	1	0.45	0.45	5.50	0.45	10.00	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Broken/ Poor	Poor	Poor	1.20	1.30	No		Vented Causeway
8	**03+303**	**Pipe**	-	1	0.45	0.45	5.50	0.45	10.00	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Broken/ Poor	Poor	Poor	1.20	1.30	No		Vented Causeway
9	**04+088**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Broken/ Poor	Poor	Poor	1.20	1.30	No		Vented Causeway
10	**04+635**	**Pipe**	-	1	0.30	0.30	5.50	0.30	10.00	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Broken/ Poor		Poor	1.20	1.30	No		Vented Causeway

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structures (pipe, slab, box, Arch)	Thickness of Slab (m)	Span arrangement		Total Ventway (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection works		Condition of									Overall Condition	Height above Bed Level		Presence of Scour	Adequacy of Waterway	Remarks
				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
11	**04+780**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Broken/ Poor		Poor	1.20	1.30	No		Vented Causeway
12	**04+880**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Broken/ Poor		Poor	1.20	1.30	No		Vented Causeway
13	**05+170**	**Pipe**	-	1	0.45	0.45	5.50	0.45	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.00	2.30		Yes	WMM Road
14	**05+212**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.00	2.30		Yes	WMM Road
15	**05+270**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.00	2.30		Yes	WMM Road
16	**05+395**	**Pipe**	-	1	0.45	0.45	5.50	0.45	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.00	2.30		Yes	WMM Road
17	**05+470**	**Pipe**	-	1	0.45	0.45	5.50	0.45	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.00	2.30		Yes	WMM Road
18	**05+590**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.00	2.30		Yes	WMM Road
19	**05+688**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.00	2.30		Yes	WMM Road
20	**05+805**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.00	2.30		Yes	WMM Road

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structures (pipe, slab, box, Arch)	Thickness of Slab (m)	Span arrangement		Total Ventway (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection works		Condition of									Overall Condition	Height above Bed Level		Presence of Scour	Adequacy of Waterway	Remarks
				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
21	**06+195**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.20	No	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Broken/ Poor		Poor	1.50	1.60	No		Culvert fully blocked
22	**06+255**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.20	No	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Broken/ Poor	Poor	Poor	1.20	1.30	No		Culvert fully blocked
23	**06+500**	**Causeway**	-	-	-	-	5.50	-	10.00	-	-	-	-	-	-	-	-	-		Poor	Poor	0.00	0.00	No		-
24	**06+640**	**Pipe**	-	1	0.45	0.45	5.50	0.45	10.00	-	-	-	-	-	-	-	-	-		Poor	Poor	0.00	0.00	No		-
25	**06+775**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair		Poor	Poor	1.20	1.30		Yes	WMM Road
26	**07+265**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.40	1.50		Yes	WMM Road
27	**07+340**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.40	1.50		Yes	WMM Road
28	**07+480**	**Pipe**	-	1	0.30	0.30	5.50	0.30	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.40	1.50		Yes	WMM Road
29	**07+915**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.00	-	-	Fair	Fair	Fair	Fair	-	Fair	Fair			Poor	1.40	1.50		Yes	WMM Road
30	**08+010**	**Pipe**	-	1	1.00	1.00	3.50	1.00	9.00	No	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.10	1.30		Yes	Road damaged

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CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structures (pipe, slab, box, Arch)	Thickness of Slab (m)	Span arrangement		Total Ventway (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection works		Condition of									Overall Condition	Height above Bed Level		Presence of Scour	Adequacy of Waterway	Remarks
				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
31	**08+130**	**Pipe**	-	1	0.60	0.60	3.50	0.60	9.00	No	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.10	1.30		Yes	Road damaged
32	**08+305**	**Pipe**	-	1	0.60	0.60	3.50	0.60	9.00	No	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.10	1.30		Yes	Road damaged
33	**08+740**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor		Poor	Poor	1.50	1.60		Yes	Road damaged
34	**09+295**	**Pipe**	-	1	0.30	0.30	3.50	0.30	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor		Poor	Poor	1.20	1.30		Yes	Road damaged
35	**09+390**	**Pipe**	-	1	0.30	0.30	3.50	0.30	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor		Poor	Poor	1.50	1.60		Yes	Road damaged
36	**09+887**	**Pipe**	-	1	0.30	0.30	3.50	0.30	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.40	1.50		Yes	Road damaged
37	**09+940**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.50	1.60		Yes	Road damaged
38	**10+495**	**Pipe**	-	1	1.00	1.00	3.50	1.00	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.20	1.40		Yes	Road damaged
39	**10+720**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor		Poor	Poor	1.20	1.30	No	Yes	Pipe damaged
40	**12+470**	**Pipe**	-	1	0.30	0.30	3.50	0.30	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor		Poor	Poor	1.50	1.60	No	Yes	Road damaged

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				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
41	**12+910**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor		Poor	Poor	1.20	1.40	No	Yes	Road damaged
42	**15+485**	**Pipe**	-	1	0.90	0.90	3.50	0.90	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.20	1.30		Yes	Pipe damaged
43	**16+500**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.50	1.60		Yes	Road damaged
44	**16+767**	**Pipe**	-	1	0.40	0.40	3.50	0.40	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.20	1.40		Yes	Road damaged
45	**17+710**	**Slab**	0.3	1	1.50	1.50	3.50	1.50	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.50	1.60		Yes	Road damaged
46	**18+560**	**Pipe**	-	1	0.90	0.90	3.50	0.90	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.20	1.30		Yes	Road damaged
47	**18+645**	**Pipe**	-	1	0.60	0.60	3.50	0.60	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.50	1.90		Yes	Road damaged
48	**18+802**	**Pipe**	-	1	1.00	1.00	3.50	1.00	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.50	1.90		Yes	Road damaged
49	**19+745**	**Pipe**	-	1	1.00	1.00	3.50	1.00	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor		Poor	Poor	1.50	1.90		Yes	Road damaged
50	**20+685**	**Pipe**	-	1	0.60	0.60	3.50	0.60	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor		Poor	Poor	1.20	1.30		Yes	Road damaged

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CULVERTS INVENTORY AND CONDITION SURVEY

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				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
51	**21+988**	**Pipe**	-	1	0.50	0.50	3.50	0.50	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor		Poor	Poor	1.10	1.30		Yes	Road damaged
52	**22+560**	**Pipe**	-	1	0.50	0.50	3.50	0.50	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.40	1.60	No	Yes	Road damaged
53	**23+090**	**Slab**	0.4	1	3.50	3.50	3.50	3.50	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.50	1.60	No	Yes	Road damaged
54	**23+525**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.10	1.20	No	Yes	Road damaged
55	**23+965**	**Pipe**	-	1	0.20	0.20	3.50	0.20	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.10	1.20		Yes	Road damaged
56	**24+155**	**Slab**	0.4	1	3.00	3.00	3.50	3.00	8.50			Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.90	2.20		Yes	ab R/F is expos
57	**24+410**	**Pipe**	-	1	0.40	0.40	3.50	0.40	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Poor	Poor			Poor	1.10	1.20		Yes	Road damaged
58	**24+630**	**Slab**	0.4	1	3.00	3.00	3.50	3.00	8.50	-	-	-	-	-	Poor	Poor	Poor	Poor		Poor	Poor	1.10	1.20		Yes	Road damaged
59	**24+730**	**Pipe**	-	1	0.30	0.30	3.50	0.30	8.50	-	-	-	-	-	Poor	Poor	Poor	Poor		Poor	Poor	1.50	1.60		Yes	Road damaged
60	**24+915**	**Pipe**	-	1	0.50	0.50	3.50	0.50	8.50	-	-	-	-	-	Poor	Poor	Poor	Poor		Poor	Poor	1.80	1.90		Yes	Road damaged

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				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
61	**25+080**	**Pipe**	-	1	0.30	0.30	3.50	0.30	8.50	-	-	-	-	-	Fair	Poor	Fair	Fair			Fair	1.00	1.20	No	Yes	-
62	**25+315**	**Pipe**	-	1	0.20	0.20	3.50	0.20	8.50	-	-	-	-	-	Fair	Poor	Fair	Fair			Fair	1.00	1.20	No	Yes	-
63	**25+567**	**Pipe**	-	1	0.50	0.50	3.50	0.50	8.50	-	-	-	-	-	Fair	Poor	Fair	Fair			Fair	1.00	1.20	No	Yes	-
64	**26+095**	**Pipe**	-	1	0.50	0.50	3.50	0.50	8.80	No		Poor	Poor		Poor			Poor	Damaged	Poor	Poor	1.20	1.40		No	U/S is fully chocked
65	**26+230**	**Pipe**	-	1	0.90	0.90	3.50	0.90	8.50	-	-	-	-	-	Fair	Poor	Fair	Fair		Poor	Fair	1.00	1.20		Yes	-
66	**26+320**	**Pipe**	-	1	0.90	0.90	3.50	0.90	8.50	-	-	-	-	-	Fair	Poor	Fair	Fair		Poor	Fair	1.00	1.20		Yes	-
67	**26+455**	**Pipe**	-	1	0.60	0.60	3.50	0.60	8.80	No		Poor	Poor		Poor			Poor	Damaged		Poor	1.20	1.40		No	U/S is fully chocked
68	**27+230**	**Pipe**	-	1	0.20	0.20	3.50	0.20	8.80	No		Poor	Poor		Poor			Poor	Damaged		Poor	1.20	1.40		No	U/S is fully chocked
69	**27+295**	**Pipe**	-	1	0.30	0.30	3.50	0.30	8.80	No		Poor	Poor		Poor			Poor	Damaged		Poor	1.20	1.40		No	U/S is fully chocked
70	**27+650**	**Pipe**	-	1	0.40	0.40	3.50	0.40	8.50	-	-	-	-	-	Fair	Poor	Fair	Fair		Poor	Poor	1.60	1.80		Yes	Damaged

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				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
71	**27+850**	**Pipe**	-	1	0.40	0.40	3.50	0.40	8.80	No		Poor	Poor		Poor			Poor	Damaged	Poor	Poor	1.20	1.40		No	U/S is fully chocked
72	**27+895**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	-	-	-	-	-	Fair	Poor	Fair	Fair		Poor	Poor	1.60	1.80		Yes	Damaged
73	**29+745**	**Pipe**	-	1	0.60	0.60	3.50	0.60	8.80	No		Poor	Poor		Poor			Poor	Damaged		Poor	1.20	1.40	No	No	D/S is fully chocked
74	**29+775**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	-	-	-	-	-	Fair	Poor	Fair	Fair			Poor	1.60	1.80	No	Yes	Damaged
75	**29+875**	**Pipe**	-	1	0.45	2.60	7.00	2.60	10.20	No		Fair	Fair		Fair			Fair	Damaged		Fair	0.80	2.00	No		
76	**30+015**	**Pipe**	-	2	0.40	3.00	3.50	3.00	8.50	No		Poor	Poor		Poor			Poor	Damaged		Poor	1.20	1.40	No	No	D/S is fully chocked
77	**30+265**	**Pipe**	-	1	0.90	0.90	3.50	0.90	8.50	No		Poor	Poor		Poor			Poor	Damaged		Poor	3.30	3.40	No	No	D/S is fully chocked
78	**30+295**	**Pipe**	-	1	1.00	1.00	3.50	1.00	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80	No	Yes	Damaged
79	**30+415**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	No		Poor	Poor		Poor			Poor	Damaged	Poor	Poor	3.30	3.40	No	No	U/S is fully chocked
80	**30+450**	**Slab**	0.3	1	0.90	0.90	3.50	0.90	8.50	No		Poor	Poor		Poor			Poor	Damaged	Poor	Poor	1.20	1.40	No	No	U/S is fully chocked

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81	**30+640**	**Slab**	0.3	1	2.12	2.12	3.50	2.12	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Poor	1.60	1.80	No	Yes	Damaged
82	**30+960**	**Slab**	0.3	1	2.80	2.80	3.50	2.80	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80	No	Yes	Damaged
83	**31+090**	**Pipe**	-	1	0.30	0.30	3.50	0.30	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80	No	Yes	Damaged
84	**31+560**	**Pipe**	-	1	0.90	0.90	3.50	0.90	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80	No	Yes	Damaged
85	**31+630**	**Pipe**	-	1	0.30	0.30	3.50	0.30	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80	No	Yes	Damaged
86	**31+775**	**Pipe**	-	1	0.90	0.90	3.50	0.90	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Poor	1.60	1.80	No	Yes	Damaged
87	**31+835**	**Slab**	0.3	1	1.00	1.00	3.50	1.00	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Poor	1.60	1.80	No	Yes	Damaged
88	**31+970**	**Slab**	0.3	1	1.00	1.00	3.50	1.00	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Poor	1.60	1.80	No	Yes	Damaged
89	**32+130**	**Slab**	0.3	1	1.60	1.60	3.50	1.60	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Poor	1.60	1.80	No	Yes	Damaged
90	**32+225**	**Slab**	0.3	1	1.70	1.70	5.50	1.70	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Fair	Fair		Poor	Poor	1.40	1.50	No	Yes	Damaged

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				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
91	**32+345**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Poor	1.60	1.80	No	Yes	Damaged
92	**32+400**	**Slab**	0.3	1	2.80	4.00	5.50	2.80	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Fair	Fair			Poor	1.40	1.50	No	Yes	Damaged
93	**32+445**	**Pipe**	-	1	0.45	0.45	3.50	0.45	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80	No	Yes	Damaged
94	**32+560**	**Pipe**	-	1	0.30	0.30	5.50	0.30	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Fair	Fair			Poor	1.40	1.50	No	Yes	Damaged
95	**32+625**	**Pipe**	-	1	0.70	0.70	3.50	0.70	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80	No	Yes	Damaged
96	**32+735**	**Pipe**	-	1	0.30	0.30	5.50	0.30	8.50	-	-	Fair	Fair	Fair	Poor	Fair	Fair	Fair			Fair	1.20	1.30	No	Yes	S is fully chock
97	**32+800**	**Pipe**	-	1	0.45	0.45	5.50	0.45	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Fair	Fair			Poor	1.60	1.80	No	Yes	Damaged
98	**32+835**	**Slab**	0.3	1	1.70	1.70	5.50	1.70	8.50	-	-	Poor	Poor	Poor	Poor	Poor	Fair	Fair		Poor	Poor	2.30	2.50	No	Yes	Damaged
99	**32+880**	**Slab**	0.3	1	1.10	1.10	3.50	1.10	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Poor	1.60	1.80	No	Yes	Damaged
100	**32+920**	**Slab**	0.3	1	1.80	1.80	3.50	1.80	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80	No	Yes	Damaged

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structures (pipe, slab, box, Arch)	Thickness of Slab (m)	Span arrangement		Total Ventway (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection works		Condition of									Overall Condition	Height above Bed Level		Presence of Scour	Adequacy of Waterway	Remarks
				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
101	**33+110**	**Pipe**	-	1	0.90	0.90	5.50	0.90	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Poor	1.60	1.80		Yes	Damaged
102	**33+175**	**Pipe**	-	1	0.30	0.30	5.50	0.30	10.20			Fair	Fair		Fair			Fair	Fair	Poor	Fair	0.90	1.10		Yes	Damaged
103	**33+735**	**Slab**	0.3	1	2.00	2.00	5.50	2.00	10.20			Fair	Fair		Fair			Fair	Fair	Poor	Fair	0.40	1.20			
104	**34+290**	**Slab**	0.3	1	2.00	4.00	5.50	4.00	9.00			Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.10	1.20			
105	**34+330**	**Slab**	0.3	1	2.40	2.40	5.50	2.40	10.20			Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.00	1.20			
106	**34+435**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.20			Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.00	1.20			
107	**34+495**	**Pipe**	-	1	0.45	0.45	5.50	0.45	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80		Yes	Damaged
108	**34+750**	**Slab**	0.4	1	1.60	1.60	5.50	1.60	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80		Yes	Damaged
109	**34+935**	**Pipe**	-	1	0.45	0.45	5.50	0.45	10.20	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.20	1.30	No	Yes	Damaged
110	**35+020**	**Pipe**	-	1	0.45	0.45	5.50	0.45	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.60	1.80		Yes	Damaged

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structures (pipe, slab, box, Arch)	Thickness of Slab (m)	Span arrangement		Total Ventway (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection works		Condition of									Overall Condition	Height above Bed Level		Presence of Scour	Adequacy of Waterway	Remarks
				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
111	**35+130**	**Pipe**	-	1	0.45	0.45	5.50	0.45	10.20	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.20	1.30	No	Yes	Damaged
112	**35+237**	**Slab**	0.3	1	3.00	3.00	5.50	3.00	10.20	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.20	1.30	No	Yes	Damaged
113	**35+315**	**Pipe**	-	1	0.60	0.60	5.50	0.60	10.20	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.20	1.30	No	Yes	Damaged
114	**35+410**	**Pipe**	-	1	0.45	0.45	5.50	0.45	8.50	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	1.60	1.80		Yes	Road damaged
115	**35+565**	**Pipe**	-	1	0.60	0.60	5.50	0.60	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.20	1.40	No	Yes	Damaged
116	**35+725**	**Slab**	0.3	1	4.00	4.00	5.50	4.00	10.20	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	Damaged
117	**35+850**	**Pipe**	-	1	1.60	1.60	5.50	1.60	9.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	1.10	1.20		Yes	Road damaged
118	**36+210**	**Slab**	0.3	1	1.60	4.00	5.50	4.00	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.20	1.40	No	Yes	Damaged
119	**36+405**	**Pipe**	-	1	1.60	1.50	5.50	1.50	9.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	0.90	1.00		Yes	Road damaged
120	**36+685**	**Pipe**	-	1	0.60	0.60	5.50	0.60	9.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Poor	1.00	1.20		Yes	Road damaged

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structures (pipe, slab, box, Arch)	Thickness of Slab (m)	Span arrangement		Total Ventway (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection works		Condition of									Overall Condition	Height above Bed Level		Presence of Scour	Adequacy of Waterway	Remarks
				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
121	**36+955**	**Pipe**	-	1	0.30	0.30	5.50	0.30	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	U/S chocked
122	**37+003**	**Pipe**	-	1	0.90	0.90	5.50	0.90	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	U/S chocked
123	**37+125**	**Slab**	0.3	1	1.20	0.60	7.00	0.60	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	0.90	1.20		Yes	Road damaged
124	**37+200**	**Pipe**	-	1	0.60	0.60	7.00	0.60	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	1.30	1.50		Yes	Road damaged
125	**37+403**	**Slab**	0.3	1	2.50	4.00	5.50	4.00	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	U/S chocked
126	**37+955**	**Slab**	0.3	1	3.00	4.00	7.00	4.00	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	1.30	1.50		Yes	Road damaged
127	**38+185**	**Pipe**	-	1	0.45	0.45	7.00	0.45	10.20	No		Fair	Fair		Fair			Fair	Fair		Fair	0.20	1.10	No		
128	**38+218**	**Pipe**	-	1	0.60	0.60	7.00	0.60	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	1.30	1.50		Yes	Road damaged
129	**38+550**	**Pipe**	-	1	0.20	0.20	7.00	0.20	10.20	No		Fair	Fair		Fair			Fair	Fair		Fair	0.60	1.10	No		
130	**38+600**	**Slab**	0.3	1	1.50	1.50	7.00	1.50	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Fair	1.30	1.50		Yes	Road damaged

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structures (pipe, slab, box, Arch)	Thickness of Slab (m)	Span arrangement		Total Ventway (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection works		Condition of									Overall Condition	Height above Bed Level		Presence of Scour	Adequacy of Waterway	Remarks
				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
131	**38+780**	**Pipe**	-	1	0.60	0.60	7.00	0.60	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Fair	1.30	1.50		Yes	Road damaged
132	**38+915**	**Pipe**	-	1	0.60	0.60	7.00	0.60	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair		Poor	Fair	1.30	1.50		Yes	Road damaged
133	**38+980**	**Pipe**	-	1	0.60	0.60	7.00	0.60	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	1.30	1.50		Yes	Road damaged
134	**39+283**	**Pipe**	-	1	0.60	0.60	7.00	0.60	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	1.30	1.50		Yes	Road damaged
135	**39+435**	**Slab**	0.3	1	2.40	4.00	5.50	4.00	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	U/S chocked
136	**39+770**	**Slab**	0.3	1	1.50	4.00	6.00	4.00	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	0.90	1.20		Yes	Road damaged
137	**39+940**	**Pipe**	-	1	0.20	0.20	6.00	0.20	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	U/S chocked
138	**40+155**	**Pipe**	-	1	0.60	0.60	7.00	0.60	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	0.90	1.20		Yes	Road damaged
139	**40+205**	**Pipe**	-	1	0.60	0.60	6.00	0.60	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	U/S chocked
140	**40+640**	**Pipe**	-	1	0.60	0.60	6.00	0.60	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	0.90	1.20		Yes	Road damaged

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structures (pipe, slab, box, Arch)	Thickness of Slab (m)	Span arrangement		Total Ventway (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection works		Condition of									Overall Condition	Height above Bed Level		Presence of Scour	Adequacy of Waterway	Remarks
				No.	Clear Span (m)					Type	Condition	Super structure	Sub structure	Foundation	Slab/Pipe /Box/Arch	Head wall	Wing wall	Return wall	Parapet/ Railing	Inlet / Outlet		U/s side (m)	D/s side (m)			
141	**40+750**	**Pipe**	-	1	0.60	0.60	6.00	0.60	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	U/S chocked
142	**41+095**	**Pipe**	-	1	0.60	0.60	6.00	0.60	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	U/S chocked
143	**41+220**	**Pipe**	-	1	0.60	0.60	6.00	0.60	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	U/S chocked
144	**41+735**	**Pipe**	-	1	0.60	0.60	6.00	0.60	9.00	No		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	1.50	1.60	No	Yes	U/S chocked
145	**42+004**	**Pipe**	-	1	0.40	0.40	6.00	0.40	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	0.90	1.20		Yes	Road damaged
146	**42+300**	**Pipe**	-	1	0.45	0.45	6.00	0.45	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	0.90	1.20		Yes	Road damaged
147	**42+565**	**Pipe**	-	1	0.40	0.40	6.00	0.40	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	0.90	1.20		Yes	Road damaged
148	**42+860**	**Pipe**	-	1	0.45	0.45	6.00	0.45	10.00	-	-	-	-	-	Poor	Poor	Fair	Fair			Fair	1.00	1.20		Yes	Road damaged

Annexure 4.1 C

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

INVENTORY & CONDITION SURVEY FOR STRUCTURES

A) General Information :

1) Project Name :	Baramulla-Gulmarg Road
2) NH / SH No :	
3) Chainage :	16+985
4) Type of Structures :	River Bridge
5) Year of Construction :	1970
6) Date of Inventory :	16-6-2019

B) Waterways & Protection Works :

1) Name of River/Water Body/Bridge :	Nalla
2) Flow Direction :	Left to Right
3) High Level Bridge / Submersible / Causeway :	High level bridge
4) HFL Data : Any mark of Flood Gauge :	No
5) HFL Data : **Local Enquiry** :	4.0m from ground level
6) Obstruction in Waterways :	Island Formation/Vegetation growth
7) Flow Pattern :	Meandering
8) Erosion of Banks :	No
9) Slope Pitching :	No
10) Toe Wall :	No
11) Flexible Apron :	NA
12) Floor Protection :	NA
13) Scour in River Bed :	Yes
14) Guide Bunds :	No

C) Salient Features & Conditions of Different Components :

1) Span Arrangement :	1x14.7m
2) Distance between c/c of Expansion Joint :	14.7m
3) Clear Width of Waterway :	1x13m
4) Bridge Statical System :	Simply Supported
5) Overall Width of Superstructures :	5.6
6) Carriageway Width :	3.6m
7) Footpath Width :	NA
8) Whether Footpath is raised or at grade :	NA
9) Whether Footpath is one sided or both sided :	NA
10) Railing Width :	No railing
11) Railing Height :	-
12) Bridge formation along longitudinal axis :	Flat
13) Horizontal alignment of bridge :	Straight
14) Skew Angle, if any :	No
15) FRL from Lowest Bed Level :	8.5m
16) Superstructures Type :	Half Through Steel Truss

17) Overall Depth of Superstructures :	2.8m
18) No of Longitudinal Girders :	-
19) No of Cross Girders :	-
20) Condition of Superstructures :	-
21) Type of Abutment :	Solid wall type
22) Type of Pier :	NA
23) Substructures Material :	Masonary
24) Type of Foundation, if visible :	Open
25) Condition of Substructures :	Cracking/Disintegration/Decay/Spalling
26) Condition of Foundations :	Not Visible
27) Type of Bearings :	Not Visible
28) Condition of Bearings :	-
29) Type of Expansion Joints :	Not Visible
30) Condition of Expansion Joints :	-
31) Type of Wearing Coat :	Bituminous
32) Condition of Wearing Coat :	Riding Quality
33) Type of Railing :	NA
34) Condition of Railing :	-
35) Drainage Spouts :	No
36) Condition of Drainage Spouts :	-
37) Weep holes :	No
38) Condition of Weep holes :	-
39) Approach Slab :	Yes
40) Condition of Approach Slab :	Fair
41) Retaining Wall / Wing Wall :	Wing wall
42) Material :	Masonary
43) Condition :	Poor

Annexure 4.1 C

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

INVENTORY & CONDITION SURVEY FOR STRUCTURES

A) General Information :

1) Project Name :	Baramulla-Gulmarg Road
2) NH / SH No :	
3) Chainage :	18+230
4) Type of Structures :	River Bridge
5) Year of Construction :	1970
6) Date of Inventory :	16-6-2019

B) Waterways & Protection Works :

1) Name of River/Water Body/Bridge :	Nalla
2) Flow Direction :	Right to Left
3) High Level Bridge / Submersible / Causeway :	High level bridge
4) HFL Data : Any mark of Flood Gauge :	Yes
5) HFL Data : **Local Enquiry** :	3.0m from ground level
6) Obstruction in Waterways :	Island Formation/Stone
7) Flow Pattern :	Straight
8) Erosion of Banks :	No
9) Slope Pitching :	Yes
10) Toe Wall :	-
11) Flexible Apron :	-
12) Floor Protection :	No
13) Scour in River Bed :	No
14) Guide Bunds :	No

C) Salient Features & Conditions of Different Components :

1) Span Arrangement :	1x21.6m
2) Distance between c/c of Expansion Joint :	21.6m
3) Clear Width of Waterway :	1x20
4) Bridge Statical System :	Simply Supported
5) Overall Width of Superstructures :	5.6
6) Carriageway Width :	3.6m
7) Footpath Width :	NA
8) Whether Footpath is raised or at grade :	NA
9) Whether Footpath is one sided or both sided :	NA
10) Railing Width :	No railing
11) Railing Height :	-
12) Bridge formation along longitudinal axis :	Flat
13) Horizontal alignment of bridge :	Straight
14) Skew Angle, if any :	No
15) FRL from Lowest Bed Level :	9.0m
16) Superstructures Type :	Half Through Steel Truss

17) Overall Depth of Superstructures :	2.8m
18) No of Longitudinal Girders :	-
19) No of Cross Girders :	-
20) Condition of Superstructures :	Poor
21) Type of Abutment :	Solid wall type
22) Type of Pier :	NA
23) Substructures Material :	Masonary
24) Type of Foundation, if visible :	Open
25) Condition of Substructures :	Good
26) Condition of Foundations :	Scouring
27) Type of Bearings :	Not Visible
28) Condition of Bearings :	-
29) Type of Expansion Joints :	Not Visible
30) Condition of Expansion Joints :	-
31) Type of Wearing Coat :	Conctrete
32) Condition of Wearing Coat :	Potholes
33) Type of Railing :	NA
34) Condition of Railing :	-
35) Drainage Spouts :	No
36) Condition of Drainage Spouts :	-
37) Weep holes :	Yes
38) Condition of Weep holes :	Damaged
39) Approach Slab :	Yes
40) Condition of Approach Slab :	Settlement
41) Retaining Wall / Wing Wall :	Wing wall
42) Material :	RCC
43) Condition :	Good

Annexure 4.1 C

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

INVENTORY & CONDITION SURVEY FOR STRUCTURES

A) General Information :

1) Project Name :	Baramulla-Gulmarg Road
2) NH / SH No :	
3) Chainage :	31+260
4) Type of Structures :	River Bridge
5) Year of Construction :	2015
6) Date of Inventory :	16-6-2019

B) Waterways & Protection Works :

1) Name of River/Water Body/Bridge :	Nala
2) Flow Direction :	Right to Left
3) High Level Bridge / Submersible / Causeway :	High level bridge
4) HFL Data : Any mark of Flood Gauge :	
5) HFL Data : **Local Enquiry** :	
6) Obstruction in Waterways :	Island Formation/Stone
7) Flow Pattern :	Straight
8) Erosion of Banks :	No
9) Slope Pitching :	Yes
10) Toe Wall :	No
11) Flexible Apron :	No
12) Floor Protection :	No
13) Scour in River Bed :	No
14) Guide Bunds :	No

C) Salient Features & Conditions of Different Components :

1) Span Arrangement :	1X6.1
2) Distance between c/c of Expansion Joint :	6.1
3) Clear Width of Waterway :	1X5
4) Bridge Statical System :	Simply Supported
5) Overall Width of Superstructures :	8
6) Carriageway Width :	7.0m
7) Footpath Width :	NA
8) Whether Footpath is raised or at grade :	NA
9) Whether Footpath is one sided or both sided :	NA
10) Railing Width :	0.1
11) Railing Height :	1.1
12) Bridge formation along longitudinal axis :	Flat
13) Horizontal alignment of bridge :	Straight
14) Skew Angle, if any :	No
15) FRL from Lowest Bed Level :	6.0m
16) Superstructures Type :	Solid slab

17) Overall Depth of Superstructures :	0.6m
18) No of Longitudinal Girders :	-
19) No of Cross Girders :	-
20) Condition of Superstructures :	Good
21) Type of Abutment :	Solid wall type
22) Type of Pier :	-
23) Substructures Material :	RCC
24) Type of Foundation, if visible :	Open
25) Condition of Substructures :	Good
26) Condition of Foundations :	Scouring
27) Type of Bearings :	NA
28) Condition of Bearings :	-
29) Type of Expansion Joints :	Not Visible
30) Condition of Expansion Joints :	-
31) Type of Wearing Coat :	Bituminous
32) Condition of Wearing Coat :	Cracks/Potholes
33) Type of Railing :	Steel railing
34) Condition of Railing :	Good
35) Drainage Spouts :	No
36) Condition of Drainage Spouts :	-
37) Weep holes :	No
38) Condition of Weep holes :	-
39) Approach Slab :	Yes
40) Condition of Approach Slab :	Fair
41) Retaining Wall / Wing Wall :	Wing wall
42) Material :	Masonary
43) Condition :	Good

Annexure 4.1 C

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

INVENTORY & CONDITION SURVEY FOR STRUCTURES

A) General Information :

1) Project Name :	Baramulla-Gulmarg Road
2) NH / SH No :	
3) Chainage :	37+490
4) Type of Structures :	River Bridge
5) Year of Construction :	1990
6) Date of Inventory :	16-6-2019

B) Waterways & Protection Works :

1) Name of River/Water Body/Bridge :	Nala
2) Flow Direction :	Right to Left
3) High Level Bridge / Submersible / Causeway :	High level bridge
4) HFL Data : Any mark of Flood Gauge :	No
5) HFL Data : **Local Enquiry** :	2.0m from ground level
6) Obstruction in Waterways :	Island Formation/Vegetation Growth
7) Flow Pattern :	Meandering
8) Erosion of Banks :	No
9) Slope Pitching :	Yes
10) Toe Wall :	No
11) Flexible Apron :	No
12) Floor Protection :	No
13) Scour in River Bed :	Yes
14) Guide Bunds :	No

C) Salient Features & Conditions of Different Components :

1) Span Arrangement :	1x8
2) Distance between c/c of Expansion Joint :	8.0
3) Clear Width of Waterway :	1x7.5
4) Bridge Statical System :	Simply Supported
5) Overall Width of Superstructures :	8
6) Carriageway Width :	7.0m
7) Footpath Width :	NA
8) Whether Footpath is raised or at grade :	NA
9) Whether Footpath is one sided or both sided :	NA
10) Railing Width :	0.2
11) Railing Height :	1.1
12) Bridge formation along longitudinal axis :	Flat
13) Horizontal alignment of bridge :	Straight
14) Skew Angle, if any :	No
15) FRL from Lowest Bed Level :	9.0m
16) Superstructures Type :	Solid slab

17) Overall Depth of Superstructures :	0.8m
18) No of Longitudinal Girders :	-
19) No of Cross Girders :	-
20) Condition of Superstructures :	Poor
21) Type of Abutment :	Solid wall type
22) Type of Pier :	-
23) Substructures Material :	Masonary
24) Type of Foundation, if visible :	Open
25) Condition of Substructures :	Poor
26) Condition of Foundations :	Not Visible
27) Type of Bearings :	Not Visible
28) Condition of Bearings :	-
29) Type of Expansion Joints :	Not visible
30) Condition of Expansion Joints :	-
31) Type of Wearing Coat :	Bituminous
32) Condition of Wearing Coat :	Cracks/Potholes
33) Type of Railing :	Steel railing
34) Condition of Railing :	Damaged
35) Drainage Spouts :	No
36) Condition of Drainage Spouts :	-
37) Weep holes :	No
38) Condition of Weep holes :	-
39) Approach Slab :	Yes
40) Condition of Approach Slab :	Poor
41) Retaining Wall / Wing Wall :	Retaining Wall
42) Material :	Masonary
43) Condition :	Poor

Annexure 4.2 : Visual Pavement Survey			
Existing Chainage		Road Type	Pavement Condition
From	To		
00+000	00+500	BT	Fair
00+500	01+000	BT	Fair
01+000	01+500	BT	Poor
01+500	02+000	BT	Poor
02+000	02+500	BT	Fair
02+500	03+000	BT	Fair
03+000	03+500	BT	Fair
03+500	04+000	BT	Fair
04+000	04+500	BT	Fair
04+500	05+000	BT	Fair
05+000	05+500	BT	Fair
05+500	06+000	BT	Fair
06+000	06+500	BT	Fair
06+500	07+000	BT	Poor
07+000	07+500	BT	Poor
07+500	08+000	BT	Poor
08+000	08+500	BT	Poor
08+500	09+000	BT	Poor
09+000	09+500	BT	Poor
09+500	10+000	BT	Poor
10+000	10+500	BT	Poor
10+500	11+000	BT	Poor
11+000	11+500	BT	Poor
11+500	12+000	BT	Poor
12+000	12+500	BT	Poor
12+500	13+000	BT	Poor
13+000	13+500	BT	Poor
13+500	14+000	BT	Poor
14+000	14+500	BT	Poor
14+500	15+000	BT	Poor
15+000	15+500	BT	Poor
15+500	16+000	BT	Poor
16+000	16+500	BT	Poor
16+500	17+000	BT	Poor
17+000	17+500	BT	Poor
17+500	18+000	BT	Fair
18+000	18+500	BT	Poor
18+500	19+000	BT	Fair
19+000	19+500	BT	Fair
19+500	20+000	BT	Poor
20+000	20+500	BT	Fair
20+500	21+000	BT	Fair
21+000	21+500	BT	Fair
21+500	22+000	BT	Fair
22+000	22+500	BT	Fair
22+500	23+000	BT	Poor
23+000	23+500	BT	Poor
23+500	24+000	BT	Poor
24+000	24+500	BT	Poor
24+500	25+000	BT	Poor
25+000	25+500	BT	Poor
25+500	26+000	BT	Poor
26+000	26+500	BT	Poor
26+500	27+000	BT	Poor
27+000	27+500	BT	Poor
27+500	28+000	BT	Poor
28+000	28+500	BT	Fair
28+500	29+000	BT	Poor
29+000	29+500	BT	Fair
29+500	30+000	BT	Fair
30+000	30+500	BT	Fair

Existing Chainage		Road Type	Pavement Condition
From	To		
30+500	31+000	BT	Fair
31+000	31+500	BT	Good
31+500	32+000	BT	Good
32+000	32+500	BT	Good
32+500	33+000	BT	Good
33+000	33+500	BT	Fair
33+500	34+000	BT	Good
34+000	34+500	BT	Good
34+500	35+000	BT	Good
35+000	35+500	BT	Fair
35+500	36+000	BT	Good
36+000	36+500	BT	Good
36+500	37+000	BT	Good
37+000	37+500	BT	Good
37+500	38+000	BT	Good
38+000	38+500	BT	Good
38+500	39+000	BT	Fair
39+000	39+500	BT	Fair
39+500	40+000	BT	Good
40+000	40+500	BT	Good
40+500	41+000	BT	Good
41+000	41+500	BT	Good
41+500	42+000	BT	Good
42+000	42+500	BT	Good
42+500	42+820	BT	Fair

Annexure 4.3 (a) : DGPS Points				
Sr. No.	**Easting**	**Northing**	**Elevation**	**DGPS Point Name**
1	**445860.064**	**3768243.344**	1853.38	GPS-36
2	444616.695	3772155.327	2104.14	GPS-26
3	444544.174	3772290.144	2111.04	GPS-26A
4	444090.994	3770708.753	2326.18	GPS-30
5	**445910.106**	**3768217.769**	2355.25	GPS-36A
6	444388.124	3767002.016	2572.28	GPS-40
7	444371.689	3766888.115	2577.90	GPS-40A
8	444279.991	3767936.383	2662.94	GPS-44
9	444298.544	3767855.467	2666.62	GPS-44A

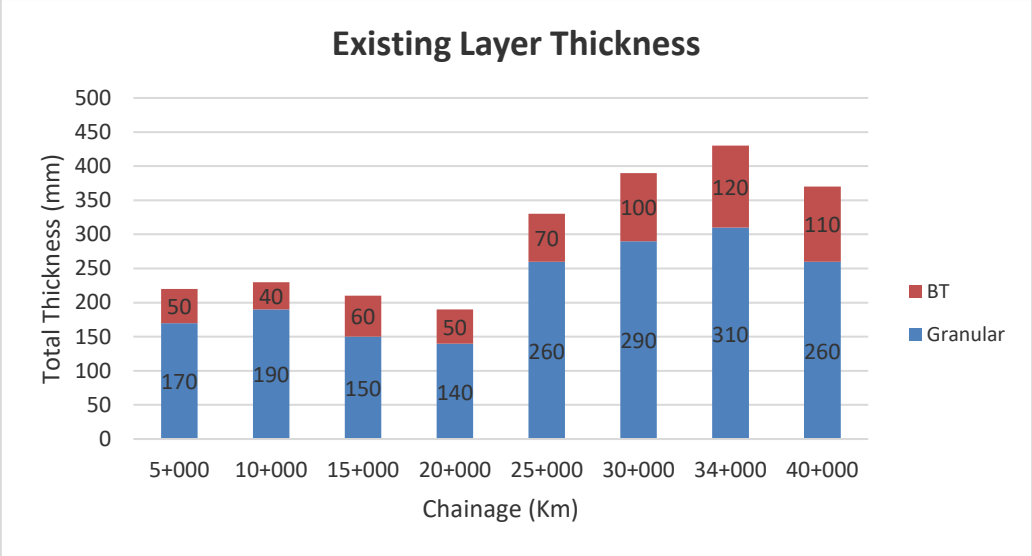
Annexure 4.3 (b): TBM List				
Sr. No.	**Easting**	**Northing**	**Elevation**	**Description**
1	444145.513	3772439.12	2146.94	TBM-63
2	443931.01	3772328.686	2160.89	TBM-64
3	444174.734	3771848.81	2195.46	TBM-65
4	443834.345	3772169.701	2217.28	TBM-66
5	443733.829	3772196.694	2222.45	TBM-67
6	446026.568	3769415.413	2256.75	TBM-79
7	446102.743	3769328.794	2262.61	TBM-80
8	445858.201	3769368.798	2265.19	TBM-78
9	444005.041	3771261.677	2276.18	TBM-69
10	445560.6	3769590.278	2278.14	TBM-77
11	445349.181	3769632.037	2286.32	TBM-76
12	445215.291	3769790.153	2291.31	TBM-75
13	445809.026	3769015.03	2292.13	TBM-81
14	444993.819	3769971.4	2296.80	TBM-74
15	444773.757	3770183.53	2298.02	TBM-73
16	444555.704	3770307.081	2298.08	TBM-72
17	444443.38	3770561.714	2299.18	TBM-71
18	445832.718	3768837.314	2303.18	TBM-82
19	445903.6	3768775.287	2312.43	TBM-83
20	445909.163	3768559.899	2326.04	TBM-84
21	445902.181	3768227.429	2354.63	TBM-86
22	445752.413	3768018.941	2370.80	TBM-87
23	445219.471	3767517.918	2409.51	TBM-89

Annexure 4.4: Roughness Index Values for Baramulla Gulmarg Road			
Chainage, Km		Roughness Index	Pavement Condition
From	To		
0+000	1+000	2765	Fair
1+000	2+000	3229	Poor
2+000	3+000	3150	Poor
3+000	4+000	3215	Poor
4+000	5+000	2641	Fair
5+000	6+000	3266	Poor
6+000	7+000	2314	Fair
7+000	8+000	2305	Fair
8+000	9+000	1640	Good
9+000	10+000	1729	Good
10+000	11+000	1195	Good
11+000	12+000	1638	Good
12+000	13+000	2695	Fair
13+000	14+000	1059	Good
14+000	15+000	3430	Poor
15+000	16+000	1203	Good
16+000	17+000	2711	Fair
17+000	18+000	3340	Poor
18+000	19+000	1594	Good
19+000	20+000	1511	Good
20+000	21+000	1255	Good
21+000	22+000	3347	Poor
22+000	23+000	3186	Poor
23+000	24+000	2760	Fair
24+000	25+000	1275	Poor
25+000	26+000	1244	Poor
26+000	27+000	1419	Poor
27+000	28+000	2228	Poor
28+000	29+000	3200	Poor
29+000	30+000	2816	Fair
30+000	31+000	2864	Fair
31+000	32+000	1973	Good
32+000	33+000	1000	Good
33+000	34+000	2810	Fair

Chainage, Km		Roughness Index	Pavement Condition
From	To		
34+000	35+000	2643	Fair
35+000	36+000	1536	Good
36+000	37+000	2782	Fair
37+000	38+000	2915	Fair
38+000	39+000	2675	Fair
39+000	40+000	1365	Good
40+000	41+000	1858	Good
41+000	42+000	1018	Good
42+000	42+820	1320	Good

Annexure 4.6 Layer Thickness of Existing Pavement

Location	Granular	BT	Total thickness
5+000	170	50	220
10+000	190	40	230
15+000	150	60	210
20+000	140	50	190
25+000	260	70	330
30+000	290	100	390
34+000	310	120	430
40+000	260	110	370



Annexure 4.6: Bulk Field Density Result

LOCATION	W1 (weight of cylinder with full of sand)	W2 (weight of soil from hole)	W3 (weight of cylinder after pouring sand into hole)	FMC %	Wieight of sand in cone (w2)	Bulk density of soil	Dry density	Lab Density (MDD)	%age compaction of exsitng subgrade
5+00	7225	1056	6021	13	368	1.832	1.621	1.985	82%
10+000	7225	1270	5820	7	368	1.776	1.66	2.08	80%
15+000	7225	1650	5610	11	368	1.919	1.728	2.18	79%
20+000	7225	1854	5530	10	368	2.026	1.842	2.065	89%
25+000	7225	951	6125	6	368	1.884	1.777	2.12	84%
30+000	7225	1050	6100	7	368	2.011	1.88	2.1	90%
35+000	7225	1560	5520	9	368	1.692	1.552	2.035	76%
40+500	7225	1350	5870	11.5	368	1.983	1.779	2.068	86%

Annexure 4.7 : Summary of Laboratory results of material from pits and borrow areas

Subgrade Pit Investigation Results

S. No.	Chainage (km)	Modified Proctor		4-Days Soaked CBR (%)	FSI (%)	Atterberg's limit (%)			Gradation (% passing)							Classification	%		
		MDD (gm/cc)	OMC (%)			W_L	W_P	I_P	100 mm	75 mm	19 mm	4.75 mm	2.00 mm	425 µm	75 µm		Gravel	Sand	Silt & Clay
1	5+000 RHS	2.099	7.90	10.50	10	NP	NP	NP	100	100	100	95	86	76	36	SM	5	59	36
2	10+000 RHS	2.030	8.80	9.35	20	22	14	8	100	100	100	95	89	75	58	CL	5	37	58
3	15+000 RHS	2.100	7.00	9.22	18	NP	NP	NP	100	100	100	96	87	67	17	SM	4	79	17
4	20+000 RHS	2.080	8.70	10.20	10	NP	NP	NP	100	100	100	94	80	66	36	SM	6	58	36

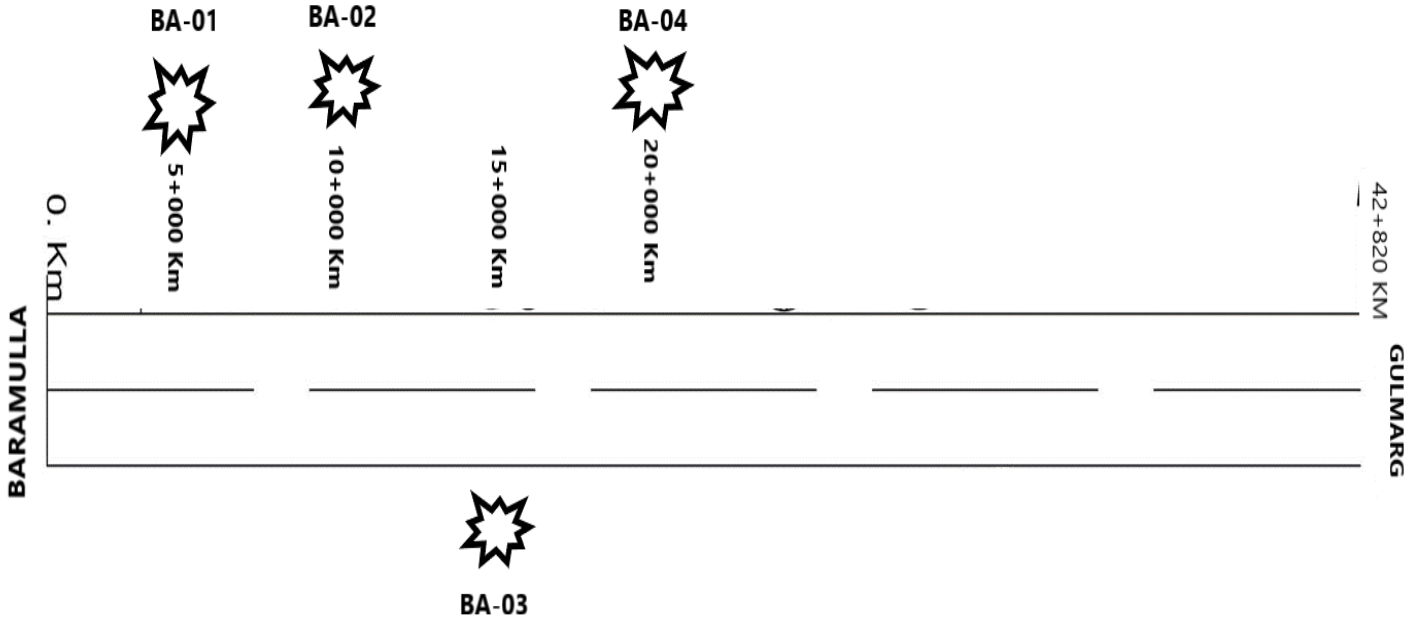
Borrow Area Results

S. No.	Chainage (km)	Modified Proctor		4-Days Soaked CBR (%)	FSI (%)	Atterberg's limit (%)			Gradation (% passing)							Classification	%		
		MDD (gm/cc)	OMC (%)			W_L	W_P	I_P	100 mm	75 mm	19 mm	4.75 mm	2.00 mm	425 µm	75 µm		Gravel	Sand	Silt & Clay
1	BA-01/05+000	2.012	9.80	10.00	10	NP	NP	NP	100	100	100	100	100	95	14	SM	0	86	14
2	BA-02/10+000	2.051	8.70	11.20	30	26	17	9	100	100	100	97	95	79	53	SM	3	44	53
3	BA-03/15+000	1.910	11.90	9.00	35	33	17	16	100	100	100	98	88	81	55	CL	2	43	55
4	BA-04/20+000	2.205	8.80	10.60	30	25	15	10	100	100	100	98	89	84	68	CL	2	30	68

Annexure 4.8				
Coarse Aggregate				
Sample ID	**AIV***	**Water absorption**	**Specific Gravity**	**FI & EI**
Agg-01/10 mm	25	1.05	2.62	74.4
Agg-01/20 mm	23	0.9	2.658	48.6
Agg-02/10 mm	22	1	2.642	67.4
Agg-02/20 mm	23	0.85	2.689	38.9
Agg-03/10 mm	21	0.95	2.652	51.8
Agg-03/20 mm	25	0.8	2.724	44.1
Agg-03/40 mm	26	0.5	2.859	44.9
Agg-04/10 mm	25	0.9	2.702	46.2
Agg-04/20 mm	28	0.6	2.758	28.7
Agg-04/40 mm	26	0.4	2.982	16.1

Annexure 4.8											
Fine Aggregates											
Sample ID	**IS Sieve Size in mm (For Sand Gradation)**							**FM**	**Silt & Clay Content**	**Water Absorption**	**Specific Gravity**
	10	**4.75**	**2.36**	**1.18**	**0.6**	**0.3**	**0.15**		**(%)**	**(%)**	
Sand-01	100	98	91	76	62	32	9	2.3	8.5	1.25	2.64
Sand-02	99	90	81	67	43	13	3	3.4	2.5	1.02	2.702
Sand-03	100	97	89	70	51	27	9	2.5	9	1.21	2.642
Sand-04	100	99	86	73	63	34	10	2.2	10	1	2.685

Annexure 4.9 Borrow Chart



Traffic Projections

Annexure 5 : Projected Traffic at Baberashi

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for 2 lane with Paved Shoulder of NH configuration for Baramulla-Gulmarg Road (NH-701A) in the state of Jammu & Kashmir.

Pcu Factor	0.5	1	1	3	3	1.5	3	0.5						
Year	Fast Moving Vehicles							Slow Moving Vehicles	Total Fast Moving Vehicles	Total Slow Vehicles	Total All Vehicles (Nos.)	Total All Vehicles (PCU)	Total Fast Moving Vehicles (PCU)	Total Slow Moving Vehicles (PCU)
	2 Wheeler	3 Wheeler	Passenger Car	Mini Bus	Standard Bus	LCV 4 Tyre	2-Axle	Bicycle						
2019	523	66	2837	66	134	76	45	377	3747	377	4124	4205	4017	189
2020	575	73	3121	69	141	80	47	415	4106	415	4520	4583	4376	207
2021	633	80	3433	73	148	84	50	456	4499	456	4956	4997	4768	228
2022	696	88	3776	76	155	88	52	502	4932	502	5433	5449	5198	251
2023	766	97	4154	80	163	92	55	552	5406	552	5958	5945	5669	276
2024	835	101	4527	84	171	97	57	602	5873	602	6475	6435	6134	301
2025	910	107	4935	88	180	102	60	656	6381	656	7037	6966	6638	328
2026	992	112	5379	93	189	107	63	715	6934	715	7649	7543	7186	357
2027	1081	117	5863	98	198	112	66	779	7536	779	8315	8170	7780	390
2028	1178	123	6391	102	208	118	70	849	8190	849	9040	8850	8425	425
2029	1284	129	6966	108	218	124	73	926	8903	926	9828	9588	9126	463
2030	1387	136	7523	113	229	130	77	1009	9595	1009	10604	10315	9810	505
2031	1498	143	8125	119	241	136	81	1100	10342	1100	11442	11097	10547	550
2032	1618	150	8775	124	253	143	85	1199	11148	1199	12347	11940	11341	599
2033	1747	157	9477	131	265	150	89	1307	12017	1307	13324	12849	12195	653
2034	1887	165	10235	137	279	158	94	1424	12955	1424	14379	13828	13116	712
2035	2019	174	10952	144	293	166	98	1552	13845	1552	15398	14771	13995	776
2036	2160	182	11719	151	307	174	103	1692	14797	1692	16489	15780	14934	846
2037	2312	191	12539	159	322	183	108	1845	15814	1845	17659	16859	15937	922
2038	2473	201	13417	167	339	192	114	2011	16902	2011	18913	18013	17007	1005
2039	2646	211	14356	175	356	202	119	2191	18065	2191	20256	19246	18151	1096
2040	2805	221	15217	184	373	212	125	2389	19138	2389	21527	20409	19215	1194
2041	2974	235	16130	195	396	224	133	2604	20286	2532	22818	21634	20368	1302
2042	3152	249	17098	207	419	238	141	2838	21504	2684	24188	22932	21590	1419
2043	3341	264	18124	219	445	252	149	3093	22794	2845	25639	24308	22885	1547
2044	3542	280	19211	232	471	267	158	3372	24161	3016	27177	25766	24258	1686
2045	3754	296	20364	246	500	283	168	3675	25611	3197	28808	27312	25714	1838
2046	3979	314	21586	261	530	300	178	4006	27148	3388	30536	28951	27257	2003
2047	4218	333	22881	276	561	318	189	4367	28777	3592	32368	30688	28892	2183
2048	4471	353	24254	293	595	337	200	4760	30503	3807	34311	32529	30626	2380
2049	4739	374	25709	311	631	358	212	5188	32334	4036	36369	34481	32463	2594
2050	5024	397	27252	329	669	379	225	5655	34274	4278	38551	36550	34411	2827
2051	5325	420	28887	349	709	402	238	6164	36330	4534	40864	38743	36476	3082
2052	5645	446	30620	370	751	426	252	6719	38510	4807	43316	41068	38664	3359

Improvement Proposals

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
1	**00+000**	439903.8	3785088.0			**Start of the Project**							
2	**00+084**	439910.3	3785004.6	**500**	**0**		00+074	00+093		**20**	0.03929071	19.645	**-2.50**
3	**00+141**	439912.6	3784946.9	**500**	**0**		00+134	00+149		**20**	0.030361052	15.181	**-2.50**
4	**00+209**	439917.3	3784878.9	**80**	**25**	00+178	00+203	00+215	00+240	**20**	0.471095625	12.688	**-2.50**
5	**00+267**	439947.6	3784828.2	**70**	**15**	00+245	00+260	00+275	00+290	**20**	0.430834514	15.158	**-2.50**
6	**00+307**	439980.6	3784805.7	**100**	**15**	00+291	00+306	00+309	00+324	**20**	0.17939471	2.939	**-2.50**
7	**00+392**	440041.4	3784745.6	**100**	**45**	00+342	00+387	00+396	00+441	**20**	0.54009469	9.009	**-2.50**
8	**00+464**	440059.6	3784674.7	**300**	**0**		00+442	00+486		**20**	0.144282267	43.285	**-2.50**
9	**00+544**	440068.1	3784595.0	**500**	**0**		00+534	00+554		**20**	0.039490046	19.745	**-2.50**
10	**00+614**	440072.9	3784524.1	**100**	**20**	00+577	00+597	00+632	00+652	**20**	0.54799828	34.800	**-2.50**
11	**00+682**	440112.3	3784468.4	**300**	**15**	00+661	00+676	00+688	00+703	**20**	0.0897054	11.912	**-2.50**
12	**00+726**	440134.6	3784430.0	**500**	**0**		00+713	00+740		**20**	0.053071142	26.536	**-2.50**
13	**00+763**	440154.9	3784398.9	**500**	**0**		00+759	00+768		**20**	0.01900764	9.504	**-2.50**
14	**00+868**	440210.5	3784310.3	**200**	**20**	00+837	00+857	00+879	00+899	**20**	0.21297787	22.596	**-2.50**
15	**00+938**	440259.7	3784259.9	**100**	**20**	00+908	00+928	00+947	00+967	**20**	0.38909363	18.909	**-2.50**
16	**01+001**	440283.2	3784201.6	**300**	**0**		00+985	01+016		**20**	0.101323833	30.397	**-2.50**
17	**01+055**	440298.4	3784149.2	**50**	**20**	01+034	01+054	01+055	01+075	**20**	0.4158884	0.794	**-2.50**
18	**01+126**	440344.0	3784094.9	**300**	**0**		01+114	01+137		**20**	0.07928605	23.786	**-2.50**
19	**01+175**	440372.6	3784054.8	**100**	**20**	01+147	01+167	01+182	01+202	**20**	0.35672764	15.673	**-2.50**
20	**01+247**	440433.2	3784013.8	**200**	**20**	01+214	01+234	01+261	01+281	**20**	0.23925107	27.850	**-2.50**
21	**01+361**	440540.0	3783974.1	**300**	**0**		01+308	01+414		**20**	0.35223837	105.672	**-2.50**
22	**01+437**	440598.1	3783924.3	**230**	**0**		01+421	01+452		**20**	0.132056226	30.373	**-2.50**
23	**01+477**	440631.9	3783902.4	**100**	**0**		01+467	01+487		**20**	0.20221047	20.221	**-2.50**
24	**01+520**	440662.9	3783871.9	**200**	**0**		01+509	01+531		**20**	0.1113697	22.274	**-2.50**
25	**01+585**	440713.9	3783831.7	**260**	**0**		01+555	01+616		**20**	0.234874888	61.067	**-2.50**
26	**01+678**	440772.0	3783758.2	**200**	**20**	01+641	01+661	01+696	01+716	**20**	0.274708585	34.942	**-2.50**
27	**01+767**	440845.4	3783705.0	**75**	**0**		01+734	01+800		**20**	0.877962707	65.847	**-2.50**
28	**01+844**	440850.7	3783625.0	**250**	**0**		01+809	01+880		**20**	0.284296744	71.074	**-2.50**
29	**01+938**	440830.3	3783533.2	**100**	**0**		01+917	01+959		**20**	0.41830542	41.831	**-2.50**
30	**01+975**	440837.7	3783496.6	**150**	**0**		01+964	01+985		**20**	0.13920518	20.881	**-2.50**
31	**02+019**	440843.6	3783400.0	**8**	**0**		02+008	02+031		**10**	2.89190575	23.135	**-2.50**
32	**02+039**	440857.1	3783470.6	**30**	**0**		02+032	02+045		**20**	0.430825567	12.925	**-2.50**
33	**02+077**	440847.9	3783507.9	**125**	**0**		02+047	02+107		**20**	0.481591584	60.199	**-2.50**
34	**02+127**	440860.1	3783557.8	**150**	**0**		02+117	02+138		**20**	0.136832733	20.525	**-2.50**
35	**02+174**	440877.2	3783601.0	**80**	**0**		02+160	02+188		**20**	0.35164175	28.131	**-2.50**
36	**02+226**	440878.9	3783670.2	**7**	**0**		02+216	02+235		**10**	2.61137125	18.802	**-2.50**
37	**02+243**	440895.9	3783639.5	**15**	**0**		02+236	02+250		**10**	0.9203822	13.806	**-2.50**
38	**02+267**	440886.2	3783617.5	**50**	**0**		02+259	02+274		**20**	0.31579984	15.790	**-2.50**
39	**02+295**	440883.4	3783588.8	**50**	**0**		02+287	02+303		**20**	0.31201084	15.601	**-2.50**
40	**02+347**	440862.1	3783540.1	**90**	**0**		02+317	02+377		**20**	0.664649367	59.818	**-2.50**
41	**02+415**	440880.0	3783471.2	**30**	**0**		02+399	02+432		**20**	1.074934867	32.248	**-2.50**
42	**02+504**	440977.2	3783447.1	**8**	**0**		02+495	02+514		**10**	2.342772	18.742	**-2.50**
43	**02+521**	440954.4	3783433.0	**30**	**0**		02+515	02+528		**20**	0.461173667	13.835	**-2.50**
44	**02+547**	440928.4	3783430.5	**70**	**0**		02+533	02+561		**20**	0.3969828	27.789	**-2.50**
45	**02+573**	440905.5	3783418.2	**100**	**0**		02+566	02+580		**20**	0.1332945	13.329	**-2.50**
46	**02+609**	440874.1	3783395.5	**30**	**0**		02+591	02+627		**20**	1.2078778	36.236	**-2.50**
47	**02+666**	440889.7	3783337.2	**70**	**0**		02+646	02+687		**20**	0.576823257	40.378	**-2.50**
48	**02+723**	440932.6	3783298.7	**150**	**0**		02+697	02+749		**20**	0.34515258	51.773	**-2.50**
49	**02+800**	440969.1	3783231.0	**200**	**0**		02+784	02+815		**20**	0.156048245	31.210	**-2.50**
50	**02+837**	440991.5	3783201.5	**60**	**0**		02+828	02+845		**20**	0.289958333	17.398	**-2.50**
51	**02+878**	441006.2	3783162.5	**100**	**0**		02+864	02+892		**20**	0.28377332	28.377	**-2.50**
52	**02+927**	441035.3	3783123.7	**70**	**0**		02+913	02+941		**20**	0.399992171	27.999	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
53	**02+959**	441043.1	3783092.5	**50**	**0**		02+953	02+964		**20**	0.21166356	10.583	**-2.50**
54	**02+985**	441055.0	3783068.3	**50**	**0**		02+977	02+994		**20**	0.3348743	16.744	**-2.50**
55	**03+026**	441064.8	3782986.9	**7**	**0**		03+017	03+036		**10**	2.881897273	19.021	**-2.50**
56	**03+040**	441072.4	3783041.2	**15**	**0**		03+037	03+043		**10**	0.4556946	6.835	**-2.50**
57	**03+087**	441057.6	3783086.4	**120**	**0**		03+076	03+099		**20**	0.1909476	22.914	**-2.50**
58	**03+118**	441053.7	3783117.2	**50**	**0**		03+109	03+127		**20**	0.35864982	17.932	**-2.50**
59	**03+155**	441036.5	3783150.0	**50**	**0**		03+139	03+170		**20**	0.62260906	31.130	**-2.50**
60	**03+195**	441042.1	3783190.8	**22**	**0**		03+185	03+205		**20**	0.924516182	20.339	**-2.50**
61	**03+233**	441014.4	3783218.5	**80**	**0**		03+225	03+241		**20**	0.19890155	15.912	**-2.50**
62	**03+261**	440998.4	3783242.5	**45**	**0**		03+245	03+277		**20**	0.710699422	31.981	**-2.50**
63	**03+300**	441003.3	3783281.5	**50**	**0**		03+286	03+313		**20**	0.52164188	26.082	**-2.50**
64	**03+324**	440993.6	3783304.5	**200**	**0**		03+320	03+329		**20**	0.0457852	9.157	**-2.50**
65	**03+348**	440983.1	3783326.5	**50**	**0**		03+342	03+355		**20**	0.26217774	13.109	**-2.50**
66	**03+367**	440979.0	3783348.8	**9**	**0**		03+358	03+375		**10**	1.980434235	16.834	**-2.50**
67	**03+400**	441016.1	3783340.2	**40**	**0**		03+388	03+412		**20**	0.60672095	24.269	**-2.50**
68	**03+437**	441053.1	3783354.9	**20**	**0**		03+425	03+450		**20**	1.24661705	24.932	**-2.50**
69	**03+485**	441085.4	3783316.8	**85**	**0**		03+464	03+506		**20**	0.498459165	42.369	**-2.50**
70	**03+525**	441127.0	3783300.8	**18**	**0**		03+512	03+539		**10**	1.524997333	27.450	**-2.50**
71	**03+552**	441139.1	3783328.4	**100**	**0**		03+548	03+557		**20**	0.08809383	8.809	**-2.50**
72	**03+596**	441174.4	3783392.6	**24**	**0**		03+568	03+624		**20**	2.361387064	55.493	**-2.50**
73	**03+652**	441197.7	3783310.9	**500**	**0**		03+633	03+670		**20**	0.072585656	36.293	**-2.50**
74	**03+728**	441213.2	3783236.2	**150**	**0**		03+713	03+743		**20**	0.196671193	29.501	**-2.50**
75	**03+778**	441213.6	3783186.4	**300**	**0**		03+754	03+801		**20**	0.15422516	46.268	**-2.50**
76	**03+841**	441223.9	3783123.3	**500**	**0**		03+812	03+871		**20**	0.1169482	58.474	**-2.50**
77	**03+895**	441238.6	3783072.0	**200**	**0**		03+877	03+913		**20**	0.17893889	35.788	**-2.50**
78	**03+941**	441243.3	3783025.7	**100**	**0**		03+933	03+950		**20**	0.16962592	16.963	**-2.50**
79	**03+974**	441252.5	3782992.6	**20**	**0**		03+961	03+986		**20**	1.2507121	25.014	**-2.50**
80	**04+003**	441284.7	3782990.9	**50**	**0**		03+989	04+018		**20**	0.56892148	28.446	**-2.50**
81	**04+065**	441339.7	3783022.3	**110**	**0**		04+031	04+099		**20**	0.617557318	67.931	**-2.50**
82	**04+166**	441444.0	3783012.0	**22**	**0**		04+151	04+181		**20**	1.3962875	30.718	**-2.50**
83	**04+244**	441450.2	3782930.3	**70**	**0**		04+222	04+266		**20**	0.6378997	44.653	**-2.50**
84	**04+275**	441433.0	3782903.0	**100**	**0**		04+269	04+282		**20**	0.12281353	12.281	**-2.50**
85	**04+310**	441409.9	3782874.8	**42**	**0**		04+288	04+332		**20**	1.043113286	43.811	**-2.50**
86	**04+365**	441353.2	3782883.7	**300**	**0**		04+351	04+379		**20**	0.091935727	27.581	**-2.50**
87	**04+410**	441295.1	3782898.5	**14**	**0**		04+394	04+426		**10**	2.281034143	31.934	**-2.50**
88	**04+514**	441347.9	3782792.2	**500**	**0**		04+497	04+532		**20**	0.069186212	34.593	**-2.50**
89	**04+549**	441365.5	3782762.2	**500**	**0**		04+540	04+559		**20**	0.038231314	19.116	**-2.50**
90	**04+588**	441386.3	3782729.8	**200**	**0**		04+582	04+593		**20**	0.054222945	10.845	**-2.50**
91	**04+638**	441411.1	3782685.9	**30**	**0**		04+629	04+647		**20**	0.5875038	17.625	**-2.50**
92	**04+702**	441406.3	3782621.5	**200**	**0**		04+681	04+723		**20**	0.21343648	42.687	**-2.50**
93	**04+756**	441413.9	3782567.9	**90**	**0**		04+733	04+778		**20**	0.497613356	44.785	**-2.50**
94	**04+801**	441397.8	3782524.9	**20**	**0**		04+798	04+804		**20**	0.32277425	6.455	**-2.50**
95	**04+820**	441396.0	3782472.0	**10**	**0**		04+806	04+833		**10**	2.7280048	27.280	**-2.50**
96	**04+868**	441431.8	3782546.6	**80**	**0**		04+844	04+891		**20**	0.584977963	46.798	**-2.50**
97	**04+922**	441424.4	3782600.8	**100**	**0**		04+911	04+933		**20**	0.22118377	22.118	**-2.50**
98	**04+955**	441427.2	3782633.8	**80**	**0**		04+945	04+965		**20**	0.258135587	20.651	**-2.50**
99	**04+990**	441439.0	3782667.0	**30**	**0**		04+980	04+999		**20**	0.629632033	18.889	**-2.50**
100	**05+029**	441427.0	3782707.6	**32**	**0**		05+011	05+048		**20**	1.132766281	36.249	**-2.50**
101	**05+098**	441480.6	3782755.1	**100**	**0**		05+076	05+121		**20**	0.44997109	44.997	**-2.50**
102	**05+155**	441536.2	3782770.8	**55**	**0**		05+134	05+175		**20**	0.750037636	41.252	**-2.50**
103	**05+190**	441554.9	3782801.5	**100**	**0**		05+186	05+194		**20**	0.08355401	8.355	**-2.50**
104	**05+221**	441573.1	3782826.5	**150**	**0**		05+211	05+230		**20**	0.126093213	18.914	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
105	**05+263**	441593.5	3782863.6	**100**	**0**		05+252	05+274		**20**	0.22167177	22.167	**-2.50**
106	**05+305**	441605.4	3782904.5	**70**	**0**		05+291	05+320		**20**	0.410903457	28.763	**-2.50**
107	**05+337**	441626.7	3782930.3	**25**	**0**		05+323	05+351		**20**	1.11325364	27.831	**-2.50**
108	**05+376**	441666.5	3782920.8	**50**	**0**		05+369	05+383		**20**	0.29666842	14.833	**-2.50**
109	**05+416**	441706.9	3782923.3	**45**	**0**		05+398	05+433		**20**	0.793316533	35.699	**-2.50**
110	**05+455**	441737.4	3782896.0	**40**	**0**		05+448	05+463		**20**	0.39046915	15.619	**-2.50**
111	**05+474**	441755.2	3782889.6	**30**	**0**		05+470	05+478		**20**	0.248794767	7.464	**-2.50**
112	**05+485**	441766.4	3782882.1	**7**	**0**		05+479	05+491		**10**	1.743488429	12.204	**-2.50**
113	**05+497**	441755.7	3782870.9	**8**	**0**		05+492	05+503		**10**	1.423698375	11.390	**-2.50**
114	**05+552**	441709.0	3782903.9	**30**	**0**		05+538	05+567		**20**	0.965779633	28.973	**-2.50**
115	**05+588**	441674.2	3782891.1	**50**	**0**		05+579	05+597		**20**	0.36235102	18.118	**-2.50**
116	**05+630**	441627.6	3782891.7	**23**	**0**		05+613	05+647		**20**	1.488602739	34.238	**-2.50**
117	**05+690**	441621.6	3782828.3	**100**	**0**		05+671	05+709		**20**	0.38045501	38.046	**-2.50**
118	**05+743**	441597.3	3782781.0	**200**	**0**		05+736	05+750		**20**	0.06818303	13.637	**-2.50**
119	**05+780**	441578.0	3782749.0	**100**	**0**		05+759	05+800		**20**	0.41354463	41.354	**-2.50**
120	**05+822**	441543.1	3782724.4	**70**	**0**		05+809	05+835		**20**	0.378722071	26.511	**-2.50**
121	**05+879**	441478.7	3782709.0	**30**	**0**		05+854	05+905		**20**	1.693004033	50.790	**-2.50**
122	**05+963**	441511.0	3782622.8	**80**	**0**		05+947	05+978		**20**	0.395591637	31.647	**-2.50**
123	**06+008**	441509.2	3782576.6	**50**	**0**		05+996	06+021		**20**	0.50291876	25.146	**-2.50**
124	**06+052**	441529.2	3782536.8	**35**	**0**		06+039	06+065		**20**	0.758156857	26.535	**-2.50**
125	**06+085**	441519.3	3782504.2	**30**	**0**		06+074	06+096		**20**	0.749282	22.478	**-2.50**
126	**06+117**	441533.8	3782474.7	**80**	**0**		06+106	06+129		**20**	0.285024262	22.802	**-2.50**
127	**06+156**	441540.5	3782436.1	**100**	**0**		06+154	06+159		**20**	0.04665085	4.665	**-2.50**
128	**06+178**	441545.3	3782414.4	**30**	**0**		06+169	06+187		**20**	0.6153448	18.460	**-2.50**
129	**06+203**	441535.5	3782391.1	**20**	**0**		06+196	06+210		**20**	0.7207968	14.416	**-2.50**
130	**06+220**	441545.9	3782360.0	**8**	**0**		06+211	06+230		**10**	2.547088	19.103	**-2.50**
131	**06+243**	441556.0	3782396.3	**40**	**0**		06+234	06+252		**20**	0.442812425	17.712	**-2.50**
132	**06+267**	441551.9	3782420.0	**70**	**0**		06+261	06+273		**20**	0.1766851	12.368	**-2.50**
133	**06+294**	441552.1	3782446.7	**150**	**0**		06+285	06+302		**20**	0.115966813	17.395	**-2.50**
134	**06+335**	441547.4	3782488.3	**80**	**0**		06+323	06+347		**20**	0.29753745	23.803	**-2.50**
135	**06+383**	441556.4	3782535.9	**110**	**0**		06+358	06+408		**20**	0.453694845	49.906	**-2.50**
136	**06+435**	441542.4	3782586.9	**50**	**0**		06+422	06+449		**20**	0.54949044	27.475	**-2.50**
137	**06+467**	441551.3	3782617.6	**50**	**0**		06+460	06+474		**20**	0.28629992	14.315	**-2.50**
138	**06+499**	441551.2	3782652.8	**20**	**0**		06+485	06+513		**20**	1.412774	28.255	**-2.50**
139	**06+527**	441582.0	3782657.8	**30**	**0**		06+521	06+533		**20**	0.382383667	11.472	**-2.50**
140	**06+557**	441611.6	3782651.2	**20**	**0**		06+552	06+563		**20**	0.5536708	11.073	**-2.50**
141	**06+584**	441637.2	3782660.0	**50**	**0**		06+577	06+592		**20**	0.29393308	14.697	**-2.50**
142	**06+606**	441655.0	3782672.9	**50**	**0**		06+604	06+608		**20**	0.08327484	4.164	**-2.50**
143	**06+628**	441673.7	3782684.3	**50**	**0**		06+618	06+638		**20**	0.3911465	19.557	**-2.50**
144	**06+658**	441692.3	3782709.4	**20**	**0**		06+646	06+669		**20**	1.15566345	23.113	**-2.50**
145	**06+706**	441741.5	3782698.3	**50**	**0**		06+689	06+723		**20**	0.66838802	33.419	**-2.50**
146	**06+749**	441781.0	3782717.3	**20**	**0**		06+742	06+756		**20**	0.7178726	14.357	**-2.50**
147	**06+769**	441836.0	3782702.1	**9**	**0**		06+757	06+781		**10**	2.791715059	23.730	**-2.50**
148	**06+809**	441759.6	3782696.0	**60**	**0**		06+795	06+824		**20**	0.484776633	29.087	**-2.50**
149	**06+845**	441729.5	3782676.9	**100**	**0**		06+828	06+861		**20**	0.33627639	33.628	**-2.50**
150	**06+898**	441695.9	3782634.5	**120**	**0**		06+882	06+915		**20**	0.280658483	33.679	**-2.50**
151	**06+940**	441661.7	3782610.1	**300**	**0**		06+932	06+948		**20**	0.054910397	16.473	**-2.50**
152	**06+965**	441642.0	3782594.3	**50**	**0**		06+958	06+973		**20**	0.31168568	15.584	**-2.50**
153	**07+013**	441591.9	3782575.2	**22**	**0**		06+994	07+031		**20**	1.682613318	37.017	**-2.50**
154	**07+045**	441609.6	3782540.9	**50**	**0**		07+042	07+049		**20**	0.14331622	7.166	**-2.50**
155	**07+071**	441617.8	3782516.9	**50**	**0**		07+061	07+080		**20**	0.38380788	19.190	**-2.50**
156	**07+116**	441649.5	3782480.5	**50**	**0**		07+091	07+142		**20**	1.01208018	50.604	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
157	**07+191**	441626.7	3782405.9	**70**	**0**		07+165	07+216		**20**	0.725410114	50.779	**-2.50**
158	**07+259**	441655.7	3782342.4	**25**	**0**		07+247	07+270		**20**	0.88908936	22.227	**-2.50**
159	**07+284**	441643.8	3782318.4	**10**	**0**		07+280	07+289		**10**	0.8543486	8.543	**-2.50**
160	**07+302**	441650.7	3782301.8	**15**	**0**		07+297	07+307		**10**	0.637281733	9.559	**-2.50**
161	**07+317**	441646.9	3782286.9	**15**	**0**		07+314	07+320		**10**	0.425652867	6.385	**-2.50**
162	**07+330**	441649.4	3782273.5	**25**	**0**		07+326	07+335		**20**	0.38683352	9.671	**-2.50**
163	**07+373**	441640.4	3782230.2	**40**	**0**		07+354	07+393		**20**	0.97493805	38.998	**-2.50**
164	**07+414**	441670.0	3782199.7	**50**	**0**		07+407	07+421		**20**	0.27806164	13.903	**-2.50**
165	**07+443**	441684.9	3782172.0	**7**	**0**		07+436	07+449		**10**	1.796806286	12.578	**-2.50**
166	**07+457**	441699.0	3782184.3	**10**	**0**		07+449	07+465		**10**	1.5360079	15.360	**-2.50**
167	**07+517**	441659.0	3782233.3	**27**	**0**		07+503	07+531		**20**	1.040512852	28.094	**-2.50**
168	**07+556**	441673.4	3782271.9	**45**	**0**		07+544	07+568		**20**	0.537215133	24.175	**-2.50**
169	**07+591**	441667.0	3782307.2	**25**	**0**		07+580	07+602		**20**	0.90767828	22.692	**-2.50**
170	**07+641**	441702.6	3782347.2	**35**	**0**		07+622	07+661		**20**	1.087755543	38.071	**-2.50**
171	**07+706**	441668.9	3782436.5	**18**	**0**		07+683	07+728		**10**	2.468953333	44.441	**-2.50**
172	**07+746**	441729.4	3782400.5	**35**	**0**		07+730	07+761		**20**	0.885452229	30.991	**-2.50**
173	**07+795**	441736.8	3782350.5	**45**	**0**		07+783	07+807		**20**	0.541870022	24.384	**-2.50**
174	**07+848**	441770.9	3782309.2	**200**	**0**		07+837	07+859		**20**	0.110632535	22.127	**-2.50**
175	**07+881**	441794.3	3782286.5	**200**	**0**		07+875	07+886		**20**	0.05661815	11.324	**-2.50**
176	**07+916**	441818.4	3782260.4	**40**	**0**		07+903	07+929		**20**	0.650961825	26.038	**-2.50**
177	**07+943**	441820.9	3782233.0	**50**	**0**		07+939	07+947		**20**	0.15632426	7.816	**-2.50**
178	**07+971**	441828.0	3782205.0	**40**	**0**		07+961	07+982		**20**	0.52467695	20.987	**-2.50**
179	**07+996**	441820.2	3782177.2	**10**	**0**		07+987	08+005		**10**	1.7965903	17.966	**-2.50**
180	**08+021**	441849.6	3782175.7	**17**	**0**		08+012	08+030		**10**	1.085143706	18.447	**-2.50**
181	**08+084**	441879.4	3782111.7	**47**	**0**		08+050	08+117		**20**	1.429470128	67.185	**-2.50**
182	**08+194**	441994.7	3782146.7	**75**	**0**		08+159	08+229		**20**	0.93085476	69.814	**-2.50**
183	**08+253**	442015.9	3782205.7	**20**	**0**		08+244	08+263		**20**	0.9157075	18.314	**-2.50**
184	**08+309**	442069.8	3782222.9	**30**	**0**		08+296	08+321		**20**	0.830634667	24.919	**-2.50**
185	**08+367**	442122.6	3782192.7	**45**	**0**		08+347	08+387		**20**	0.877542689	39.489	**-2.50**
186	**08+408**	442162.2	3782207.4	**90**	**0**		08+397	08+419		**20**	0.2393366	21.540	**-2.50**
187	**08+449**	442196.5	3782230.7	**100**	**0**		08+441	08+458		**20**	0.16447652	16.448	**-2.50**
188	**08+473**	442219.4	3782241.2	**22**	**0**		08+461	08+485		**20**	1.091954136	24.023	**-2.50**
189	**08+497**	442239.5	3782225.7	**150**	**0**		08+489	08+506		**20**	0.112203907	16.831	**-2.50**
190	**08+539**	442269.9	3782196.0	**50**	**0**		08+521	08+557		**20**	0.71108956	35.554	**-2.50**
191	**08+583**	442314.3	3782193.3	**200**	**0**		08+578	08+587		**20**	0.048086325	9.617	**-2.50**
192	**08+615**	442352.5	3782192.8	**16**	**0**		08+601	08+630		**10**	1.776016187	28.416	**-2.50**
193	**08+644**	442345.1	3782159.4	**100**	**0**		08+638	08+651		**20**	0.12977502	12.978	**-2.50**
194	**08+690**	442329.4	3782116.2	**150**	**0**		08+675	08+705		**20**	0.19412102	29.118	**-2.50**
195	**08+726**	442321.7	3782066.8	**9**	**0**		08+715	08+737		**10**	2.462847556	22.166	**-2.50**
196	**08+763**	442360.0	3782101.5	**120**	**0**		08+745	08+781		**20**	0.298590717	35.831	**-2.50**
197	**08+828**	442393.5	3782158.2	**130**	**0**		08+813	08+844		**20**	0.243054008	31.597	**-2.50**
198	**08+860**	442417.2	3782182.3	**25**	**0**		08+845	08+875		**20**	1.18955908	29.739	**-2.50**
199	**08+896**	442452.9	3782167.3	**12**	**0**		08+888	08+903		**10**	1.216172083	14.594	**-2.50**
200	**08+919**	442451.9	3782143.3	**200**	**0**		08+913	08+924		**20**	0.05319163	10.638	**-2.50**
201	**08+953**	442452.3	3782109.0	**100**	**0**		08+939	08+967		**20**	0.27571586	27.572	**-2.50**
202	**08+981**	442444.9	3782081.7	**100**	**0**		08+978	08+984		**20**	0.06529598	6.530	**-2.50**
203	**09+007**	442439.8	3782056.2	**100**	**0**		08+999	09+015		**20**	0.15423219	15.423	**-2.50**
204	**09+047**	442426.0	3782018.8	**100**	**0**		09+042	09+052		**20**	0.10569398	10.569	**-2.50**
205	**09+075**	442413.4	3781993.4	**40**	**0**		09+066	09+084		**20**	0.444638475	17.786	**-2.50**
206	**09+093**	442413.2	3781975.0	**50**	**0**		09+088	09+098		**20**	0.20395136	10.198	**-2.50**
207	**09+136**	442403.8	3781932.7	**30**	**0**		09+123	09+149		**20**	0.861406667	25.842	**-2.50**
208	**09+166**	442375.6	3781917.6	**40**	**0**		09+154	09+179		**20**	0.636975175	25.479	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
209	**09+229**	442348.2	3781859.8	**50**	**0**		09+210	09+248		**20**	0.7496174	37.481	**-2.50**
210	**09+278**	442266.2	3781827.2	**9**	**0**		09+266	09+291		**10**	2.789102444	25.102	**-2.50**
211	**09+296**	442321.6	3781828.7	**20**	**0**		09+292	09+299		**20**	0.33830775	6.766	**-2.50**
212	**09+337**	442369.7	3781847.0	**9**	**0**		09+326	09+347		**10**	2.321233333	20.891	**-2.50**
213	**09+359**	442357.6	3781817.3	**50**	**0**		09+349	09+368		**20**	0.37379396	18.690	**-2.50**
214	**09+402**	442328.0	3781786.1	**200**	**0**		09+396	09+407		**20**	0.056306075	11.261	**-2.50**
215	**09+432**	442305.4	3781764.9	**500**	**0**		09+426	09+439		**20**	0.024276686	12.138	**-2.50**
216	**09+471**	442277.7	3781737.5	**20**	**0**		09+461	09+480		**20**	0.96446315	19.289	**-2.50**
217	**09+511**	442284.8	3781696.7	**30**	**0**		09+499	09+522		**20**	0.777143533	23.314	**-2.50**
218	**09+559**	442257.1	3781656.6	**300**	**0**		09+534	09+584		**20**	0.165834377	49.750	**-2.50**
219	**09+637**	442223.6	3781585.3	**105**	**0**		09+608	09+666		**20**	0.550892029	57.844	**-2.50**
220	**09+725**	442233.6	3781496.6	**30**	**0**		09+715	09+735		**20**	0.671627267	20.149	**-2.50**
221	**09+762**	442261.5	3781468.6	**23**	**0**		09+748	09+776		**20**	1.211382217	27.862	**-2.50**
222	**09+815**	442237.8	3781416.5	**65**	**0**		09+785	09+844		**20**	0.906713923	58.936	**-2.50**
223	**09+870**	442172.4	3781400.7	**13**	**0**		09+857	09+884		**10**	2.1458836	26.824	**-2.50**
224	**09+902**	442202.4	3781372.2	**50**	**0**		09+896	09+908		**20**	0.23996358	11.998	**-2.50**
225	**09+929**	442218.2	3781347.6	**10**	**0**		09+921	09+937		**10**	1.5881672	15.882	**-2.50**
226	**09+957**	442242.9	3781364.1	**60**	**0**		09+953	09+961		**20**	0.131153267	7.869	**-2.50**
227	**09+978**	442261.8	3781373.4	**50**	**0**		09+974	09+982		**20**	0.15577264	7.789	**-2.50**
228	**10+011**	442290.3	3781393.5	**25**	**0**		09+999	10+024		**20**	0.99269332	24.817	**-2.50**
229	**10+048**	442325.4	3781379.5	**100**	**0**		10+040	10+056		**20**	0.15465916	15.466	**-2.50**
230	**10+082**	442359.6	3781359.3	**30**	**0**		10+059	10+105		**20**	1.522085333	45.663	**-2.50**
231	**10+118**	442340.3	3781322.7	**100**	**0**		10+113	10+122		**20**	0.09303119	9.303	**-2.50**
232	**10+166**	442313.7	3781281.9	**500**	**0**		10+155	10+178		**20**	0.047149172	23.575	**-2.50**
233	**10+199**	442297.4	3781254.2	**200**	**0**		10+188	10+209		**20**	0.10327083	20.654	**-2.50**
234	**10+256**	442263.5	3781208.1	**100**	**0**		10+236	10+275		**20**	0.38123884	38.124	**-2.50**
235	**10+291**	442233.0	3781189.1	**200**	**0**		10+286	10+296		**20**	0.048558015	9.712	**-2.50**
236	**10+333**	442196.6	3781164.1	**50**	**0**		10+308	10+358		**20**	1.01595834	50.798	**-2.50**
237	**10+376**	442198.9	3781118.6	**50**	**0**		10+372	10+380		**20**	0.15653302	7.827	**-2.50**
238	**10+406**	442195.7	3781088.8	**100**	**0**		10+389	10+423		**20**	0.33868855	33.869	**-2.50**
239	**10+442**	442204.0	3781053.4	**500**	**0**		10+429	10+454		**20**	0.049923672	24.962	**-2.50**
240	**10+471**	442209.3	3781024.2	**40**	**0**		10+460	10+483		**20**	0.559312875	22.373	**-2.50**
241	**10+512**	442237.5	3780993.4	**45**	**0**		10+493	10+530		**20**	0.833996644	37.530	**-2.50**
242	**10+576**	442231.4	3780927.7	**70**	**0**		10+552	10+599		**20**	0.659852714	46.190	**-2.50**
243	**10+616**	442253.8	3780892.5	**100**	**0**		10+610	10+623		**20**	0.13651107	13.651	**-2.50**
244	**10+643**	442271.3	3780871.9	**100**	**0**		10+636	10+651		**20**	0.15061679	15.062	**-2.50**
245	**10+669**	442285.5	3780848.8	**20**	**0**		10+656	10+681		**20**	1.25000345	25.000	**-2.50**
246	**10+701**	442263.4	3780822.3	**30**	**0**		10+692	10+710		**20**	0.589912767	17.697	**-2.50**
247	**10+735**	442259.6	3780787.9	**170**	**0**		10+713	10+757		**20**	0.260662729	44.313	**-2.50**
248	**10+777**	442244.4	3780748.4	**150**	**0**		10+766	10+788		**20**	0.14795546	22.193	**-2.50**
249	**10+827**	442219.5	3780704.5	**80**	**0**		10+805	10+849		**20**	0.5489999	43.920	**-2.50**
250	**10+872**	442221.0	3780658.9	**100**	**0**		10+862	10+883		**20**	0.2085856	20.859	**-2.50**
251	**10+918**	442212.5	3780611.0	**50**	**0**		10+892	10+944		**20**	1.03932786	51.966	**-2.50**
252	**10+961**	442247.3	3780581.2	**70**	**0**		10+946	10+976		**20**	0.425410186	29.779	**-2.50**
253	**11+000**	442285.2	3780570.2	**80**	**0**		10+988	11+013		**20**	0.312858475	25.029	**-2.50**
254	**11+040**	442320.2	3780546.6	**17**	**0**		11+028	11+052		**10**	1.424659353	24.219	**-2.50**
255	**11+089**	442394.3	3780627.5	**12**	**0**		11+072	11+105		**10**	2.836531826	32.620	**-2.50**
256	**11+139**	442348.5	3780529.2	**250**	**0**		11+121	11+156		**20**	0.140546132	35.137	**-2.50**
257	**11+218**	442325.4	3780453.3	**200**	**0**		11+204	11+232		**20**	0.139931565	27.986	**-2.50**
258	**11+270**	442317.2	3780400.8	**80**	**0**		11+246	11+294		**20**	0.601440225	48.115	**-2.50**
259	**11+343**	442349.1	3780334.1	**50**	**0**		11+328	11+358		**20**	0.59147196	29.574	**-2.50**
260	**11+402**	442340.4	3780274.6	**55**	**0**		11+384	11+420		**20**	0.651369473	35.825	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
261	**11+443**	442310.5	3780245.4	**50**	**0**		11+427	11+458		**20**	0.60844602	30.422	**-2.50**
262	**11+489**	442301.7	3780199.1	**200**	**0**		11+463	11+515		**20**	0.257346815	51.469	**-2.50**
263	**11+579**	442258.8	3780109.3	**30**	**0**		11+553	11+605		**20**	1.746058333	52.382	**-2.50**
264	**11+669**	442355.7	3780082.4	**90**	**0**		11+645	11+694		**20**	0.544736189	49.026	**-2.50**
265	**11+710**	442397.8	3780094.3	**20**	**0**		11+697	11+723		**20**	1.2860196	25.720	**-2.50**
266	**11+743**	442417.9	3780062.2	**20**	**0**		11+728	11+757		**20**	1.44731575	28.946	**-2.50**
267	**11+796**	442356.2	3780012.0	**13**	**0**		11+780	11+813		**10**	2.498334154	32.478	**-2.50**
268	**11+843**	442425.7	3780014.7	**50**	**0**		11+838	11+849		**20**	0.21841726	10.921	**-2.50**
269	**11+886**	442467.1	3780025.6	**50**	**0**		11+879	11+893		**20**	0.28080284	14.040	**-2.50**
270	**11+916**	442497.4	3780024.9	**20**	**0**		11+909	11+923		**20**	0.65231975	13.046	**-2.50**
271	**11+945**	442520.8	3780041.9	**50**	**0**		11+938	11+951		**20**	0.25873276	12.937	**-2.50**
272	**11+976**	442550.5	3780053.5	**100**	**0**		11+965	11+988		**20**	0.22826042	22.826	**-2.50**
273	**12+015**	442616.9	3780098.8	**10**	**0**		12+001	12+029		**10**	2.7837093	27.837	**-2.50**
274	**12+055**	442570.3	3780032.7	**50**	**0**		12+046	12+064		**20**	0.35649718	17.825	**-2.50**
275	**12+098**	442559.2	3779990.5	**200**	**0**		12+093	12+104		**20**	0.054111875	10.822	**-2.50**
276	**12+130**	442552.7	3779958.8	**50**	**0**		12+114	12+147		**20**	0.65847968	32.924	**-2.50**
277	**12+176**	442517.5	3779928.7	**120**	**0**		12+164	12+188		**20**	0.201442858	24.173	**-2.50**
278	**12+210**	442496.7	3779901.9	**200**	**0**		12+193	12+226		**20**	0.161590455	32.318	**-2.50**
279	**12+249**	442468.1	3779875.4	**100**	**0**		12+242	12+255		**20**	0.13347626	13.348	**-2.50**
280	**12+284**	442445.4	3779847.8	**200**	**0**		12+272	12+296		**20**	0.11799008	23.598	**-2.50**
281	**12+328**	442414.1	3779817.7	**500**	**0**		12+316	12+340		**20**	0.047492774	23.746	**-2.50**
282	**12+393**	442368.6	3779769.9	**140**	**0**		12+369	12+418		**20**	0.345014629	48.302	**-2.50**
283	**12+451**	442315.8	3779743.2	**25**	**0**		12+438	12+464		**20**	1.02358776	25.590	**-2.50**
284	**12+493**	442311.8	3779694.3	**23**	**0**		12+473	12+512		**20**	1.674645957	38.517	**-2.50**
285	**12+572**	442224.8	3779710.5	**65**	**0**		12+538	12+605		**20**	1.036285031	67.359	**-2.50**
286	**12+636**	442179.7	3779659.0	**60**	**0**		12+626	12+647		**20**	0.363344983	21.801	**-2.50**
287	**12+669**	442168.4	3779628.6	**30**	**0**		12+664	12+674		**20**	0.333345867	10.000	**-2.50**
288	**12+716**	442124.8	3779575.6	**20**	**20**	12+684	12+704	12+728	12+748	**10**	2.267848769	24.223	**-2.50**
289	**12+792**	442222.5	3779576.4	**70**	**0**		12+775	12+809		**20**	0.489460086	34.262	**-2.50**
290	**12+827**	442254.7	3779559.6	**35**	**0**		12+813	12+841		**20**	0.794432743	27.805	**-2.50**
291	**12+861**	442264.8	3779526.4	**65**	**0**		12+849	12+873		**20**	0.373423215	24.273	**-2.50**
292	**12+898**	442261.6	3779485.7	**20**	**0**		12+884	12+913		**20**	1.44163135	28.833	**-2.50**
293	**12+923**	442289.0	3779480.0	**100**	**0**		12+916	12+930		**20**	0.13921492	13.921	**-2.50**
294	**12+967**	442335.6	3779476.8	**20**	**20**	12+944	12+964	12+970	12+990	**20**	1.33657465	6.731	**-2.50**
295	**13+005**	442342.4	3779436.0	**200**	**0**		12+998	13+012		**20**	0.07010212	14.020	**-2.50**
296	**13+098**	442365.4	3779340.3	**80**	**55**	13+026	13+081	13+114	13+169	**20**	1.10806455	33.645	**-2.50**
297	**13+174**	442445.3	3779321.9	**100**	**0**		13+171	13+176		**20**	0.05110467	5.110	**-2.50**
298	**13+217**	442487.0	3779310.0	**200**	**20**	13+187	13+207	13+227	13+247	**20**	0.20014183	20.028	**-2.50**
299	**13+272**	442536.5	3779284.4	**500**	**0**		13+262	13+283		**20**	0.04043141	20.216	**-2.50**
300	**13+328**	442586.4	3779261.0	**500**	**0**		13+306	13+349		**20**	0.084551378	42.276	**-2.50**
301	**13+386**	442637.5	3779231.6	**500**	**0**		13+357	13+416		**20**	0.116301626	58.151	**-2.50**
302	**13+460**	442705.3	3779202.4	**200**	**20**	13+426	13+446	13+474	13+494	**20**	0.2394982	27.900	**-2.50**
303	**13+577**	442820.4	3779183.1	**150**	**0**		13+561	13+592		**20**	0.20568184	30.852	**-2.50**
304	**13+626**	442866.6	3779165.1	**200**	**20**	13+600	13+620	13+632	13+652	**20**	0.15987129	11.974	**-2.50**
305	**13+694**	442932.8	3779150.8	**500**	**0**		13+684	13+704		**20**	0.03965402	19.827	**-2.50**
306	**13+778**	443013.9	3779130.0	**450**	**0**		13+745	13+810		**20**	0.143387524	64.524	**-2.50**
307	**13+847**	443083.0	3779122.5	**150**	**0**		13+832	13+862		**20**	0.199817307	29.973	**-2.50**
308	**13+915**	443148.2	3779101.7	**380**	**0**		13+864	13+966		**20**	0.266000137	101.080	**-2.50**
309	**14+017**	443234.2	3779046.1	**230**	**20**	13+969	13+989	14+044	14+064	**20**	0.325073957	54.767	**-2.50**
310	**14+102**	443316.8	3779025.0	**400**	**15**	14+072	14+087	14+116	14+131	**20**	0.111671795	29.669	**-2.50**
311	**14+170**	443384.9	3779015.6	**150**	**0**		14+149	14+192		**20**	0.288396447	43.259	**-2.50**
312	**14+212**	443423.3	3778998.2	**100**	**0**		14+207	14+218		**20**	0.11024367	11.024	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
313	**14+251**	443460.5	3778986.1	**150**	**0**		14+234	14+268		**20**	0.228790913	34.319	**-2.50**
314	**14+302**	443503.7	3778959.9	**500**	**0**		14+282	14+322		**20**	0.079416392	39.708	**-2.50**
315	**14+369**	443564.2	3778929.6	**90**	**0**		14+349	14+389		**20**	0.434000889	39.060	**-2.50**
316	**14+401**	443584.8	3778903.7	**30**	**0**		14+392	14+411		**20**	0.6581472	19.744	**-2.50**
317	**14+437**	443585.2	3778867.0	**30**	**0**		14+423	14+450		**20**	0.918935533	27.568	**-2.50**
318	**14+479**	443620.4	3778840.9	**120**	**0**		14+464	14+494		**20**	0.246388242	29.567	**-2.50**
319	**14+531**	443669.5	3778820.6	**90**	**0**		14+502	14+560		**20**	0.647472256	58.273	**-2.50**
320	**14+597**	443703.8	3778762.3	**55**	**0**		14+579	14+616		**20**	0.672890964	37.009	**-2.50**
321	**14+632**	443737.3	3778749.4	**50**	**0**		14+621	14+643		**20**	0.4396952	21.985	**-2.50**
322	**14+715**	443794.6	3778689.7	**800**	**0**		14+686	14+744		**20**	0.072801386	58.241	**-2.50**
323	**14+792**	443852.1	3778637.9	**500**	**0**		14+784	14+800		**20**	0.031654272	15.827	**-2.50**
324	**14+815**	443869.7	3778623.0	**500**	**0**		14+810	14+820		**20**	0.01988647	9.943	**-2.50**
325	**14+869**	443910.3	3778587.2	**1200**	**0**		14+863	14+875		**20**	0.009856497	11.828	**-2.50**
326	**14+967**	443984.7	3778523.2	**500**	**0**		14+961	14+974		**20**	0.026324164	13.162	**-2.50**
327	**15+011**	444017.1	3778493.6	**200**	**0**		15+007	15+016		**20**	0.043735715	8.747	**-2.50**
328	**15+043**	444041.4	3778473.5	**200**	**0**		15+034	15+051		**20**	0.08498745	16.997	**-2.50**
329	**15+113**	444092.1	3778423.4	**150**	**0**		15+067	15+159		**20**	0.613043113	91.956	**-2.50**
330	**15+195**	444175.1	3778409.4	**170**	**0**		15+180	15+211		**20**	0.182092171	30.956	**-2.50**
331	**15+249**	444225.5	3778391.2	**150**	**15**	15+228	15+243	15+255	15+270	**20**	0.17848368	11.773	**-2.50**
332	**15+304**	444279.5	3778381.9	**100**	**15**	15+287	15+302	15+305	15+320	**20**	0.18047768	3.048	**-2.50**
333	**15+356**	444328.5	3778364.0	**500**	**0**		15+347	15+364		**20**	0.035324448	17.662	**-2.50**
334	**15+394**	444364.6	3778352.2	**200**	**0**		15+389	15+398		**20**	0.048261035	9.652	**-2.50**
335	**15+424**	444393.6	3778341.2	**60**	**0**		15+409	15+439		**20**	0.500817767	30.049	**-2.50**
336	**15+463**	444432.4	3778346.6	**30**	**0**		15+454	15+472		**20**	0.581851767	17.456	**-2.50**
337	**15+497**	444458.5	3778369.5	**200**	**0**		15+489	15+505		**20**	0.07937594	15.875	**-2.50**
338	**15+532**	444482.6	3778394.2	**125**	**15**	15+512	15+527	15+537	15+552	**20**	0.200583568	10.073	**-2.50**
339	**15+586**	444527.4	3778424.7	**500**	**0**		15+580	15+592		**20**	0.025139828	12.570	**-2.50**
340	**15+627**	444560.4	3778448.5	**200**	**0**		15+617	15+637		**20**	0.098862985	19.773	**-2.50**
341	**15+683**	444609.7	3778477.0	**160**	**0**		15+654	15+713		**20**	0.370875887	59.340	**-2.50**
342	**15+737**	444663.0	3778485.2	**150**	**0**		15+728	15+746		**20**	0.123479887	18.522	**-2.50**
343	**15+768**	444694.3	3778486.2	**50**	**0**		15+758	15+778		**20**	0.38881026	19.441	**-2.50**
344	**15+789**	444713.3	3778494.6	**100**	**0**		15+784	15+793		**20**	0.0836182	8.362	**-2.50**
345	**15+821**	444741.3	3778510.0	**120**	**0**		15+811	15+830		**20**	0.154777358	18.573	**-2.50**
346	**15+847**	444765.8	3778518.9	**100**	**0**		15+841	15+852		**20**	0.11251382	11.251	**-2.50**
347	**15+904**	444818.6	3778545.0	**90**	**0**		15+874	15+935		**20**	0.678413789	61.057	**-2.50**
348	**15+955**	444868.8	3778533.9	**100**	**0**		15+951	15+958		**20**	0.07091045	7.091	**-2.50**
349	**15+992**	444905.5	3778528.5	**300**	**0**		15+972	16+011		**20**	0.128811407	38.643	**-2.50**
350	**16+057**	444971.0	3778527.3	**150**	**15**	16+033	16+048	16+066	16+081	**20**	0.215469553	17.320	**-2.50**
351	**16+126**	445039.5	3778510.9	**100**	**20**	16+083	16+103	16+149	16+169	**20**	0.65427697	45.428	**-2.50**
352	**16+194**	445102.6	3778539.2	**200**	**0**		16+185	16+203		**20**	0.08781986	17.564	**-2.50**
353	**16+236**	445142.6	3778553.0	**40**	**0**		16+225	16+247		**20**	0.565371	22.615	**-2.50**
354	**16+263**	445159.8	3778574.5	**30**	**0**		16+257	16+269		**20**	0.3813359	11.440	**-2.50**
355	**16+286**	445200.2	3778597.4	**11**	**0**		16+273	16+300		**10**	2.58486619	27.141	**-2.50**
356	**16+341**	445163.2	3778529.3	**170**	**0**		16+321	16+360		**20**	0.234217588	39.817	**-2.50**
357	**16+391**	445150.1	3778480.6	**100**	**0**		16+380	16+401		**20**	0.20968295	20.968	**-2.50**
358	**16+430**	445132.0	3778445.3	**150**	**0**		16+421	16+439		**20**	0.11987662	17.981	**-2.50**
359	**16+473**	445108.0	3778409.7	**25**	**0**		16+462	16+483		**20**	0.87034992	21.759	**-2.50**
360	**16+497**	445114.9	3778385.6	**25**	**0**		16+488	16+505		**20**	0.67224816	16.806	**-2.50**
361	**16+568**	445086.0	3778316.1	**42**	**0**		16+544	16+593		**20**	1.14982881	48.293	**-2.50**
362	**16+609**	445117.0	3778283.1	**15**	**0**		16+598	16+619		**10**	1.375988467	20.640	**-2.50**
363	**16+626**	445105.7	3778267.3	**15**	**0**		16+621	16+631		**10**	0.699807867	10.497	**-2.50**
364	**16+647**	445085.3	3778262.1	**40**	**0**		16+637	16+657		**20**	0.501511825	20.060	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
365	**16+673**	445066.0	3778244.0	**100**	**0**		16+662	16+684		**20**	0.21519366	21.519	**-2.50**
366	**16+706**	445046.7	3778216.1	**30**	**0**		16+697	16+716		**20**	0.627804333	18.834	**-2.50**
367	**16+738**	445015.4	3778205.0	**20**	**0**		16+726	16+749		**20**	1.14413645	22.883	**-2.50**
368	**16+759**	445013.5	3778182.7	**50**	**0**		16+751	16+766		**20**	0.29626952	14.813	**-2.50**
369	**16+783**	445018.6	3778158.5	**40**	**0**		16+779	16+788		**20**	0.208752025	8.350	**-2.50**
370	**16+810**	445018.6	3778131.5	**30**	**0**		16+801	16+819		**20**	0.612651933	18.380	**-2.50**
371	**16+843**	445037.8	3778104.1	**100**	**0**		16+837	16+850		**20**	0.12906949	12.907	**-2.50**
372	**16+869**	445050.8	3778079.4	**20**	**0**		16+856	16+882		**20**	1.3113525	26.227	**-2.50**
373	**16+932**	444997.8	3778030.8	**20**	**0**		16+914	16+949		**20**	1.78148305	35.630	**-2.50**
374	**16+956**	445023.4	3778012.7	**200**	**0**		16+951	16+960		**20**	0.04480921	8.962	**-2.50**
375	**16+989**	445050.9	3777991.3	**30**	**0**		16+972	17+006		**20**	1.130229867	33.907	**-2.50**
376	**17+031**	445090.3	3778011.2	**300**	**0**		17+023	17+038		**20**	0.05028117	15.084	**-2.50**
377	**17+079**	445132.4	3778035.2	**120**	**0**		17+052	17+106		**20**	0.449842975	53.981	**-2.50**
378	**17+160**	445266.6	3778230.5	**21**	**0**		17+129	17+190		**20**	2.916933	61.256	**-2.50**
379	**17+217**	445188.2	3778032.8	**200**	**0**		17+210	17+224		**20**	0.069423445	13.885	**-2.50**
380	**17+274**	445170.7	3777977.7	**200**	**20**	17+233	17+253	17+296	17+316	**20**	0.312205195	42.441	**-2.50**
381	**17+361**	445119.6	3777906.3	**100**	**0**		17+337	17+386		**20**	0.49583658	49.584	**-2.50**
382	**17+488**	445103.8	3777780.5	**50**	**0**		17+481	17+494		**20**	0.261202	13.060	**-2.50**
383	**17+540**	445110.9	3777728.5	**150**	**0**		17+518	17+561		**20**	0.28666052	42.999	**-2.50**
384	**17+588**	445103.7	3777680.5	**100**	**0**		17+577	17+600		**20**	0.23411132	23.411	**-2.50**
385	**17+680**	445111.4	3777589.1	**50**	**0**		17+666	17+694		**20**	0.55742192	27.871	**-2.50**
386	**17+732**	445142.9	3777546.9	**100**	**0**		17+721	17+743		**20**	0.21659894	21.660	**-2.50**
387	**17+791**	445168.1	3777491.1	**80**	**0**		17+757	17+825		**20**	0.848318137	67.865	**-2.50**
388	**17+859**	445139.2	3777427.0	**200**	**0**		17+855	17+863		**20**	0.04118227	8.236	**-2.50**
389	**17+896**	445125.3	3777392.2	**100**	**0**		17+886	17+907		**20**	0.21427881	21.428	**-2.50**
390	**17+948**	445096.0	3777349.2	**200**	**0**		17+943	17+953		**20**	0.0500119	10.002	**-2.50**
391	**18+003**	445063.0	3777305.4	**200**	**0**		17+985	18+021		**20**	0.1772289	35.446	**-2.50**
392	**18+054**	445039.8	3777259.8	**200**	**0**		18+050	18+059		**20**	0.04171239	8.342	**-2.50**
393	**18+077**	445028.5	3777239.6	**150**	**0**		18+068	18+087		**20**	0.12400042	18.600	**-2.50**
394	**18+147**	445000.2	3777170.3	**20**	**0**		18+130	18+164		**20**	1.66917485	33.383	**-2.50**
395	**18+178**	445034.9	3777160.0	**100**	**0**		18+168	18+188		**20**	0.20158644	20.159	**-2.50**
396	**18+229**	445086.2	3777155.5	**200**	**0**		18+225	18+233		**20**	0.03772485	7.545	**-2.50**
397	**18+275**	445132.6	3777149.7	**50**	**0**		18+259	18+291		**20**	0.63557132	31.779	**-2.50**
398	**18+357**	445203.9	3777189.6	**500**	**0**		18+347	18+366		**20**	0.036633216	18.317	**-2.50**
399	**18+445**	445283.5	3777230.5	**230**	**0**		18+397	18+493		**20**	0.416486	95.792	**-2.50**
400	**18+526**	445364.6	3777235.1	**150**	**0**		18+512	18+540		**20**	0.1837969	27.570	**-2.50**
401	**18+568**	445406.8	3777229.8	**50**	**0**		18+564	18+572		**20**	0.15000152	7.500	**-2.50**
402	**18+596**	445434.8	3777230.5	**50**	**0**		18+579	18+612		**20**	0.65963308	32.982	**-2.50**
403	**18+651**	445478.4	3777265.9	**50**	**0**		18+638	18+664		**20**	0.50321126	25.161	**-2.50**
404	**18+693**	445520.7	3777273.6	**65**	**0**		18+678	18+709		**20**	0.472557523	30.716	**-2.50**
405	**18+732**	445567.3	3777309.2	**8**	**0**		18+722	18+743		**10**	2.6217965	20.974	**-2.50**
406	**18+747**	445553.8	3777277.1	**10**	**0**		18+744	18+750		**10**	0.5870429	5.870	**-2.50**
407	**18+780**	445526.2	3777258.8	**200**	**0**		18+772	18+789		**20**	0.08649319	17.299	**-2.50**
408	**18+818**	445493.0	3777240.8	**50**	**0**		18+806	18+829		**20**	0.45563262	22.782	**-2.50**
409	**18+858**	445466.3	3777203.0	**35**	**0**		18+832	18+884		**20**	1.4725244	51.538	**-2.50**
410	**18+904**	445505.2	3777169.2	**50**	**0**		18+896	18+911		**20**	0.288306	14.415	**-2.50**
411	**18+932**	445520.4	3777145.5	**80**	**0**		18+922	18+942		**20**	0.2465799	19.726	**-2.50**
412	**18+977**	445553.3	3777114.4	**60**	**0**		18+963	18+990		**20**	0.463080967	27.785	**-2.50**
413	**19+013**	445565.9	3777080.1	**200**	**0**		18+998	19+028		**20**	0.147645075	29.529	**-2.50**
414	**19+068**	445606.8	3777005.1	**25**	**0**		19+039	19+097		**20**	2.34607264	58.652	**-2.50**
415	**19+120**	445527.7	3777027.6	**100**	**0**		19+113	19+128		**20**	0.1512442	15.124	**-2.50**
416	**19+180**	445466.7	3777055.3	**20**	**0**		19+163	19+198		**20**	1.7662104	35.324	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
417	**19+238**	445450.9	3776988.6	**33**	**0**		19+216	19+260		**20**	1.351161727	44.588	**-2.50**
418	**19+294**	445504.8	3776962.4	**150**	**0**		19+283	19+305		**20**	0.14445406	21.668	**-2.50**
419	**19+328**	445532.9	3776943.4	**100**	**0**		19+322	19+334		**20**	0.11725548	11.726	**-2.50**
420	**19+378**	445577.2	3776920.4	**100**	**0**		19+371	19+385		**20**	0.13870227	13.870	**-2.50**
421	**19+412**	445606.7	3776899.4	**50**	**0**		19+391	19+434		**20**	0.84402404	42.201	**-2.50**
422	**19+451**	445611.1	3776859.3	**100**	**0**		19+443	19+459		**20**	0.15972001	15.972	**-2.50**
423	**19+490**	445621.5	3776821.7	**80**	**0**		19+478	19+503		**20**	0.3150844	25.207	**-2.50**
424	**19+524**	445619.9	3776788.4	**70**	**0**		19+515	19+532		**20**	0.24963	17.474	**-2.50**
425	**19+551**	445625.4	3776761.7	**100**	**0**		19+542	19+560		**20**	0.18080847	18.081	**-2.50**
426	**19+575**	445626.0	3776737.2	**200**	**0**		19+565	19+585		**20**	0.099818305	19.964	**-2.50**
427	**19+660**	445636.3	3776653.2	**100**	**0**		19+642	19+677		**20**	0.35585665	35.586	**-2.50**
428	**19+708**	445659.1	3776609.3	**35**	**0**		19+697	19+720		**20**	0.646935114	22.643	**-2.50**
429	**19+745**	445653.0	3776573.2	**50**	**0**		19+741	19+748		**20**	0.14155498	7.078	**-2.50**
430	**19+777**	445652.1	3776541.1	**80**	**0**		19+764	19+790		**20**	0.324317663	25.945	**-2.50**
431	**19+821**	445636.9	3776499.7	**350**	**0**		19+792	19+849		**20**	0.163766806	57.318	**-2.50**
432	**19+902**	445596.2	3776427.7	**55**	**0**		19+882	19+923		**20**	0.747145255	41.093	**-2.50**
433	**19+937**	445562.1	3776416.9	**120**	**0**		19+925	19+949		**20**	0.197079925	23.650	**-2.50**
434	**19+968**	445534.3	3776401.5	**20**	**0**		19+958	19+978		**20**	0.99297155	19.859	**-2.50**
435	**20+003**	445493.7	3776423.0	**12**	**0**		19+990	20+016		**10**	2.16016275	25.922	**-2.50**
436	**20+035**	445498.0	3776380.9	**35**	**0**		20+018	20+052		**20**	0.955713943	33.450	**-2.50**
437	**20+070**	445530.2	3776362.7	**30**	**0**		20+057	20+082		**20**	0.831380933	24.941	**-2.50**
438	**20+096**	445536.4	3776335.9	**50**	**0**		20+092	20+100		**20**	0.16404298	8.202	**-2.50**
439	**20+129**	445548.7	3776306.0	**50**	**0**		20+122	20+135		**20**	0.26122768	13.061	**-2.50**
440	**20+145**	445550.8	3776290.0	**20**	**0**		20+139	20+150		**20**	0.59284595	11.857	**-2.50**
441	**20+161**	445542.0	3776272.4	**10**	**0**		20+152	20+170		**10**	1.7633665	17.634	**-2.50**
442	**20+186**	445518.7	3776290.3	**16**	**0**		20+178	20+194		**10**	1.054336812	16.869	**-2.50**
443	**20+234**	445471.6	3776270.5	**19**	**0**		20+222	20+246		**10**	1.279739579	24.315	**-2.50**
444	**20+289**	445477.7	3776213.6	**120**	**20**	20+258	20+278	20+300	20+320	**20**	0.347256508	21.671	**-2.50**
445	**20+331**	445467.6	3776172.5	**200**	**0**		20+327	20+336		**20**	0.04220618	8.441	**-2.50**
446	**20+347**	445463.3	3776157.7	**200**	**0**		20+340	20+353		**20**	0.0660389	13.208	**-2.50**
447	**20+378**	445456.7	3776127.6	**200**	**0**		20+366	20+389		**20**	0.11582386	23.165	**-2.50**
448	**20+435**	445437.2	3776071.2	**55**	**0**		20+410	20+460		**20**	0.915872091	50.373	**-2.50**
449	**20+483**	445389.8	3776055.3	**20**	**0**		20+473	20+492		**20**	0.92054285	18.411	**-2.50**
450	**20+524**	445376.0	3776014.8	**65**	**0**		20+508	20+541		**20**	0.500819031	32.553	**-2.50**
451	**20+560**	445349.3	3775990.3	**130**	**0**		20+542	20+578		**20**	0.275437415	35.807	**-2.50**
452	**20+593**	445319.6	3775975.3	**500**	**0**		20+583	20+604		**20**	0.040757014	20.379	**-2.50**
453	**20+639**	445276.9	3775955.9	**40**	**0**		20+621	20+657		**20**	0.8759968	35.040	**-2.50**
454	**20+698**	445260.9	3775897.6	**100**	**0**		20+689	20+707		**20**	0.18047652	18.048	**-2.50**
455	**20+732**	445257.9	3775863.7	**100**	**0**		20+717	20+747		**20**	0.29469659	29.470	**-2.50**
456	**20+772**	445242.9	3775826.6	**100**	**0**		20+764	20+780		**20**	0.15365284	15.365	**-2.50**
457	**20+820**	445232.1	3775780.1	**100**	**0**		20+809	20+831		**20**	0.21556983	21.557	**-2.50**
458	**20+870**	445210.4	3775734.5	**130**	**0**		20+840	20+899		**20**	0.452961438	58.885	**-2.50**
459	**20+964**	445136.3	3775675.5	**100**	**0**		20+957	20+971		**20**	0.13512167	13.512	**-2.50**
460	**20+985**	445118.5	3775664.8	**20**	**0**		20+981	20+988		**20**	0.3807978	7.616	**-2.50**
461	**21+001**	445092.8	3775631.1	**8**	**0**		20+991	21+011		**10**	2.732190933	20.491	**-2.50**
462	**21+019**	445131.0	3775652.5	**100**	**0**		21+016	21+022		**20**	0.06610633	6.611	**-2.50**
463	**21+043**	445150.8	3775665.4	**500**	**0**		21+039	21+046		**20**	0.012565304	6.283	**-2.50**
464	**21+077**	445180.3	3775683.9	**250**	**0**		21+055	21+100		**20**	0.177865392	44.466	**-2.50**
465	**21+122**	445221.5	3775700.7	**200**	**0**		21+112	21+132		**20**	0.099464435	19.893	**-2.50**
466	**21+159**	445255.3	3775718.5	**30**	**0**		21+148	21+171		**20**	0.7487332	22.462	**-2.50**
467	**21+183**	445280.9	3775711.5	**10**	**0**		21+175	21+191		**10**	1.6358631	16.359	**-2.50**
468	**21+248**	445259.0	3775647.2	**150**	**0**		21+236	21+261		**20**	0.16706318	25.059	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
469	**21+318**	445225.8	3775586.0	**300**	**0**		21+291	21+345		**20**	0.181727727	54.518	**-2.50**
470	**21+360**	445199.6	3775553.4	**50**	**0**		21+355	21+364		**20**	0.17734148	8.867	**-2.50**
471	**21+393**	445174.0	3775531.2	**90**	**0**		21+377	21+410		**20**	0.363186889	32.687	**-2.50**
472	**21+438**	445152.7	3775491.5	**70**	**0**		21+431	21+445		**20**	0.199682257	13.978	**-2.50**
473	**21+470**	445143.5	3775460.9	**100**	**0**		21+465	21+475		**20**	0.09998922	9.999	**-2.50**
474	**21+500**	445132.1	3775433.4	**200**	**0**		21+485	21+515		**20**	0.15136122	30.272	**-2.50**
475	**21+534**	445114.1	3775403.6	**100**	**0**		21+525	21+544		**20**	0.19016642	19.017	**-2.50**
476	**21+578**	445098.9	3775362.4	**150**	**0**		21+569	21+587		**20**	0.120700847	18.105	**-2.50**
477	**21+618**	445089.6	3775323.4	**200**	**0**		21+599	21+637		**20**	0.189493775	37.899	**-2.50**
478	**21+705**	445053.7	3775243.5	**170**	**0**		21+665	21+745		**20**	0.472374912	80.304	**-2.50**
479	**21+773**	445057.2	3775174.9	**150**	**0**		21+762	21+784		**20**	0.14486264	21.729	**-2.50**
480	**21+815**	445065.2	3775134.1	**100**	**0**		21+801	21+828		**20**	0.26686954	26.687	**-2.50**
481	**21+853**	445062.5	3775096.0	**70**	**0**		21+840	21+865		**20**	0.357343214	25.014	**-2.50**
482	**21+887**	445072.2	3775062.7	**90**	**0**		21+878	21+896		**20**	0.201228833	18.111	**-2.50**
483	**21+942**	445076.9	3775007.5	**300**	**0**		21+925	21+960		**20**	0.11939786	35.819	**-2.50**
484	**21+999**	445088.3	3774952.1	**500**	**0**		21+978	22+020		**20**	0.085387676	42.694	**-2.50**
485	**22+106**	445100.9	3774845.9	**250**	**20**	22+066	22+086	22+125	22+145	**20**	0.236921692	39.230	**-2.50**
486	**22+185**	445128.6	3774771.1	**300**	**0**		22+165	22+206		**20**	0.13731494	41.194	**-2.50**
487	**22+281**	445149.2	3774677.9	**200**	**0**		22+273	22+288		**20**	0.074761475	14.952	**-2.50**
488	**22+327**	445155.8	3774632.2	**200**	**0**		22+320	22+334		**20**	0.072555155	14.511	**-2.50**
489	**22+377**	445166.6	3774583.1	**80**	**0**		22+364	22+390		**20**	0.3277063	26.217	**-2.50**
490	**22+407**	445163.2	3774553.2	**200**	**0**		22+401	22+413		**20**	0.056613685	11.323	**-2.50**
491	**22+461**	445160.2	3774498.8	**350**	**0**		22+434	22+489		**20**	0.158881869	55.609	**-2.50**
492	**22+505**	445150.9	3774456.2	**200**	**0**		22+495	22+515		**20**	0.099842375	19.968	**-2.50**
493	**22+558**	445144.8	3774403.3	**400**	**0**		22+534	22+582		**20**	0.118799488	47.520	**-2.50**
494	**22+647**	445124.3	3774317.3	**500**	**0**		22+629	22+664		**20**	0.069151118	34.576	**-2.50**
495	**22+741**	445108.8	3774223.7	**500**	**0**		22+723	22+760		**20**	0.07428026	37.140	**-2.50**
496	**22+818**	445090.8	3774149.7	**100**	**0**		22+808	22+828		**20**	0.20043386	20.043	**-2.50**
497	**22+850**	445077.1	3774120.5	**500**	**0**		22+841	22+858		**20**	0.034445112	17.223	**-2.50**
498	**22+901**	445057.1	3774073.8	**200**	**0**		22+879	22+922		**20**	0.21297719	42.595	**-2.50**
499	**22+951**	445047.6	3774024.6	**500**	**0**		22+943	22+958		**20**	0.030644778	15.322	**-2.50**
500	**23+038**	445028.3	3773939.3	**200**	**0**		23+030	23+046		**20**	0.08089005	16.178	**-2.50**
501	**23+076**	445022.9	3773901.3	**200**	**0**		23+070	23+083		**20**	0.06139661	12.279	**-2.50**
502	**23+126**	445013.0	3773853.1	**300**	**0**		23+111	23+140		**20**	0.09888329	29.665	**-2.50**
503	**23+160**	445009.4	3773818.7	**100**	**0**		23+155	23+166		**20**	0.10750721	10.751	**-2.50**
504	**23+223**	444996.2	3773757.1	**300**	**0**		23+194	23+252		**20**	0.195681057	58.704	**-2.50**
505	**23+324**	444994.6	3773656.2	**200**	**0**		23+303	23+344		**20**	0.2033048	40.661	**-2.50**
506	**23+361**	444986.4	3773619.3	**500**	**0**		23+352	23+371		**20**	0.03686537	18.433	**-2.50**
507	**23+394**	444978.1	3773587.5	**500**	**0**		23+381	23+407		**20**	0.051588934	25.794	**-2.50**
508	**23+431**	444966.9	3773552.5	**75**	**0**		23+411	23+450		**20**	0.516594173	38.745	**-2.50**
509	**23+471**	444975.5	3773512.3	**200**	**0**		23+461	23+481		**20**	0.100088545	20.018	**-2.50**
510	**23+519**	444990.1	3773466.4	**70**	**0**		23+499	23+539		**20**	0.560624143	39.244	**-2.50**
511	**23+579**	444975.1	3773407.9	**300**	**0**		23+570	23+587		**20**	0.05669201	17.008	**-2.50**
512	**23+623**	444961.7	3773365.5	**500**	**0**		23+623	23+624		**20**	0.00278454	1.392	**-2.50**
513	**23+679**	444945.0	3773312.7	**300**	**0**		23+661	23+696		**20**	0.116625743	34.988	**-2.50**
514	**23+739**	444920.4	3773257.8	**200**	**0**		23+723	23+755		**20**	0.16026492	32.053	**-2.50**
515	**23+827**	444897.3	3773171.8	**200**	**0**		23+791	23+864		**20**	0.364342925	72.869	**-2.50**
516	**23+894**	444857.8	3773117.2	**200**	**0**		23+881	23+907		**20**	0.129754095	25.951	**-2.50**
517	**23+949**	444820.5	3773077.5	**300**	**0**		23+934	23+963		**20**	0.09632934	28.899	**-2.50**
518	**23+980**	444801.1	3773052.5	**500**	**0**		23+971	23+990		**20**	0.037591472	18.796	**-2.50**
519	**24+022**	444774.5	3773020.8	**200**	**0**		24+012	24+032		**20**	0.102915735	20.583	**-2.50**
520	**24+054**	444751.3	3772998.2	**70**	**0**		24+041	24+067		**20**	0.364190586	25.493	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
521	**24+081**	444739.9	3772973.8	**500**	**0**		24+074	24+087		**20**	0.02576752	12.884	**-2.50**
522	**24+112**	444727.3	3772944.7	**100**	**0**		24+094	24+130		**20**	0.35797403	35.797	**-2.50**
523	**24+162**	444724.7	3772894.6	**500**	**0**		24+152	24+172		**20**	0.03967412	19.837	**-2.50**
524	**24+221**	444719.3	3772835.9	**100**	**0**		24+207	24+235		**20**	0.285191	28.519	**-2.50**
525	**24+267**	444702.5	3772793.5	**70**	**0**		24+255	24+278		**20**	0.340776614	23.854	**-2.50**
526	**24+299**	444701.3	3772760.6	**150**	**0**		24+288	24+310		**20**	0.145242807	21.786	**-2.50**
527	**24+334**	444695.1	3772726.6	**500**	**0**		24+321	24+346		**20**	0.050127174	25.064	**-2.50**
528	**24+365**	444691.0	3772695.9	**100**	**0**		24+354	24+375		**20**	0.2075128	20.751	**-2.50**
529	**24+421**	444672.2	3772642.3	**200**	**0**		24+397	24+446		**20**	0.244937785	48.988	**-2.50**
530	**24+464**	444668.2	3772599.9	**100**	**0**		24+458	24+470		**20**	0.11771817	11.772	**-2.50**
531	**24+493**	444662.1	3772571.4	**200**	**0**		24+483	24+503		**20**	0.09649576	19.299	**-2.50**
532	**24+530**	444657.8	3772534.7	**150**	**0**		24+516	24+544		**20**	0.184321967	27.648	**-2.50**
533	**24+585**	444641.3	3772481.3	**60**	**0**		24+567	24+603		**20**	0.601047367	36.063	**-2.50**
534	**24+630**	444654.7	3772438.3	**70**	**0**		24+622	24+637		**20**	0.2104803	14.734	**-2.50**
535	**24+675**	444658.9	3772392.4	**45**	**0**		24+659	24+691		**20**	0.706928956	31.812	**-2.50**
536	**24+729**	444698.4	3772353.9	**100**	**0**		24+724	24+734		**20**	0.10013396	10.013	**-2.50**
537	**24+761**	444723.9	3772333.6	**50**	**0**		24+743	24+779		**20**	0.72075408	36.038	**-2.50**
538	**24+808**	444732.3	3772286.7	**50**	**0**		24+796	24+820		**20**	0.4666471	23.332	**-2.50**
539	**24+848**	444756.9	3772254.0	**40**	**0**		24+833	24+862		**20**	0.7283328	29.133	**-2.50**
540	**24+895**	444752.8	3772205.6	**60**	**0**		24+881	24+909		**20**	0.466012	27.961	**-2.50**
541	**24+943**	444770.7	3772161.1	**120**	**0**		24+919	24+967		**20**	0.394881467	47.386	**-2.50**
542	**24+981**	444770.2	3772122.5	**100**	**0**		24+972	24+990		**20**	0.17353478	17.353	**-2.50**
543	**25+039**	444759.4	3772065.2	**30**	**0**		25+034	25+045		**20**	0.376834933	11.305	**-2.50**
544	**25+076**	444766.5	3772028.3	**25**	**0**		25+065	25+087		**20**	0.88555252	22.139	**-2.50**
545	**25+097**	444752.7	3772011.8	**50**	**0**		25+094	25+100		**20**	0.13058122	6.529	**-2.50**
546	**25+115**	444739.6	3771999.7	**50**	**0**		25+112	25+117		**20**	0.09325658	4.663	**-2.50**
547	**25+135**	444726.3	3771984.9	**50**	**0**		25+131	25+138		**20**	0.14463992	7.232	**-2.50**
548	**25+150**	444699.2	3771962.3	**7**	**0**		25+141	25+158		**10**	2.700890615	17.556	**-2.50**
549	**25+165**	444714.3	3771994.8	**20**	**0**		25+161	25+169		**20**	0.39354205	7.871	**-2.50**
550	**25+185**	444729.1	3772008.3	**100**	**0**		25+179	25+192		**20**	0.1329598	13.296	**-2.50**
551	**25+209**	444744.4	3772026.5	**10**	**0**		25+204	25+213		**10**	0.8531691	8.532	**-2.50**
552	**25+220**	444741.4	3772045.4	**6**	**0**		25+213	25+228		**10**	2.315207903	14.354	**-2.50**
553	**25+265**	444709.5	3772005.1	**100**	**0**		25+261	25+269		**20**	0.08042081	8.042	**-2.50**
554	**25+325**	444668.1	3771960.8	**80**	**0**		25+313	25+338		**20**	0.319538325	25.563	**-2.50**
555	**25+347**	444658.9	3771940.8	**50**	**0**		25+340	25+355		**20**	0.29800992	14.900	**-2.50**
556	**25+368**	444597.6	3771872.2	**7**	**0**		25+358	25+379		**10**	2.965219028	21.350	**-2.50**
557	**25+385**	444643.5	3771946.5	**50**	**0**		25+382	25+388		**20**	0.11059202	5.530	**-2.50**
558	**25+399**	444652.4	3771957.9	**100**	**0**		25+395	25+404		**20**	0.08782167	8.782	**-2.50**
559	**25+421**	444664.2	3771976.1	**100**	**0**		25+417	25+425		**20**	0.08624633	8.625	**-2.50**
560	**25+446**	444679.3	3771995.5	**100**	**0**		25+439	25+452		**20**	0.1259076	12.591	**-2.50**
561	**25+472**	444692.8	3772018.1	**200**	**0**		25+462	25+482		**20**	0.09716866	19.434	**-2.50**
562	**25+510**	444715.4	3772049.0	**40**	**0**		25+496	25+523		**20**	0.689415275	27.577	**-2.50**
563	**25+540**	444713.7	3772079.6	**50**	**0**		25+530	25+550		**20**	0.40239428	20.120	**-2.50**
564	**25+561**	444702.3	3772102.6	**10**	**0**		25+552	25+570		**10**	1.862014	18.620	**-2.50**
565	**25+614**	444653.5	3772057.1	**16**	**0**		25+598	25+630		**10**	2.029950625	32.479	**-2.50**
566	**25+663**	444636.8	3772112.9	**100**	**0**		25+652	25+674		**20**	0.21549668	21.550	**-2.50**
567	**25+700**	444618.5	3772145.9	**120**	**0**		25+683	25+718		**20**	0.294317283	35.318	**-2.50**
568	**25+758**	444576.8	3772186.3	**70**	**0**		25+737	25+778		**20**	0.585966829	41.018	**-2.50**
569	**25+815**	444564.6	3772242.4	**100**	**0**		25+813	25+816		**20**	0.02533697	2.534	**-2.50**
570	**25+834**	444559.9	3772261.5	**100**	**0**		25+825	25+843		**20**	0.17788783	17.789	**-2.50**
571	**25+859**	444546.9	3772290.7	**14**	**0**		25+845	25+872		**10**	1.9835435	27.770	**-2.50**
572	**25+891**	444520.3	3772261.5	**100**	**0**		25+885	25+896		**20**	0.11600172	11.600	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
573	**25+925**	444494.3	3772239.0	**500**	**0**		25+919	25+931		**20**	0.023205048	11.603	**-2.50**
574	**25+959**	444467.4	3772216.7	**50**	**0**		25+945	25+974		**20**	0.59279566	29.640	**-2.50**
575	**25+994**	444457.5	3772183.2	**100**	**0**		25+989	25+999		**20**	0.09897067	9.897	**-2.50**
576	**26+016**	444453.3	3772161.4	**100**	**0**		26+013	26+019		**20**	0.06148884	6.149	**-2.50**
577	**26+037**	444448.1	3772140.6	**50**	**0**		26+023	26+051		**20**	0.55634592	27.817	**-2.50**
578	**26+103**	444400.1	3772094.6	**60**	**0**		26+093	26+113		**20**	0.326015083	19.561	**-2.50**
579	**26+140**	444367.1	3772079.0	**50**	**0**		26+134	26+145		**20**	0.22921804	11.461	**-2.50**
580	**26+178**	444336.6	3772055.0	**40**	**0**		26+163	26+193		**20**	0.75626885	30.251	**-2.50**
581	**26+200**	444313.6	3772057.0	**100**	**0**		26+196	26+203		**20**	0.07182716	7.183	**-2.50**
582	**26+226**	444287.7	3772057.4	**100**	**0**		26+219	26+233		**20**	0.13998889	13.999	**-2.50**
583	**26+250**	444263.8	3772061.2	**100**	**0**		26+246	26+254		**20**	0.08113175	8.113	**-2.50**
584	**26+277**	444234.5	3772063.4	**10**	**0**		26+269	26+285		**10**	1.6269552	16.270	**-2.50**
585	**26+306**	444238.6	3772094.5	**30**	**0**		26+298	26+314		**20**	0.54384	16.315	**-2.50**
586	**26+334**	444227.2	3772120.4	**70**	**0**		26+329	26+339		**20**	0.149897757	10.493	**-2.50**
587	**26+376**	444216.2	3772161.5	**500**	**0**		26+367	26+386		**20**	0.038483646	19.242	**-2.50**
588	**26+404**	444207.9	3772187.9	**25**	**0**		26+396	26+411		**20**	0.59807888	14.952	**-2.50**
589	**26+431**	444216.1	3772214.6	**200**	**0**		26+426	26+437		**20**	0.05796553	11.593	**-2.50**
590	**26+461**	444223.0	3772243.0	**100**	**0**		26+449	26+472		**20**	0.23802771	23.803	**-2.50**
591	**26+509**	444245.4	3772286.2	**80**	**0**		26+490	26+528		**20**	0.466265312	37.301	**-2.50**
592	**26+564**	444245.9	3772342.0	**80**	**0**		26+549	26+579		**20**	0.378265037	30.261	**-2.50**
593	**26+605**	444261.6	3772380.3	**50**	**0**		26+587	26+622		**20**	0.70323426	35.162	**-2.50**
594	**26+646**	444248.4	3772420.8	**50**	**0**		26+642	26+651		**20**	0.1965397	9.827	**-2.50**
595	**26+685**	444243.4	3772462.7	**20**	**0**		26+669	26+700		**20**	1.5263447	30.527	**-2.50**
596	**26+707**	444217.1	3772460.8	**50**	**0**		26+704	26+710		**20**	0.1243345	6.217	**-2.50**
597	**26+732**	444192.4	3772455.8	**100**	**0**		26+730	26+735		**20**	0.05243402	5.243	**-2.50**
598	**26+763**	444162.2	3772448.1	**60**	**0**		26+747	26+780		**20**	0.54775875	32.866	**-2.50**
599	**26+797**	444137.9	3772423.1	**30**	**0**		26+783	26+810		**20**	0.882409567	26.472	**-2.50**
600	**26+866**	444145.6	3772353.2	**230**	**0**		26+836	26+896		**20**	0.262553535	60.387	**-2.50**
601	**26+923**	444136.8	3772296.3	**110**	**0**		26+906	26+940		**20**	0.314193782	34.561	**-2.50**
602	**26+961**	444119.7	3772262.5	**100**	**0**		26+956	26+965		**20**	0.09226313	9.226	**-2.50**
603	**26+984**	444111.4	3772241.2	**70**	**0**		26+976	26+991		**20**	0.219470529	15.363	**-2.50**
604	**27+017**	444086.8	3772204.8	**24**	**0**		26+994	27+040		**20**	1.899080667	45.578	**-2.50**
605	**27+071**	444047.3	3772256.9	**100**	**0**		27+057	27+086		**20**	0.28434966	28.435	**-2.50**
606	**27+123**	444005.6	3772287.9	**300**	**0**		27+114	27+133		**20**	0.063701747	19.111	**-2.50**
607	**27+153**	443982.4	3772307.4	**50**	**0**		27+138	27+168		**20**	0.61565322	30.783	**-2.50**
608	**27+207**	443914.9	3772313.3	**9**	**0**		27+196	27+218		**10**	2.436252	21.926	**-2.50**
609	**27+249**	443954.2	3772273.5	**20**	**0**		27+243	27+256		**20**	0.63714685	12.743	**-2.50**
610	**27+291**	443997.4	3772266.7	**70**	**0**		27+265	27+318		**20**	0.755426886	52.880	**-2.50**
611	**27+339**	444028.1	3772227.2	**55**	**0**		27+320	27+359		**20**	0.715404	39.347	**-2.50**
612	**27+386**	444025.5	3772179.4	**50**	**0**		27+377	27+395		**20**	0.36266678	18.133	**-2.50**
613	**27+414**	444034.0	3772152.8	**50**	**0**		27+402	27+425		**20**	0.46903134	23.452	**-2.50**
614	**27+441**	444053.6	3772132.9	**30**	**0**		27+432	27+450		**20**	0.601275967	18.038	**-2.50**
615	**27+475**	444059.6	3772099.3	**50**	**0**		27+468	27+482		**20**	0.28287868	14.144	**-2.50**
616	**27+501**	444071.9	3772074.3	**20**	**0**		27+490	27+513		**20**	1.13201165	22.640	**-2.50**
617	**27+535**	444049.3	3772045.9	**10**	**0**		27+528	27+542		**10**	1.379678	13.797	**-2.50**
618	**27+564**	444069.3	3772022.4	**20**	**0**		27+557	27+571		**20**	0.6749707	13.499	**-2.50**
619	**27+606**	444070.6	3771978.9	**35**	**0**		27+589	27+623		**20**	0.954325943	33.401	**-2.50**
620	**27+649**	444107.9	3771954.2	**200**	**0**		27+647	27+652		**20**	0.021890985	4.378	**-2.50**
621	**27+679**	444132.1	3771937.5	**50**	**0**		27+673	27+684		**20**	0.2269677	11.348	**-2.50**
622	**27+706**	444158.0	3771927.1	**40**	**0**		27+695	27+718		**20**	0.582454075	23.298	**-2.50**
623	**27+738**	444176.5	3771900.6	**100**	**0**		27+734	27+742		**20**	0.08317156	8.317	**-2.50**
624	**27+768**	444195.6	3771877.5	**80**	**0**		27+754	27+782		**20**	0.353648363	28.292	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
625	**27+800**	444206.4	3771846.8	**30**	**0**		27+790	27+810		**20**	0.653298933	19.599	**-2.50**
626	**27+843**	444243.1	3771822.8	**70**	**0**		27+828	27+859		**20**	0.433465371	30.343	**-2.50**
627	**27+875**	444492.0	3771786.2	**6**	**0**		27+865	27+885		**10**	3.085779531	19.749	**-2.50**
628	**27+907**	444241.9	3771808.8	**50**	**0**		27+904	27+910		**20**	0.1188979	5.945	**-2.50**
629	**27+924**	444224.9	3771812.4	**20**	**0**		27+917	27+931		**20**	0.6943261	13.887	**-2.50**
630	**27+972**	444175.5	3771786.4	**12**	**0**		27+959	27+984		**10**	2.071945583	24.863	**-2.50**
631	**28+009**	444176.2	3771831.0	**20**	**0**		28+004	28+013		**20**	0.4886718	9.773	**-2.50**
632	**28+033**	444165.1	3771852.7	**50**	**0**		28+021	28+044		**20**	0.46478048	23.239	**-2.50**
633	**28+063**	444140.6	3771870.7	**100**	**0**		28+054	28+072		**20**	0.18030804	18.031	**-2.50**
634	**28+101**	444114.0	3771898.8	**100**	**0**		28+080	28+122		**20**	0.42409784	42.410	**-2.50**
635	**28+156**	444063.4	3771919.6	**100**	**0**		28+151	28+160		**20**	0.08277272	8.277	**-2.50**
636	**28+176**	444044.9	3771929.0	**200**	**0**		28+172	28+181		**20**	0.0433099	8.662	**-2.50**
637	**28+204**	444020.0	3771943.1	**40**	**0**		28+190	28+219		**20**	0.716115875	28.645	**-2.50**
638	**28+248**	444005.2	3771985.2	**45**	**0**		28+235	28+261		**20**	0.5898436	26.543	**-2.50**
639	**28+285**	443974.3	3772008.2	**60**	**0**		28+268	28+303		**20**	0.586142317	35.169	**-2.50**
640	**28+329**	443959.6	3772049.4	**100**	**0**		28+320	28+337		**20**	0.17760252	17.760	**-2.50**
641	**28+368**	443939.9	3772083.8	**100**	**0**		28+359	28+377		**20**	0.18201376	18.201	**-2.50**
642	**28+401**	443928.4	3772116.6	**40**	**0**		28+382	28+421		**20**	0.966200675	38.648	**-2.50**
643	**28+439**	443889.9	3772127.1	**40**	**0**		28+431	28+448		**20**	0.42767275	17.107	**-2.50**
644	**28+498**	443844.5	3772164.9	**110**	**0**		28+470	28+525		**20**	0.500592673	55.065	**-2.50**
645	**28+569**	443774.2	3772178.7	**50**	**0**		28+561	28+576		**20**	0.31068398	15.534	**-2.50**
646	**28+596**	443750.2	3772191.9	**20**	**0**		28+590	28+602		**20**	0.56736045	11.347	**-2.50**
647	**28+614**	443718.3	3772189.8	**6**	**0**		28+606	28+622		**10**	2.602709	15.616	**-2.50**
648	**28+629**	443744.1	3772176.5	**20**	**0**		28+627	28+631		**20**	0.1625437	3.251	**-2.50**
649	**28+654**	443767.9	3772168.8	**100**	**0**		28+644	28+663		**20**	0.19042173	19.042	**-2.50**
650	**28+685**	443795.3	3772153.8	**50**	**0**		28+683	28+688		**20**	0.09717804	4.859	**-2.50**
651	**28+712**	443820.4	3772143.0	**50**	**0**		28+702	28+723		**20**	0.43120362	21.560	**-2.50**
652	**28+737**	443837.0	3772124.6	**100**	**0**		28+734	28+740		**20**	0.05577614	5.578	**-2.50**
653	**28+769**	443859.6	3772102.1	**50**	**0**		28+760	28+778		**20**	0.36396868	18.198	**-2.50**
654	**28+811**	443876.9	3772063.8	**200**	**0**		28+804	28+817		**20**	0.06780185	13.560	**-2.50**
655	**28+853**	443897.1	3772026.3	**250**	**0**		28+822	28+884		**20**	0.248005156	62.001	**-2.50**
656	**28+990**	443930.4	3771893.1	**100**	**0**		28+964	29+015		**20**	0.51044009	51.044	**-2.50**
657	**29+070**	443908.8	3771813.7	**50**	**0**		29+047	29+092		**20**	0.90110056	45.055	**-2.50**
658	**29+124**	443942.6	3771767.8	**40**	**0**		29+110	29+139		**20**	0.72971435	29.189	**-2.50**
659	**29+166**	443938.6	3771724.6	**70**	**0**		29+145	29+188		**20**	0.6100883	42.706	**-2.50**
660	**29+235**	443972.8	3771664.3	**200**	**0**		29+226	29+244		**20**	0.08643151	17.286	**-2.50**
661	**29+289**	444003.6	3771619.5	**200**	**0**		29+286	29+293		**20**	0.03805376	7.611	**-2.50**
662	**29+322**	444023.7	3771592.5	**30**	**0**		29+307	29+337		**20**	0.9920983	29.763	**-2.50**
663	**29+377**	444004.0	3771538.8	**50**	**0**		29+368	29+387		**20**	0.3636661	18.183	**-2.50**
664	**29+415**	443979.1	3771510.1	**70**	**0**		29+401	29+429		**20**	0.4051927	28.363	**-2.50**
665	**29+509**	443950.1	3771419.5	**70**	**30**	29+470	29+500	29+518	29+548	**20**	0.687905729	18.153	**-2.50**
666	**29+573**	443974.3	3771358.6	**200**	**0**		29+565	29+581		**20**	0.08020156	16.040	**-2.50**
667	**29+624**	443989.2	3771310.0	**200**	**0**		29+612	29+636		**20**	0.121178675	24.236	**-2.50**
668	**29+666**	444007.6	3771268.7	**15**	**0**		29+654	29+678		**10**	1.568382867	23.526	**-2.50**
669	**29+694**	443978.9	3771255.9	**20**	**0**		29+684	29+703		**20**	0.9249404	18.499	**-2.50**
670	**29+729**	443970.5	3771219.0	**20**	**0**		29+716	29+741		**20**	1.2583372	25.167	**-2.50**
671	**29+773**	444012.0	3771194.3	**45**	**0**		29+751	29+795		**20**	0.977811711	44.002	**-2.50**
672	**29+824**	444015.5	3771132.5	**15**	**0**		29+808	29+839		**10**	2.05643	30.846	**-2.50**
673	**29+873**	444069.9	3771165.2	**15**	**0**		29+860	29+886		**10**	1.714144	25.712	**-2.50**
674	**29+910**	444085.9	3771127.2	**50**	**0**		29+901	29+918		**20**	0.33961946	16.981	**-2.50**
675	**29+935**	444102.9	3771108.4	**50**	**0**		29+928	29+942		**20**	0.2911045	14.555	**-2.50**
676	**29+962**	444115.4	3771082.4	**30**	**0**		29+947	29+978		**20**	1.0174993	30.525	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
677	**30+021**	444177.3	3771075.7	**30**	**0**		30+005	30+038		**20**	1.090834967	32.725	**-2.50**
678	**30+059**	444191.6	3771039.2	**50**	**0**		30+053	30+064		**20**	0.21814678	10.907	**-2.50**
679	**30+116**	444200.6	3770981.7	**140**	**0**		30+076	30+156		**20**	0.566707086	79.339	**-2.50**
680	**30+209**	444162.4	3770894.0	**70**	**15**	30+174	30+189	30+228	30+243	**20**	0.7715304	39.007	**-2.50**
681	**30+287**	444190.9	3770818.4	**50**	**20**	30+258	30+278	30+297	30+317	**20**	0.77676696	18.838	**-2.50**
682	**30+370**	444155.8	3770739.2	**35**	**0**		30+352	30+389		**20**	1.083781114	37.932	**-2.50**
683	**30+424**	444190.5	3770695.1	**30**	**0**		30+411	30+436		**20**	0.8469089	25.407	**-2.50**
684	**30+468**	444236.0	3770692.5	**200**	**0**		30+452	30+485		**20**	0.16718993	33.438	**-2.50**
685	**30+514**	444281.9	3770682.1	**40**	**0**		30+496	30+532		**20**	0.8892507	35.570	**-2.50**
686	**30+585**	444315.1	3770614.6	**40**	**0**		30+562	30+608		**20**	1.144383475	45.775	**-2.50**
687	**30+635**	444369.2	3770616.3	**50**	**0**		30+614	30+656		**20**	0.83692398	41.846	**-2.50**
688	**30+691**	444408.8	3770575.0	**70**	**0**		30+680	30+702		**20**	0.3086414	21.605	**-2.50**
689	**30+737**	444450.1	3770552.6	**40**	**0**		30+720	30+753		**20**	0.824831825	32.993	**-2.50**
690	**30+783**	444461.7	3770507.1	**120**	**0**		30+767	30+799		**20**	0.269288775	32.315	**-2.50**
691	**30+820**	444461.0	3770470.1	**50**	**0**		30+814	30+825		**20**	0.23207968	11.604	**-2.50**
692	**30+863**	444470.4	3770426.2	**35**	**0**		30+846	30+880		**20**	0.967698229	33.869	**-2.50**
693	**30+909**	444435.9	3770389.7	**25**	**0**		30+892	30+925		**20**	1.33135604	33.284	**-2.50**
694	**30+939**	444454.2	3770361.5	**50**	**0**		30+928	30+950		**20**	0.4322141	21.611	**-2.50**
695	**30+968**	444478.5	3770346.2	**200**	**0**		30+963	30+972		**20**	0.045226945	9.045	**-2.50**
696	**30+992**	444498.2	3770332.5	**200**	**0**		30+984	30+999		**20**	0.07401099	14.802	**-2.50**
697	**31+062**	444559.0	3770296.5	**30**	**0**		31+052	31+072		**20**	0.670854533	20.126	**-2.50**
698	**31+097**	444571.8	3770263.1	**50**	**0**		31+090	31+104		**20**	0.28346664	14.173	**-2.50**
699	**31+151**	444604.8	3770219.6	**100**	**0**		31+130	31+173		**20**	0.42756324	42.756	**-2.50**
700	**31+216**	444620.3	3770150.8	**20**	**0**		31+199	31+233		**20**	1.7026616	34.053	**-2.50**
701	**31+265**	444672.1	3770169.9	**50**	**0**		31+258	31+273		**20**	0.29886214	14.943	**-2.50**
702	**31+304**	444711.0	3770172.0	**50**	**0**		31+299	31+309		**20**	0.2121627	10.608	**-2.50**
703	**31+355**	444761.9	3770185.9	**40**	**0**		31+337	31+374		**20**	0.911135625	36.445	**-2.50**
704	**31+455**	444843.1	3770124.9	**170**	**25**	31+406	31+431	31+480	31+505	**20**	0.435498665	49.035	**-2.50**
705	**31+568**	444896.8	3770024.4	**100**	**0**		31+542	31+594		**20**	0.52010997	52.011	**-2.50**
706	**31+621**	444942.0	3769996.0	**100**	**0**		31+614	31+627		**20**	0.12545576	12.546	**-2.50**
707	**31+674**	444992.2	3769972.7	**50**	**0**		31+653	31+696		**20**	0.86873202	43.437	**-2.50**
708	**31+730**	445007.8	3769916.0	**45**	**0**		31+710	31+750		**20**	0.886818178	39.907	**-2.50**
709	**31+793**	445066.6	3769889.9	**100**	**0**		31+787	31+800		**20**	0.12881703	12.882	**-2.50**
710	**31+854**	445128.6	3769871.6	**50**	**20**	31+814	31+834	31+873	31+893	**20**	1.18399844	39.200	**-2.50**
711	**31+926**	445136.7	3769790.2	**30**	**0**		31+905	31+948		**20**	1.447992333	43.440	**-2.50**
712	**31+995**	445211.0	3769788.4	**45**	**0**		31+975	32+014		**20**	0.8841268	39.786	**-2.50**
713	**32+023**	445229.2	3769765.0	**50**	**0**		32+019	32+027		**20**	0.17079836	8.540	**-2.50**
714	**32+051**	445250.1	3769746.1	**50**	**0**		32+038	32+063		**20**	0.51172282	25.586	**-2.50**
715	**32+090**	445262.6	3769708.4	**100**	**0**		32+069	32+110		**20**	0.41324894	41.325	**-2.50**
716	**32+146**	445300.5	3769666.5	**100**	**0**		32+132	32+160		**20**	0.27178913	27.179	**-2.50**
717	**32+178**	445315.2	3769637.2	**20**	**0**		32+170	32+186		**20**	0.77307915	15.462	**-2.50**
718	**32+213**	445349.3	3769625.4	**50**	**0**		32+198	32+229		**20**	0.61795154	30.898	**-2.50**
719	**32+261**	445377.6	3769585.6	**50**	**0**		32+250	32+273		**20**	0.47276936	23.638	**-2.50**
720	**32+306**	445384.2	3769540.8	**100**	**0**		32+300	32+313		**20**	0.1217996	12.180	**-2.50**
721	**32+363**	445409.2	3769449.7	**25**	**0**		32+332	32+393		**20**	2.44507604	61.127	**-2.50**
722	**32+438**	445457.2	3769554.6	**55**	**0**		32+414	32+462		**20**	0.865423582	47.598	**-2.50**
723	**32+499**	445517.9	3769571.8	**50**	**0**		32+486	32+513		**20**	0.53796926	26.898	**-2.50**
724	**32+538**	445550.4	3769606.3	**10**	**0**		32+528	32+549		**10**	2.1615158	21.615	**-2.50**
725	**32+580**	445562.4	3769553.8	**20**	**0**		32+565	32+596		**20**	1.5532017	31.064	**-2.50**
726	**32+612**	445597.4	3769561.2	**100**	**0**		32+606	32+618		**20**	0.11611104	11.611	**-2.50**
727	**32+650**	445639.0	3769575.1	**15**	**0**		32+637	32+664		**10**	1.793050667	26.896	**-2.50**
728	**32+708**	445645.3	3769512.2	**100**	**0**		32+686	32+730		**20**	0.43313149	43.313	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
729	**32+748**	445631.4	3769471.9	**25**	**0**		32+732	32+764		**20**	1.27358052	31.840	**-2.50**
730	**32+780**	445660.3	3769450.7	**45**	**0**		32+765	32+796		**20**	0.677066489	30.468	**-2.50**
731	**32+842**	445724.0	3769453.7	**80**	**0**		32+809	32+874		**20**	0.812532563	65.003	**-2.50**
732	**32+916**	445773.7	3769511.4	**200**	**0**		32+901	32+931		**20**	0.150050535	30.010	**-2.50**
733	**32+997**	445832.3	3769604.5	**15**	**0**		32+978	33+016		**10**	2.5372194	38.058	**-2.50**
734	**33+027**	445834.8	3769545.3	**50**	**0**		33+021	33+033		**20**	0.24991076	12.496	**-2.50**
735	**33+052**	445829.6	3769520.4	**50**	**0**		33+041	33+064		**20**	0.45945366	22.973	**-2.50**
736	**33+093**	445840.0	3769479.9	**120**	**0**		33+071	33+116		**20**	0.373572983	44.829	**-2.50**
737	**33+130**	445835.5	3769442.8	**50**	**0**		33+123	33+138		**20**	0.29862448	14.931	**-2.50**
738	**33+157**	445840.2	3769416.5	**100**	**0**		33+153	33+161		**20**	0.08115826	8.116	**-2.50**
739	**33+211**	445851.3	3769301.4	**25**	**0**		33+178	33+244		**20**	2.62612184	65.653	**-2.50**
740	**33+274**	445902.2	3769415.7	**50**	**0**		33+268	33+280		**20**	0.24468896	12.234	**-2.50**
741	**33+304**	445921.0	3769439.6	**50**	**0**		33+298	33+310		**20**	0.23041338	11.521	**-2.50**
742	**33+336**	445934.3	3769468.4	**50**	**0**		33+331	33+341		**20**	0.18771558	9.386	**-2.50**
743	**33+379**	445959.5	3769503.6	**50**	**0**		33+373	33+385		**20**	0.22694874	11.347	**-2.50**
744	**33+408**	445997.1	3769536.8	**11**	**0**		33+394	33+422		**10**	2.531385091	27.845	**-2.50**
745	**33+447**	445982.6	3769477.2	**25**	**0**		33+432	33+461		**20**	1.14807608	28.702	**-2.50**
746	**33+495**	446023.3	3769445.6	**30**	**0**		33+480	33+510		**20**	0.990118667	29.704	**-2.50**
747	**33+584**	446016.1	3769355.5	**200**	**0**		33+563	33+605		**20**	0.20809954	41.620	**-2.50**
748	**33+663**	445987.6	3769259.4	**21**	**0**		33+639	33+687		**20**	2.271943952	47.711	**-2.50**
749	**33+711**	446051.3	3769287.3	**70**	**0**		33+697	33+725		**20**	0.3940819	27.586	**-2.50**
750	**33+759**	446084.8	3769322.3	**200**	**0**		33+753	33+765		**20**	0.062639085	12.528	**-2.50**
751	**33+813**	446295.7	3769516.7	**5**	**0**		33+805	33+821		**10**	3.096836111	16.723	**-2.50**
752	**33+884**	446081.5	3769300.8	**200**	**0**		33+860	33+908		**20**	0.239985385	47.997	**-2.50**
753	**33+952**	446046.2	3769242.0	**80**	**20**	33+921	33+941	33+963	33+983	**20**	0.519264075	21.541	**-2.50**
754	**34+076**	445937.1	3769180.9	**50**	**0**		34+057	34+094		**20**	0.74147236	37.074	**-2.50**
755	**34+116**	445924.2	3769141.8	**100**	**0**		34+105	34+127		**20**	0.21478046	21.478	**-2.50**
756	**34+179**	445891.9	3769087.3	**150**	**0**		34+156	34+202		**20**	0.30286588	45.430	**-2.50**
757	**34+227**	445880.1	3769036.9	**15**	**0**		34+214	34+239		**10**	1.663926667	24.959	**-2.50**
758	**34+263**	445837.4	3769051.2	**30**	**0**		34+242	34+284		**20**	1.4058152	42.174	**-2.50**
759	**34+310**	445845.8	3769103.8	**12**	**0**		34+302	34+319		**10**	1.432915417	17.195	**-2.50**
760	**34+335**	445818.7	3769112.1	**20**	**0**		34+323	34+347		**20**	1.21314215	24.263	**-2.50**
761	**34+367**	445798.2	3769085.3	**100**	**0**		34+362	34+372		**20**	0.09557922	9.558	**-2.50**
762	**34+405**	445772.5	3769057.8	**100**	**0**		34+386	34+423		**20**	0.36472587	36.473	**-2.50**
763	**34+443**	445752.8	3769009.3	**12**	**0**		34+429	34+457		**10**	2.327766583	27.933	**-2.50**
764	**34+490**	445819.9	3769035.4	**15**	**0**		34+474	34+506		**10**	2.140378933	32.106	**-2.50**
765	**34+528**	445810.2	3768987.1	**50**	**0**		34+524	34+531		**20**	0.14922912	7.461	**-2.50**
766	**34+567**	445808.3	3768947.9	**50**	**0**		34+563	34+571		**20**	0.16199756	8.100	**-2.50**
767	**34+591**	445803.3	3768924.5	**50**	**0**		34+586	34+596		**20**	0.20489272	10.245	**-2.50**
768	**34+633**	445803.0	3768882.2	**50**	**0**		34+618	34+648		**20**	0.60016412	30.008	**-2.50**
769	**34+685**	445771.8	3768837.3	**15**	**0**		34+675	34+695		**10**	1.301972133	19.530	**-2.50**
770	**34+710**	445789.3	3768816.2	**25**	**0**		34+697	34+722		**20**	1.011039	25.276	**-2.50**
771	**34+751**	445832.6	3768822.1	**60**	**0**		34+726	34+775		**20**	0.808867033	48.532	**-2.50**
772	**34+851**	445911.0	3768930.7	**13**	**0**		34+834	34+867		**10**	2.6400444	33.001	**-2.50**
773	**34+883**	445903.0	3768866.7	**40**	**0**		34+875	34+891		**20**	0.4178652	16.715	**-2.50**
774	**34+920**	445914.0	3768830.5	**60**	**0**		34+898	34+942		**20**	0.73450505	44.070	**-2.50**
775	**34+957**	445897.7	3768796.1	**40**	**0**		34+948	34+965		**20**	0.423245375	16.930	**-2.50**
776	**34+995**	445897.0	3768757.4	**30**	**0**		34+986	35+004		**20**	0.616340433	18.490	**-2.50**
777	**35+027**	445877.8	3768731.3	**50**	**0**		35+022	35+032		**20**	0.20087582	10.044	**-2.50**
778	**35+072**	445835.5	3768693.1	**12**	**0**		35+059	35+086		**10**	2.249172083	26.990	**-2.50**
779	**35+120**	445896.4	3768683.4	**15**	**0**		35+109	35+131		**10**	1.457059533	21.856	**-2.50**
780	**35+168**	445894.2	3768632.3	**130**	**0**		35+149	35+188		**20**	0.299902538	38.987	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
781	**35+227**	445909.2	3768575.4	**40**	**0**		35+212	35+241		**20**	0.70537235	28.215	**-2.50**
782	**35+266**	445891.2	3768538.0	**50**	**0**		35+246	35+286		**20**	0.80228888	40.114	**-2.50**
783	**35+308**	445906.8	3768495.9	**35**	**0**		35+290	35+326		**20**	1.0381388	36.335	**-2.50**
784	**35+353**	445875.7	3768457.8	**10**	**0**		35+344	35+361		**10**	1.6643032	16.643	**-2.50**
785	**35+387**	445907.0	3768436.8	**50**	**0**		35+372	35+403		**20**	0.61961324	30.981	**-2.50**
786	**35+425**	445921.1	3768399.5	**30**	**0**		35+408	35+441		**20**	1.1166389	33.499	**-2.50**
787	**35+456**	445898.0	3768374.9	**50**	**0**		35+454	35+459		**20**	0.09026752	4.513	**-2.50**
788	**35+483**	445881.5	3768354.0	**50**	**0**		35+480	35+486		**20**	0.13094834	6.547	**-2.50**
789	**35+533**	445845.6	3768318.9	**50**	**0**		35+530	35+536		**20**	0.1269963	6.350	**-2.50**
790	**35+557**	445826.4	3768304.4	**50**	**0**		35+552	35+563		**20**	0.21534024	10.767	**-2.50**
791	**35+598**	445800.1	3768273.7	**100**	**0**		35+590	35+606		**20**	0.16160293	16.160	**-2.50**
792	**35+662**	445668.2	3768162.5	**15**	**0**		35+641	35+684		**10**	2.911165867	43.667	**-2.50**
793	**35+756**	445855.3	3768257.6	**11**	**0**		35+744	35+767		**10**	2.167417818	23.842	**-2.50**
794	**35+793**	445848.2	3768201.5	**14**	**0**		35+778	35+808		**10**	2.119577	29.674	**-2.50**
795	**35+839**	445904.8	3768226.9	**18**	**0**		35+823	35+855		**10**	1.796735086	31.443	**-2.50**
796	**35+878**	445913.7	3768182.2	**20**	**0**		35+872	35+884		**20**	0.6024366	12.049	**-2.50**
797	**35+945**	445887.2	3768120.5	**80**	**0**		35+936	35+954		**20**	0.2245582	17.965	**-2.50**
798	**35+964**	445875.7	3768104.7	**50**	**0**		35+961	35+968		**20**	0.1242871	6.214	**-2.50**
799	**36+010**	445853.0	3768063.8	**25**	**0**		35+996	36+023		**20**	1.09131496	27.283	**-2.50**
800	**36+036**	445824.8	3768064.5	**50**	**0**		36+033	36+040		**20**	0.14030238	7.015	**-2.50**
801	**36+081**	445779.7	3768059.4	**50**	**0**		36+061	36+100		**20**	0.79352178	39.676	**-2.50**
802	**36+117**	445756.7	3768030.0	**20**	**0**		36+110	36+123		**20**	0.6446861	12.894	**-2.50**
803	**36+157**	445717.0	3768019.3	**30**	**0**		36+148	36+167		**20**	0.6308567	18.926	**-2.50**
804	**36+193**	445694.4	3767991.2	**40**	**0**		36+182	36+203		**20**	0.515601575	20.624	**-2.50**
805	**36+236**	445686.4	3767942.4	**15**	**0**		36+221	36+250		**10**	1.8833872	28.251	**-2.50**
806	**36+264**	445655.6	3767958.2	**50**	**0**		36+260	36+267		**20**	0.15089932	7.545	**-2.50**
807	**36+290**	445630.1	3767966.7	**50**	**0**		36+282	36+299		**20**	0.32580972	16.290	**-2.50**
808	**36+323**	445597.0	3767966.7	**120**	**0**		36+311	36+336		**20**	0.205764425	24.692	**-2.50**
809	**36+353**	445565.7	3767973.1	**20**	**0**		36+339	36+366		**20**	1.3702319	27.405	**-2.50**
810	**36+389**	445550.4	3767937.3	**20**	**0**		36+383	36+394		**20**	0.54249125	10.850	**-2.50**
811	**36+442**	445557.8	3767883.9	**70**	**15**	36+414	36+429	36+455	36+470	**20**	0.576619386	25.363	**-2.50**
812	**36+502**	445532.3	3767829.4	**200**	**20**	36+475	36+495	36+508	36+528	**20**	0.169236685	13.847	**-2.50**
813	**36+605**	445504.7	3767729.4	**50**	**0**		36+589	36+620		**20**	0.62715186	31.358	**-2.50**
814	**36+678**	445446.8	3767683.1	**100**	**20**	36+656	36+676	36+680	36+700	**20**	0.24666203	4.666	**-2.50**
815	**36+743**	445407.4	3767631.3	**150**	**30**	36+704	36+734	36+752	36+782	**20**	0.319405513	17.911	**-2.50**
816	**36+805**	445356.4	3767596.2	**80**	**0**		36+796	36+813		**20**	0.213446238	17.076	**-2.50**
817	**36+845**	445316.6	3767579.9	**30**	**0**		36+826	36+863		**20**	1.2325229	36.976	**-2.50**
818	**36+906**	445253.9	3767650.5	**29**	**0**		36+874	36+939		**20**	2.287706456	65.200	**-2.50**
819	**36+978**	445240.9	3767549.3	**50**	**0**		36+959	36+996		**20**	0.73615148	36.808	**-2.50**
820	**37+030**	445200.5	3767514.7	**100**	**0**		37+024	37+036		**20**	0.12072916	12.073	**-2.50**
821	**37+108**	445133.8	3767470.4	**200**	**20**	37+041	37+061	37+156	37+176	**20**	0.574679835	94.936	**-2.50**
822	**37+251**	445076.1	3767337.5	**50**	**20**	37+227	37+247	37+255	37+275	**20**	0.56109214	8.055	**-2.50**
823	**37+298**	445036.6	3767310.5	**100**	**0**		37+276	37+320		**20**	0.44543113	44.543	**-2.50**
824	**37+355**	444989.3	3767228.8	**20**	**0**		37+330	37+381		**20**	2.5153267	50.307	**-2.50**
825	**37+421**	445083.1	3767270.6	**50**	**0**		37+409	37+434		**20**	0.49770442	24.885	**-2.50**
826	**37+448**	445115.7	3767268.0	**15**	**0**		37+435	37+462		**10**	1.7964594	26.947	**-2.50**
827	**37+477**	445105.4	3767235.2	**70**	**0**		37+466	37+489		**20**	0.328520271	22.996	**-2.50**
828	**37+566**	445051.4	3767161.5	**130**	**20**	37+508	37+528	37+605	37+625	**20**	0.745091592	76.862	**-2.50**
829	**37+677**	445064.3	3767047.1	**20**	**0**		37+666	37+689		**20**	1.13360705	22.672	**-2.50**
830	**37+748**	445002.9	3767009.5	**150**	**20**	37+706	37+726	37+769	37+789	**20**	0.4225223	43.378	**-2.50**
831	**37+831**	444955.8	3766940.3	**200**	**0**		37+823	37+838		**20**	0.07598818	15.198	**-2.50**
832	**37+890**	444912.8	3766865.7	**16**	**0**		37+870	37+910		**10**	2.486257063	39.780	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
833	**37+937**	444902.8	3766940.1	**60**	**0**		37+915	37+958		**20**	0.716313883	42.979	**-2.50**
834	**38+020**	444956.5	3767021.4	**20**	**0**		37+999	38+041		**20**	2.0753144	41.506	**-2.50**
835	**38+109**	444851.6	3767029.7	**40**	**0**		38+085	38+132		**20**	1.177712	47.108	**-2.50**
836	**38+156**	444833.8	3767084.6	**20**	**0**		38+137	38+174		**20**	1.82930675	36.586	**-2.50**
837	**38+233**	444942.0	3767090.6	**22**	**0**		38+208	38+258		**20**	2.291133636	50.405	**-2.50**
838	**38+277**	444894.1	3767139.4	**40**	**0**		38+261	38+293		**20**	0.800703725	32.028	**-2.50**
839	**38+355**	444815.5	3767139.0	**80**	**0**		38+336	38+373		**20**	0.454855312	36.388	**-2.50**
840	**38+410**	444765.0	3767113.9	**75**	**0**		38+394	38+427		**20**	0.442663107	33.200	**-2.50**
841	**38+452**	444723.0	3767113.2	**50**	**0**		38+443	38+461		**20**	0.36888968	18.444	**-2.50**
842	**38+514**	444633.0	3767076.5	**18**	**0**		38+491	38+536		**10**	2.5529308	44.676	**-2.50**
843	**38+572**	444685.8	3767154.5	**200**	**0**		38+569	38+576		**20**	0.03326344	6.653	**-2.50**
844	**38+626**	444717.2	3767204.3	**18**	**0**		38+611	38+641		**10**	1.696298222	30.533	**-2.50**
845	**38+670**	444672.7	3767225.0	**80**	**0**		38+649	38+690		**20**	0.522044038	41.764	**-2.50**
846	**38+724**	444561.8	3767215.5	**16**	**0**		38+702	38+746		**10**	2.737494062	43.800	**-2.50**
847	**38+787**	444673.6	3767275.0	**18**	**0**		38+771	38+804		**10**	1.849697167	33.295	**-2.50**
848	**38+852**	444621.5	3767328.9	**20**	**0**		38+839	38+866		**20**	1.38382965	27.677	**-2.50**
849	**38+924**	444665.1	3767390.6	**30**	**0**		38+910	38+938		**20**	0.935930533	28.078	**-2.50**
850	**38+989**	444732.2	3767391.9	**50**	**20**	38+960	38+980	38+998	39+018	**20**	0.75344876	17.672	**-2.50**
851	**39+037**	444767.4	3767426.3	**20**	**0**		39+036	39+038		**20**	0.0596183	1.192	**-2.50**
852	**39+117**	444822.2	3767486.5	**70**	**0**		39+088	39+146		**20**	0.823495171	57.645	**-2.50**
853	**39+158**	444818.5	3767529.6	**50**	**0**		39+152	39+164		**20**	0.24692958	12.346	**-2.50**
854	**39+212**	444827.1	3767582.8	**120**	**0**		39+197	39+227		**20**	0.251228892	30.147	**-2.50**
855	**39+251**	444843.2	3767619.3	**40**	**0**		39+240	39+263		**20**	0.576212125	23.048	**-2.50**
856	**39+283**	444838.0	3767650.8	**50**	**0**		39+280	39+286		**20**	0.13334878	6.667	**-2.50**
857	**39+308**	444830.8	3767674.4	**50**	**0**		39+301	39+314		**20**	0.24968406	12.484	**-2.50**
858	**39+332**	444829.6	3767698.8	**100**	**0**		39+328	39+336		**20**	0.08859749	8.860	**-2.50**
859	**39+367**	444831.1	3767734.9	**30**	**0**		39+353	39+381		**20**	0.939996633	28.200	**-2.50**
860	**39+430**	444886.8	3767772.2	**90**	**0**		39+393	39+468		**20**	0.842888044	75.860	**-2.50**
861	**39+492**	444895.6	3767835.3	**150**	**0**		39+476	39+508		**20**	0.21616794	32.425	**-2.50**
862	**39+544**	445158.9	3768546.1	**8**	**0**		39+531	39+556		**10**	3.119049383	25.264	**-2.50**
863	**39+625**	444868.7	3767814.0	**150**	**0**		39+599	39+651		**20**	0.351781567	52.767	**-2.50**
864	**39+674**	444835.6	3767776.9	**100**	**0**		39+659	39+690		**20**	0.30450079	30.450	**-2.50**
865	**39+719**	444795.1	3767752.8	**45**	**0**		39+694	39+743		**20**	1.098630556	49.438	**-2.50**
866	**39+769**	444798.5	3767700.1	**150**	**0**		39+762	39+775		**20**	0.08251636	12.377	**-2.50**
867	**39+792**	444802.0	3767676.6	**100**	**0**		39+789	39+796		**20**	0.0687737	6.877	**-2.50**
868	**39+836**	444811.8	3767632.1	**25**	**0**		39+823	39+850		**20**	1.06145484	26.536	**-2.50**
869	**39+880**	444777.6	3767601.8	**20**	**0**		39+871	39+889		**20**	0.87810975	17.562	**-2.50**
870	**39+937**	444779.5	3767542.4	**30**	**0**		39+920	39+954		**20**	1.111604367	33.348	**-2.50**
871	**39+986**	444734.6	3767518.3	**100**	**0**		39+974	39+998		**20**	0.24575596	24.576	**-2.50**
872	**40+039**	444693.3	3767480.7	**33**	**0**		40+019	40+059		**20**	1.209975485	39.929	**-2.50**
873	**40+093**	444641.7	3767507.0	**50**	**0**		40+076	40+111		**20**	0.69247786	34.624	**-2.50**
874	**40+139**	444595.4	3767496.6	**50**	**0**		40+122	40+156		**20**	0.68251166	34.126	**-2.50**
875	**40+179**	444570.7	3767465.3	**200**	**0**		40+170	40+187		**20**	0.08448314	16.897	**-2.50**
876	**40+261**	444514.3	3767405.0	**150**	**15**	40+234	40+249	40+273	40+288	**20**	0.265359747	24.804	**-2.50**
877	**40+316**	444466.6	3767375.6	**50**	**0**		40+296	40+336		**20**	0.80354514	40.177	**-2.50**
878	**40+372**	444454.5	3767319.8	**200**	**0**		40+367	40+376		**20**	0.04727965	9.456	**-2.50**
879	**40+434**	444438.3	3767259.4	**120**	**20**	40+395	40+415	40+452	40+472	**20**	0.469872233	36.385	**-2.50**
880	**40+496**	444451.3	3767198.1	**100**	**0**		40+487	40+504		**20**	0.16711702	16.712	**-2.50**
881	**40+530**	444452.8	3767160.1	**30**	**0**		40+509	40+550		**20**	1.384667367	41.540	**-2.50**
882	**40+574**	444403.7	3767148.7	**15**	**0**		40+564	40+584		**10**	1.3479352	20.219	**-2.50**
883	**40+597**	444403.8	3767123.9	**50**	**0**		40+594	40+600		**20**	0.13813718	6.907	**-2.50**
884	**40+635**	444409.5	3767083.7	**20**	**0**		40+622	40+649		**20**	1.34727475	26.945	**-2.50**

Annexure 8.1(a)

HORIZONTAL CURVE DETAILS

HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (Ls) (m)	Transition Start Chainage (Km)	Circular Start Chainage (Km)	Circular End Chainage (Km)	Transition End Chainage (Km)	Design Speed (Kmph)	Deviation Angle	Length of circular curve (Lc) (m)	e : Super elevation (%)
885	**40+686**	444354.8	3767062.7	**20**	**0**		40+669	40+703		**20**	1.6866272	33.733	**-2.50**
886	**40+749**	444387.6	3767000.1	**80**	**0**		40+716	40+782		**20**	0.82750795	66.201	**-2.50**
887	**40+805**	444367.6	3766944.7	**110**	**0**		40+789	40+822		**20**	0.301536164	33.169	**-2.50**
888	**40+848**	444365.8	3766901.8	**200**	**0**		40+841	40+856		**20**	0.07380592	14.761	**-2.50**
889	**40+876**	444366.6	3766873.6	**200**	**0**		40+869	40+884		**20**	0.0715136	14.303	**-2.50**
890	**40+925**	444364.5	3766824.2	**30**	**0**		40+910	40+939		**20**	0.979521967	29.386	**-2.50**
891	**40+957**	444335.9	3766806.7	**100**	**0**		40+952	40+962		**20**	0.09690351	9.690	**-2.50**
892	**40+980**	444317.3	3766792.7	**30**	**0**		40+976	40+984		**20**	0.270183433	8.106	**-2.50**
893	**41+023**	444275.4	3766776.1	**30**	**0**		41+005	41+040		**20**	1.191693133	35.751	**-2.50**
894	**41+098**	444275.2	3766697.0	**100**	**0**		41+068	41+129		**20**	0.60422482	60.422	**-2.50**
895	**41+160**	444239.3	3766645.2	**50**	**0**		41+143	41+176		**20**	0.66024194	33.012	**-2.50**
896	**41+211**	444242.1	3766593.0	**200**	**0**		41+203	41+220		**20**	0.08398893	16.798	**-2.50**
897	**41+258**	444248.4	3766547.1	**250**	**0**		41+235	41+280		**20**	0.179288868	44.822	**-2.50**
898	**41+334**	444941.7	3764431.0	**8**	**0**		41+321	41+346		**10**	3.13407228	25.496	**-2.50**
899	**41+411**	444232.0	3766543.5	**100**	**0**		41+406	41+417		**20**	0.1026428	10.264	**-2.50**
900	**41+435**	444226.9	3766566.2	**200**	**0**		41+426	41+443		**20**	0.082976355	16.595	**-2.50**
901	**41+513**	444202.4	3766643.9	**95**	**0**		41+470	41+556		**20**	0.909293021	86.383	**-2.50**
902	**41+599**	444254.7	3766719.5	**45**	**0**		41+574	41+623		**20**	1.097027267	49.366	**-2.50**
903	**41+670**	444216.7	3766790.3	**30**	**0**		41+647	41+693		**20**	1.551651767	46.550	**-2.50**
904	**41+777**	444317.3	3766846.7	**40**	**0**		41+755	41+799		**20**	1.09853135	43.941	**-2.50**
905	**41+824**	444315.4	3766896.5	**25**	**0**		41+815	41+832		**20**	0.68733456	17.183	**-2.50**
906	**41+863**	444288.9	3766926.2	**20**	**0**		41+854	41+871		**20**	0.8891382	17.783	**-2.50**
907	**41+897**	444294.6	3766961.0	**50**	**0**		41+883	41+910		**20**	0.54314948	27.157	**-2.50**
908	**41+932**	444281.4	3766994.0	**40**	**0**		41+923	41+940		**20**	0.42638725	17.055	**-2.50**
909	**41+973**	444283.4	3767036.4	**40**	**0**		41+955	41+991		**20**	0.90782985	36.313	**-2.50**
910	**42+026**	444241.5	3767072.3	**65**	**0**		42+010	42+042		**20**	0.486954615	31.652	**-2.50**
911	**42+070**	444223.2	3767118.7	**20**	**0**		42+052	42+087		**20**	1.7296455	34.593	**-2.50**
912	**42+139**	444299.4	3767135.5	**20**	**0**		42+126	42+152		**20**	1.3419298	26.839	**-2.50**
913	**42+186**	444300.1	3767185.1	**45**	**0**		42+171	42+200		**20**	0.644495622	29.002	**-2.50**
914	**42+231**	444268.7	3767227.9	**15**	**0**		42+217	42+246		**10**	1.927588533	28.914	**-2.50**
915	**42+285**	444329.5	3767245.1	**20**	**0**		42+271	42+298		**20**	1.35299195	27.060	**-2.50**
916	**42+322**	444327.3	3767284.8	**20**	**0**		42+320	42+324		**20**	0.1791814	3.584	**-2.50**
917	**42+372**	444315.6	3767333.3	**20**	**0**		42+371	42+372		**20**	0.05883835	1.177	**-2.50**
918	**42+410**	444304.4	3767370.1	**180**	**0**		42+388	42+432		**20**	0.245939122	44.269	**-2.50**
919	**42+446**	444302.7	3767405.6	**100**	**0**		42+443	42+448		**20**	0.05256158	5.256	**-2.50**
920	**42+482**	444298.9	3767442.0	**70**	**0**		42+471	42+493		**20**	0.314214643	21.995	**-2.50**
921	**42+540**	444311.2	3767498.8	**100**	**0**		42+537	42+543		**20**	0.0672282	6.723	**-2.50**
922	**42+578**	444316.6	3767536.1	**100**	**0**		42+562	42+594		**20**	0.32084218	32.084	**-2.50**
923	**42+645**	444347.1	3767596.6	**200**	**20**	42+609	42+629	42+661	42+681	**20**	0.260619385	32.124	**-2.50**
924	**42+711**	444360.6	3767661.4	**200**	**0**		42+694	42+728		**20**	0.17270549	34.541	**-2.50**
925	**42+784**	444388.1	3767730.6	**80**	**25**	42+742	42+767	42+801	42+826	**20**	0.743187025	34.455	**-2.50**
926	**42+820**	444482.5	3767776.2			**End of the Project**							

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
1	00+000	1585.063	0.736	PROJECT START			
2	00+093	1585.751	1.944	1.208	Sag	30	24.842
3	00+261	1589.015	1.199	-0.745	Hog	30	40.293
4	00+533	1592.266	10.376	9.177	Sag	100	10.897
5	00+616	1600.899	7.657	-2.719	Hog	30	11.032
6	00+721	1608.934	1.662	-5.995	Hog	65	10.844
7	00+810	1610.426	6.762	5.100	Sag	30	5.882
8	00+855	1613.473	3.741	-3.021	Hog	30	9.931
9	00+907	1615.407	8.015	4.274	Sag	40	9.360
10	00+958	1619.479	1.092	-6.923	Hog	50	7.222
11	01+069	1620.686	4.475	3.383	Sag	60	17.733
12	01+147	1624.200	-0.606	-5.081	Hog	20	3.936
13	01+202	1623.868	2.711	3.317	Sag	50	15.070
14	01+253	1625.256	1.039	-1.672	Hog	20	11.959
15	01+296	1625.701	3.067	2.028	Sag	30	14.794
16	01+399	1628.867	5.539	2.472	Sag	60	24.274
17	01+492	1634.007	-3.430	-8.969	Hog	40	4.460
18	01+541	1632.324	-0.445	2.985	Sag	30	10.051
19	01+587	1632.119	3.265	3.710	Sag	30	8.085
20	01+625	1633.360	3.037	-0.228	Hog	20	87.467
21	01+650	1634.123	6.178	3.141	Sag	20	6.366
22	01+675	1635.697	0.104	-6.074	Hog	20	3.292
23	01+719	1635.742	13.385	13.281	Sag	20	1.506
24	01+760	1641.183	12.030	-1.355	Hog	20	14.766
25	01+807	1646.906	6.750	-5.280	Hog	30	5.681
26	01+859	1650.436	8.399	1.649	Sag	30	18.194
27	01+947	1657.817	9.076	0.677	Sag	30	44.327
28	02+040	1666.197	6.711	-2.365	Hog	60	25.378
29	02+121	1671.663	-0.672	-7.383	Hog	60	8.126
30	02+198	1671.146	6.480	7.152	Sag	30	4.195
31	02+247	1674.309	3.902	-2.578	Hog	30	11.639
32	02+326	1677.384	9.027	5.125	Sag	50	9.756
33	02+382	1682.516	2.750	-6.277	Hog	50	7.966
34	02+454	1684.478	5.268	2.518	Sag	30	11.917
35	02+524	1688.201	4.342	-0.926	Hog	20	21.598
36	02+550	1689.296	5.881	1.539	Sag	20	12.991
37	02+584	1691.321	5.424	-0.457	Hog	20	43.718
38	02+639	1694.326	4.817	-0.607	Hog	30	49.475
39	02+717	1698.055	5.157	0.340	Sag	30	88.414
40	02+774	1701.008	7.377	2.220	Sag	20	9.008
41	02+811	1703.698	3.926	-3.451	Hog	20	5.795
42	02+838	1704.791	8.282	4.356	Sag	30	6.886
43	02+871	1707.519	2.321	-5.961	Hog	30	5.033
44	02+926	1708.782	5.002	2.681	Sag	30	11.190
45	02+971	1711.046	3.348	-1.654	Hog	30	18.132
46	03+007	1712.258	7.587	4.239	Sag	20	4.718
47	03+039	1714.633	3.695	-3.892	Hog	20	5.140
48	03+070	1715.784	4.784	1.089	Sag	30	27.566
49	03+102	1717.327	2.750	-2.034	Hog	30	14.752
50	03+137	1718.300	5.653	2.903	Sag	30	10.333
51	03+169	1720.070	4.512	-1.141	Hog	30	26.289

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
52	03+209	1721.909	6.526	2.014	Sag	30	14.897
53	03+248	1724.456	2.709	-3.817	Hog	30	7.860
54	03+288	1725.529	6.280	3.571	Sag	20	5.602
55	03+320	1727.536	4.644	-1.636	Hog	30	18.343
56	03+363	1729.543	6.999	2.355	Sag	30	12.743
57	03+419	1733.456	4.181	-2.818	Hog	30	10.648
58	03+468	1735.487	6.383	2.202	Sag	30	13.624
59	03+507	1738.010	2.730	-3.653	Hog	40	10.949
60	03+546	1739.060	5.463	2.733	Sag	30	10.976
61	03+585	1741.193	4.681	-0.782	Hog	30	38.365
62	03+693	1746.261	5.000	0.319	Sag	30	94.049
63	03+742	1748.708	4.367	-0.633	Hog	30	47.418
64	03+773	1750.059	5.807	1.440	Sag	30	20.840
65	03+815	1752.496	4.643	-1.164	Hog	30	25.775
66	03+852	1754.209	5.443	0.800	Sag	30	37.495
67	03+900	1756.847	4.238	-1.205	Hog	30	24.891
68	03+948	1758.880	5.160	0.922	Sag	30	32.546
69	03+984	1760.754	3.392	-1.768	Hog	20	11.314
70	04+013	1761.734	5.953	2.561	Sag	20	7.810
71	04+048	1763.779	-0.652	-6.605	Hog	20	3.028
72	04+099	1763.448	9.156	9.808	Sag	30	3.059
73	04+143	1767.552	7.332	-1.824	Hog	20	10.964
74	04+184	1770.560	2.445	-4.887	Hog	20	4.092
75	04+215	1771.315	4.722	2.277	Sag	30	13.175
76	04+249	1772.914	2.552	-2.170	Hog	20	9.217
77	04+295	1774.083	7.944	5.392	Sag	30	5.564
78	04+355	1778.820	2.555	-5.389	Hog	30	5.567
79	04+390	1779.722	13.840	11.285	Sag	20	1.772
80	04+424	1784.467	2.317	-11.523	Hog	30	2.604
81	04+470	1785.525	5.990	3.673	Sag	20	5.445
82	04+535	1789.433	4.494	-1.496	Hog	30	20.055
83	04+656	1794.882	5.330	0.836	Sag	20	23.920
84	04+717	1798.105	-3.562	-8.892	Hog	60	6.747
85	04+780	1795.853	11.525	15.087	Sag	40	2.651
86	04+832	1801.844	2.497	-9.028	Hog	40	4.431
87	04+884	1803.140	0.722	-1.775	Hog	30	16.902
88	04+928	1803.461	6.720	5.998	Sag	30	5.002
89	04+976	1806.692	2.246	-4.474	Hog	30	6.706
90	05+041	1808.141	4.921	2.675	Sag	30	11.218
91	05+124	1812.223	2.441	-2.480	Hog	30	12.097
92	05+162	1813.157	4.733	2.292	Sag	30	13.085
93	05+194	1814.646	3.934	-0.799	Hog	30	37.513
94	05+237	1816.347	2.880	-1.054	Hog	30	28.469
95	05+272	1817.357	4.398	1.518	Sag	30	19.757
96	05+302	1818.677	3.354	-1.044	Hog	30	28.728
97	05+333	1819.727	4.626	1.272	Sag	20	15.728
98	05+357	1820.814	2.340	-2.286	Hog	20	8.750
99	05+389	1821.570	5.344	3.004	Sag	20	6.657
100	05+422	1823.338	1.615	-3.729	Hog	20	5.362
101	05+469	1824.095	8.401	6.786	Sag	20	2.947
102	05+503	1826.934	1.351	-7.050	Hog	20	2.837

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
103	05+545	1827.501	3.186	1.835	Sag	30	16.343
104	05+588	1828.879	4.858	1.672	Sag	30	17.948
105	05+626	1830.701	4.025	-0.833	Hog	30	36.021
106	05+657	1831.956	4.951	0.926	Sag	30	32.386
107	05+701	1834.159	3.314	-1.637	Hog	30	18.321
108	05+731	1835.158	4.064	0.750	Sag	20	26.673
109	05+759	1836.290	2.284	-1.780	Hog	30	16.862
110	05+786	1836.903	5.006	2.722	Sag	20	7.349
111	05+851	1840.143	1.507	-3.499	Hog	30	8.575
112	05+883	1840.631	3.883	2.376	Sag	30	12.627
113	06+037	1846.611	4.866	0.983	Sag	60	61.071
114	06+126	1850.951	0.646	-4.220	Hog	30	7.110
115	06+191	1851.371	10.321	9.675	Sag	30	3.101
116	06+227	1855.094	1.470	-8.851	Hog	20	2.260
117	06+271	1855.729	3.614	2.144	Sag	30	13.995
118	06+323	1857.608	4.649	1.035	Sag	30	28.989
119	06+365	1859.597	3.390	-1.259	Hog	30	23.829
120	06+410	1861.104	4.081	0.691	Sag	30	43.408
121	06+443	1862.454	2.501	-1.580	Hog	30	18.988
122	06+468	1863.087	5.846	3.345	Sag	20	5.979
123	06+498	1864.801	2.865	-2.981	Hog	30	10.066
124	06+538	1865.957	3.865	1.000	Sag	30	30.014
125	06+602	1868.440	0.464	-3.401	Hog	30	8.821
126	06+634	1868.588	7.778	7.314	Sag	20	2.735
127	06+667	1871.151	2.588	-5.190	Hog	20	3.854
128	06+704	1872.094	4.462	1.874	Sag	20	10.672
129	06+724	1873.025	2.320	-2.142	Hog	20	9.338
130	06+751	1873.646	5.873	3.553	Sag	20	5.630
131	06+772	1874.886	3.535	-2.338	Hog	20	8.554
132	06+852	1877.702	6.906	3.371	Sag	40	11.866
133	06+904	1881.266	4.023	-2.883	Hog	40	13.876
134	06+977	1884.235	1.797	-2.226	Hog	50	22.461
135	07+035	1885.273	4.638	2.841	Sag	30	10.559
136	07+070	1886.877	3.519	-1.119	Hog	20	17.873
137	07+096	1887.786	4.844	1.325	Sag	20	15.098
138	07+120	1888.966	3.506	-1.338	Hog	20	14.953
139	07+145	1889.830	4.137	0.631	Sag	20	31.695
140	07+177	1891.179	3.812	-0.325	Hog	30	92.173
141	07+223	1892.931	4.452	0.640	Sag	30	46.851
142	07+375	1899.710	0.482	-3.970	Hog	50	12.593
143	07+489	1900.256	11.762	11.280	Sag	20	1.773
144	07+536	1905.787	3.726	-8.036	Hog	20	2.489
145	07+859	1917.845	4.581	0.855	Sag	60	70.155
146	07+961	1922.498	3.365	-1.216	Hog	60	49.328
147	08+069	1926.127	4.832	1.467	Sag	30	20.442
148	08+126	1928.896	2.504	-2.328	Hog	30	12.887
149	08+165	1929.864	4.400	1.896	Sag	30	15.829
150	08+200	1931.426	2.091	-2.309	Hog	20	8.662
151	08+226	1931.960	6.467	4.376	Sag	30	6.855
152	08+256	1933.943	1.669	-4.798	Hog	20	4.168
153	08+287	1934.461	5.484	3.815	Sag	20	5.242

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
154	08+313	1935.889	3.477	-2.007	Hog	20	9.961
155	08+337	1936.701	4.621	1.144	Sag	20	17.475
156	08+361	1937.833	3.370	-1.251	Hog	20	15.980
157	08+403	1939.254	4.511	1.141	Sag	20	17.525
158	08+447	1941.210	2.198	-2.313	Hog	30	12.969
159	08+498	1942.332	11.018	8.820	Sag	30	3.401
160	08+545	1947.528	1.046	-9.972	Hog	30	3.009
161	08+600	1948.101	4.656	3.610	Sag	20	5.540
162	08+643	1950.108	4.280	-0.376	Hog	20	53.121
163	08+697	1952.405	2.394	-1.886	Hog	30	15.908
164	08+726	1953.109	4.797	2.403	Sag	20	8.322
165	08+758	1954.629	3.729	-1.068	Hog	20	18.723
166	08+792	1955.907	3.055	-0.674	Hog	30	44.494
167	08+847	1957.579	5.914	2.859	Sag	30	10.492
168	08+893	1960.295	-1.099	-7.013	Hog	20	2.852
169	08+923	1959.964	3.542	4.641	Sag	30	6.464
170	08+971	1961.659	4.677	1.135	Sag	20	17.622
171	09+011	1963.561	3.254	-1.423	Hog	30	21.076
172	09+053	1964.933	4.602	1.348	Sag	20	14.835
173	09+099	1967.007	3.965	-0.637	Hog	20	31.413
174	09+137	1968.550	4.665	0.700	Sag	30	42.837
175	09+165	1969.824	3.342	-1.323	Hog	20	15.116
176	09+201	1971.028	5.269	1.927	Sag	30	15.567
177	09+228	1972.473	3.364	-1.905	Hog	20	10.499
178	09+271	1973.901	0.199	-3.165	Hog	30	9.479
179	09+297	1973.953	2.985	2.786	Sag	20	7.180
180	09+337	1975.135	-4.033	-7.018	Hog	30	4.274
181	09+377	1973.502	4.500	8.533	Sag	30	3.516
182	09+413	1975.126	2.342	-2.158	Hog	30	13.907
183	09+448	1975.933	6.406	4.064	Sag	30	7.382
184	09+486	1978.404	1.893	-4.513	Hog	20	4.431
185	09+514	1978.937	8.987	7.094	Sag	20	2.819
186	09+552	1982.319	5.967	-3.020	Hog	20	6.623
187	09+577	1983.819	7.308	1.341	Sag	30	22.372
188	09+604	1985.764	4.139	-3.169	Hog	20	6.311
189	09+634	1987.017	8.814	4.675	Sag	20	4.278
190	09+689	1991.824	0.865	-7.949	Hog	50	6.290
191	09+780	1992.619	5.293	4.428	Sag	80	18.066
192	09+851	1996.362	-0.136	-5.429	Hog	20	3.684
193	09+875	1996.329	4.476	4.612	Sag	20	4.336
194	09+904	1997.594	-0.763	-5.239	Hog	20	3.817
195	09+932	1997.377	4.514	5.277	Sag	20	3.790
196	09+962	1998.716	3.439	-1.075	Hog	30	27.914
197	09+992	1999.775	4.685	1.246	Sag	30	24.069
198	10+021	2001.123	5.185	0.500	Sag	20	40.029
199	10+072	2003.757	2.672	-2.513	Hog	30	11.935
200	10+132	2005.358	2.253	-0.419	Hog	30	71.738
201	10+174	2006.297	2.657	0.404	Sag	30	74.375
202	10+199	2006.964	1.746	-0.911	Hog	20	21.967
203	10+321	2009.093	-8.425	-10.171	Hog	60	5.899
204	10+393	2002.995	-0.112	8.313	Sag	60	7.218

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
205	10+449	2002.933	-2.173	-2.061	Hog	20	9.701
206	10+473	2002.397	-0.551	1.622	Sag	20	12.332
207	10+500	2002.250	-6.878	-6.327	Hog	20	3.161
208	10+528	2000.345	-2.302	4.576	Sag	20	4.371
209	10+554	1999.744	-3.212	-0.910	Hog	20	21.994
210	10+579	1998.946	-2.206	1.006	Sag	20	19.883
211	10+613	1998.191	-5.207	-3.001	Hog	20	6.664
212	10+644	1996.561	-2.333	2.874	Sag	20	6.960
213	10+671	1995.923	-8.658	-6.325	Hog	20	3.162
214	10+698	1993.594	-2.831	5.827	Sag	20	3.432
215	10+730	1992.697	-6.377	-3.546	Hog	20	5.640
216	10+783	1989.330	-1.811	4.566	Sag	30	6.570
217	10+855	1988.014	-9.866	-8.055	Hog	80	9.932
218	10+946	1979.070	-11.132	-1.266	Hog	20	15.792
219	11+029	1969.867	-4.406	6.726	Sag	120	17.841
220	11+273	1959.129	2.989	7.395	Sag	60	8.114
221	11+411	1963.262	-0.976	-3.965	Hog	50	12.612
222	11+449	1962.893	2.100	3.076	Sag	20	6.504
223	11+486	1963.681	-5.684	-7.784	Hog	30	3.854
224	11+563	1959.288	3.828	9.512	Sag	50	5.257
225	11+710	1964.897	6.348	2.520	Sag	30	11.903
226	11+758	1967.916	-2.783	-9.131	Hog	60	6.571
227	11+804	1966.610	-1.629	1.154	Sag	20	17.327
228	11+879	1965.401	-4.541	-2.912	Hog	40	13.738
229	11+914	1963.789	-3.346	1.195	Sag	20	16.741
230	11+939	1962.951	-5.659	-2.313	Hog	20	8.647
231	11+966	1961.459	-2.396	3.263	Sag	20	6.129
232	12+001	1960.613	-6.790	-4.394	Hog	20	4.551
233	12+051	1957.233	-2.326	4.464	Sag	20	4.480
234	12+120	1955.632	-5.025	-2.699	Hog	20	7.410
235	12+156	1953.797	-3.468	1.557	Sag	20	12.849
236	12+197	1952.389	-4.546	-1.078	Hog	20	18.550
237	12+226	1951.037	-3.230	1.316	Sag	30	22.786
238	12+267	1949.734	-3.868	-0.638	Hog	30	46.998
239	12+297	1948.552	-4.588	-0.720	Hog	30	41.699
240	12+344	1946.429	-3.653	0.935	Sag	30	32.089
241	12+396	1944.514	-4.837	-1.184	Hog	30	25.341
242	12+435	1942.639	-3.158	1.679	Sag	30	17.878
243	12+482	1941.142	-4.054	-0.896	Hog	30	33.493
244	12+617	1935.695	2.007	6.061	Sag	30	4.949
245	12+663	1936.623	0.349	-1.658	Hog	30	18.097
246	12+708	1936.782	2.388	2.039	Sag	30	14.718
247	12+832	1939.733	0.182	-2.206	Hog	30	13.600
248	12+894	1939.847	4.044	3.862	Sag	30	7.769
249	12+929	1941.257	1.548	-2.496	Hog	30	12.020
250	12+987	1942.150	-0.705	-2.253	Hog	40	17.759
251	13+042	1941.763	0.270	0.975	Sag	30	30.770
252	13+218	1942.240	-4.075	-4.345	Hog	30	6.904
253	13+278	1939.812	-4.528	-0.453	Hog	30	66.220
254	13+331	1937.412	-3.796	0.732	Sag	30	40.954
255	13+451	1932.848	-5.176	-1.380	Hog	30	21.728

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
256	13+505	1930.070	-2.391	2.785	Sag	30	10.771
257	13+563	1928.676	-3.437	-1.046	Hog	30	28.672
258	13+620	1926.728	-0.870	2.567	Sag	30	11.685
259	13+709	1925.947	-0.688	0.182	Sag	60	330.583
260	13+812	1925.238	-2.122	-1.434	Hog	30	20.932
261	13+867	1924.073	-4.616	-2.494	Hog	30	12.029
262	13+915	1921.876	-2.977	1.639	Sag	30	18.306
263	13+962	1920.486	-1.625	1.352	Sag	30	22.199
264	14+026	1919.440	-0.491	1.134	Sag	30	26.444
265	14+075	1919.199	-1.708	-1.217	Hog	30	24.646
266	14+110	1918.607	-0.390	1.318	Sag	20	15.168
267	14+153	1918.438	-4.434	-4.044	Hog	50	12.364
268	14+241	1914.549	-5.434	-1.000	Hog	30	29.981
269	14+308	1910.919	-5.311	0.123	Sag	30	244.134
270	14+373	1907.452	-8.170	-2.859	Hog	30	10.494
271	14+421	1903.483	0.638	8.808	Sag	30	3.406
272	14+493	1903.939	2.794	2.156	Sag	30	13.917
273	14+546	1905.421	-3.001	-5.795	Hog	30	5.178
274	14+603	1903.710	-0.546	2.455	Sag	30	12.222
275	14+651	1903.448	-0.243	0.303	Sag	30	98.941
276	14+726	1903.265	-0.863	-0.620	Hog	30	48.377
277	14+780	1902.801	-1.878	-1.015	Hog	30	29.566
278	14+837	1901.726	-0.886	0.992	Sag	30	30.252
279	14+911	1901.073	0.070	0.956	Sag	30	31.389
280	14+968	1901.113	-1.487	-1.557	Hog	30	19.270
281	15+074	1899.539	-11.176	-9.689	Hog	40	4.128
282	15+146	1891.529	-12.871	-1.695	Hog	30	17.708
283	15+214	1882.732	-4.637	8.234	Sag	80	9.716
284	15+301	1878.721	-8.861	-4.224	Hog	30	7.102
285	15+348	1874.550	-3.952	4.909	Sag	30	6.111
286	15+393	1872.763	-9.409	-5.457	Hog	30	5.497
287	15+442	1868.121	0.473	9.882	Sag	60	6.072
288	15+496	1868.373	-7.553	-8.026	Hog	20	2.492
289	15+524	1866.242	4.564	12.117	Sag	20	1.651
290	15+560	1867.896	-10.091	-14.655	Hog	30	2.047
291	15+617	1862.171	-16.344	-6.253	Hog	30	4.798
292	15+675	1852.710	-7.093	9.251	Sag	80	8.648
293	15+770	1845.986	-8.859	-1.766	Hog	60	33.992
294	15+900	1834.431	-10.108	-1.249	Hog	60	48.011
295	15+986	1825.750	-14.921	-4.813	Hog	30	6.234
296	16+039	1817.770	-8.768	6.153	Sag	40	6.501
297	16+106	1811.903	-10.511	-1.743	Hog	60	34.422
298	16+186	1803.505	-12.494	-1.983	Hog	20	10.087
299	16+217	1799.625	-7.293	5.201	Sag	30	5.768
300	16+268	1795.898	-1.392	5.901	Sag	30	5.084
301	16+323	1795.135	-5.236	-3.844	Hog	50	13.008
302	16+394	1791.407	-4.825	0.411	Sag	60	146.010
303	16+447	1788.882	-6.678	-1.853	Hog	20	10.793
304	16+470	1787.346	-1.895	4.783	Sag	20	4.182
305	16+491	1786.945	-6.553	-4.658	Hog	20	4.294
306	16+517	1785.224	-4.769	1.784	Sag	20	11.213

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
307	16+571	1782.670	-6.228	-1.459	Hog	60	41.133
308	16+611	1780.147	-4.580	1.648	Sag	20	12.138
309	16+634	1779.099	-6.566	-1.986	Hog	20	10.071
310	16+682	1775.959	-2.301	4.265	Sag	20	4.690
311	16+716	1775.172	-7.989	-5.688	Hog	20	3.516
312	16+768	1771.022	-5.205	2.784	Sag	50	17.957
313	16+937	1762.214	0.533	5.738	Sag	80	13.942
314	17+074	1762.943	4.378	3.845	Sag	50	13.006
315	17+137	1765.692	3.582	-0.796	Hog	50	62.857
316	17+187	1767.508	5.798	2.216	Sag	30	13.539
317	17+232	1770.067	3.828	-1.970	Hog	50	25.381
318	17+379	1775.693	-2.587	-6.415	Hog	50	7.794
319	17+445	1773.979	-1.769	0.818	Sag	30	36.695
320	17+494	1773.111	-5.465	-3.696	Hog	30	8.119
321	17+621	1766.178	-4.191	1.274	Sag	30	23.563
322	17+669	1764.169	-5.443	-1.252	Hog	30	23.971
323	17+761	1759.169	1.842	7.285	Sag	80	10.982
324	17+972	1763.066	4.780	2.938	Sag	60	20.422
325	18+037	1766.182	3.147	-1.633	Hog	30	18.380
326	18+213	1771.700	-4.488	-7.635	Hog	30	3.929
327	18+291	1768.187	1.341	5.829	Sag	40	6.862
328	18+356	1769.062	0.375	-0.966	Hog	60	62.086
329	18+520	1769.677	5.378	5.003	Sag	60	11.993
330	18+633	1775.713	3.793	-1.585	Hog	30	18.929
331	18+715	1778.832	5.558	1.765	Sag	30	16.999
332	18+749	1780.757	2.699	-2.859	Hog	30	10.493
333	18+794	1781.955	5.001	2.302	Sag	30	13.029
334	18+851	1784.810	4.508	-0.493	Hog	30	60.780
335	18+888	1786.486	5.268	0.760	Sag	30	39.472
336	18+921	1788.241	3.668	-1.600	Hog	20	12.503
337	18+966	1789.864	5.377	1.709	Sag	20	11.701
338	18+997	1791.564	4.741	-0.636	Hog	20	31.415
339	19+021	1792.668	5.639	0.898	Sag	20	22.272
340	19+042	1793.861	4.722	-0.917	Hog	20	21.817
341	19+063	1794.844	6.331	1.609	Sag	20	12.429
342	19+084	1796.216	3.440	-2.891	Hog	20	6.918
343	19+128	1797.711	4.544	1.104	Sag	30	27.180
344	19+204	1801.177	6.574	2.030	Sag	30	14.779
345	19+252	1804.325	2.935	-3.639	Hog	20	5.496
346	19+280	1805.157	6.298	3.363	Sag	20	5.947
347	19+327	1808.098	3.559	-2.739	Hog	20	7.301
348	19+371	1809.654	5.297	1.738	Sag	20	11.509
349	19+398	1811.124	4.485	-0.812	Hog	20	24.644
350	19+420	1812.108	5.818	1.333	Sag	20	15.004
351	19+451	1813.900	2.566	-3.252	Hog	20	6.149
352	19+490	1814.899	5.813	3.247	Sag	30	9.239
353	19+525	1816.909	-1.366	-7.179	Hog	20	2.786
354	19+572	1816.259	9.667	11.033	Sag	35	3.172
355	19+634	1822.217	6.262	-3.405	Hog	40	11.746
356	19+685	1825.425	2.039	-4.223	Hog	30	7.103
357	19+721	1826.167	12.074	10.035	Sag	20	1.993

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
358	19+752	1829.835	3.791	-8.283	Hog	20	2.414
359	19+798	1831.573	5.798	2.007	Sag	20	9.966
360	19+844	1834.251	3.492	-2.306	Hog	30	13.010
361	19+873	1835.254	5.151	1.659	Sag	20	12.053
362	19+957	1839.603	12.348	7.197	Sag	30	4.168
363	19+995	1844.343	6.890	-5.458	Hog	30	5.497
364	20+060	1848.774	6.058	-0.832	Hog	30	36.054
365	20+092	1850.748	5.145	-0.913	Hog	30	32.848
366	20+122	1852.282	7.195	2.050	Sag	25	12.196
367	20+151	1854.361	-0.943	-8.138	Hog	20	2.458
368	20+196	1853.932	4.172	5.115	Sag	30	5.866
369	20+232	1855.431	-0.623	-4.795	Hog	20	4.171
370	20+267	1855.216	10.495	11.118	Sag	35	3.148
371	20+300	1858.717	11.971	1.476	Sag	30	20.332
372	20+342	1863.703	5.180	-6.791	Hog	30	4.418
373	20+390	1866.217	0.349	-4.831	Hog	60	12.421
374	20+450	1866.425	5.407	5.058	Sag	50	9.886
375	20+505	1869.407	8.155	2.748	Sag	10	3.640
376	20+518	1870.498	5.352	-2.803	Hog	10	3.568
377	20+552	1872.282	3.755	-1.597	Hog	20	12.531
378	20+596	1873.950	6.711	2.956	Sag	30	10.152
379	20+637	1876.690	2.732	-3.979	Hog	35	8.797
380	20+674	1877.711	6.049	3.317	Sag	20	6.029
381	20+715	1880.143	3.793	-2.256	Hog	25	11.082
382	20+745	1881.296	6.196	2.403	Sag	10	4.161
383	20+776	1883.188	3.547	-2.649	Hog	15	5.663
384	20+833	1885.237	5.953	2.406	Sag	30	12.473
385	20+873	1887.574	4.641	-1.312	Hog	20	15.254
386	20+948	1891.078	7.343	2.702	Sag	20	7.403
387	20+985	1893.774	9.958	2.615	Sag	20	7.647
388	21+005	1895.838	0.713	-9.245	Hog	20	2.163
389	21+059	1896.221	4.113	3.400	Sag	30	8.825
390	21+130	1899.133	5.558	1.445	Sag	20	13.841
391	21+153	1900.383	7.479	1.921	Sag	20	10.410
392	21+180	1902.465	1.479	-6.000	Hog	20	3.333
393	21+218	1903.028	4.287	2.808	Sag	30	10.683
394	21+241	1903.983	5.087	0.800	Sag	10	12.498
395	21+265	1905.222	2.064	-3.023	Hog	30	9.922
396	21+291	1905.760	2.967	0.903	Sag	10	11.075
397	21+304	1906.142	2.595	-0.372	Hog	10	26.888
398	21+317	1906.474	1.078	-1.517	Hog	10	6.591
399	21+339	1906.710	2.689	1.611	Sag	15	9.310
400	21+367	1907.464	-1.355	-4.044	Hog	20	4.946
401	21+391	1907.130	0.428	1.783	Sag	15	8.413
402	21+418	1907.245	-2.340	-2.768	Hog	30	10.841
403	21+445	1906.620	-4.140	-1.800	Hog	15	8.331
404	21+463	1905.875	-8.265	-4.125	Hog	20	4.849
405	21+485	1904.047	-6.785	1.480	Sag	15	10.137
406	21+500	1903.050	-4.834	1.951	Sag	10	5.126
407	21+528	1901.705	-0.893	3.941	Sag	30	7.611
408	21+561	1901.410	-1.449	-0.556	Hog	20	35.976

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
409	21+600	1900.845	3.495	4.944	Sag	40	8.090
410	21+635	1902.078	2.553	-0.942	Hog	20	21.224
411	21+677	1903.143	6.296	3.743	Sag	50	13.358
412	21+718	1905.721	4.421	-1.875	Hog	20	10.667
413	21+757	1907.461	0.097	-4.324	Hog	30	6.938
414	21+794	1907.497	-0.367	-0.464	Hog	20	43.085
415	21+821	1907.397	0.531	0.898	Sag	20	22.276
416	21+855	1907.575	2.795	2.264	Sag	20	8.832
417	21+888	1908.500	-0.496	-3.291	Hog	25	7.597
418	21+916	1908.360	-2.559	-2.063	Hog	25	12.118
419	21+958	1907.305	2.435	4.994	Sag	25	5.006
420	22+004	1908.426	4.320	1.885	Sag	30	15.910
421	22+031	1909.591	3.832	-0.488	Hog	20	40.947
422	22+056	1910.564	4.393	0.561	Sag	20	35.623
423	22+086	1911.866	1.824	-2.569	Hog	20	7.784
424	22+130	1912.681	0.326	-1.498	Hog	20	13.348
425	22+155	1912.761	1.781	1.455	Sag	20	13.741
426	22+184	1913.285	1.261	-0.520	Hog	20	38.455
427	22+225	1913.796	4.267	3.006	Sag	30	9.980
428	22+253	1914.979	3.604	-0.663	Hog	20	30.175
429	22+282	1916.032	4.825	1.221	Sag	20	16.381
430	22+315	1917.618	4.015	-0.810	Hog	20	24.690
431	22+373	1919.939	2.374	-1.641	Hog	20	12.189
432	22+414	1920.927	4.676	2.302	Sag	20	8.690
433	22+453	1922.736	2.638	-2.038	Hog	20	9.812
434	22+481	1923.490	4.037	1.399	Sag	20	14.289
435	22+517	1924.923	5.337	1.300	Sag	20	15.394
436	22+552	1926.793	3.011	-2.326	Hog	20	8.598
437	22+578	1927.569	4.193	1.182	Sag	15	12.684
438	22+623	1929.469	5.809	1.616	Sag	20	12.376
439	22+695	1933.627	7.897	2.088	Sag	20	9.578
440	22+748	1937.849	8.795	0.898	Sag	20	22.278
441	22+804	1942.735	-2.524	-11.319	Hog	45	3.976
442	22+857	1941.396	-0.617	1.907	Sag	21.763	11.413
443	22+894	1941.167	4.352	4.969	Sag	35	7.043
444	22+963	1944.176	4.748	0.396	Sag	20	50.498
445	22+990	1945.439	4.193	-0.555	Hog	20	35.994
446	23+014	1946.482	5.553	1.360	Sag	20	14.708
447	23+044	1948.132	4.753	-0.800	Hog	20	25.017
448	23+090	1950.312	6.532	1.779	Sag	60	33.737
449	23+149	1954.185	2.878	-3.654	Hog	40	10.949
450	23+206	1955.813	6.335	3.457	Sag	50	14.465
451	23+275	1960.211	0.551	-5.784	Hog	40	6.915
452	23+337	1960.552	4.491	3.940	Sag	55	13.958
453	23+374	1962.220	6.875	2.384	Sag	15	6.292
454	23+446	1967.136	2.380	-4.495	Hog	45	10.011
455	23+495	1968.296	10.592	8.212	Sag	30	3.653
456	23+532	1972.281	7.931	-2.661	Hog	10	3.758
457	23+564	1974.831	3.164	-4.767	Hog	40	8.391
458	23+614	1976.391	6.065	2.901	Sag	20	6.893
459	23+635	1977.675	7.373	1.308	Sag	20	15.291

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
460	23+662	1979.684	8.257	0.884	Sag	25	28.294
461	23+707	1983.402	3.963	-4.294	Hog	30	6.986
462	23+756	1985.346	6.671	2.708	Sag	30	11.075
463	23+805	1988.612	4.013	-2.658	Hog	30	11.284
464	23+846	1990.241	4.390	0.377	Sag	20	52.971
465	23+881	1991.782	4.304	-0.086	Hog	20	231.048
466	23+904	1992.777	4.838	0.534	Sag	20	37.392
467	23+940	1994.517	4.794	-0.044	Hog	20	447.560
468	23+977	1996.294	5.516	0.722	Sag	20	27.701
469	24+001	1997.627	5.104	-0.412	Hog	20	48.586
470	24+036	1999.377	9.602	4.498	Sag	15	3.335
471	24+052	2000.973	14.222	4.620	Sag	15	3.246
472	24+072	2003.816	6.973	-7.249	Hog	15	2.069
473	24+090	2005.046	1.873	-5.100	Hog	20	3.922
474	24+122	2005.650	5.328	3.455	Sag	30	8.684
475	24+159	2007.612	3.155	-2.173	Hog	20	9.202
476	24+198	2008.842	6.559	3.404	Sag	25	7.343
477	24+237	2011.399	2.158	-4.401	Hog	30	6.816
478	24+278	2012.283	7.948	5.790	Sag	35	6.044
479	24+329	2016.361	4.059	-3.889	Hog	30	7.713
480	24+362	2017.696	8.458	4.399	Sag	25	5.683
481	24+399	2020.786	4.673	-3.785	Hog	25	6.606
482	24+438	2022.652	7.651	2.978	Sag	25	8.395
483	24+466	2024.763	6.766	-0.885	Hog	20	22.589
484	24+500	2027.043	8.706	1.940	Sag	25	12.884
485	24+525	2029.244	9.283	0.577	Sag	15	25.997
486	24+541	2030.708	7.523	-1.760	Hog	15	8.520
487	24+560	2032.183	1.525	-5.998	Hog	20	3.335
488	24619.055	2033.078	9.722	8.197	Sag	55	6.710
489	24657.631	2036.829	6.242	-3.480	Hog	20	5.746
490	24681.32	2038.307	7.534	1.292	Sag	20	15.479
491	24700.587	2039.759	7.121	-0.413	Hog	15	36.281
492	24718.608	2041.042	9.031	1.910	Sag	10	5.235
493	24733.696	2042.405	12.946	3.915	Sag	20	5.107
494	24749.224	2044.415	14.224	1.278	Sag	5	3.915
495	24754.976	2045.233	17.200	2.976	Sag	5	1.680
496	24760	2046.097	15.649	-1.551	Hog	5	3.224
497	24773.84	2048.263	11.960	-3.689	Hog	15	4.066
498	24792.108	2050.448	8.781	-3.179	Hog	15	4.720
499	24811.468	2052.148	13.108	4.327	Sag	10	2.311
500	24832.417	2054.894	3.088	-10.020	Hog	25	2.495
501	24876.149	2056.245	9.489	6.401	Sag	15	2.343
502	24890.063	2057.565	13.961	4.472	Sag	10	2.236
503	24900.491	2059.021	16.140	2.179	Sag	10	4.590
504	24909.838	2060.529	13.624	-2.516	Hog	5	1.987
505	24938.527	2064.438	12.381	-1.243	Hog	10	8.047
506	24952.472	2066.165	9.251	-3.130	Hog	10	3.194
507	24965.338	2067.355	6.894	-2.357	Hog	10	4.243
508	24982.907	2068.566	4.060	-2.834	Hog	20	7.059
509	25019.481	2070.051	6.516	2.456	Sag	20	8.146
510	25041.003	2071.453	1.749	-4.767	Hog	20	4.196

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
511	25093.211	2072.367	7.995	6.246	Sag	30	4.803
512	25134.629	2075.678	10.933	2.938	Sag	15	5.107
513	25162.133	2078.685	1.503	-9.430	Hog	20	2.121
514	25188.592	2079.083	3.768	2.265	Sag	10	4.414
515	25206.981	2079.775	13.233	9.465	Sag	20	2.113
516	25224.617	2082.109	3.860	-9.373	Hog	10	1.067
517	25257.539	2083.380	8.918	5.058	Sag	25	4.942
518	25285.389	2085.864	3.924	-4.994	Hog	20	4.004
519	25347.184	2088.289	8.779	4.855	Sag	10	2.060
520	25358.759	2089.305	14.195	5.416	Sag	10	1.846
521	25371.304	2091.085	7.339	-6.856	Hog	10	1.459
522	25389.351	2092.410	7.123	-0.216	Hog	20	92.587
523	25410.171	2093.893	6.122	-1.001	Hog	20	19.993
524	25439.755	2095.704	0.915	-5.207	Hog	25	4.801
525	25472.233	2096.001	3.250	2.335	Sag	20	8.567
526	25502.666	2096.990	1.183	-2.067	Hog	20	9.679
527	25529.608	2097.309	5.814	4.631	Sag	30	6.479
528	25589.406	2100.786	1.574	-4.240	Hog	40	9.434
529	25641.372	2101.603	4.347	2.773	Sag	20	7.210
530	25688.002	2103.630	2.817	-1.530	Hog	20	13.071
531	25716.44	2104.432	4.546	1.729	Sag	20	11.571
532	25734.884	2105.270	2.936	-1.610	Hog	10	6.211
533	25751.264	2105.751	6.080	3.144	Sag	10	3.181
534	25778.312	2107.395	3.722	-2.358	Hog	20	8.482
535	25817.092	2108.839	4.821	1.099	Sag	20	18.198
536	25863.022	2111.053	6.146	1.325	Sag	20	15.094
537	25886.06	2112.469	4.012	-2.134	Hog	20	9.371
538	25912.206	2113.518	4.528	0.516	Sag	20	38.761
539	25951.146	2115.281	5.592	1.064	Sag	20	18.797
540	25982.274	2117.022	4.441	-1.151	Hog	10	8.691
541	25996.512	2117.654	6.146	1.705	Sag	15	8.800
542	26016.152	2118.861	3.391	-2.755	Hog	10	3.630
543	26032.064	2119.401	-1.719	-5.110	Hog	10	1.957
544	26052.69	2119.046	3.683	5.402	Sag	15	2.777
545	26074.601	2119.853	2.202	-1.481	Hog	20	13.506
546	26109.612	2120.624	4.241	2.039	Sag	20	9.810
547	26140	2121.913	4.070	-0.171	Hog	20	116.650
548	26168.116	2123.057	5.503	1.433	Sag	20	13.952
549	26200.565	2124.843	3.311	-2.192	Hog	20	9.124
550	26253.446	2126.594	2.120	-1.191	Hog	20	16.788
551	26283.21	2127.225	6.632	4.512	Sag	10	2.216
552	26306.39	2128.762	3.303	-3.329	Hog	20	6.008
553	26338.11	2129.810	3.707	0.404	Sag	20	49.460
554	26356.888	2130.506	3.492	-0.215	Hog	15	69.651
555	26379.824	2131.307	5.318	1.826	Sag	20	10.953
556	26413.624	2133.104	3.062	-2.256	Hog	20	8.867
557	26453.97	2134.340	4.493	1.431	Sag	20	13.978
558	26481.149	2135.561	3.912	-0.581	Hog	20	34.418
559	26504.717	2136.483	4.692	0.780	Sag	20	25.654
560	26528.506	2137.599	2.974	-1.718	Hog	20	11.647
561	26554.56	2138.374	4.446	1.472	Sag	20	13.586

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
562	26593.044	2140.085	4.096	-0.350	Hog	20	57.128
563	26646.018	2142.255	3.766	-0.330	Hog	20	60.609
564	26678.7	2143.486	5.525	1.759	Sag	5	2.843
565	26697.43	2144.521	4.020	-1.505	Hog	30	19.939
566	26727.277	2145.721	3.823	-0.197	Hog	20	101.109
567	26740.685	2146.234	3.538	-0.285	Hog	5	17.563
568	26769.54	2147.254	4.800	1.262	Sag	20	15.841
569	26796.582	2148.553	2.457	-2.343	Hog	20	8.533
570	26814.473	2148.992	4.425	1.968	Sag	15	7.621
571	26843.078	2150.258	3.979	-0.446	Hog	20	44.825
572	26860.777	2150.962	4.362	0.383	Sag	15	39.148
573	26888.249	2152.160	3.637	-0.725	Hog	20	27.583
574	26925.745	2153.524	3.883	0.246	Sag	20	81.374
575	26961.48	2154.911	3.534	-0.349	Hog	20	57.415
576	26988.559	2155.869	3.995	0.461	Sag	20	43.455
577	27042.939	2158.041	3.401	-0.594	Hog	20	33.682
578	27065	2158.791	4.128	0.727	Sag	20	27.516
579	27093.975	2159.987	2.780	-1.348	Hog	20	14.840
580	27123.073	2160.796	4.079	1.299	Sag	20	15.390
581	27153.619	2162.042	-2.133	-6.212	Hog	20	3.219
582	27189.018	2161.287	12.945	15.078	Sag	30	1.990
583	27214.387	2164.571	2.313	-10.632	Hog	20	1.881
584	27256.452	2165.544	5.433	3.120	Sag	30	9.616
585	27285	2167.095	3.797	-1.636	Hog	20	12.228
586	27324.792	2168.606	2.991	-0.806	Hog	20	24.806
587	27373.652	2170.068	3.978	0.987	Sag	20	20.266
588	27394.602	2170.901	3.360	-0.618	Hog	20	32.358
589	27415.126	2171.591	6.702	3.342	Sag	20	5.984
590	27444.525	2173.561	0.190	-6.512	Hog	35	5.374
591	27482.902	2173.634	5.388	5.198	Sag	20	3.848
592	27524.385	2175.869	2.783	-2.605	Hog	40	15.356
593	27582.241	2177.479	4.377	1.594	Sag	20	12.546
594	27609.033	2178.652	1.156	-3.221	Hog	10	3.105
595	27630.324	2178.898	3.970	2.814	Sag	20	7.109
596	27670.476	2180.492	4.250	0.280	Sag	30	107.053
597	27695.946	2181.575	3.673	-0.577	Hog	20	34.656
598	27760.764	2183.955	5.433	1.760	Sag	15	8.523
599	27784.061	2185.221	2.836	-2.597	Hog	20	7.703
600	27807.842	2185.896	5.906	3.070	Sag	10	3.258
601	27829.069	2187.149	0.526	-5.380	Hog	20	3.717
602	27851.59	2187.268	5.640	5.114	Sag	10	1.955
603	27872.364	2188.439	13.856	8.216	Sag	10	1.217
604	27881.034	2189.641	3.123	-10.733	Hog	5	0.466
605	27904.776	2190.382	5.394	2.271	Sag	10	4.404
606	27916.166	2190.997	4.019	-1.375	Hog	10	7.274
607	27934.17	2191.720	2.507	-1.512	Hog	15	9.922
608	27951.112	2192.145	6.463	3.956	Sag	15	3.792
609	27965.889	2193.100	1.587	-4.876	Hog	10	2.051
610	28009.938	2193.799	3.996	2.409	Sag	15	6.226
611	28034.012	2194.761	3.370	-0.626	Hog	20	31.957
612	28085.849	2196.508	4.781	1.411	Sag	50	35.430

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
613	28129.921	2198.615	4.300	-0.481	Hog	20	41.556
614	28181.192	2200.820	3.659	-0.641	Hog	20	31.211
615	28204.861	2201.686	5.823	2.164	Sag	20	9.245
616	28229.065	2203.095	4.666	-1.157	Hog	20	17.289
617	28280.579	2205.499	7.794	3.128	Sag	40	12.786
618	28324.521	2208.924	3.627	-4.167	Hog	25	5.999
619	28366.133	2210.433	6.172	2.545	Sag	30	11.788
620	28394.608	2212.191	4.026	-2.146	Hog	20	9.321
621	28417.97	2213.131	2.841	-1.185	Hog	20	16.876
622	28436.867	2213.668	5.825	2.984	Sag	15	5.027
623	28464.178	2215.259	5.243	-0.582	Hog	20	34.344
624	28492.199	2216.728	5.982	0.739	Sag	20	27.038
625	28518.539	2218.304	4.769	-1.213	Hog	30	24.725
626	28570.376	2220.776	3.010	-1.759	Hog	30	17.052
627	28605.873	2221.844	12.554	9.544	Sag	25	2.619
628	28629.042	2224.753	0.004	-12.550	Hog	20	1.594
629	28678.433	2224.755	6.811	6.807	Sag	45	6.610
630	28721.338	2227.677	4.640	-2.171	Hog	30	13.813
631	28806.504	2231.629	5.210	0.570	Sag	30	52.565
632	28849.993	2233.895	3.243	-1.967	Hog	30	15.245
633	28877.627	2234.791	6.068	2.825	Sag	20	7.078
634	28935.046	2238.275	3.783	-2.285	Hog	60	26.260
635	28980.687	2240.002	6.726	2.943	Sag	20	6.796
636	29001.752	2241.418	4.383	-2.343	Hog	20	8.538
637	29078.408	2244.779	8.115	3.732	Sag	20	5.359
638	29110.701	2247.399	1.348	-6.767	Hog	10	1.478
639	29130.374	2247.664	4.749	3.401	Sag	15	4.410
640	29155	2248.834	4.072	-0.677	Hog	30	44.269
641	29176.209	2249.698	4.621	0.549	Sag	10	18.184
642	29231.541	2252.255	5.357	0.736	Sag	30	40.803
643	29266.617	2254.134	4.904	-0.453	Hog	30	66.302
644	29295.998	2255.575	7.343	2.439	Sag	20	8.200
645	29325.897	2257.770	4.385	-2.958	Hog	20	6.762
646	29347.059	2258.698	6.639	2.254	Sag	10	4.437
647	29362.332	2259.712	4.699	-1.940	Hog	10	5.155
648	29408.996	2261.905	4.949	0.250	Sag	30	120.181
649	29453.45	2264.105	4.819	-0.130	Hog	30	231.128
650	29487.48	2265.745	6.378	1.559	Sag	30	19.242
651	29521.722	2267.929	4.187	-2.191	Hog	30	13.692
652	29583.065	2270.498	5.543	1.356	Sag	30	22.130
653	29609.934	2271.987	3.568	-1.975	Hog	20	10.126
654	29633.994	2272.845	6.626	3.058	Sag	20	6.540
655	29656.127	2274.312	10.284	3.658	Sag	20	5.468
656	29679.554	2276.721	5.643	-4.641	Hog	15	3.232
657	29697.416	2277.729	9.335	3.692	Sag	10	2.708
658	29716.119	2279.475	2.216	-7.119	Hog	20	2.809
659	29752.424	2280.280	6.498	4.282	Sag	20	4.671
660	29770.998	2281.486	4.094	-2.404	Hog	15	6.241
661	29785.235	2282.069	5.348	1.254	Sag	10	7.973
662	29808.533	2283.315	2.374	-2.974	Hog	15	5.043
663	29821.855	2283.632	5.172	2.798	Sag	10	3.574

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
664	29835.972	2284.362	2.974	-2.198	Hog	15	6.826
665	29859.64	2285.066	5.983	3.009	Sag	30	9.971
666	29885.85	2286.634	2.795	-3.188	Hog	10	3.137
667	29909.748	2287.302	7.094	4.299	Sag	15	3.489
668	29926.907	2288.519	7.936	0.842	Sag	15	17.823
669	29945.287	2289.978	1.740	-6.196	Hog	15	2.421
670	29975.721	2290.508	8.913	7.173	Sag	20	2.788
671	30000.092	2292.680	5.349	-3.564	Hog	25	7.015
672	30069.518	2296.394	4.456	-0.893	Hog	30	33.592
673	30105.827	2298.012	6.024	1.568	Sag	30	19.137
674	30163.388	2301.479	3.861	-2.163	Hog	30	13.869
675	30201.558	2302.953	-0.930	-4.791	Hog	30	6.262
676	30248.154	2302.519	0.740	1.670	Sag	30	17.966
677	30281.288	2302.765	-0.415	-1.155	Hog	30	25.977
678	30305.991	2302.662	2.686	3.101	Sag	10	3.225
679	30331.23	2303.340	-5.168	-7.854	Hog	30	3.820
680	30360.788	2301.813	0.106	5.274	Sag	20	3.792
681	30427.264	2301.883	-1.815	-1.921	Hog	30	15.621
682	30459.054	2301.306	-4.835	-3.020	Hog	30	9.933
683	30485.643	2300.021	0.211	5.046	Sag	20	3.963
684	30535.973	2300.127	-1.969	-2.180	Hog	50	22.934
685	30588.56	2299.092	1.326	3.295	Sag	20	6.071
686	30608.64	2299.358	-0.246	-1.572	Hog	20	12.727
687	30634.29	2299.295	0.436	0.682	Sag	30	44.013
688	30664.739	2299.428	-1.792	-2.228	Hog	30	13.463
689	30693.399	2298.914	1.462	3.254	Sag	20	6.145
690	30730.897	2299.462	-1.540	-3.002	Hog	20	6.663
691	30749.351	2299.178	-0.253	1.287	Sag	15	11.660
692	30778.417	2299.105	0.228	0.481	Sag	20	41.560
693	30800	2299.154	-1.773	-2.001	Hog	20	9.995
694	30826.871	2298.677	1.808	3.581	Sag	30	8.379
695	30867.291	2299.408	-0.987	-2.795	Hog	30	10.735
696	30905.491	2299.031	0.247	1.234	Sag	20	16.208
697	30940.697	2299.118	-1.607	-1.854	Hog	30	16.182
698	30967.471	2298.688	-0.367	1.240	Sag	20	16.123
699	30991.219	2298.601	0.742	1.109	Sag	15	13.529
700	31015.471	2298.781	-1.813	-2.555	Hog	10	3.914
701	31037.609	2298.379	1.521	3.334	Sag	10	3.000
702	31060.378	2298.726	-1.404	-2.925	Hog	20	6.838
703	31088.067	2298.337	0.278	1.682	Sag	20	11.891
704	31105.374	2298.385	0.945	0.667	Sag	10	15.002
705	31115.285	2298.479	-0.075	-1.020	Hog	5	4.903
706	31139.121	2298.461	-1.121	-1.046	Hog	15	14.334
707	31157.938	2298.250	1.352	2.473	Sag	10	4.043
708	31178.721	2298.531	2.100	0.748	Sag	10	13.372
709	31203.239	2299.046	-1.406	-3.506	Hog	20	5.705
710	31230.899	2298.657	-1.963	-0.557	Hog	10	17.943
711	31252.242	2298.238	0.466	2.429	Sag	30	12.352
712	31297.91	2298.451	-0.531	-0.997	Hog	30	30.105
713	31318.948	2298.339	0.101	0.632	Sag	10	15.836
714	31348.745	2298.369	-1.651	-1.752	Hog	30	17.131

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
715	31377.333	2297.897	0.139	1.790	Sag	25	13.971
716	31398.219	2297.926	1.042	0.903	Sag	15	16.604
717	31420.179	2298.155	0.706	-0.336	Hog	25	74.304
718	31447.667	2298.349	-1.607	-2.313	Hog	25	10.810
719	31472.59	2297.948	0.373	1.980	Sag	20	10.103
720	31495.094	2298.032	-1.641	-2.014	Hog	25	12.418
721	31518.155	2297.654	0.357	1.998	Sag	20	10.010
722	31539.589	2297.731	-2.144	-2.501	Hog	20	7.996
723	31568.915	2297.102	1.634	3.778	Sag	30	7.942
724	31608.89	2297.755	-1.271	-2.905	Hog	40	13.773
725	31648.483	2297.252	-1.133	0.138	Sag	30	217.684
726	31696.826	2296.704	-1.859	-0.726	Hog	20	27.528
727	31728.676	2296.112	-0.194	1.665	Sag	15	9.005
728	31760.16	2296.051	-3.732	-3.538	Hog	35	9.893
729	31792.156	2294.857	0.787	4.519	Sag	25	5.533
730	31817.378	2295.055	-3.016	-3.803	Hog	25	6.574
731	31840	2294.373	-3.187	-0.171	Hog	20	116.962
732	31863.705	2293.617	-2.205	0.982	Sag	20	20.362
733	31898.414	2292.852	-3.572	-1.367	Hog	20	14.632
734	31920.162	2292.075	-0.399	3.173	Sag	20	6.303
735	31939.53	2291.998	-2.296	-1.897	Hog	15	7.908
736	31958.699	2291.558	-0.973	1.323	Sag	20	15.123
737	31992.785	2291.226	-4.198	-3.225	Hog	25	7.753
738	32025.588	2289.849	-1.791	2.407	Sag	20	8.311
739	32047.5	2289.456	-1.628	0.163	Sag	10	61.191
740	32066.417	2289.149	-1.619	0.009	Sag	20	2157.465
741	32088.152	2288.797	-2.990	-1.371	Hog	20	14.588
742	32109.959	2288.145	-1.164	1.826	Sag	20	10.954
743	32133.83	2287.867	-2.509	-1.345	Hog	20	14.871
744	32164.057	2287.109	-4.715	-2.206	Hog	15	6.800
745	32177.434	2286.478	-0.263	4.452	Sag	10	2.247
746	32202.321	2286.412	-3.173	-2.910	Hog	15	5.155
747	32219.95	2285.853	-1.354	1.819	Sag	20	10.991
748	32258.068	2285.337	-0.409	0.945	Sag	10	10.580
749	32269.576	2285.290	-1.536	-1.127	Hog	10	8.870
750	32285.074	2285.052	-1.152	0.384	Sag	20	52.056
751	32310.148	2284.763	1.308	2.460	Sag	25	10.164
752	32346.579	2285.240	0.827	-0.481	Hog	20	41.578
753	32375.534	2285.479	-4.448	-5.275	Hog	15	2.844
754	32391.661	2284.762	1.127	5.575	Sag	10	1.794
755	32408.923	2284.956	-1.350	-2.477	Hog	20	8.075
756	32431.532	2284.651	-4.147	-2.797	Hog	10	3.575
757	32447.47	2283.990	-7.541	-3.394	Hog	10	2.947
758	32456.123	2283.338	-6.735	0.806	Sag	5	6.206
759	32478.001	2281.864	-3.222	3.513	Sag	15	4.269
760	32495.286	2281.307	-6.055	-2.833	Hog	10	3.529
761	32503.735	2280.796	-2.818	3.237	Sag	5	1.545
762	32528.421	2280.100	-12.292	-9.474	Hog	10	1.055
763	32539.637	2278.721	-8.880	3.412	Sag	5	1.465
764	32552.648	2277.566	-6.796	2.084	Sag	15	7.200
765	32577.058	2275.907	-3.434	3.362	Sag	20	5.948

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
766	32602.714	2275.026	-5.139	-1.705	Hog	15	8.799
767	32626.28	2273.815	-3.804	1.335	Sag	15	11.240
768	32642.957	2273.181	-7.332	-3.528	Hog	10	2.835
769	32658.35	2272.052	-0.255	7.077	Sag	10	1.413
770	32675.11	2272.009	-1.016	-0.761	Hog	10	13.151
771	32696.493	2271.792	-0.345	0.671	Sag	20	29.836
772	32720.641	2271.709	-0.997	-0.652	Hog	15	23.015
773	32746.067	2271.455	1.221	2.218	Sag	20	9.016
774	32766.371	2271.703	0.191	-1.030	Hog	20	19.412
775	32813.359	2271.793	-2.322	-2.513	Hog	20	7.959
776	32833.82	2271.318	-1.443	0.879	Sag	20	22.766
777	32889.914	2270.508	-3.315	-1.872	Hog	30	16.028
778	32914.544	2269.691	-2.535	0.780	Sag	15	19.220
779	32962.1	2268.486	-0.520	2.015	Sag	20	9.925
780	32986.473	2268.360	-5.980	-5.460	Hog	10	1.831
781	32998.916	2267.615	-1.639	4.341	Sag	10	2.303
782	33010	2267.434	0.205	1.844	Sag	10	5.424
783	33023.72	2267.462	-2.103	-2.308	Hog	10	4.332
784	33034.422	2267.237	-3.156	-1.053	Hog	10	9.500
785	33053.92	2266.621	-1.141	2.015	Sag	20	9.923
786	33083.461	2266.284	-3.131	-1.990	Hog	20	10.048
787	33105.819	2265.584	-2.304	0.827	Sag	20	24.176
788	33127.15	2265.093	0.157	2.461	Sag	20	8.127
789	33150.387	2265.130	-3.274	-3.431	Hog	20	5.828
790	33172.195	2264.416	-0.273	3.001	Sag	10	3.331
791	33186.965	2264.375	-4.011	-3.738	Hog	10	2.675
792	33197.704	2263.945	-1.358	2.653	Sag	10	3.769
793	33209.113	2263.790	-2.674	-1.316	Hog	10	7.598
794	33221.202	2263.466	-1.072	1.602	Sag	10	6.242
795	33250.596	2263.151	-0.888	0.184	Sag	20	108.654
796	33274.493	2262.939	-3.356	-2.468	Hog	20	8.105
797	33305.903	2261.885	-0.279	3.077	Sag	20	6.500
798	33333.832	2261.807	-1.988	-1.709	Hog	20	11.702
799	33351.918	2261.447	-1.125	0.863	Sag	10	11.587
800	33363.153	2261.321	-2.564	-1.439	Hog	10	6.949
801	33381.075	2260.862	-5.600	-3.036	Hog	10	3.294
802	33398.667	2259.876	-7.779	-2.179	Hog	10	4.590
803	33410.8	2258.933	-4.519	3.260	Sag	10	3.067
804	33432.722	2257.942	-1.345	3.174	Sag	20	6.303
805	33450.614	2257.701	-4.722	-3.377	Hog	15	4.442
806	33468.772	2256.844	0.244	4.966	Sag	20	4.027
807	33504.69	2256.932	-1.128	-1.372	Hog	20	14.569
808	33533.284	2256.609	-0.589	0.539	Sag	20	37.068
809	33572.337	2256.379	-2.750	-2.161	Hog	30	13.885
810	33613.579	2255.245	1.128	3.878	Sag	30	7.738
811	33653.666	2255.697	-1.633	-2.761	Hog	20	7.244
812	33683.663	2255.207	7.057	8.690	Sag	30	3.452
813	33729.972	2258.475	3.138	-3.919	Hog	25	6.379
814	33772.432	2259.807	5.880	2.742	Sag	40	14.587
815	33821.628	2262.700	-0.730	-6.610	Hog	30	4.539
816	33878.472	2262.285	0.491	1.221	Sag	30	24.570

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
817	33934.706	2262.561	2.725	2.234	Sag	30	13.432
818	33968.268	2263.476	7.231	4.506	Sag	30	6.657
819	34013.615	2266.755	5.837	-1.394	Hog	30	21.512
820	34042.125	2268.419	8.226	2.389	Sag	20	8.371
821	34075.125	2271.133	3.055	-5.171	Hog	25	4.835
822	34118.227	2272.450	5.205	2.150	Sag	30	13.957
823	34164.584	2274.863	4.926	-0.279	Hog	30	107.693
824	34216.088	2277.400	3.295	-1.631	Hog	30	18.392
825	34236.485	2278.072	5.326	2.031	Sag	10	4.923
826	34257.138	2279.172	1.536	-3.790	Hog	20	5.277
827	34293.89	2279.737	10.382	8.846	Sag	25	2.826
828	34323.523	2282.814	13.125	2.743	Sag	15	5.470
829	34339.814	2284.952	4.397	-8.728	Hog	15	1.719
830	34364.765	2286.049	2.643	-1.754	Hog	20	11.405
831	34389.202	2286.695	4.481	1.838	Sag	20	10.883
832	34408.176	2287.545	3.560	-0.921	Hog	15	16.288
833	34455	2289.212	4.728	1.168	Sag	20	17.126
834	34485.24	2290.642	7.737	3.009	Sag	20	6.647
835	34505.462	2292.206	1.982	-5.755	Hog	20	3.475
836	34545.355	2292.997	4.698	2.716	Sag	40	14.729
837	34590.253	2295.106	4.203	-0.495	Hog	20	40.386
838	34639.771	2297.187	5.312	1.109	Sag	20	18.032
839	34670.975	2298.845	4.357	-0.955	Hog	20	20.956
840	34701.664	2300.182	8.979	4.622	Sag	15	3.246
841	34723.859	2302.175	4.753	-4.226	Hog	25	5.916
842	34749.772	2303.407	4.329	-0.424	Hog	20	47.098
843	34795.247	2305.375	2.972	-1.357	Hog	20	14.743
844	34833.089	2306.500	10.105	7.133	Sag	30	4.206
845	34861.352	2309.356	2.078	-8.027	Hog	20	2.492
846	34907.276	2310.310	4.681	2.603	Sag	20	7.685
847	34947.427	2312.190	2.169	-2.512	Hog	20	7.963
848	34976.868	2312.828	8.203	6.034	Sag	30	4.972
849	35028.885	2317.095	2.942	-5.261	Hog	50	9.505
850	35078.337	2318.550	8.118	5.176	Sag	20	3.864
851	35132.535	2322.950	0.263	-7.855	Hog	45	5.729
852	35190.277	2323.102	6.319	6.056	Sag	50	8.257
853	35238.767	2326.166	4.626	-1.693	Hog	20	11.814
854	35262.242	2327.252	6.747	2.121	Sag	15	7.070
855	35283.617	2328.694	2.766	-3.981	Hog	25	6.279
856	35322.919	2329.781	6.196	3.430	Sag	20	5.830
857	35380	2333.318	7.006	0.810	Sag	20	24.713
858	35456.595	2338.684	3.559	-3.447	Hog	80	23.210
859	35552.804	2342.108	4.481	0.922	Sag	30	32.523
860	35607.961	2344.580	6.802	2.321	Sag	30	12.930
861	35646.103	2347.174	3.095	-3.707	Hog	15	4.047
862	35667.812	2347.846	6.314	3.219	Sag	15	4.659
863	35687.722	2349.103	2.156	-4.158	Hog	20	4.810
864	35751.205	2350.472	8.524	6.368	Sag	30	4.712
865	35776.477	2352.626	1.109	-7.415	Hog	15	2.023
866	35812.908	2353.030	8.584	7.475	Sag	45	6.020
867	35850.302	2356.240	4.900	-3.684	Hog	25	6.785

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
868	35958.57	2361.545	6.502	1.602	Sag	30	18.722
869	35999.619	2364.214	6.973	0.471	Sag	25	53.024
870	36021.619	2365.748	4.045	-2.928	Hog	15	5.123
871	36059.27	2367.271	6.543	2.498	Sag	20	8.008
872	36107.31	2370.414	2.104	-4.439	Hog	60	13.519
873	36161.861	2371.562	6.626	4.522	Sag	20	4.423
874	36201.596	2374.195	7.761	1.135	Sag	30	26.443
875	36234.821	2376.774	11.909	4.148	Sag	15	3.616
876	36253.004	2378.939	1.967	-9.942	Hog	20	2.012
877	36294.583	2379.757	5.178	3.211	Sag	20	6.229
878	36312.222	2380.670	2.969	-2.209	Hog	15	6.793
879	36344.402	2381.626	9.659	6.690	Sag	20	2.990
880	36362.479	2383.372	6.793	-2.866	Hog	15	5.234
881	36389.82	2385.229	4.249	-2.544	Hog	20	7.862
882	36411.428	2386.147	1.600	-2.649	Hog	15	5.663
883	36437.238	2386.560	2.621	1.021	Sag	15	14.697
884	36461.849	2387.205	0.784	-1.837	Hog	15	8.167
885	36486.077	2387.395	2.503	1.719	Sag	15	8.725
886	36512.911	2388.067	4.126	1.623	Sag	15	9.243
887	36536.207	2389.028	1.419	-2.707	Hog	20	7.388
888	36569.559	2389.501	5.815	4.396	Sag	30	6.825
889	36616.175	2392.212	5.222	-0.593	Hog	30	50.573
890	36658.338	2394.414	3.736	-1.486	Hog	20	13.462
891	36697.512	2395.877	4.912	1.176	Sag	20	17.004
892	36759.471	2398.921	5.915	1.003	Sag	20	19.938
893	36786.073	2400.494	3.086	-2.829	Hog	30	10.602
894	36833.104	2401.946	8.163	5.077	Sag	20	3.939
895	36864.803	2404.533	-3.169	-11.332	Hog	30	2.647
896	36891.889	2403.675	5.424	8.593	Sag	10	1.164
897	36917.689	2405.074	1.837	-3.587	Hog	10	2.788
898	36933.434	2405.363	4.523	2.686	Sag	15	5.584
899	36956.446	2406.404	5.400	0.877	Sag	20	22.809
900	36980.278	2407.691	6.927	1.527	Sag	20	13.096
901	37030.627	2411.179	3.050	-3.877	Hog	10	2.579
902	37080	2412.685	4.574	1.524	Sag	30	19.689
903	37106.03	2413.876	2.524	-2.050	Hog	20	9.758
904	37148.901	2414.958	5.924	3.400	Sag	40	11.768
905	37205.981	2418.339	5.152	-0.772	Hog	20	25.917
906	37262.249	2421.238	1.969	-3.183	Hog	30	9.425
907	37300.541	2421.992	4.461	2.492	Sag	30	12.039
908	37333.701	2423.471	1.723	-2.738	Hog	20	7.305
909	37352.925	2423.802	6.476	4.753	Sag	15	3.156
910	37374.458	2425.197	2.184	-4.292	Hog	20	4.660
911	37410.851	2425.991	0.046	-2.138	Hog	20	9.357
912	37434.871	2426.003	6.540	6.494	Sag	20	3.080
913	37455	2427.319	5.463	-1.077	Hog	20	18.566
914	37475.264	2428.426	6.656	1.193	Sag	20	16.753
915	37504.292	2430.358	5.342	-1.314	Hog	20	15.215
916	37529.673	2431.714	6.974	1.632	Sag	20	12.252
917	37617.753	2437.857	2.425	-4.549	Hog	50	10.991
918	37690.74	2439.627	7.365	4.940	Sag	50	10.121

Annexure 8.1(b)

Vertical Curve Details

Sr. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
919	37755	2444.360	7.009	-0.356	Hog	20	56.124
920	37803.972	2447.792	5.974	-1.035	Hog	20	19.314
921	37828.037	2449.230	7.372	1.398	Sag	20	14.297
922	37869.256	2452.269	1.191	-6.181	Hog	20	3.236
923	37904.23	2452.685	2.997	1.806	Sag	20	11.073
924	37950.026	2454.058	7.372	4.375	Sag	20	4.572
925	37970.118	2455.539	4.718	-2.654	Hog	20	7.538
926	38014.567	2457.637	6.769	2.051	Sag	20	9.752
927	38035.893	2459.080	4.935	-1.834	Hog	20	10.904
928	38099.536	2462.221	8.386	3.451	Sag	15	4.347
929	38136.465	2465.318	1.283	-7.103	Hog	20	2.816
930	38185.259	2465.944	4.060	2.777	Sag	20	7.203
931	38213.994	2467.111	0.693	-3.367	Hog	20	5.940
932	38238.159	2467.278	5.281	4.588	Sag	20	4.359
933	38265.547	2468.724	7.236	1.955	Sag	25	12.784
934	38319.509	2472.629	6.554	-0.682	Hog	20	29.331
935	38343.386	2474.194	7.231	0.677	Sag	20	29.544
936	38366.519	2475.867	5.181	-2.050	Hog	20	9.753
937	38416.765	2478.470	3.711	-1.470	Hog	25	17.013
938	38476.134	2480.673	4.951	1.240	Sag	20	16.129
939	38499.224	2481.816	8.985	4.034	Sag	25	6.197
940	38525.073	2484.139	2.236	-6.749	Hog	25	3.704
941	38558.682	2484.890	1.082	-1.154	Hog	30	26.004
942	38584.885	2485.174	2.008	0.926	Sag	20	21.618
943	38608.311	2485.644	3.876	1.868	Sag	20	10.706
944	38653.016	2487.377	6.195	2.319	Sag	30	12.936
945	38714.526	2491.187	3.448	-2.747	Hog	30	10.922
946	38759.537	2492.739	0.656	-2.792	Hog	30	10.745
947	38797.86	2492.991	3.850	3.194	Sag	25	7.827
948	38840.449	2494.630	2.330	-1.520	Hog	30	19.740
949	38886.373	2495.701	5.394	3.064	Sag	30	9.793
950	39006.055	2502.156	6.419	1.025	Sag	30	29.253
951	39102.172	2508.326	0.935	-5.484	Hog	100	18.234
952	39277.336	2509.964	0.808	-0.127	Hog	30	236.073
953	39362.244	2510.650	1.747	0.939	Sag	30	31.957
954	39491.847	2512.914	7.313	5.566	Sag	60	10.780
955	39533.409	2515.953	4.266	-3.047	Hog	20	6.564
956	39569.199	2517.480	5.235	0.969	Sag	30	30.944
957	39620.181	2520.149	5.796	0.561	Sag	30	53.534
958	39681.909	2523.727	3.826	-1.970	Hog	30	15.233
959	39711.564	2524.861	8.148	4.322	Sag	20	4.628
960	39737.583	2526.981	5.135	-3.013	Hog	30	9.959
961	39793.624	2529.859	5.434	0.299	Sag	30	100.337
962	39865.205	2533.749	2.585	-2.849	Hog	30	10.527
963	39941.53	2535.722	4.779	2.194	Sag	30	13.672
964	39976.44	2537.390	3.715	-1.064	Hog	30	28.196
965	40051.74	2540.187	2.217	-1.498	Hog	30	20.029
966	40105.361	2541.376	6.050	3.833	Sag	40	10.436
967	40173.61	2545.505	4.572	-1.478	Hog	60	40.609
968	40242.192	2548.641	3.100	-1.472	Hog	30	20.374
969	40293.263	2550.224	5.815	2.715	Sag	50	18.416

Annexure 8.2
Structure Proposals

S.No	Design Chainage	Type of Structure	Existing Span Arrangement	Proposed Span Arrangement	Existing Carriageway(m)	Proposed Carriageway(m)	Existing Overall width(m)	Proposed Overall width(m)	Existing Type of Super Structure	Proposed Type of Super Structure	Reason
1	16+955	Minor Bridge	1 X 14.7	1 X 15	3.60	7.50	5.60	8.50	Steel Truss	RCC GIRDER	Bridge is 50 years old and width is only 3.5 m
2	18+203	Minor Bridge	1 X 21.6	1 X 25	3.60	7.50	5.60	8.50	Steel Truss	PSC GIRDER	Bridge is 50 years old and width is only 3.5 m
3	32+352	Minor Bridge	1 X 6.1	-	7.00	-	8.00	-	Solid Slab	-	Retained
4	37+341	Minor Bridge	1 X 8	-	7	-	8.00	-	Solid Slab	-	Retained with Gabion Wall (Stone Wiremash) Protection

Annexure 8.3
Culvert Proposals

Design Chainage	Existing Type of Structure	Existing Span Arrangement	Proposed Span Arrangement	Existing Carriageway (m)	Proposed Carriageway(m)	Overall width(m)	Proposed Overall width(m)	Existing Type of Super Structure	Proposed Type of Super Structure	Remarks
0+000	Culvert	1 X 4	1 X 4	7.0	-	8.0	-	Slab	-	Retained without widening
01+272	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
01+571	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Slab	Box Cell	Replaced
01+725	Culvert	-	1 X 6	5.5	7.5	6.5	8.5	Causeway	Box Cell	Replaced
02+168	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
02+190	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
02+296	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
03+298	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
04+084	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
04+626	Culvert	1 X 0.3	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
04+771	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
04+872	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
05+160	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
05+202	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
05+260	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
05+385	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
05+460	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
05+580	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
05+678	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
05+790	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
06+187	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
06+246	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
06+500	Culvert	-	1 X 3	5.5	7.5	6.5	8.5	Causeway	Box Cell	Replaced
06+628	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
06+762	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
07+255	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
07+327	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
7+469	Culvert	1 X 0.3	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
07+901	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
08+002	Culvert	1 X 1	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
08+114	Culvert	1 X 0.6	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
08+291	Culvert	1 X 0.6	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
08+729	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
9+285	Culvert	1 X 0.3	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
09+375	Culvert	1 X 0.3	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
09+873	Culvert	1 X 0.3	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
9+935	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
10+478	Culvert	1 X 1	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
10+704	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
12+453	Culvert	1 X 0.3	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
12+891	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
15+462	Culvert	1 X 0.9	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
16+473	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
16+740	Culvert	1 X 0.4	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
17+684	Culvert	1 X 1.5	1 X 2	3.5	7.5	4.5	8.5	Slab	Box Cell	Replaced
18+528	Culvert	1 X 0.9	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
18+614	Culvert	1 X 0.6	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
18+774	Culvert	1 X 1	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
19+713	Culvert	1 X 1	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
20+649	Culvert	1 X 0.6	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
21+950	Culvert	1 X 0.5	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
22+523	Culvert	1 X 0.5	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
23+053	Culvert	1 X 3.5		3.5	7.5	4.5	8.5	Slab	-	Retained with widening
23+485	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
23+927	Culvert	1 X 0.2	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
24+116	Culvert	1 X 3		3.5	7.5	4.5	8.5	Slab	-	Retained with widening
24+374	Culvert	1 X 0.4	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
24+588	Culvert	1 X 3		3.5	7.5	4.5	8.5	Slab	-	Retained with widening
24+686	Culvert	1 X 0.3	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
24+874	Culvert	1 X 0.5	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
25+038	Culvert	1 X 0.3	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
25+271	Culvert	1 X 0.2	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
25+524	Culvert	1 X 0.5	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
26+049	Culvert	1 X 0.5	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
26+187	Culvert	1 X 0.9	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
26+274	Culvert	1 X 0.9	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
26+410	Culvert	1 X 0.6	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
27+237	Culvert	1 X 0.2	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
27+252	Culvert	1 X 0.3	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
27+605	Culvert	1 X 0.4	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
27+803	Culvert	1 X 0.4	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
27+848	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
29+700	Culvert	1 X 0.6	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
29+725	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
29+824	Culvert	1 X 2.6	1 X 3	7.0	-	8.0	-	Pipe	-	Retained without widening
29+968	Culvert	2 X 3	1 X 4	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
30+218	Culvert	1 X 0.9	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
30+247	Culvert	1 X 1	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
30+368	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
30+450	Culvert	1 X 0.9	1 X 2	3.5	7.5	4.5	8.5	Slab	Box Cell	Replaced
30+592	Culvert	1 X 2.12		3.5	7.5	4.5	8.5	Slab	-	Retained with widening

Annexure 8.3
Culvert Proposals

Design Chainage	Existing Type of Structure	Existing Span Arrangement	Proposed Span Arrangement	Existing Carriageway (m)	Proposed Carriageway(m)	Overall width(m)	Proposed Overall width(m)	Existing Type of Super Structure	Proposed Type of Super Structure	Remarks
30+912	Culvert	1 X 2.8		3.5	7.5	4.5	8.5	Slab	-	Retained with widening
31+043	Culvert	1 X 0.3	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
31+513	Culvert	1 X 0.9	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
31+580	Culvert	1 X 0.3	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
31+726	Culvert	1 X 0.9	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
31+787	Culvert	1 X 1	1 X 2	3.5	7.5	4.5	8.5	Slab	Box Cell	Replaced
31+922	Culvert	1 X 1	1 X 2	3.5	7.5	4.5	8.5	Slab	Box Cell	Replaced
32+081	Culvert	1 X 1.6	1 X 2	3.5	7.5	4.5	8.5	Slab	Box Cell	Replaced
32+174	Culvert	1 X 1.7	1 X 2	5.5	7.5	6.5	8.5	Slab	Box Cell	Replaced
32+296	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
32+407	Culvert	1 X 0.45	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
32+508	Culvert	1 X 0.3	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
32+576	Culvert	1 X 0.7	1 X 2	3.5	7.5	4.5	8.5	Pipe	Box Cell	Replaced
32+685	Culvert	1 X 0.3	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
32+748	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
32+782	Culvert	1 X 1.7	1 X 2	5.5	7.5	6.5	8.5	Slab	Box Cell	Replaced
32+827	Culvert	1 X 1.1	1 X 2	3.5	7.5	4.5	8.5	Slab	Box Cell	Replaced
32+868	Culvert	1 X 1.8	1 X 2	3.5	7.5	4.5	8.5	Slab	Box Cell	Replaced
33+058	Culvert	1 X 0.9	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
33+123	Culvert	1 X 0.3	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
33+681	Culvert	1 X 2		5.5	7.5	6.5	8.5	Slab	-	Retained with widening
34+238	Culvert	1 X 4		5.5	7.5	6.5	8.5	Slab	-	Retained with widening
34+282	Culvert	1 X 2.4		5.5	7.5	6.5	8.5	Slab	-	Retained with widening
34+387	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
34+446	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
34+697	Culvert	1 X 1.6	1 X 2	5.5	7.5	6.5	8.5	Slab	Box Cell	Replaced
34+877	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
34+963	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
35+075	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
35+181	Culvert	1 X 3		5.5	7.5	6.5	8.5	Slab	-	Retained with widening
35+260	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
35+352	Culvert	1 X 0.45	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
35+505	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
35+665	Culvert	1 X 4		5.5	7.5	6.5	8.5	Slab	-	Retained with widening
35+794	Culvert	1 X 1.6	1 X 2	5.5	-	6.5	-	Pipe	-	Retained without widening
36+154	Culvert	1 X 4	1 X 4	5.5	7.5	6.5	8.5	Slab	Box Cell	Replaced
36+345	Culvert	1 X 1.5	1 X 2	5.5	-	6.5	-	Pipe	-	Retained without widening
36+627	Culvert	1 X 0.6	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
36+895	Culvert	1 X 0.3	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
36+942	Culvert	1 X 0.9	1 X 2	5.5	7.5	6.5	8.5	Pipe	Box Cell	Replaced
37+065	Culvert	1 X 0.6	1 X 2	7.0	7.5	8.0	8.5	Slab	Box Cell	Replaced
37+140	Culvert	1 X 0.6	1 X 2	7.0	7.5	8.0	8.5	Pipe	Box Cell	Replaced
37+360	Culvert	1 X 4		5.5	7.5	6.5	8.5	Slab	-	Retained with widening
37+890	Culvert	1 X 4	1 X 4	7.0	-	8.0	-	Slab	-	Retained without widening
38+117	Culvert	1 X 0.45	1 X 2	7.0	7.5	8.0	8.5	Pipe	Box Cell	Replaced
38+155	Culvert	1 X 0.6	1 X 2	7.0	7.5	8.0	8.5	Pipe	Box Cell	Replaced
38+490	Culvert	1 X 0.2	1 X 2	7.0	7.5	8.0	8.5	Pipe	Box Cell	Replaced
38+537	Culvert	1 X 1.5	1 X 2	7.0	-	8.0	-	Slab	-	Retained without widening
38+713	Culvert	1 X 0.6	1 X 2	7.0	7.5	8.0	8.5	Pipe	Box Cell	Replaced
38+850	Culvert	1 X 0.6	1 X 2	7.0	7.5	8.0	8.5	Pipe	Box Cell	Replaced
38+917	Culvert	1 X 0.6	1 X 2	7.0	7.5	8.0	8.5	Pipe	Box Cell	Replaced
39+217	Culvert	1 X 0.6	1 X 2	7.0	7.5	8.0	8.5	Pipe	Box Cell	Replaced
39+367	Culvert	1 X 4		5.5	7.5	6.5	8.5	Slab	-	Retained with widening
39+704	Culvert	1 X 4		6.0	7.5	7.0	8.5	Slab	-	Retained with widening
39+880	Culvert	1 X 0.2	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced
40+090	Culvert	1 X 0.6	1 X 2	7.0	7.5	8.0	8.5	Pipe	Box Cell	Replaced
40+141	Culvert	1 X 0.6	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced
40+572	Culvert	1 X 0.6	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced
40+685	Culvert	1 X 0.6	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced
41+028	Culvert	1 X 0.6	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced
41+152	Culvert	1 X 0.6	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced
41+667	Culvert	1 X 0.6	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced
41+934	Culvert	1 X 0.4	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced
42+230	Culvert	1 X 0.45	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced
42+595	Culvert	1 X 0.4	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced
42+790	Culvert	1 X 0.45	1 X 2	6.0	7.5	7.0	8.5	Pipe	Box Cell	Replaced

Annexure 8.4 : Equivalent Single Axle Load Calculation for Station (At Babareshi)							
Year	**Bus**	**LCV**	**2 Axle**	**Yearly Design ESA**	**Cummulative Design ESA**	**MSA**	**Design Period**
VDF	**2.58**	**1.345**	**4.544**				
2020	**225**	**85**	**51**	135426		**Base Year**	
2021	236	94	54	143033			
2022	248	103	56	151103			
2023	260	112	59	159466			
2024	273	122	62	168320	168320	**0.168**	**1-year**
2025	287	133	65	177696	346016		
2026	302	145	68	187627	533644		
2027	317	158	72	198150	731793		
2028	332	171	75	208990	940783	**0.941**	**5-years**
2029	349	185	79	220446	1161229		
2030	367	199	83	232556	1393786		
2031	385	215	87	245359	1639144		
2032	404	233	92	258896	1898040		
2033	424	249	96	272754	2170794	**2.171**	**10-years**
2034	445	266	101	287369	2458163		
2035	468	285	106	302783	2760946		
2036	491	305	111	319042	3079988		
2037	516	326	117	336191	3416179		
2038	541	346	123	353641	3769820	**3.770**	**15-years**
2039	569	366	129	372002	4141823		
2040	597	388	135	391322	4533145		
2041	627	412	142	411651	4944796		
2042	658	436	149	433043	5377839		
2043	691	463	157	455552	5833391	**5.833**	**20-years**

Annexure 8.5 (a)
Improvement Proposal

Sr. no.	Design Chainage (Km) From	Design Chainage (Km) To	Design Length (m)	TCS Detail	TCS Type
1	00+000	01+700	1700	BUILTUP -LOCATION	TCS-6
2	01+700	01+810	110	ONE SIDE FILL & ONE SIDE CUT	TCS-1
3	01+810	01+840	30	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
4	01+840	01+900	60	ONE SIDE FILL & ONE SIDE CUT	TCS-1
5	01+900	01+920	20	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
6	01+920	02+090	170	ONE SIDE FILL & ONE SIDE CUT	TCS-1
7	02+090	02+170	80	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
8	02+170	02+210	40	ONE SIDE FILL WITH PROTECTION WORK & ONE SIDE CUT	TCS-4
9	02+210	02+300	90	ONE SIDE FILL & ONE SIDE CUT	TCS-1
10	02+300	02+330	30	ONE SIDE FILL WITH PROTECTION WORK & ONE SIDE CUT	TCS-4
11	02+330	02+390	60	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK ON BOTH SIDE	TCS-2
12	02+390	02+420	30	ONE SIDE FILL WITH PROTECTION WORK & ONE SIDE CUT	TCS-4
13	02+420	02+450	30	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
14	02+450	02+540	90	ONE SIDE FILL & ONE SIDE CUT	TCS-1
15	02+540	02+580	40	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
16	02+580	02+660	80	ONE SIDE FILL & ONE SIDE CUT	TCS-1
17	02+660	02+680	20	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
18	02+680	02+900	220	ONE SIDE FILL & ONE SIDE CUT	TCS-1
19	02+900	02+980	80	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
20	02+980	03+160	180	ONE SIDE FILL & ONE SIDE CUT	TCS-1
21	03+160	03+190	30	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
22	03+190	04+430	1240	ONE SIDE FILL & ONE SIDE CUT	TCS-1
23	04+430	04+450	20	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
24	04+450	04+980	530	ONE SIDE FILL & ONE SIDE CUT	TCS-1
25	04+980	05+000	20	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
26	05+000	05+070	70	ONE SIDE FILL & ONE SIDE CUT	TCS-1
27	05+070	05+100	30	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
28	05+100	05+120	20	ONE SIDE FILL & ONE SIDE CUT	TCS-1
29	05+120	05+140	20	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
30	05+140	05+190	50	ONE SIDE FILL & ONE SIDE CUT	TCS-1
31	05+190	05+210	20	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
32	05+210	06+200	990	ONE SIDE FILL & ONE SIDE CUT	TCS-1
33	06+200	06+220	20	ONE SIDE FILL WITH PROTECTION WORK & ONE SIDE CUT	TCS-4
34	06+220	06+410	190	ONE SIDE FILL & ONE SIDE CUT	TCS-1
35	06+410	06+430	20	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
36	06+430	07+310	880	ONE SIDE FILL & ONE SIDE CUT	TCS-1
37	07+310	07+350	40	ONE SIDE FILL WITH PROTECTION WORK & ONE SIDE CUT	TCS-4
38	07+350	07+390	40	ONE SIDE FILL & ONE SIDE CUT	TCS-1
39	07+390	07+420	30	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
40	07+420	07+470	50	ONE SIDE FILL & ONE SIDE CUT	TCS-1
41	07+470	07+540	70	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
42	07+540	08+900	1360	ONE SIDE FILL & ONE SIDE CUT	TCS-1
43	08+900	09+200	300	BUILTUP -LOCATION	TCS-6
44	09+200	09+280	80	ONE SIDE FILL & ONE SIDE CUT	TCS-1
45	09+280	09+300	20	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
46	09+300	09+930	630	ONE SIDE FILL & ONE SIDE CUT	TCS-1
47	09+930	09+950	20	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
48	09+950	12+500	2550	ONE SIDE FILL & ONE SIDE CUT	TCS-1
49	12+500	14+900	2400	BUILTUP -LOCATION	TCS-6
50	14+900	16+948	2047.5	ONE SIDE FILL & ONE SIDE CUT	TCS-1
51	16+948	16+963	15	Minor Bridge	Minor Bridge
52	16+963	17+300	337.5	ONE SIDE FILL & ONE SIDE CUT	TCS-1
53	17+300	17+850	550	BUILTUP -LOCATION	TCS-6
54	17+850	18+000	150	BUILTUP -LOCATION	TCS-6
55	18+000	18+191	190.5	BUILTUP -LOCATION	TCS-6
56	18+191	18+216	25	Minor Bridge	Minor Bridge
57	18+216	18+500	284.5	BUILTUP -LOCATION	TCS-6
58	18+500	23+000	4500	ONE SIDE FILL & ONE SIDE CUT	TCS-1
59	23+000	23+400	400	BUILTUP -LOCATION	TCS-6
60	23+400	25+280	1880	ONE SIDE FILL & ONE SIDE CUT	TCS-1
61	25+280	25+300	20	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
62	25+300	25+420	120	ONE SIDE FILL & ONE SIDE CUT	TCS-1
63	25+420	25+500	80	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
64	25+500	25+890	390	ONE SIDE FILL & ONE SIDE CUT	TCS-1
65	25+890	26+010	120	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
66	26+010	26+050	40	ONE SIDE FILL & ONE SIDE CUT	TCS-1
67	26+050	26+090	40	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3
68	26+090	29+000	2910	ONE SIDE FILL & ONE SIDE CUT	TCS-1
69	29+000	32+349	3348.95	OVERLAY WITHOUT WIDENING	TCS-5
70	32+349	32+355	6.1	Minor Bridge	Minor Bridge
71	32+355	37+337	4981.95	OVERLAY WITHOUT WIDENING	TCS-5
72	37+337	37+345	8	Minor Bridge	Minor Bridge
73	37+345	42+820	5475	OVERLAY WITHOUT WIDENING	TCS-5
Total Design Length			**42820**		

Annexure 8.5 (b)
Improvement Proposal : Summary of TCS

Sr.No.	Detail	TCS	Length	
			M.	Kms.
1	ONE SIDE FILL & ONE SIDE CUT	TCS-1	21905	21.905
2	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK ON BOTH SIDE	TCS-2	60	0.060
3	ONE SIDE FILL & ONE SIDE CUT WITH PROTECTION WORK	TCS-3	860	0.860
4	ONE SIDE FILL WITH PROTECTION WORK & ONE SIDE CUT	TCS-4	160	0.160
5	OVERLAY WITHOUT WIDENING	TCS-5	13805.9	13.806
6	BUILTUP -LOCATION	TCS-6	5975	5.975
7	MINOR BRIDGE		54.1	0.054
	TOTAL DESIGN LENGTH		**42820**	**42.820**

Economic and Financial Analysis

Annexure- 10							
Economic & Financial Analysis of Baramulla- Gulamarg							
No of Years		**Initial Construction Cost after (A)**	**Routine Maintenance @ 0.5% of Civil Cost Per year**	**Periodic Maintenance @ 2.5 % of Civil Cost Per 5 year**	**Total Cost E= A+B+C+D**	**Total toll Revneues (F)**	**Net Cost (D)**
	2020	43.36			43.36		43.36
	2021	43.36			43.36		43.36
1	2022				0.00	1.29	1.29
2	2023				0.00	1.44	1.44
3	2024				0.00	1.59	1.59
4	2025			2.89	2.89	1.77	1.12
5	2026		0.58		0.58	1.95	1.37
6	2027		0.58		0.58	2.16	1.58
7	2028		0.58		0.58	2.38	1.80
8	2029		0.58		0.58	2.63	2.05
9	2030			3.18	3.18	2.90	0.28
10	2031		0.58		0.58	3.18	2.60
11	2032		0.58		0.58	3.49	2.91
12	2033		0.58		0.58	3.82	3.24
13	2034		0.58		0.58	4.19	3.61
14	2035			3.50	3.50	4.60	1.10
15	2036		0.58		0.58	5.01	4.43
16	2037		0.58		0.58	5.46	4.88
17	2038		0.58		0.58	5.94	5.37
18	2039		0.58		0.58	6.47	5.90
19	2040			3.85	3.85	7.05	3.20
20	2041		0.58		0.58	7.68	7.10
21	2042		0.58		0.58	8.31	7.73
22	2043		0.58		0.58	8.99	8.41
23	2044		0.58		0.58	9.72	9.14
24	2045			4.23	4.23	10.51	6.28
25	2046		0.58		0.58	11.37	10.79
26	2047		0.58		0.58	12.29	11.71
27	2048		0.58		0.58	13.29	12.72
28	2049		0.58		0.58	14.38	13.80
29	2050		0.58		0.58	15.55	14.97
				IRR			2.6%
Note: All Figures in INR Crores				**NPV**	**(58.02)**		

Annexure- 10							
Economic & Financial Analysis of Baramulla- Gulamarg (NPV & IRR)							
Base cost plus 15% and Base Benefits							
No of Years	**Year**	**Initial Construction Cost after (A)**	**Routine Maintenance @ 0.5% of Civil Cost Per year**	**Periodic Maintenance @ 2.5 % of Civil Cost Per 5 year**	**Total Cost E= A+B+C+D**	**Total toll Revneues (F)**	**Net Cost (D)**
	2020	43.36			49.86		49.86
	2021	43.36			49.86		49.86
1	2022				0.00	1.29	1.29
2	2023				0.00	1.44	1.44
3	2024				0.00	1.59	1.59
4	2025			2.89	3.32	1.77	1.55
5	2026		0.58		0.66	1.95	1.29
6	2027		0.58		0.66	2.16	1.49
7	2028		0.58		0.66	2.38	1.71
8	2029		0.58		0.66	2.63	1.96
9	2030			3.18	3.66	2.90	0.76
10	2031		0.58		0.66	3.18	2.51
11	2032		0.58		0.66	3.49	2.82
12	2033		0.58		0.66	3.82	3.16
13	2034		0.58		0.66	4.19	3.53
14	2035			3.50	4.02	4.60	0.58
15	2036		0.58		0.66	5.01	4.34
16	2037		0.58		0.66	5.46	4.79
17	2038		0.58		0.66	5.94	5.28
18	2039		0.58		0.66	6.47	5.81
19	2040			3.85	4.42	7.05	2.63
20	2041		0.58		0.66	7.68	7.02
21	2042		0.58		0.66	8.31	7.64
22	2043		0.58		0.66	8.99	8.32
23	2044		0.58		0.66	9.72	9.05
24	2045			4.23	4.87	10.51	5.64
25	2046		0.58		0.66	11.37	10.70
26	2047		0.58		0.66	12.29	11.63
27	2048		0.58		0.66	13.29	12.63
28	2049		0.58		0.66	14.38	13.71
29	2050		0.58		0.66	15.55	14.88
				IRR			1.7%
Note: All Figures in INR Crores				**NPV**	**(70.27)**		

Annexure- 10							
Economic & Financial Analysis of Baramulla- Gulamarg (NPV & IRR)							
Base cost and Base Benefits minus 15%							
No of Years	**Year**	**Initial Construction Cost after (A)**	**Routine Maintenance @ 0.5% of Civil Cost Per year**	**Periodic Maintenance @ 2.5 % of Civil Cost Per 5 year**	**Total Cost E= A+B+C+D**	**Total toll Revneues (F)**	**Net Cost (D)**
	2020	43.36			43.36		43.36
	2021	43.36			43.36		43.36
1	2022				0.00	1.10	1.10
2	2023				0.00	1.22	1.22
3	2024				0.00	1.36	1.36
4	2025			2.89	2.89	1.50	1.39
5	2026		0.58		0.58	1.66	1.08
6	2027		0.58		0.58	1.83	1.25
7	2028		0.58		0.58	2.02	1.44
8	2029		0.58		0.58	2.23	1.65
9	2030			3.18	3.18	2.46	0.72
10	2031		0.58		0.58	2.70	2.12
11	2032		0.58		0.58	2.96	2.38
12	2033		0.58		0.58	3.25	2.67
13	2034		0.58		0.58	3.56	2.99
14	2035			3.50	3.50	3.91	0.41
15	2036		0.58		0.58	4.26	3.68
16	2037		0.58		0.58	4.64	4.06
17	2038		0.58		0.58	5.05	4.47
18	2039		0.58		0.58	5.50	4.92
19	2040			3.85	3.85	5.99	2.15
20	2041		0.58		0.58	6.53	5.95
21	2042		0.58		0.58	7.06	6.48
22	2043		0.58		0.58	7.64	7.06
23	2044		0.58		0.58	8.26	7.68
24	2045			4.23	4.23	8.93	4.70
25	2046		0.58		0.58	9.66	9.08
26	2047		0.58		0.58	10.45	9.87
27	2048		0.58		0.58	11.30	10.72
28	2049		0.58		0.58	12.22	11.64
29	2050		0.58		0.58	13.22	12.64
				IRR			1.6%
Note: All Figures in INR Crores				**NPV**	**(61.13)**		

Annexure- 10

Economic & Financial Analysis of Baramulla- Gulamarg (NPV & IRR)

Base Cost plus 15% & base benefits minus 15%

No of Years	Year	Initial Construction Cost after (A)	Routine Maintenance @ 0.5% of Civil Cost Per year	Periodic Maintenance @ 2.5 % of Civil Cost Per 5 year	Total Cost E= A+B+C+D	Total toll Revneues (F)	Net Cost (D)
	2020	43.36			49.86		49.86
	2021	43.36			49.86		49.86
1	2022				0.00	1.10	1.10
2	2023				0.00	1.22	1.22
3	2024				0.00	1.36	1.36
4	2025			2.89	3.32	1.50	1.82
5	2026		0.58		0.66	1.66	1.00
6	2027		0.58		0.66	1.83	1.17
7	2028		0.58		0.66	2.02	1.36
8	2029		0.58		0.66	2.23	1.57
9	2030			3.18	3.66	2.46	1.19
10	2031		0.58		0.66	2.70	2.04
11	2032		0.58		0.66	2.96	2.30
12	2033		0.58		0.66	3.25	2.58
13	2034		0.58		0.66	3.56	2.90
14	2035			3.50	4.02	3.91	0.11
15	2036		0.58		0.66	4.26	3.59
16	2037		0.58		0.66	4.64	3.97
17	2038		0.58		0.66	5.05	4.39
18	2039		0.58		0.66	5.50	4.84
19	2040			3.85	4.42	5.99	1.57
20	2041		0.58		0.66	6.53	5.86
21	2042		0.58		0.66	7.06	6.40
22	2043		0.58		0.66	7.64	6.97
23	2044		0.58		0.66	8.26	7.60
24	2045			4.23	4.87	8.93	4.07
25	2046		0.58		0.66	9.66	9.00
26	2047		0.58		0.66	10.45	9.78
27	2048		0.58		0.66	11.30	10.64
28	2049		0.58		0.66	12.22	11.56
29	2050		0.58		0.66	13.22	12.55
				IRR			0.8%
Note: All Figures in INR Crores				**NPV**	**(72.94)**		