

# **NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.**

**(MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF INDIA)**

**3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI – 110001**

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.500 to Km 142.000 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244 in the state of Jammu & Kashmir**



## **FINAL DETAILED PROJECT REPORT VAILOO TO DONIPAWA SECTION VOLUME-IA: ANNEXURE TO MAIN REPORT**

**NOVEMBER 2020**



**RODIC CONSULTANTS PVT. LTD.**

**IN JV WITH**

**MONARCH SURVEYORS AND ENGINEERING CONSULTANTS PVT. LTD.**



# **Final Detailed Project Report**

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## **Annexure to Main Report**

# Traffic Survey and analysis

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## Annexure 3.1 Average Daily Traffic

7-DAYS TRAFFIC SUMMARY  
(Up+Down)

Road : Brakpora Road

District : Anantnag

Date of Work : 10-Jul-19 to 17-Jul-19

Location: Brakpora

State : Jammu and Kashmir

Starting Day : Wednesday

Ending Day : Tuesday

Direction of Traffic :

Up	From: Anantnag	To: Achabal
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Down	From: Achabal	To: Anantnag
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		Motorised Vehicle																				Non-motorised Vehicles																	
		Two Wheeler	Three Wheeler / Auto Rickshaw	Motorized Van	Car/ Jeep/ Van/ Taxi		Bus		LCV (Mini Truck)	Truck						Agricultural Tractor				Total Motorised Vehicles		Cycle	Cycle Rickshaw	Animal Drawn				Total Non-motorised Vehicles											
							Mini	Full		2-Axle Rigid Truck	3-Axle Rigid Truck	Multi-Axle Rigid Truck	Truck Trailer (Artic/ Semi-artic)	With Trailer	Without Trailer	Bullock Cart	Horse Drawn Vehicle																						
Equivalency Factor		0.5	1.0	1.0	1.0	3.0	3.0	1.5	3.0	4.5	4.5	4.5	4.5	1.5		0.5	2.0	6.0	4.0																				
Time Period		No.	PCU	No.	PCU	No.	PCU	No.	PCU	No.	PCU	No.	PCU	No.	PCU	No.	PCU	No.	PCU	No.	PCU	No.	PCU	No.	PCU	No.	PCU	No.	PCU										
10-Jul-19 (Day-1)		2302	1152	394	394	4	4	4848	4848	14	42	128	384	348	523	378	1134	9	41	4	18	0	0	32	144	0	0	8461	8684	81	41	9	18	0	0	1	4	91	63
11-Jul-19 (Day-2)		2513	1257	469	469	10	10	5113	5113	16	48	140	420	375	563	407	1221	13	59	7	32	0	0	43	194	0	0	9106	9386	92	47	15	30	0	0	2	8	109	85
12-Jul-19 (Day-3)		2473	1237	517	517	7	7	5079	5079	22	66	153	459	417	626	384	1152	17	77	5	23	0	0	55	248	0	0	9129	9491	87	44	12	24	0	0	4	16	103	84
13-Jul-19 (Day-4)		2226	1113	484	484	14	14	4573	4573	18	54	131	393	366	549	348	1044	11	50	8	36	0	0	40	180	0	0	8219	8490	73	37	11	22	0	0	2	8	86	67
14-Jul-19 (Day-5)		2130	1066	439	439	6	6	4120	4120	10	30	122	366	329	494	315	945	8	36	2	10	0	0	35	158	0	0	7516	7670	62	31	7	14	0	0	1	4	70	49
15-Jul-19 (Day-6)		2274	1138	461	461	12	12	4531	4531	13	39	149	447	352	528	355	1065	14	64	9	41	0	0	49	221	0	0	8219	8547	77	39	13	26	0	0	5	20	95	85
16-Jul-19 (Day-7)		2388	1194	507	507	9	9	4986	4986	15	45	162	486	391	587	369	1107	10	46	3	14	0	0	63	284	0	0	8903	9265	92	47	16	32	0	0	3	12	111	91
Directional Split (%)	Up	52		50		44		52		53		67		56		47		45		60		0		54		0		52		62		45		0		50		60	
	Down	48		50		56		48		47		33		44		53		55		40		0		46		0		48		38		55		0		50		40	
Average Daily Traffic (Up+Down)	No. & PCU	2329	1165	467	467	9	9	4750	4750	15	45	140	420	368	553	365	1095	11	50	5	23	0	0	46	208	0	0	8505	8785	81	41	11	22	0	0	2	8	94	71
	Total No.	8599																																					
	Total PCU	8856																																					
Commercial Vehicle = 950																																							

## Annexure 3.2 Annual Average Daily Traffic

### Annual Average Daily Traffic (AADT)

Road : Brakpora Road

Starting Date : 10-Jul-19

Location : Brakpora

Ending Date : 17-Jul-19

Type of Vehicle		ADT (Up+Dn)		Annual Average Daily Traffic (AADT)	
		No.	PCU	No.	PCU
Fast / Motorised Vehicles	Two Wheeler	2329	1165	2096	1049
	Three Wheeler / Auto Rickshaw	467	467	430	430
	Motorized Van	9	9	8	8
	Car/ Jeep/ Van/ Taxi	4750	4750	4370	4370
	Bus	Mini	15	13	40
		Full	140	125	374
	LCV (Mini Truck)		368	328	492
	Truck	2-Axle Rigid Truck	365	325	975
		3-Axle Rigid Truck	11	10	45
		Multi-Axle Rigid Truck	5	4	20
		Truck Trailer (Artic/ Semi-artic)	0	0	0
	Tractor With Trailer		46	41	185
	Tractor Without Trailer		0	0	0
Slow / Non-motorised Vehicles	Cycle		81	81	41
	Cycle Rickshaw		11	11	22
	Bullock Cart		0	0	0
	Horse Drawn Vehicle		2	2	8
Total Motorised Vehicles		8505	8785	7750	7988
Total Non-motorised Vehicles		94	71	94	71
Total Vehicles		8599		7844	
Total PCU		8856		8059	
Commercial Vehicles per Day (CVPD)		950		846	

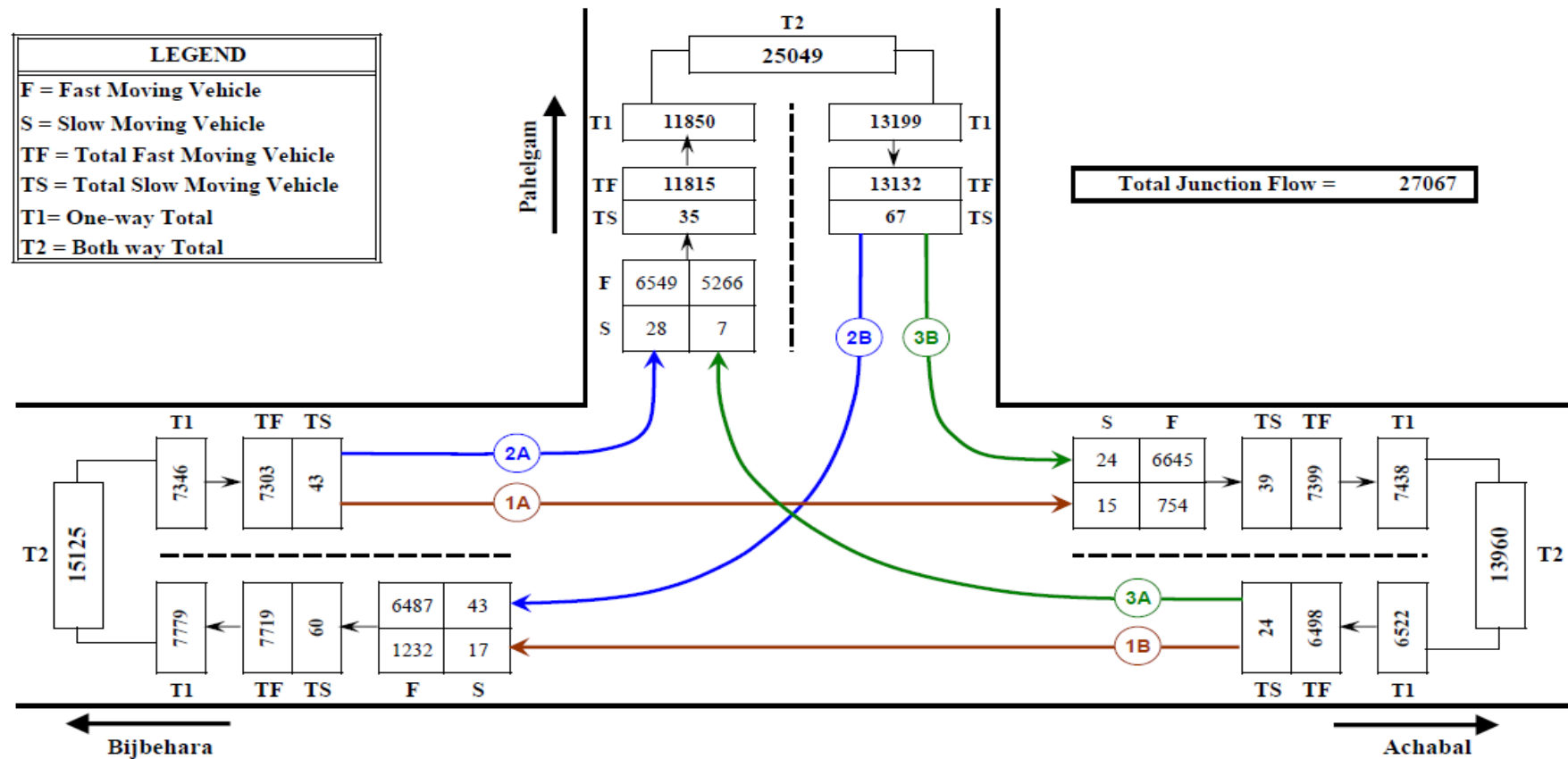
Average Seasonal Correction Factor		
For vehicles operated on Diesel	=	0.89 [ For Bus, LCV, Truck & Tractor ]
For vehicles operated on Petrol	=	0.92 [ For 3-wheeler, Motorised Van & 4-wheeler ]
For vehicle operated on both Petrol & Diesel	=	0.90 [ For 2-wheeler ]

## Annexure 3.3 TMC

Total Directional Traffic Volume  
(In Number)

Road Name : KP Road  
 Location of Intersection : Nai Basti  
 Peak Hour : 8 to 20

Date: 24-Jul-19  
 Day: Wednesday



## Annexure 3.3

## Hourly Traffic for All Directions

Location : Nai Basti

Date : 24-Jul-19

Road Name : KP Road

Day : Wednesday

Direction		Bijbehara to Achabal	Achabal to Bijbehara	Bijbehara to Pahelgam	Pahelgam to Bijbehara	Achabal to Pahelgam	Pahelgam to Achabal	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	89	125	784	782	623	756	3159
9	10	72	110	729	722	587	775	2995
10	11	57	113	753	761	541	822	3047
11	12	62	122	785	645	557	730	2901
12	13	71	103	609	551	480	577	2391
13	14	81	106	565	603	474	582	2411
14	15	70	104	477	566	398	527	2142
15	16	74	103	452	451	434	492	2006
16	17	66	104	460	467	340	416	1853
17	18	54	107	351	391	336	382	1621
18	19	35	76	301	304	257	321	1294
19	20	38	76	311	287	246	289	1247
Total		2018	7826	13107	11803	11942	33736	27067

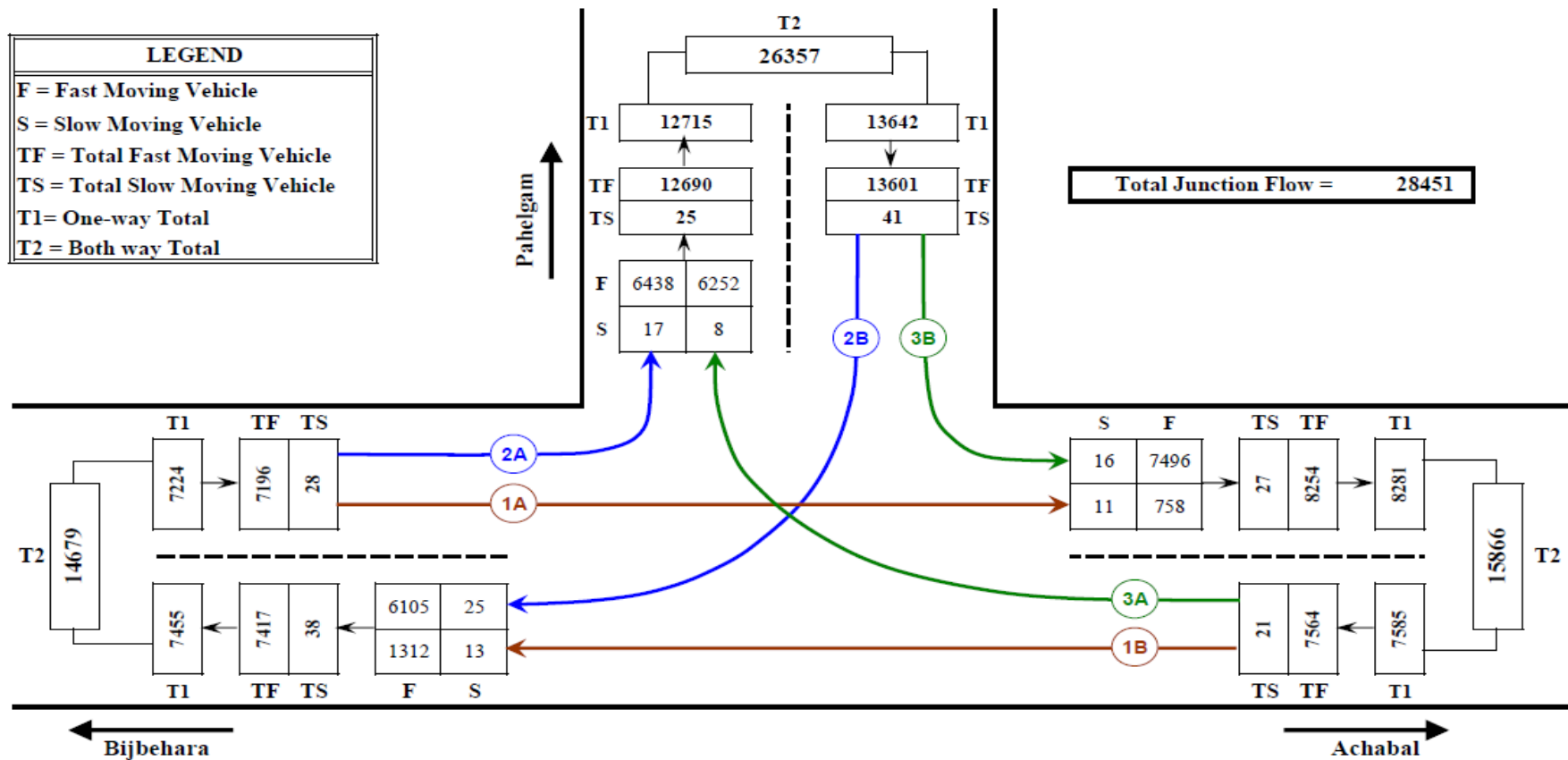


## Annexure 3.3

Total Directional Traffic Volume  
(In PCU)

Road Name : KP Road  
 Location of Intersection : Nai Basti  
 Peak Hour : 8 to 20

Date: 24-Jul-19  
 Day: Wednesday





## Annexure 3.3

## Hourly PCU for All Directions

Location : Nai Basti

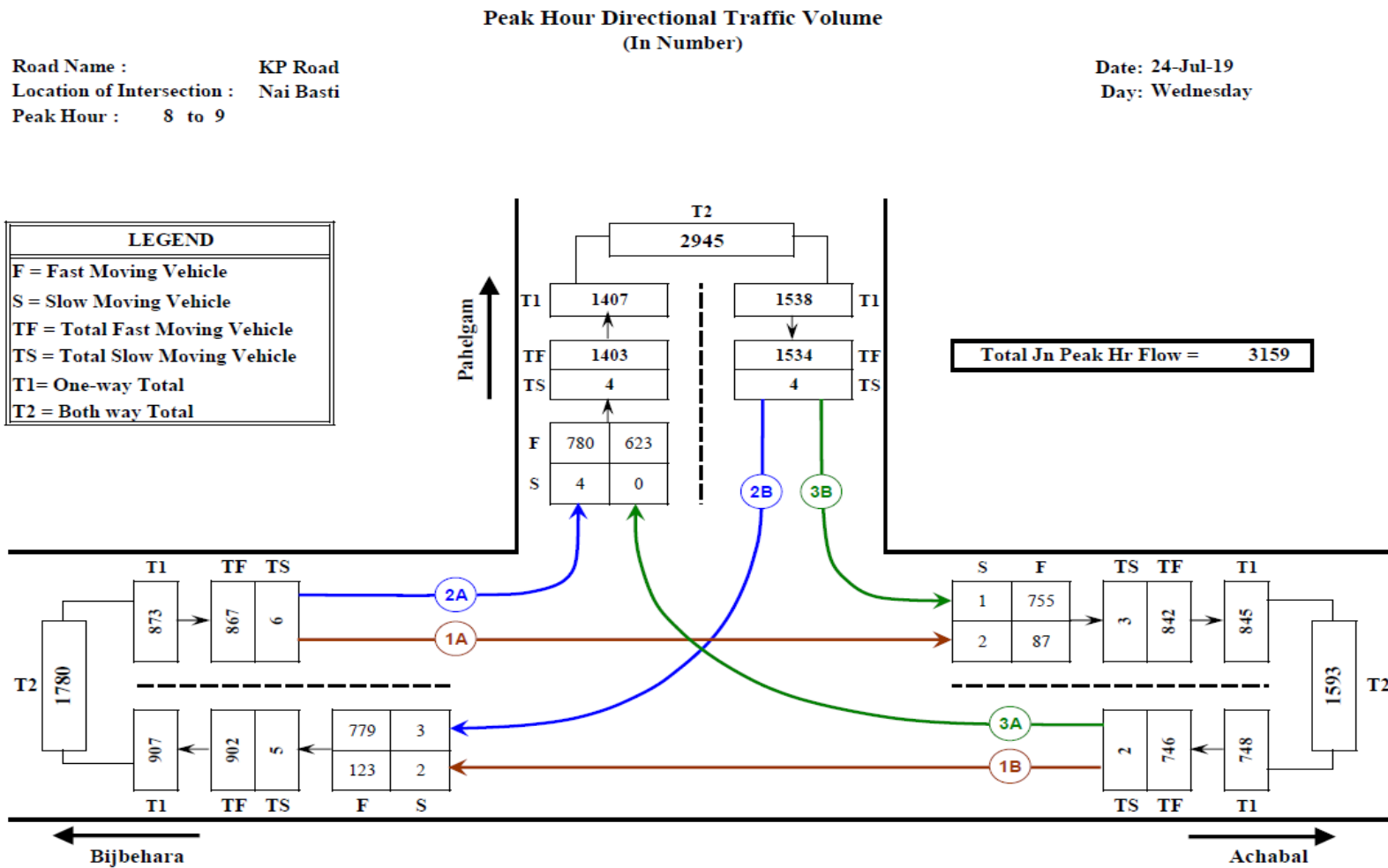
Date : 24-Jul-19

Road Name : KP Road

Day : Wednesday

Direction		Bijbehara to Achabal	Achabal to Bijbehara	Bijbehara to Pahelgam	Pahelgam to Bijbehara	Achabal to Pahelgam	Pahelgam to Achabal	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	95	132	764	739	732	861	3323
9	10	67	103	730	686	714	858	3158
10	11	67	122	750	738	673	936	3286
11	12	68	119	775	595	691	830	3078
12	13	67	127	602	500	541	672	2509
13	14	76	124	558	552	563	646	2519
14	15	69	115	479	518	460	582	2223
15	16	67	98	415	423	507	563	2073
16	17	69	108	425	423	411	444	1880
17	18	54	111	352	377	395	452	1741
18	19	33	76	298	303	299	371	1380
19	20	37	90	307	276	274	297	1281
Total		2094	7780	12585	12390	13772	7512	28451

## Annexure 3.3

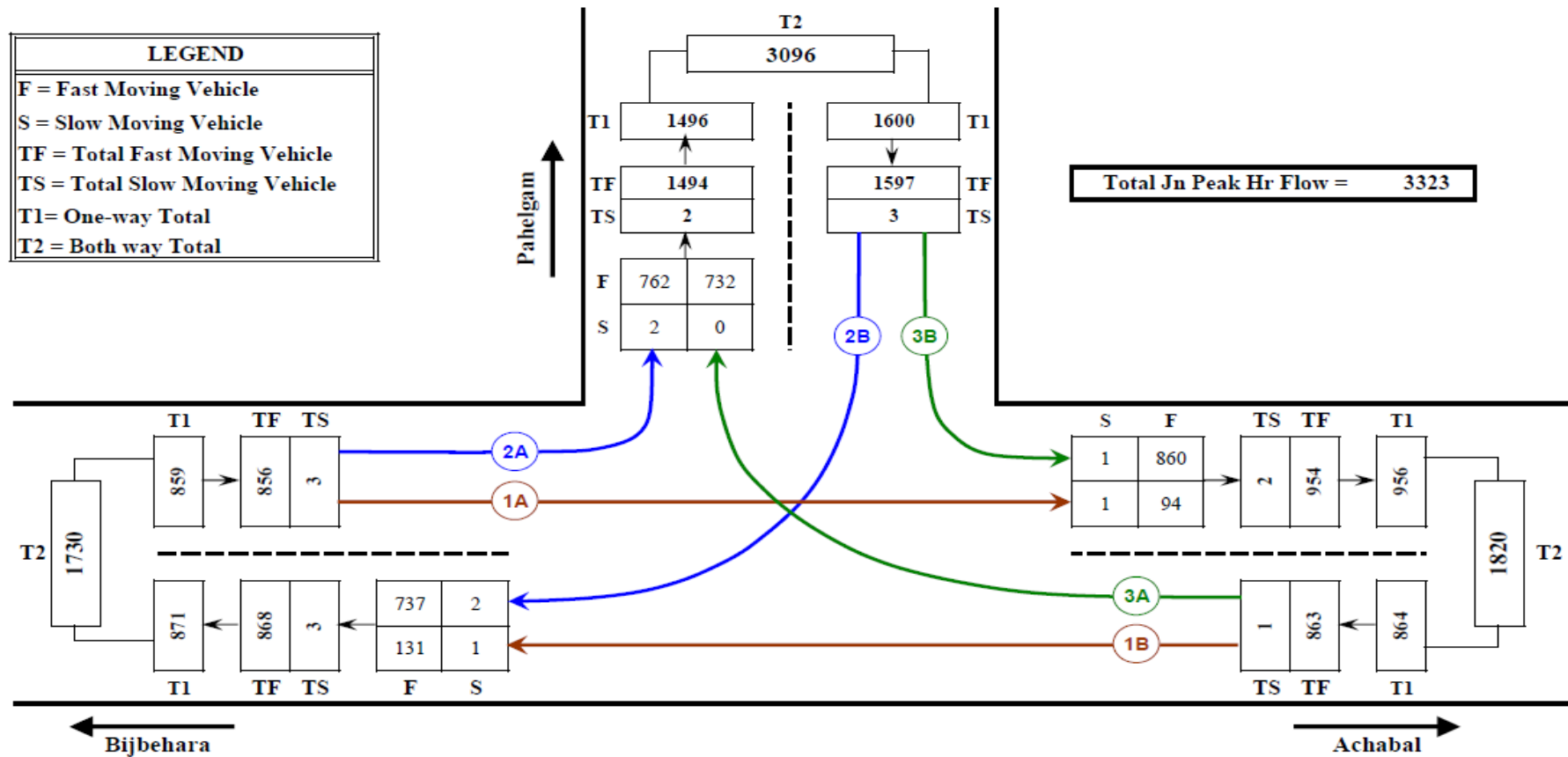


## Annexure 3.3

### Peak Hour Directional Traffic Volume (In PCU)

Road Name : KP Road  
 Location of Intersection : Nai Basti  
 Peak Hour : 8 to 9

Date: 24-Jul-19  
 Day: Wednesday



## Annexure 3.3

## Peak Hour Traffic for All Directions

Location : Nai Basti

Date : 24-Jul-19

Road Name : KP Road

Day : Wednesday

Peak Hour		Direction		Total Motorised Vehicles		Total Non-motorised Vehicles		Total Motorised + Non-Motorised Vehicles	
		Code	Description	No.	PCU	No.	PCU	No.	PCU
From	To								
8	9	1A	Bijbehara to Achabal	87	94	2	1	89	95
		1B	Achabal to Bijbehara	123	131	2	1	125	132
		2A	Bijbehara to Pahelgam	780	762	4	2	784	764
		2B	Pahelgam to Bijbehara	779	737	3	2	782	739
		3A	Achabal to Pahelgam	623	732	0	0	623	732
		3B	Pahelgam to Achabal	755	860	1	1	756	861
Total Peak Hour Data								3159	3323

**Anexure 3.4 A****Traffic Zones for O-D Survey**

<b>Zone Code</b>	<b>Zone Name</b>
<b>1</b>	Achabal
<b>2</b>	Anantnag
<b>3</b>	Vailoo
<b>4</b>	Kokernag
<b>5</b>	Rest of Anantnag District
<b>6</b>	Srinagar
<b>7</b>	Pulwama District
<b>8</b>	Ganderbal District
<b>9</b>	Kishtwar District
<b>10</b>	Rest of J&K State

## Annexure 3.4 B

Origin - Destination Matrix  
**Brakpora Road**  
**For Goods Vehicles (in Number)**

Place of Survey : Brakpora

Date : 10-Jul-19

Number of Sample : 188

Weather : Clear &amp; Sunny

		DESTINATION ZONES												
		O\D	1	2	3	4	5	6	7	8	9	10	Total	
ORIGIN ZONES	1			25				18		6	2			51
	2		25			21		2				9		57
	3			4				12		2				18
	4			4				3	6					13
	5					8	4	19				4		35
	6		6					2						8
	7											4		4
	8													0
	9													0
	10						2							2
Total			31	33	29	6	56	6	8	2	17	0		188

## Annexure 3.4 C

Zone Influence Factor of Goods Vehicles				
Zone Code	Name of Zone	Trip Production	Trip Attraction	ZIF (%)
1	Achabal	51	31	21.8
2	Anantnag	57	33	23.9
3	Vailoo	18	29	12.5
4	Kokernag	13	6	5.1
5	Rest of Anantnag District	35	56	24.2
6	Srinagar	8	6	3.7
7	Pulwama District	4	8	3.2
8	Ganderbal District	0	2	0.5
9	Kishtwar District	0	17	4.5
10	Rest of J&K State	2	0	0.5



## Annexure 3.4 D

Origin - Destination Matrix  
**Brakpora Road**  
**For Passenger Vehicles (in Number)**

Place of Survey : Brakpora

Date : 10-Jul-19

Number of Sample : 1043

Weather : Clear &amp; Sunny

		DESTINATION ZONES										Total
O/D		1	2	3	4	5	6	7	8	9	10	
ORIGIN ZONES	1		168			42	42	42				294
	2	147		49	49							245
	3					126						126
	4					84						84
	5	98										98
	6			98								98
	7	49										49
	8	49										49
	9											0
	10											0
Total		343	168	147	49	252	42	42	0	0	0	1043

### Annexure 3.4 E

Zone Influence Factor of Passenger Vehicles				
Zone Code	Name of Zone	Trip Production	Trip Attraction	ZIF (%)
1	Achabal	294	343	30.5
2	Anantnag	245	168	19.8
3	Vailoo	126	147	13.1
4	Kokernag	84	49	6.4
5	Rest of Anantnag District	98	252	16.8
6	Srinagar	98	42	6.7
7	Pulwama District	49	42	4.4
8	Ganderbal District	49	0	2.3
9	Kishtwar District	0	0	0.0
10	Rest of J&K State	0	0	0.0

## Annexure 3.5 (i) : Vdf Analysis (Bus)

**Survey Location: Brakpora**

									<b>VDF</b>	<b>1.049</b>
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	1st	2nd	SW-FSA	DW-SA		
1	Bus	People	2570	3660	50.42	71.81	0.362	0.649	122.23	1.01
2	Bus	People	3000	2940	58.86	57.68	0.672	0.270	116.54	0.94
3	Bus	People	3420	2590	67.10	50.82	1.136	0.163	117.92	1.30
4	Bus	Passenger	3330	3320	65.33	65.14	1.021	0.440	130.47	1.46
5	Bus	Passenger	3040	3080	59.64	60.43	0.709	0.326	120.07	1.03
6	Bus	Passenger	3470	3640	68.08	71.42	1.204	0.635	139.50	1.84
7	Bus	Passenger	2200	3700	43.16	72.59	0.194	0.678	115.76	0.87
8	Bus	Passenger	3180	3360	62.39	65.92	0.849	0.461	128.31	1.31
9	Bus	Passenger	2130	3580	41.79	70.24	0.171	0.594	112.03	0.77
10	Bus	Passenger	2400	3170	47.09	62.20	0.275	0.365	109.28	0.64
11	Bus	Passenger	2010	2900	39.44	56.90	0.135	0.256	96.33	0.39

## Annexure 3.5 (i) : Vdf Analysis (Bus)

**Survey Location: Brakpora**

									<b>VDF</b>	<b>1.049</b>
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	1st	2nd	SW-FSA	DW-SA		
12	Bus	Passenger	2450	2920	48.07	57.29	0.299	0.263	105.36	0.56
13	Bus	Passenger	2480	3960	48.66	77.70	0.314	0.890	126.35	1.20
14	Bus	Passenger	2880	3340	56.51	65.53	0.571	0.450	122.04	1.02
15	Bus	Passenger	2680	4230	52.58	82.99	0.428	1.158	135.57	1.59
16	Bus	Passenger	2160	4040	42.38	79.26	0.181	0.964	121.64	1.14
17	Bus	Passenger	2970	2760	58.27	54.15	0.646	0.210	112.42	0.86
18	Bus	Passenger	2740	2830	53.76	55.52	0.468	0.232	109.28	0.70
19	Bus	Passenger	3040	3810	59.64	74.75	0.709	0.762	134.40	1.47
20	Bus	Passenger	2490	3620	48.85	71.02	0.319	0.621	119.88	0.94
21	Bus	Passenger	2740	4350	53.76	85.35	0.468	1.295	139.11	1.76
22	Bus	Passenger	3040	3990	59.64	78.28	0.709	0.917	137.93	1.63

## Annexure 3.5 (i) : Vdf Analysis (Bus)

**Survey Location: Brakpora**

									<b>VDF</b>	<b>1.049</b>
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	1st	2nd	SW-FSA	DW-SA		
23	Bus	Passenger	2700	2780	52.97	54.54	0.441	0.216	107.52	0.66
24	Bus	Passenger	2160	4230	42.38	82.99	0.181	1.158	125.37	1.34
25	Bus	Passenger	3070	2530	60.23	49.64	0.737	0.148	109.87	0.89
26	Bus	Passenger	2500	3170	49.05	62.20	0.324	0.365	111.25	0.69
27	Bus	Passenger	2800	3460	54.94	67.89	0.510	0.518	122.82	1.03
28	Bus	Passenger	2410	3300	47.28	64.75	0.280	0.429	112.03	0.71
29	Bus	Passenger	2630	3830	51.60	75.14	0.397	0.778	126.75	1.18
30	Bus	Passenger	2350	2740	46.11	53.76	0.253	0.204	99.87	0.46
31	Bus	Passenger	3280	2800	64.35	54.94	0.961	0.222	119.29	1.18
32	Bus	Passenger	2410	3740	47.28	73.38	0.280	0.708	120.66	0.99

Annexure 3.5 (ii) : VDF ANALYSIS - M Axle																
Survey Location: Brakpora															VDF	4.390
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	3rd	4th	1st	2nd	3rd	4th	SW-FSA	SW-SA	DW-TA <sup>2</sup>	DW-TA <sup>3</sup>		
1	Multi Axle Truck	Grocery	3560	4230	5430	5350	69.85	82.99	106.54	104.97	1.333	2.658	4.17	_	364.34	8.16
2	Multi Axle Truck	Empty	2760	2010	1956	1895	54.15	39.44	38.38	37.18	0.482	0.135	_	0.069	169.14	0.62
													Average		266.74	4.39

### **Annexure 3.5 (iii) :VDF ANALYSIS - 3 Axle**

**Survey Location:**        **Brakpora**

											<b>VDF</b>	<b>1.820</b>
Sr.No.	Vehicle Type	Commodity	Wheel Load (kg)			Axle Load (KN)			Equivalency		Gross Vehicle Weight (GVW) in KN	Vehicle Damage Factor (VDF)
			1st	2nd	3rd	1st	2nd	3rd	SW-FSA	DW-TA <sup>2</sup>		
1	3 Axle Truck	Empty	2140	1610	1505	41.99	31.59	29.53	0.174	0.03	103.10	0.20
2	3 Axle Truck	Empty	2340	2010	1720	45.91	39.44	33.75	0.249	0.06	119.09	0.31
3	3 Axle Truck	Vegetables	3650	5500	4800	71.61	107.91	94.18	1.473	3.48	273.70	4.95
										<b>Average</b>	<b>165.30</b>	<b>1.82</b>



### **Annexure 3.5 (iv) :VDF ANALYSIS - 2 Axle**

**Survey Location: Brakpora**

									<b>VDF</b>	<b>2.943</b>
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	1st	2nd	SW-FSA	DW-SA		
1	2 Axle Truck	Oil	2825	5860	55.43	114.97	0.529	4.266	170.40	4.79
2	2 Axle Truck	Chips	2460	3560	48.27	69.85	0.304	0.581	118.11	0.89
3	2 Axle Truck	Empty	1920	1510	37.67	29.63	0.113	0.019	67.30	0.13
4	2 Axle Truck	Drum	3410	5000	66.90	98.10	1.122	2.261	165.00	3.38
5	2 Axle Truck	Goods	3460	5490	67.89	107.71	1.190	3.286	175.60	4.48
6	2 Axle Truck	Bitumen	3190	5385	62.59	105.65	0.860	3.042	168.24	3.90
7	2 Axle Truck	Empty	1950	1550	38.26	30.41	0.120	0.021	68.67	0.14
8	2 Axle Truck	Foods	3590	4945	70.44	97.02	1.379	2.163	167.46	3.54
9	2 Axle Truck	Goods	2890	6010	56.70	117.92	0.579	4.720	174.62	5.30
10	2 Axle Truck	Empty	1960	1490	38.46	29.23	0.123	0.018	67.69	0.14
11	2 Axle Truck	Empty	1890	1560	37.08	30.61	0.106	0.021	67.69	0.13
12	2 Axle Truck	Aggregates	2700	5930	52.97	116.35	0.441	4.474	169.32	4.91
13	2 Axle Truck	Aggregates	2630	6390	51.60	125.37	0.397	6.032	176.97	6.43
14	2 Axle Truck	Empty	1910	1590	37.47	31.20	0.110	0.023	68.67	0.13
15	2 Axle Truck	Oil	3560	5190	69.85	101.83	1.333	2.625	171.68	3.96
16	2 Axle Truck	Bricks	3080	5460	60.43	107.13	0.747	3.215	167.55	3.96
17	2 Axle Truck	Foods	1870	4820	36.69	94.57	0.102	1.953	131.26	2.05
18	2 Axle Truck	goods	2570	4130	50.42	81.03	0.362	1.053	131.45	1.41
19	2 Axle Truck	Aggregates	2880	5910	56.51	115.95	0.571	4.414	172.46	4.98

### **Annexure 3.5 (iv) :VDF ANALYSIS - 2 Axle**

**Survey Location: Brakpora**

									<b>VDF</b>	<b>2.943</b>
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	1st	2nd	SW-FSA	DW-SA		
20	2 Axle Truck	Foods	3630	4440	71.22	87.11	1.441	1.406	158.33	2.85
21	2 Axle Truck	Foods	3580	4120	70.24	80.83	1.364	1.042	151.07	2.41
22	2 Axle Truck	oil	3090	4970	60.63	97.51	0.757	2.207	158.14	2.96
23	2 Axle Truck	Aggregates	3050	5800	59.84	113.80	0.718	4.094	173.64	4.81
24	2 Axle Truck	Bricks	2120	5560	41.59	109.09	0.168	3.457	150.68	3.62
25	2 Axle Truck	Bricks	2990	5270	58.66	103.40	0.663	2.790	162.06	3.45
26	2 Axle Truck	Aggregates	3270	5500	64.16	107.91	0.949	3.310	172.07	4.26
27	2 Axle Truck	fruits	2710	4290	53.17	84.17	0.448	1.225	137.34	1.67
28	2 Axle Truck	Aggregates	2540	5950	49.83	116.74	0.346	4.534	166.57	4.88
29	2 Axle Truck	Groceries	2560	4980	50.23	97.71	0.357	2.225	147.93	2.58
30	2 Axle Truck	Groceries	3100	5240	60.82	102.81	0.767	2.727	163.63	3.49
31	2 Axle Truck	oil	2770	4370	54.35	85.74	0.489	1.319	140.09	1.81
32	2 Axle Truck	fruits	2090	4210	41.01	82.60	0.158	1.136	123.61	1.29
33	2 Axle Truck	Goods	2410	5060	47.28	99.28	0.280	2.372	146.56	2.65
34	2 Axle Truck	Goods	2340	5080	45.91	99.67	0.249	2.409	145.58	2.66
35	2 Axle Truck	Vegetables	2540	4100	49.83	80.44	0.346	1.022	130.28	1.37
36	2 Axle Truck	Fruits	2880	4860	56.51	95.35	0.571	2.018	151.86	2.59
37	2 Axle Truck	Goods	3180	5430	62.39	106.54	0.849	3.145	168.93	3.99
38	2 Axle Truck	Misslaneous	3600	4730	70.63	92.80	1.394	1.811	163.43	3.21

### **Annexure 3.5 (iv) :VDF ANALYSIS - 2 Axle**

**Survey Location: Brakpora**

									<b>VDF</b>	<b>2.943</b>
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	1st	2nd	SW-FSA	DW-SA		
39	2 Axle Truck	Scrap	2160	5980	42.38	117.33	0.181	4.626	159.71	4.81
40	2 Axle Truck	Vegetables	2770	4560	54.35	89.47	0.489	1.564	143.81	2.05
41	2 Axle Truck	fruits	3520	4900	69.06	96.14	1.274	2.086	165.20	3.36
42	2 Axle Truck	Empty	2040	4030	40.02	79.07	0.144	0.954	119.09	1.10
43	2 Axle Truck	Vegetables	3420	4910	67.10	96.33	1.136	2.103	163.43	3.24
44	2 Axle Truck	Fruits	3500	4860	68.67	95.35	1.246	2.018	164.02	3.26
45	2 Axle Truck	Aggregates	1960	5930	38.46	116.35	0.123	4.474	154.80	4.60
46	2 Axle Truck	fruits	2180	4490	42.77	88.09	0.187	1.470	130.87	1.66
47	2 Axle Truck	fruits	1900	4360	37.28	85.54	0.108	1.307	122.82	1.42
48	2 Axle Truck	Goods	1930	4780	37.87	93.78	0.115	1.889	131.65	2.00
49	2 Axle Truck	Vegetables	2550	4740	50.03	93.00	0.351	1.826	143.03	2.18
50	2 Axle Truck	Aggregates	3490	5770	68.47	113.21	1.232	4.010	181.68	5.24
51	2 Axle Truck	Steel	3660	5780	71.81	113.40	1.490	4.038	185.21	5.53
52	2 Axle Truck	Goods	3500	4660	68.67	91.43	1.246	1.706	160.10	2.95
53	2 Axle Truck	fruits	2050	5090	40.22	99.87	0.147	2.428	140.09	2.57
54	2 Axle Truck	Vegetables	3140	4370	61.61	85.74	0.807	1.319	147.35	2.13
55	2 Axle Truck	Vegetables	2600	4880	51.01	95.75	0.379	2.052	146.76	2.43
56	2 Axle Truck	Goods	3180	4110	62.39	80.64	0.849	1.032	143.03	1.88
57	2 Axle Truck	Steel	3540	5980	69.45	117.33	1.304	4.626	186.78	5.93

### **Annexure 3.5 (iv) :VDF ANALYSIS - 2 Axle**

**Survey Location: Brakpora**

									<b>VDF</b>	<b>2.943</b>
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	1st	2nd	SW-FSA	DW-SA		
58	2 Axle Truck	Steel	2670	5840	52.39	114.58	0.422	4.208	166.97	4.63
59	2 Axle Truck	Scrap	2680	4680	52.58	91.82	0.428	1.735	144.40	2.16
60	2 Axle Truck	Empty	2860	4020	56.11	78.87	0.555	0.945	134.99	1.50
61	2 Axle Truck	Aggregates	2980	5440	58.47	106.73	0.655	3.168	165.20	3.82
62	2 Axle Truck	Goods	3610	5260	70.83	103.20	1.410	2.769	174.03	4.18
63	2 Axle Truck	Bricks	3370	5710	66.12	112.03	1.071	3.846	178.15	4.92
64	2 Axle Truck	Aggregates	2700	4390	52.97	86.13	0.441	1.344	139.11	1.78
65	2 Axle Truck	fruits	2740	4560	53.76	89.47	0.468	1.564	143.23	2.03
66	2 Axle Truck	fruits	2930	4220	57.49	82.80	0.612	1.147	140.28	1.76
67	2 Axle Truck	Empty	2290	4030	44.93	79.07	0.228	0.954	124.00	1.18
68	2 Axle Truck	Electronics	3640	4380	71.42	85.94	1.457	1.331	157.35	2.79
69	2 Axle Truck	Electronics	2380	5290	46.70	103.79	0.266	2.833	150.49	3.10
70	2 Axle Truck	Aggregates	3190	5600	62.59	109.87	0.860	3.558	172.46	4.42
71	2 Axle Truck	Vegetables	3000	4060	58.86	79.66	0.672	0.983	138.52	1.66
72	2 Axle Truck	Bricks	1990	5600	39.04	109.87	0.130	3.558	148.92	3.69
73	2 Axle Truck	Oil	2280	4440	44.73	87.11	0.224	1.406	131.85	1.63
									<b>Average</b>	<b>148.10</b>
										<b>2.94</b>

## Annexure 3.5 (v) :VDF ANALYSIS - LCV

Survey Location: Brakpora

										VDF	1.104
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	1st	2nd	SW-FSA	DW-SA	SW-RSA		
1	Mini LCV	Vegetables	2900	2750	56.90	53.96	0.587		0.475	110.85	1.06
2	Mini LCV	Animals	2110	3040	41.40	59.64	0.165		0.709	101.04	0.87
3	Mini LCV	Cold Drinks	2870	2560	56.31	50.23	0.563		0.357	106.54	0.92
4	Mini LCV	Vegetables	1550	1860	30.41	36.49	0.048		0.099	66.90	0.15
5	Mini LCV	Cold Drinks	3000	3040	58.86	59.64	0.672		0.709	118.50	1.38
6	Mini LCV	Pillar	1680	2570	32.96	50.42	0.066		0.362	83.39	0.43
7	Mini LCV	Foods	1670	2330	32.77	45.71	0.065		0.245	78.48	0.31
8	Mini LCV	Grains	2710	1750	53.17	34.34	0.448		0.078	87.51	0.53
9	Mini LCV	Chicken	1670	2590	32.77	50.82	0.065		0.374	83.58	0.44
10	Mini LCV	Animals	2360	2690	46.30	52.78	0.258		0.435	99.08	0.69
11	LCV	Empty	1570	2550	30.80	50.03	0.050	0.153		80.83	0.20
12	Mini LCV	Animals	2460	2940	48.27	57.68	0.304		0.620	105.95	0.92
13	Mini LCV	Wood	2820	3000	55.33	58.86	0.525		0.672	114.19	1.20
14	Mini LCV	Wood	2020	2720	39.63	53.37	0.138		0.454	93.00	0.59
15	Mini LCV	Marble	2470	2470	48.46	48.46	0.309		0.309	96.92	0.62
16	Mini LCV	Fruits	2930	2030	57.49	39.83	0.612		0.141	97.32	0.75
17	Mini LCV	Animals	2640	1890	51.80	37.08	0.403		0.106	88.88	0.51
18	Mini LCV	Empty	1590	2330	31.20	45.71	0.053		0.245	76.91	0.30
19	Mini LCV	Animals	2640	2930	51.80	57.49	0.403		0.612	109.28	1.02
20	Mini LCV	Vegetables	2840	2550	55.72	50.03	0.540		0.351	105.75	0.89
21	Mini LCV	Vegetables	1770	2790	34.73	54.74	0.081		0.503	89.47	0.58
22	Mini LCV	Wood	2220	2270	43.56	44.54	0.202		0.220	88.09	0.42
23	Mini LCV	Marble	2970	2670	58.27	52.39	0.646		0.422	110.66	1.07
24	Mini LCV	Grains	2560	2640	50.23	51.80	0.357		0.403	102.02	0.76
25	Mini LCV	Animals	2420	2940	47.48	57.68	0.285		0.620	105.16	0.90
26	Mini LCV	Empty	1920	1890	37.67	37.08	0.113		0.106	74.75	0.22
27	Mini LCV	Wood	1790	2660	35.12	52.19	0.085		0.416	87.31	0.50
28	Mini LCV	Animals	2680	2530	52.58	49.64	0.428		0.340	102.22	0.77

## Annexure 3.5 (v) :VDF ANALYSIS - LCV

Survey Location: Brakpora

										VDF	1.104
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	1st	2nd	SW-FSA	DW-SA	SW-RSA		
29	Mini LCV	Fruits	2880	2860	56.51	56.11	0.571		0.555	112.62	1.13
30	Mini LCV	Empty	2160	2070	42.38	40.61	0.181		0.152	82.99	0.33
31	Mini LCV	Fruits	2340	2910	45.91	57.09	0.249		0.595	103.01	0.84
32	Mini LCV	Empty	1970	1790	38.65	35.12	0.125		0.085	73.77	0.21
33	Mini LCV	Empty	2190	2560	42.97	50.23	0.191		0.357	93.20	0.55
34	Mini LCV	Animals	2120	2850	41.59	55.92	0.168		0.548	97.51	0.72
35	Mini LCV	Plastic products	1650	2210	32.37	43.36	0.062		0.198	75.73	0.26
36	Mini LCV	Wood	2560	2340	50.23	45.91	0.357		0.249	96.14	0.61
37	Mini LCV	Chicken	2900	1880	56.90	36.89	0.587		0.104	93.78	0.69
38	Mini LCV	Grains	2850	2710	55.92	53.17	0.548		0.448	109.09	1.00
39	Mini LCV	Foods	1610	2960	31.59	58.08	0.056		0.637	89.66	0.69
40	Mini LCV	Wood	2410	2170	47.28	42.58	0.280		0.184	89.86	0.46
41	Mini LCV	Sand	2840	2810	55.72	55.13	0.540		0.518	110.85	1.06
42	Mini LCV	Empty	1820	2190	35.71	42.97	0.091		0.191	78.68	0.28
43	Mini LCV	Bricks	2680	3050	52.58	59.84	0.428		0.718	112.42	1.15
44	Mini LCV	Aggregates	1900	2720	37.28	53.37	0.108		0.454	90.64	0.56
45	Mini LCV	fruits	2830	2550	55.52	50.03	0.532		0.351	105.56	0.88
46	Mini LCV	Aggregates	2140	2880	41.99	56.51	0.174		0.571	98.49	0.75
47	Mini LCV	Groceries	2050	2230	40.22	43.75	0.147		0.205	83.97	0.35
48	Mini LCV	Groceries	2680	2960	52.58	58.08	0.428		0.637	110.66	1.07
49	Mini LCV	oil	2760	2150	54.15	42.18	0.482		0.177	96.33	0.66
50	Mini LCV	fruits	2780	2450	54.54	48.07	0.496		0.299	102.61	0.79
51	Mini LCV	Goods	2810	1920	55.13	37.67	0.518		0.113	92.80	0.63
52	Mini LCV	Goods	2110	1810	41.40	35.51	0.165		0.089	76.91	0.25
53	Mini LCV	Vegetables	2770	3020	54.35	59.25	0.489		0.691	113.60	1.18
54	Mini LCV	Fruits	2640	2000	51.80	39.24	0.403		0.133	91.04	0.54
55	Mini LCV	Goods	2870	1820	56.31	35.71	0.563		0.091	92.02	0.65
56	Mini LCV	Misslaneous	2080	1830	40.81	35.90	0.155		0.093	76.71	0.25

## Annexure 3.5 (v) :VDF ANALYSIS - LCV

Survey Location: Brakpora

										VDF	1.104
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	1st	2nd	SW-FSA	DW-SA	SW-RSA		
57	Mini LCV	Scrap	1780	1890	34.92	37.08	0.083		0.106	72.01	0.19
58	Mini LCV	Vegetables	1620	1770	31.78	34.73	0.057		0.081	66.51	0.14
59	Mini LCV	fruits	2880	2970	56.51	58.27	0.571		0.646	114.78	1.22
60	Mini LCV	Empty	2870	1740	56.31	34.14	0.563		0.076	90.45	0.64
61	LCV	Vegetables	4870	6970	95.55	136.75	4.669	8.538	19.592	232.30	32.80
62	Mini LCV	Fruits	2460	2170	48.27	42.58	0.304		0.184	90.84	0.49
63	Mini LCV	Aggregates	2920	2120	57.29	41.59	0.603		0.168	98.88	0.77
64	Mini LCV	fruits	1990	2740	39.04	53.76	0.130		0.468	92.80	0.60
65	Mini LCV	fruits	2690	3200	52.78	62.78	0.435		0.870	115.56	1.31
66	Mini LCV	Goods	1640	2400	32.18	47.09	0.060		0.275	79.26	0.34
67	Mini LCV	Vegetables	1710	2170	33.55	42.58	0.071		0.184	76.13	0.26
68	Mini LCV	Goods	2030	2970	39.83	58.27	0.141		0.646	98.10	0.79
69	Mini LCV	Empty	1730	2210	33.94	43.36	0.074		0.198	77.30	0.27
70	Mini LCV	Plastic products	2220	1910	43.56	37.47	0.202		0.110	81.03	0.31
71	Mini LCV	Chicken	2780	3010	54.54	59.06	0.496		0.681	113.60	1.18
72	Mini LCV	Grains	2350	3020	46.11	59.25	0.253		0.691	105.36	0.94
73	Mini LCV	Vegetables	2550	2790	50.03	54.74	0.351		0.503	104.77	0.85
									Average	96.23	1.10



<b>VDF Summary</b>		
<b>Sr. No.</b>	<b>Vehicle Type</b>	<b>VDF</b>
<b>1</b>	LCV	1.10444
<b>2</b>	2 Axle	2.94281
<b>3</b>	3 Axle	1.82046
<b>4</b>	MAV	4.38954
<b>5</b>	Bus	1.04853
		<b>2.26116</b>

# **Engineering Survey, Material Investigation & Pavement Design**

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Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road : Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

KMS NO : Km 235+000 TO 269.000

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage (Lined / Earthen)	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles		High Tension Poles				Vertical Curve	Horizont al Curve				
			Left	Right											Left	Right	Left	Right		left	right	Left	Right								
235+000	235+100	Hilly / Rolling	Builtup	Builtup	Vailoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	River	Both	7.50	20-30
235+100	235+200	Hilly / Rolling	Builtup	Builtup	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	25.30	40-50
235+200	235+300	Hilly / Rolling	Builtup	Builtup	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	Agriculture land	Both	23.40	20-30	
235+300	235+400	Hilly / Rolling	Builtup	Builtup	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	10.90	40-50	
235+400	235+500	Hilly / Rolling	Builtup	Builtup	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	11.27	40-50	
235+500	235+600	Hilly / Rolling	Forest	Builtup	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	19.42	40-50	
235+600	235+700	Hilly / Rolling	Forest	Builtup	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	Agriculture land	Both	16.37	20-30	
235+700	235+800	Hilly / Rolling	Forest	Agri.	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	Agriculture land	Both	8.59	40-50	
235+800	235+900	Hilly / Rolling	Builtup	Builtup	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	Agriculture land	Both	34.00	40-50	
235+900	236+000	Hilly / Rolling	Builtup	Builtup	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	Agriculture land	Both	34.00	20-30	
236+000	236+100	Hilly / Rolling	Agri.	Agri.	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	RHC	Agriculture land	Both	34.00	20-30
236+100	236+200	Hilly / Rolling	Agri.	Agri.	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	30.00	40-50	
236+200	236+300	Hilly / Rolling	Agri.	Agri.	Gad Wali	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	31.60	40-50	
236+300	236+400	Hilly / Rolling	Agri.	Agri.	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	31.60	40-50	
236+400	236+500	Hilly / Rolling	Agri.	Agri.	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	31.40	40-50	
236+500	236+600	Hilly / Rolling	Agri.	Agri.	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	31.40	40-50	
236+600	236+700	Hilly / Rolling	Agri.	Agri.	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	26.90	40-50	
236+700	236+800	Hilly / Rolling	Agri.	Agri.	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	VC	LHC	Apple Orchard	LHS	33.10	20-30	
236+800	236+900	Hilly / Rolling	Agri.	Agri.	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	RHC	Apple Orchard	LHS	33.10	20-30	
236+900	237+000	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	Apple Orchard	LHS	34.95	20-30	
237+000	237+100	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	LHS	25.90	40-50	
237+100	237+200	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	VC	-	-	-	21.33	40-50	
237+200	237+300	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	34.90	40-50	
237+300	237+400	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	RHC	-	-	31.86	20-30	
237+400	237+500	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	30.00	20-30	

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road : Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

KMS NO : Km 235+000 TO 269.000

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage (Lined / Earthen)	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles		High Tension Poles				Vertical Curve	Horizont al Curve				
Left	Right		Left	Right											Left	Right	Left	Right		Left	Right	Left	Right		Left			Right			
237+500	237+600	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	10.00	20-30	
237+600	237+700	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	19.90	40-50	
237+700	237+800	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	30.00	40-50	
237+800	237+900	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	30.00	40-50	
237+900	238+000	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	30.00	40-50	
238+000	238+100	Hilly / Rolling	Builtup	Builtup	Wandevalgam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	VC	-	-	-	45.60	40-50	
238+100	238+200	Hilly / Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	31.00	40-50	
238+200	238+300	Hilly / Rolling	Agri.	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	31.00	40-50	
238+300	238+400	Hilly / Rolling	Agri.	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	31.00	40-50	
238+400	238+500	Hilly / Rolling	Agri.	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	VC	-	Agriculture land	Both	37.00	40-50	
238+500	238+600	Hilly / Rolling	Agri.	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	25.00	40-50	
238+600	238+700	Hilly / Rolling	Agri.	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	-	Plain Alluvial origin Soil	-	-	RHC	Agriculture land	Both	25.00	20-30	
238+700	238+800	Hilly / Rolling	Agri.	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	49.66	40-50	
238+800	238+900	Hilly / Rolling	Builtup	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	49.66	40-50	
238+900	239+000	Hilly / Rolling	Builtup	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	-	Plain Alluvial origin Soil	-	VC	-	-	-	49.66	40-50	
239+000	239+100	Hilly / Rolling	Builtup	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	30.00	40-50	
239+100	239+200	Hilly / Rolling	Builtup	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	30.00	40-50	
239+200	239+300	Hilly / Rolling	Builtup	Builtup	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	44.20	40-50	
239+300	239+400	Hilly / Rolling	Builtup	Builtup	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	31.42	40-50	
239+400	239+500	Hilly / Rolling	Builtup	Builtup	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	LHC	-	-	31.42	20-30	
239+500	239+600	Hilly / Rolling	Builtup	Builtup	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	Yes	-	-	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	35.00	40-50	
239+600	239+700	Hilly / Rolling	Builtup	Builtup	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	35.00	40-50	
239+700	239+800	Hilly / Rolling	Builtup	Builtup	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	29.60	20-30	
239+800	239+900	Hilly / Rolling	Builtup	Builtup	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	25.09	40-50	
239+900	240+000	Hilly / Rolling	Agri.	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	25.09	40-50	

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road :  
KMS NO : Km 235+000 TO 269.000

Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani - Kishtwar – Chattroo - Khanabal Section of NH 244.

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage (Lined / Earthen)	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To		Left	Right			Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles		High Tension Poles									
															Left	Right	Left	Right		left	right	Left	Right								
240+000	240+100	Hilly / Rolling	Agri.	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	Agriculture land	Both	25.09	20-30	
240+100	240+200	Hilly / Rolling	Agri.	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	25.09	40-50	
240+200	240+300	Hilly / Rolling	Agri.	Agri.	Zalangam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	Agriculture land	Both	47.11	40-50	
240+300	240+400	Hilly / Rolling	Agri.	Agri.	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	-	Plain Alluvial origin Soil	-	VC	RHC	Agriculture land	Both	35.10	20-30	
240+400	240+500	Hilly / Rolling	Agri.	Agri.	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	VC	RHC	Agriculture land	Both	35.10	20-30	
240+500	240+600	Hilly / Rolling	Agri.	Agri.	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	RHC	Agriculture land	Both	35.10	20-30	
240+600	240+700	Hilly / Rolling	Agri.	Agri.	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	25.50	40-50	
240+700	240+800	Hilly / Rolling	Builtup	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	-	Plain Alluvial origin Soil	-	VC	-	Agriculture land	Both	25.50	40-50	
240+800	240+900	Hilly / Rolling	Builtup	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	25.50	40-50	
240+900	241+000	Hilly / Rolling	Builtup	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	25.50	40-50	
241+000	241+100	Hilly / Rolling	Builtup	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	33.35	40-50	
241+100	241+200	Hilly / Rolling	Open	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	33.35	40-50	
241+200	241+300	Hilly / Rolling	Open	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	33.35	40-50	
241+300	241+400	Hilly / Rolling	Open	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	Yes	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	33.35	40-50	
241+400	241+500	Hilly / Rolling	Open	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	Yes	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	33.35	40-50	
241+500	241+600	Hilly / Rolling	Builtup	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	Yes	-	-	-	-	-	Yes	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	39.88	40-50	
241+600	241+700	Hilly / Rolling	Builtup	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	Yes	Yes	-	Plain Alluvial origin Soil	-	-	RHC	-	-	39.88	20-30	
241+700	241+800	Hilly / Rolling	Agri.	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	Yes	Yes	Yes	-	Plain Alluvial origin Soil	Lined	-	-	-	-	33.50	40-50	
241+800	241+900	Hilly / Rolling	Agri.	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	Yes	Yes	Yes	-	Plain Alluvial origin Soil	Lined	VC	-	-	-	33.50	40-50	
241+900	242+000	Hilly / Rolling	Agri.	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	Yes	-	Plain Alluvial origin Soil	Lined	-	LHC	-	-	33.50	20-30	
242+000	242+100	Hilly / Rolling	Agri.	Builtup	Bindoo	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	Lined	VC	-	-	-	33.50	40-50	
242+100	242+200	Hilly / Rolling	Builtup	Builtup	Bidder	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	Yes	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	23.30	40-50	
242+200	242+300	Hilly / Rolling	Builtup	Builtup	Bidder	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	Yes	Yes	-	Plain Alluvial origin Soil	-	VC	-	-	-	29.30	40-50	
242+300	242+400	Hilly / Rolling	Builtup	Builtup	Bidder	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	Yes	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	29.30	40-50	
242+400	242+500	Hilly / Rolling	Builtup	Builtup	Bidder	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	Yes	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	29.30	40-50	

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road :  
KMS NO : Km 235+000 TO 269.000

Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage (Lined / Earthen)	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Left	Right		Surface Type	Width (m)	Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles				High Tension Poles					
			Left	Right													Left	Right	left	right		Left	Right		Type	Side					
242+500	242+600	Hilly / Rolling	Builtup	Builtup	Bidder	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	Yes	-	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	44.70	20-30	
242+600	242+700	Hilly / Rolling	Builtup	Builtup	Bidder	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	28.12	40-50	
242+700	242+800	Hilly / Rolling	Builtup	Builtup	Bidder	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	Yes	Yes	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	25.61	20-30	
242+800	242+900	Hilly / Rolling	Builtup	Builtup	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	Yes	Yes	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	25.61	40-50	
242+900	243+000	Hilly / Rolling	Builtup	Builtup	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	28.86	40-50	
243+000	243+100	Hilly / Rolling	Agri.	Agri.	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	38.80	40-50	
243+100	243+200	Hilly / Rolling	Agri.	Agri.	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	VC	-	Agriculture land	Both	38.80	40-50	
243+200	243+300	Hilly / Rolling	Agri.	Agri.	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	38.80	40-50	
243+300	243+400	Hilly / Rolling	Builtup	Open	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	Yes	-	-	Yes	Plain Alluvial origin Soil	-	VC	-	Agriculture land	Both	38.80	40-50	
243+400	243+500	Hilly / Rolling	Agri.	Builtup	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	25.29	40-50	
243+500	243+600	Hilly / Rolling	Agri.	Builtup	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	-	Plain Alluvial origin Soil	-	VC	RHC	-	-	25.29	20-30	
243+600	243+700	Hilly / Rolling	Agri.	Agri.	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	Agriculture land	Both	25.29	40-50	
243+700	243+800	Hilly / Rolling	Agri.	Agri.	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	Yes	Plain Alluvial origin Soil	Lined	-	-	Agriculture land	Both	25.29	40-50	
243+800	243+900	Hilly / Rolling	Agri.	Agri.	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	Lined	VC	-	Agriculture land	Both	21.38	40-50	
243+900	244+000	Hilly / Rolling	Builtup	Builtup	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	LHC	Agriculture land	Both	41.55	20-30	
244+000	244+100	Hilly / Rolling	Builtup	Builtup	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	29.49	40-50	
244+100	244+200	Hilly / Rolling	Builtup	Builtup	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	26.00	40-50	
244+200	244+300	Hilly / Rolling	Agri.	Builtup	Hangalgund	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	Yes	Plain Alluvial origin Soil	Lined	VC	-	-	-	14.35	40-50	
244+300	244+400	Hilly / Rolling	Builtup	Agri.	Dan Veth Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	Yes	-	Yes	-	-	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	13.10	40-50	
244+400	244+500	Hilly / Rolling	Builtup	Agri.	Dan Veth Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	Yes	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	RHC	Agriculture land	Both	13.10	20-30	
244+500	244+600	Hilly / Rolling	Builtup	Agri.	Dan Veth Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	RHC	Agriculture land	Both	13.10	20-30	
244+600	244+700	Hilly / Rolling	Builtup	Agri.	Dan Veth Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	Agriculture land	Both	13.10	20-30	
244+700	244+800	Hilly / Rolling	Builtup	Agri.	Dan Veth Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes						Plain Alluvial origin Soil	Lined	-	-	Agriculture land	Both	19.00	40-50	
244+800	244+900	Hilly / Rolling	Builtup	Agri.	Dan Veth Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-							Plain Alluvial origin Soil	Lined	-	-	Yes	-	Plain Alluvial origin Soil	Lined	-
244+900	245+000	Hilly / Rolling	Builtup	Agri.	Dan Veth Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	Lined	VC	-	Agriculture land	Both	20.28	40-50	

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road :  
KMS NO : Km 235+000 TO 269.000

Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani - Kishtwar – Chattroo - Khanabal Section of NH 244.

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage (Lined / Earthen)	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles		High Tension Poles									
			Left	Right											Left	Right	Left	Right		Left	Right	Left	right		Left	Right					
245+000	245+100	Hilly / Rolling	Builtup	Agri.	Dan Veth Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	Agriculture land	Both	20.28	40-50	
245+100	245+200	Hilly / Rolling	Builtup	Agri.	Dan Veth Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	Yes	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	26.30	40-50	
245+200	245+300	Hilly / Rolling	Builtup	Agri.	Dan Veth Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	Yes	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	44.23	40-50	
245+300	245+400	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	Yes	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	44.23	40-50	
245+400	245+500	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	Yes	Yes	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	26.00	40-50	
245+500	245+600	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	15.40	20-30	
245+600	245+700	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	Yes	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	LHC	-	-	11.20	20-30	
245+700	245+800	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	Yes	-	Yes	Yes	Yes	-	Plain Alluvial origin Soil	-	-	RHC	-	-	20.10	20-30	
245+800	245+900	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	LHC	-	-	32.20	20-30	
245+900	246+000	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	Yes	Yes	-	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	19.60	20-30	
246+000	246+100	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	22.70	40-50	
246+100	246+200	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	18.54	20-30	
246+200	246+300	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	Yes	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	29.20	40-50	
246+300	246+400	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	29.20	20-30	
246+400	246+500	Hilly / Rolling	Builtup	Builtup	Sagam	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	24.37	20-30	
246+500	246+600	Hilly / Rolling	Agri.	Builtup	Sagam	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	Yes	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	29.50	40-50	
246+600	246+700	Hilly / Rolling	Agri.	Builtup	Sagam	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	VC	-	-	-	29.50	40-50	
246+700	246+800	Hilly / Rolling	Agri.	Builtup	Takia Ahamad Shah	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	Yes	Yes	-	Yes	Yes	-	Plain Alluvial origin Soil	-	-	RHC	-	-	44.50	20-30	
246+800	246+900	Hilly / Rolling	Agri.	Builtup	Takia Ahamad Shah	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	-	-	Yes	Yes	Yes	-	Plain Alluvial origin Soil	Lined	VC	-	-	-	32.80	40-50	
246+900	247+000	Hilly / Rolling	Agri.	Builtup	Takia Ahamad Shah	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	-	-	-	Yes	Yes	-	Plain Alluvial origin Soil	Lined	-	-	-	-	32.80	40-50	
247+000	247+100	Hilly / Rolling	Agri.	Agri.	Takia Ahamad Shah	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	Yes	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	32.80	40-50	
247+100	247+200	Hilly / Rolling	Agri.	Agri.	Takia Ahamad Shah	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	Yes	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	Apple Orchard	RHS	32.80	40-50	
247+200	247+300	Hilly / Rolling	Agri.	Agri.	Takia Ahamad Shah	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	Yes	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	RHC	Apple Orchard	RHS	32.80	20-30	
247+300	247+400	Hilly / Rolling	Agri.	Agri.	Takia Ahamad Shah	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	Yes	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	32.27	40-50	
247+400	247+500	Hilly / Rolling	Agri.	Agri.	Buchoo	10.5	BT	7.0	-	ES	1.5	ES	2	Yes	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	Agriculture land	Both	28.08	40-50	



Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road :  
KMS NO : Km 235+000 TO 269.000

Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani - Kishtwar – Chattroo - Khanabal Section of NH 244.

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles		High Tension Poles				(Lined / Earthen)	Vertical Curve				
			Left	Right											Left	Right	Left	Right		left	right	Left	Right								
247+500	247+600	Hilly / Rolling	Agri.	Agri.	Buchoo	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	-	Agriculture land	Both	28.08	40-50	
247+600	247+700	Hilly / Rolling	Buitup	Buitup	Buchoo	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	Agriculture land	Both	24.40	40-50	
247+700	247+800	Hilly / Rolling	Buitup	Buitup	Buchoo	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	LHC	Apple Orchard	Both	32.70	20-30	
247+800	247+900	Hilly / Rolling	Buitup	Buitup	Buchoo	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	-	Apple Orchard	Both	32.70	40-50	
247+900	248+000	Hilly / Rolling	Buitup	Buitup	Buchoo	10.5	BT	7.0	-	ES	1.5	ES	2	-	-	Yes	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	LHC	apple Orchard	Both	32.70	20-30	
248+000	248+100	Hilly / Rolling	Buitup	Buitup	Buchoo	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	S	Apple orchard	Both	32.70	20-30	
248+100	248+200	Hilly / Rolling	Buitup	Buitup	Buchoo	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	32.10	40-50	
248+200	248+300	Hilly / Rolling	Buitup	Buitup	Buchoo	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	-	-	-	31.08	40-50	
248+300	248+400	Hilly / Rolling	Buitup	Buitup	Buchoo	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	RHC	-	-	31.08	20-30	
248+400	248+500	Hilly / Rolling	Buitup	Buitup	Peertakia	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	RHC	-	-	38.62	20-30	
248+500	248+600	Hilly / Rolling	Buitup	Buitup	Peertakia	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	Lined	-	RHC	-	-	34.30	20-30	
248+600	248+700	Hilly / Rolling	Buitup	Agri.	Peertakia	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	-	-	-	-	-	Yes	Plain Alluvial origin Soil	Lined	-	LHC	-	-	34.30	20-30	
248+700	248+800	Hilly / Rolling	Buitup	Agri.	Peertakia	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	34.30	40-50	
248+800	248+900	Hilly / Rolling	Agri.	Agri.	Peertakia	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	-	-	-	32.00	40-50	
248+900	249+000	Hilly / Rolling	Buitup	Buitup	Peertakia	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	29.40	40-50	
249+000	249+100	Hilly / Rolling	Buitup	Buitup	Peertakia	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	30.66	40-50	
249+100	249+200	Hilly / Rolling	Buitup	Buitup	Peertakia	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	-	-	-	32.14	40-50	
249+200	249+300	Hilly / Rolling	Agri.	Agri.	-	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	Agriculture land	Both	32.14	40-50	
249+300	249+400	Hilly / Rolling	Buitup	Agri.	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	Agriculture land	Both	32.14	40-50	
249+400	249+500	Hilly / Rolling	Agri.	Buitup	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	Agriculture land	Both	32.14	40-50	
249+500	249+600	Hilly / Rolling	Buitup	Buitup	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	RHC	-	-	28.40	20-30	
249+600	249+700	Hilly / Rolling	Buitup	Buitup	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	RHC	-	-	27.13	20-30	
249+700	249+800	Hilly / Rolling	Buitup	Buitup	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	38.50	40-50	
249+800	249+900	Hilly / Rolling	Agri.	Buitup	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	both	38.50	40-50	
249+900	250+000	Hilly / Rolling	Agri.	Buitup	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	Agriculture land	Both	32.50	20-30	

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road :  
KMS NO : Km 235+000 TO 269.000

Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage (Lined / Earthen)	Curves			Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs	Reataining Wall		OFC Cables	Electric poles		High Tension Poles		Vertical Curve			Horizontal Curve						
			Left	Right												Left	Right		Left	right	Left	Right										
250+000	250+100	Hilly / Rolling	Buitup	Buitup	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	Agriculture land	Both	32.50	20-30		
250+100	250+200	Hilly / Rolling	Buitup	Buitup	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	RHC	Agriculture land	Both	31.40	20-30		
250+200	250+300	Hilly / Rolling	Buitup	Buitup	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	24.44	40-50		
250+300	250+400	Hilly / Rolling	Buitup	Buitup	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	24.44	40-50		
250+400	250+500	Hilly / Rolling	River		Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	12.14	40-50		
250+500	250+600	Hilly / Rolling	River		Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	River	-	33.50	40-50		
250+600	250+700	Hilly / Rolling	Agri.	Agri.	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	River	-	33.50	40-50		
250+700	250+800	Hilly / Rolling	Agri.	Agri.	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	33.50	40-50		
250+800	250+900	Hilly / Rolling	Agri.	Agri.	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	-	Yes	Yes	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	12.00	40-50		
250+900	251+000	Hilly / Rolling	Agri.	Agri.	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	Yes	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	12.00	40-50		
251+000	251+100	Plain/Rolling	Agri.	Agri.	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	Yes	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	12.00	40-50		
251+100	251+200	Plain/Rolling	Agri.	Agri.	Hiller	11.0	BT	7.0	-	ES	2	ES	2	-	-	Yes	Yes	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	RHC	Agriculture land	Both	12.00	20-30		
251+200	251+300	Plain/Rolling	River		-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	-	Yes	Plain Alluvial origin Soil	-	VC	-	Agriculture land	Both	30.00	40-50		
251+300	251+400	Plain/Rolling	Agri.	Agri.	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	30.00	40-50		
251+400	251+500	Plain/Rolling	Buitup	Buitup	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	12.20	40-50		
251+500	251+600	Plain/Rolling	Buitup	Buitup	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agriculture land	Both	12.20	40-50		
251+600	251+700	Plain/Rolling	Buitup	Buitup	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	30.20	40-50		
251+700	251+800	Plain/Rolling	Buitup	Buitup	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	S	-	-	32.07	20-30		
251+800	251+900	Plain/Rolling	Buitup	Buitup	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	30.00	40-50		
251+900	252+000	Plain/Rolling	Buitup	Buitup	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	37.13	40-50		
252+000	252+100	Plain/Rolling	Buitup	Buitup	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	39.20	40-50		
252+100	252+200	Plain/Rolling	Buitup	Buitup	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	Yes	Yes	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	28.90	40-50		
252+200	252+300	Plain/Rolling	Buitup	Buitup	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	Yes	Yes	-	Yes	Plain Alluvial origin Soil	-	-	S	-	-	28.90	20-30		
252+300	252+400	Plain/Rolling	Buitup	Buitup	Hillar Arhama	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	Yes	Yes	Yes	Yes	Plain Alluvial origin Soil	-	-	S	-	-	28.90	20-30		
252+400	252+500	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	Yes	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	28.40	40-50		

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road :  
KMS NO : Km 235+000 TO 269.000

Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani - Kishtwar – Chattroo - Khanabal Section of NH 244.

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities								Local Soil Type	Drainage  (Lined / Earthen)	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)	
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles				High Tension Poles						Vertical Curve
			Left	Right											Left	Right	Left	Right		left	right			Left	Right					
252+500	252+600	Plain/Rolling	Agri.	Agri.	Akingam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	28.40	40-50
252+600	252+700	Plain/Rolling	Agri.	Agri.	Akingam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	30.90	40-50
252+700	252+800	Plain/Rolling	Builtup	Builtup	Akingam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	11.20	40-50
252+800	252+900	Plain/Rolling	Builtup	Builtup	Akingam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	20.20	20-30
252+900	253+000	Plain/Rolling	Builtup	Builtup	Akingam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	31.00	20-30
253+000	253+100	Plain/Rolling	Builtup	Builtup	Akingam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	29.60	40-50
253+100	253+200	Plain/Rolling	Builtup	Builtup	Akingam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	28.35	40-50
253+200	253+300	Plain/Rolling	Agri.	Agri.	Akingam	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	25.40	40-50
253+300	253+400	Plain/Rolling	Agri.	Agri.	Akingam	9.0	BT	7.0	-	ES	1	ES	1	Yes	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	27.80	40-50
253+400	253+500	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	27.80	40-50
253+500	253+600	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	-	Plain Alluvial origin Soil	-	VC	RHC	Apple Orchard	Both	27.80	20-30
253+600	253+700	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	RHC	Apple Orchard	Both	29.40	20-30
253+700	253+800	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	29.40	40-50
253+800	253+900	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	Yes	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	29.40	40-50
253+900	254+000	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	29.40	40-50
254+000	254+100	Plain/Rolling	Builtup	Builtup	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	29.40	40-50
254+100	254+200	Plain/Rolling	Builtup	Builtup	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	Apple Orchard	Both	30.31	20-30
254+200	254+300	Plain/Rolling	Builtup	Builtup	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	Apple Orchard	Both	30.31	20-30
254+300	254+400	Plain/Rolling	Builtup	Builtup	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	30.31	40-50
254+400	254+500	Plain/Rolling	Builtup	Builtup	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	VC	-	Apple Orchard	Both	30.31	40-50
254+500	254+600	Plain/Rolling	Builtup	Builtup	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	both	39.60	40-50
254+600	254+700	Plain/Rolling	Builtup	Builtup	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	both	21.00	40-50
254+700	254+800	Plain/Rolling	Builtup	Builtup	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	both	29.20	40-50
254+800	254+900	Plain/Rolling	Builtup	Builtup	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	Apple Orchard	both	29.50	20-30

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road :  
KMS NO : Km 235+000 TO 269.000

Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani - Kishtwar – Chattroo - Khanabal Section of NH 244.

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities								Local Soil Type	Drainage	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)	
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles				High Tension Poles						(Lined / Earthen)
			Left	Right											Left	Right	Left	Right		Left	Right		Left	Right	Left	Right	Left			
254+900	255+000	Plain/Rolling	Builtup	Builtup	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	34.52	20-30	
255+000	255+100	Plain/Rolling	Agri.	Agri.	Badoora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	25.90	20-30	
255+100	255+200	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	25.30	40-50	
255+200	255+300	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	22.00	40-50	
255+300	255+400	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	29.20	40-50	
255+400	255+500	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	29.80	40-50	
255+500	255+600	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	29.80	40-50	
255+600	255+700	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	30.40	40-50	
255+700	255+800	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	Yes	Yes	-	Yes	Plain Alluvial origin Soil	-	VC	-	Apple Orchard	Both	30.40	40-50
255+800	255+900	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	Yes	Yes	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	30.40	40-50
255+900	256+000	Plain/Rolling	Agri.	Hill	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Apple Orchard	Both	30.40	40-50
256+000	256+100	Plain/Rolling	Agri.	Hill	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	Yes	-	-	-	Yes	Mountaneous Dissacted	-	-	-	Apple Orchard	Both	30.40	40-50
256+100	256+200	Plain/Rolling	Agri.	Hill	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	Yes	-	-	-	Yes	Mountaneous Dissacted	-	-	RHC	Apple Orchard	Both	11.00	20-30
256+200	256+300	Plain/Rolling	Agri.	Hill	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Mountaneous Dissacted	-	VC	RHC	Apple Orchard	Both	24.90	20-30
256+300	256+400	Plain/Rolling	Agri.	Hill	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	Yes	Yes	-	Yes	Mountaneous Dissacted	-	-	-	Apple Orchard	Both	24.90	40-50
256+400	256+500	Plain/Rolling	Agri.	Hill	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	Yes	Yes	-	Yes	Mountaneous Dissacted	-	-	LHC	Apple Orchard	Both	36.70	20-30
256+500	256+600	Plain/Rolling	Agri.	Hill	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Mountaneous Dissacted	-	-	-	Apple Orchard	Both	36.70	40-50
256+600	256+700	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	-	-	Mountaneous Dissacted	-	VC	-	Apple Orchard	Both	38.61	40-50
256+700	256+800	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	-	Mountaneous Dissacted	-	-	RHC	Apple Orchard	Both	30.90	20-30
256+800	256+900	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	28.05	40-50	
256+900	257+000	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	26.80	40-50	
257+000	257+100	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	35.70	40-50
257+100	257+200	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	LHC	-	-	32.30	20-30
257+200	257+300	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	32.30	40-50

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road : Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani - Kishtwar – Chattroo - Khanabal Section of NH 244.

KMS NO : Km 235+000 TO 269.000

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles		High Tension Poles				(Lined / Earthen)	Vertical Curve				
Left	Right		Left	Right											Left	Right	Left	Right		left	right	Left	Right								
257+300	257+400	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	32.30	20-30	
257+400	257+500	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	32.30	40-50	
257+500	257+600	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	32.30	40-50	
257+600	257+700	Plain/Rolling	Builtup	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	32.30	40-50	
257+700	257+800	Plain/Rolling	Agri.	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	32.30	40-50	
257+800	257+900	Plain/Rolling	Agri.	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	-	-	32.30	40-50	
257+900	258+000	Plain/Rolling	Agri.	Builtup	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	32.30	40-50	
258+000	258+100	Plain/Rolling	Agri.	Agri.	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	32.30	40-50	
258+100	258+200	Plain/Rolling	Agri.	Agri.	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	32.30	40-50	
258+200	258+300	Plain/Rolling	Agri.	Agri.	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	32.30	40-50	
258+300	258+400	Plain/Rolling	Agri.	Agri.	Achabal	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	36.00	40-50	
258+400	258+500	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	36.00	40-50	
258+500	258+600	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	LHC	Agricultural Land	Both	36.00	20-30	
258+600	258+700	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	36.00	40-50	
258+700	258+800	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	31.90	40-50	
258+800	258+900	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	-	Plain Alluvial origin Soil	-	VC	-	Agricultural Land	Both	31.90	40-50	
258+900	259+000	Plain/Rolling	Agri.	Builtup	Koleh Garh	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	Agricultural Land	Both	31.90	20-30	
259+000	259+100	Plain/Rolling	Agri.	Builtup	Koleh Garh	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	31.90	40-50	
259+100	259+200	Plain/Rolling	Agri.	Builtup	Koleh Garh	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	31.90	40-50	
259+200	259+300	Plain/Rolling	Agri.	Builtup	Koleh Garh	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	S	-	-	31.90	20-30	
259+300	259+400	Plain/Rolling	Builtup	Builtup	Koleh Garh	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	VC	S	-	-	31.90	20-30	
259+400	259+500	Plain/Rolling	Builtup	Agri.	Koleh Garh	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	-	-	-	31.90	40-50	
259+500	259+600	Plain/Rolling	Builtup	Builtup	Thajiwara	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	LHC	-	-	35.36	20-30	
259+600	259+700	Plain/Rolling	Builtup	Builtup	Thajiwara	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	35.36	40-50	

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road : Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani - Kishtwar – Chattroo - Khanabal Section of NH 244.

KMS NO : Km 235+000 TO 269.000

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles		High Tension Poles				(Lined / Earthen)	Vertical Curve				
Left	Right		Left	Right											Left	Right	Left	Right		Left	Right	Left	Right		Left			Right			
259+700	259+800	Plain/Rolling	Builtup	Builtup	Thajiwara	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	35.36	40-50	
259+800	259+900	Plain/Rolling	Builtup	Builtup	Thajiwara	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	-	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	35.36	20-30	
259+900	260+000	Plain/Rolling	Builtup	Builtup	Thajiwara	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	S	-	-	24.70	20-30	
260+000	260+100	Plain/Rolling	Builtup	Builtup	Thajiwara	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	S	-	-	31.00	20-30	
260+100	260+200	Plain/Rolling	Builtup	Builtup	Thajiwara	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	Yes	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	LHC	-	-	31.00	20-30	
260+200	260+300	Plain/Rolling	Builtup	Builtup	Thajiwara	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	Yes	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	28.40	20-30	
260+300	260+400	Plain/Rolling	Builtup	Builtup	Thajiwara	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	28.40	40-50	
260+400	260+500	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	Yes	Yes	-	-	-	-	Plain Alluvial origin Soil	-	-	RHC	-	-	28.40	20-30	
260+500	260+600	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	-	-	Plain Alluvial origin Soil	-	-	RHC	Agricultural Land	Both	28.40	20-30	
260+600	260+700	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	-	-	Plain Alluvial origin Soil	-	-	RHC	Agricultural Land	Both	27.40	20-30	
260+700	260+800	Plain/Rolling	Agri.	Agri.	-	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	27.40	40-50	
260+800	260+900	Plain/Rolling	Agri.	Agri.	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	Yes	-	-	-	-	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	27.40	40-50	
260+900	261+000	Plain/Rolling	Agri.	Agri.	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	Agricultural Land	Both	27.40	40-50	
261+000	261+100	Plain/Rolling	Agri.	Agri.	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	Yes	-	-	-	-	Plain Alluvial origin Soil	Lined	-	-	Agricultural Land	Both	27.40	40-50	
261+100	261+200	Plain/Rolling	Agri.	Agri.	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	-	Agricultural Land	Both	26.00	40-50	
261+200	261+300	Plain/Rolling	Agri.	Agri.	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	Yes	-	Plain Alluvial origin Soil	Lined	VC	S	Agricultural Land	Both	29.00	20-30	
261+300	261+400	Plain/Rolling	Agri.	Agri.	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	Yes	-	-	-	-	Plain Alluvial origin Soil	Lined	-	-	Agricultural Land	Both	29.00	40-50	
261+400	261+500	Plain/Rolling	Agri.	Agri.	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	Yes	-	-	Plain Alluvial origin Soil	Lined	-	-	Agricultural Land	Both	29.00	40-50	
261+500	261+600	Plain/Rolling	Agri.	Agri.	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	Yes	-	-	Plain Alluvial origin Soil	Lined	-	-	Agricultural Land	Both	29.00	40-50	
261+600	261+700	Plain/Rolling	Builtup	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	Yes	Yes	-	Plain Alluvial origin Soil	Lined	-	-	Agricultural Land	Both	29.00	40-50	
261+700	261+800	Plain/Rolling	Builtup	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	Yes	-	Yes	-	Plain Alluvial origin Soil	Lined	-	S	-	-	33.20	20-30	
261+800	261+900	Plain/Rolling	Builtup	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	Yes	Yes	Yes	-	Plain Alluvial origin Soil	Lined	VC	-	-	-	33.20	40-50	
261+900	262+000	Plain/Rolling	Agri.	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	33.20	40-50	
262+000	262+100	Plain/Rolling	Agri.	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	Yes	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	RHC	-	-	33.20	20-30	
262+100	262+200	Plain/Rolling	Builtup	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	33.20	40-50	

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road : Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

KMS NO : Km 235+000 TO 269.000

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles		High Tension Poles				(Lined / Earthen)	Vertical Curve				
Left	Right		Left	Right											Left	Right	Left	Right		left	right	Left	Right								
262+200	262+300	Plain/Rollin g	Builtup	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	33.20	20-30
262+300	262+400	Plain/Rollin g	Builtup	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	36.10	40-50	
262+400	262+500	Plain/Rollin g	Builtup	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	31.10	40-50	
262+500	262+600	Plain/Rollin g	Agri.	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	Yes	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	LHC	-	-	19.00	20-30	
262+600	262+700	Plain/Rollin g	Agri.	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	19.00	40-50	
262+700	262+800	Plain/Rollin g	Agri.	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	30.00	40-50	
262+800	262+900	Plain/Rollin g	Agri.	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	Yes	Yes	-	Plain Alluvial origin Soil	-	VC	-	-	-	30.00	40-50	
262+900	263+000	Plain/Rollin g	Builtup	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	Yes	-	-	-	Yes	-	Plain Alluvial origin Soil	-	VC	-	-	-	34.00	40-50	
263+000	263+100	Plain/Rollin g	Builtup	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	34.00	20-30	
263+100	263+200	Plain/Rollin g	Agri.	Builtup	Barakpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	S	-	-	22.00	20-30	
263+200	263+300	Plain/Rollin g	Agri.	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	22.00	40-50	
263+300	263+400	Plain/Rollin g	Agri.	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	22.00	40-50	
263+400	263+500	Plain/Rollin g	Builtup	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	32.60	40-50	
263+500	263+600	Plain/Rollin g	Builtup	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	32.60	20-30	
263+600	263+700	Plain/Rollin g	Builtup	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	31.40	40-50	
263+700	263+800	Plain/Rollin g	River		Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	Yes	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	8.20	20-30	
263+800	263+900	Plain/Rollin g	Builtup	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	31.70	20-30	
263+900	264+000	Plain/Rollin g	Builtup	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	RHC	-	-	31.70	20-30	
264+000	264+100	Plain/Rollin g	Builtup	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	11.00	20-30	
264+100	264+200	Plain/Rollin g	Builtup	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	11.00	20-30	
264+200	264+300	Plain/Rollin g	Builtup	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	11.00	20-30	
264+300	264+400	Plain/Rollin g	Builtup	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	27.80	40-50	
264+400	264+500	Plain/Rollin g	Builtup	Builtup	Donipawa	9.0	BT	7.0	-	ES	1	ES	1	Yes	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	27.80	40-50	
264+500	264+600	Plain/Rollin g	Builtup	Hill	Chitti Singh Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	27.80	20-30	
264+600	264+700	Plain/Rollin g	Builtup	Hill	Chitti Singh Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	15.00	40-50	

Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road :  
KMS NO : Km 235+000 TO 269.000

Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles		High Tension Poles				(Lined / Earthen)	Vertical Curve				
			Left	Right											Left	Right	Left	Right		Left	Right	Left	Right								
264+700	264+800	Plain/Rolling	Builtup	Builtup	Chitti Singh Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	9.10	40-50	
264+800	264+900	Plain/Rolling	Builtup	Builtup	Chitti Singh Pora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	S	-	-	9.10	20-30	
264+900	265+000	Plain/Rolling	Builtup	Builtup	Sheerpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	Yes	Yes	Yes	Plain Alluvial origin Soil	-	-	S	-	-	11.00	20-30	
265+000	265+100	Plain/Rolling	Builtup	Builtup	Sheerpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	Yes	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	15.20	40-50	
265+100	265+200	Plain/Rolling	Builtup	Builtup	Sheerpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	15.20	40-50	
265+200	265+300	Plain/Rolling	Builtup	Builtup	Sheerpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	15.20	40-50	
265+300	265+400	Plain/Rolling	Builtup	Builtup	Sheerpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	19.70	40-50	
265+400	265+500	Plain/Rolling	Builtup	Builtup	Sheerpora	9.0	BT	7.0	-	ES	1	ES	1	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	22.90	20-30	
265+500	265+600	Plain/Rolling	Builtup	Builtup	Sheerpora	15.5	BT	14.0	1.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	22.90	20-30	
265+600	265+700	Plain/Rolling	Builtup	Builtup	Sheerpora	15.5	BT	14.0	1.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	22.90	40-50	
265+700	265+800	Plain/Rolling	Builtup	Builtup	Janglat Mandi	15.5	BT	14.0	1.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	22.90	40-50	
265+800	265+900	Plain/Rolling	Builtup	Builtup	Janglat Mandi	15.5	BT	14.0	1.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	22.90	20-30	
265+900	266+000	Plain/Rolling	Builtup	Builtup	Lal Chowk	15.5	BT	14.0	1.5	-	-	-	-	-	-	-	-	-	Yes	Yes	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	21.54	40-50	
266+000	266+100	Plain/Rolling	Builtup	Builtup	Lal Chowk	15.5	BT	14.0	1.5	-	-	-	-	-	-	-	-	Yes	-	Yes	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	23.20	40-50	
266+100	266+200	Plain/Rolling	Builtup	Builtup	Lal Chowk	15.5	BT	14.0	1.5	-	-	-	-	-	-	-	-	-	-	-	Yes	-	Plain Alluvial origin Soil	-	-	-	-	-	23.20	40-50	
266+200	266+300	Plain/Rolling	Builtup	Builtup	Lal Chowk	14.0	BT	14.0		-	-	-	-	-	-	-	-	-	-	Yes	Yes	Yes	Plain Alluvial origin Soil	-	VC	LHC	-	-	23.20	20-30	
266+300	266+400	Plain/Rolling	Builtup	Builtup	LHS-Bangidhar, RHS- Mehman Mohalla	15.5	BT	14.0	1.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	23.20	40-50	
266+400	266+500	Plain/Rolling	Builtup	Builtup	LHS-Bangidhar, RHS- Mehman Mohalla	15.5	BT	14.0	1.5	-	-	-	-	-	-	-	-	-	Yes	Yes	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	23.20	40-50	
266+500	266+600	Plain/Rolling	Builtup	Builtup	Mehandi Kadal	14.5	BT	14.0	0.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	S	-	-	23.20	20-30	
266+600	266+700	Plain/Rolling	Builtup	Builtup	Mehandi Kadal	14.5	BT	14.0	0.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	S	-	-	14.00	20-30	
266+700	266+800	Plain/Rolling	Builtup	Builtup	Mehandi Kadal	14.5	BT	14.0	0.5	-	-	-	-	-	-	-	Yes	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	-	-	-	16.00	40-50	
266+800	266+900	Plain/Rolling	Builtup	Builtup	Mehandi Kadal	14.5	BT	14.0	0.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	20.00	40-50	
266+900	267+000	Plain/Rolling	Builtup	Builtup	Nai Basti	14.5	BT	14.0	0.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	20.00	40-50	



Annexure - 4.1

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing Pre-Construction Services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

ROAD INVENTORY DATA SHEET

Name of the Road : Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

KMS NO : Km 235+000 TO 269.000

Chainage		Terrain	Adjacent Landuse Pattern		Village / Town Name	Road Way Width (m)	Carriageway		Median	Shoulder				Road Side Furniture and Utilities										Local Soil Type	Drainage	Curves		Details of Forest Land / Arboriculture		E-ROW (m)	Existing Speed (Km/hr)
From	To						Surface Type	Width (m)		Width (m)	Type	Width (m)	Type	Width (m)	KMS / HMS / Road Signs		Reataining Wall		OFC Cables	Electric poles		High Tension Poles				(Lined / Earthen)	Vertical Curve				
Left	Right		Left	Right					Left						Right	Left	Right	Left		Right	left	right	Left		Right						
267+000	267+100	Plain/Rolling	Builtup	Builtup	Nai Basti	14.5	BT	14.0	0.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	23.00	40-50	
267+100	267+200	Plain/Rolling	Builtup	Builtup	Nai Basti	14.5	BT	14.0	0.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	LHC	-	-	23.00	20-30	
267+200	267+300	Plain/Rolling	Builtup	Builtup	Khanabal	14.5	BT	14.0	0.5	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	VC	-	-	-	23.00	40-50	
267+300	267+400	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	23.00	40-50	
267+400	267+500	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	23.00	40-50	
267+500	267+600	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	23.00	40-50	
267+600	267+700	Plain/Rolling	Builtup	Builtup	Khanabal	14.0	BT	14.0	-	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	Lined	-	-	-	-	16.50	40-50	
267+700	267+800	Plain/Rolling	Builtup	Builtup	Khanabal	14.0	BT	14.0	-	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	RHC	-	-	16.50	20-30	
267+800	267+900	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	18.00	20-30	
267+900	268+000	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	LHC	-	-	22.70	20-30	
268+000	268+100	Plain/Rolling	River		Khanabal	14.0	BT	14.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Plain Alluvial origin Soil	-	-	-	-	-	11.10	40-50	
268+100	268+200	Plain/Rolling	Builtup	Builtup	Khanabal	14.0	BT	14.0	-	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	RHC	-	-	25.10	20-30	
268+200	268+300	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	27.38	40-50	
268+300	268+400	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	27.38	40-50	
268+400	268+500	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	23.50	40-50	
268+500	268+600	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	25.10	40-50	
268+600	268+700	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	25.10	40-50	
268+700	268+800	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	25.10	40-50	
268+800	268+900	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	VC	-	-	-	16.00	40-50	
268+900	269+000	Plain/Rolling	Builtup	Builtup	Khanabal	15.2	BT	14.0	1.2	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	Plain Alluvial origin Soil	-	-	-	-	-	16.00	40-50	

Annexure 4.2 : Visual Pavement Survey			
Existing Chainage		Road Type	Pavement Condition
From	To		
235.000	235.500	BT	Fair
235.500	236.000	BT	Fair
236.000	236.500	BT	Fair
236.500	237.000	BT	Fair
237.000	237.500	BT	Good
237.500	238.000	BT	Good
238.000	238.500	BT	Good
238.500	239.000	BT	Fair
239.000	239.500	BT	Fair
239.500	240.000	BT	Fair
240.000	240.500	BT	Fair
240.500	241.000	BT	Fair
241.000	241.500	BT	Fair
241.500	242.000	BT	Good
242.000	242.500	BT	Good
242.500	243.000	BT	Good
243.000	243.500	BT	Fair
243.500	244.000	BT	Good
244.000	244.500	BT	Good
244.500	245.000	BT	Fair
245.000	245.500	BT	Fair
245.500	246.000	BT	Fair
246.000	246.500	BT	Good
246.500	247.000	BT	Good
247.000	247.500	BT	Good
247.500	248.000	BT	Fair
248.000	248.500	BT	Fair
248.500	249.000	BT	Fair
249.000	249.500	BT	Fair
249.500	250.000	BT	Fair
250.000	250.500	BT	Fair
250.500	251.000	BT	Fair
251.000	251.500	BT	Fair
251.500	252.000	BT	Fair
252.000	252.500	BT	Fair
252.500	253.000	BT	Fair
253.000	253.500	BT	Fair
253.500	254.000	BT	Fair
254.000	254.500	BT	Fair
254.500	255.000	BT	Good
255.000	255.500	BT	Good
255.500	256.000	BT	Good
256.000	256.500	BT	Fair
256.500	257.000	BT	Fair
257.000	257.500	BT	Fair
257.500	258.000	BT	Fair
258.000	258.500	BT	Fair
258.500	259.000	BT	Fair
259.000	259.500	BT	Good

Existing Chainage		Road Type	Pavement Condition
From	To		
259.500	260.000	BT	Good
260.000	260.500	BT	Good
260.500	261.000	BT	Good
261.000	261.500	BT	Fair
261.500	262.000	BT	Fair
262.000	262.500	BT	Fair
262.500	263.000	BT	Fair
263.000	263.500	BT	Fair
263.500	264.000	BT	Fair
264.000	264.500	BT	Fair
264.500	265.000	BT	Good
265.000	265.500	BT	Good
265.500	266.000	BT	Fair
266.000	266.500	BT	Fair
266.500	267.000	BT	Fair
267.000	267.500	BT	Good
267.500	268.000	BT	Good
268.000	268.500	BT	Good
268.500	269.000	BT	Good

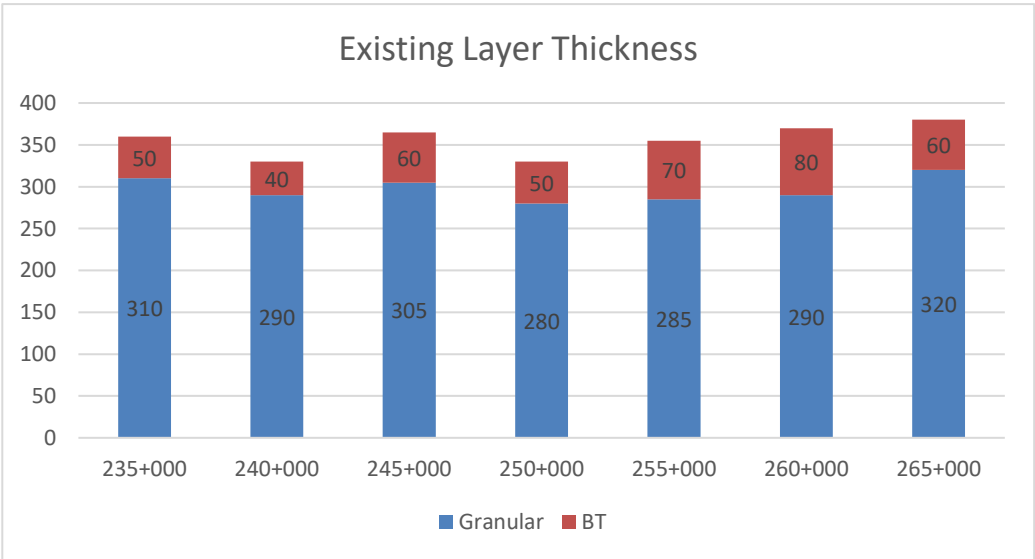
**Annexure 4.3: Roughness Index Values**

Chainage, Km		Roughness Index (mm/Km)		Pavement Condition	
From	To	Left	Right	Left	Right
235+000	236+000	2389	2115	Fair	Fair
236+000	237+000	2386	2673	Fair	Fair
237+000	238+000	1529	1554	Good	Good
238+000	239+000	1763	1961	Good	Fair
239+000	240+000	1525	1914	Fair	Good
240+000	241+000	2147	2815	Fair	Fair
241+000	242+000	2679	2991	Fair	Fair
242+000	243+000	1847	1946	Good	Good
243+000	244+000	1933	1933	Good	Fair
244+000	245+000	2856	2636	Fair	Fair
245+000	246+000	1924	1869	Good	Good
246+000	247+000	2183	2128	Fair	Fair
247+000	248+000	2870	2895	Fair	Fair
248+000	249+000	1932	1729	Good	Good
249+000	250+000	2182	2330	Good	Fair
250+000	251+000	2247	2885	Fair	Fair
251+000	252+000	2147	2087	Fair	Fair
252+000	253+000	2171	2059	Fair	Fair
253+000	254+000	2241	2350	Fair	Fair
254+000	255+000	2348	2097	Fair	Fair
255+000	256+000	1842	1875	Good	Good
256+000	257+000	2915	2438	Fair	Fair
257+000	258+000	2663	2017	Fair	Fair
258+000	259+000	2556	2073	Fair	Fair
259+000	260+000	2881	2163	Fair	Fair
260+000	261+000	2388	2332	Fair	Fair
261+000	262+000	1811	1928	Fair	Good
262+000	263+000	1500	1964	Good	Good
263+000	264+000	2611	2808	Fair	Fair
264+000	265+000	2015	2049	Fair	Fair
265+000	266+000	2082	2617	Fair	Fair
266+000	267+000	1896	1896	Good	Fair
267+000	268+000	1661	1528	Good	Good
268+000	269+000	1680	1806	Good	Good

Annexure 4.4: Bulk Field Density Result										
Sr. No.	Location	W1	W2	W3	FMC (%)	Wieigh t of sand in cone ( w2)	Bulk densit y of soil	Dry Density	Lab Density (MDD)	%age compactio n of exsitng subgrade.
		(weight of cylinde r with full of sand )	(weight of soil from hole)	(weight of cylinde r after pourin g sand into hole )						
1	235+000	7225	1490	5688	10	369	1.85	1.68	2.081	81%
2	240+000	7225	1792	5486	11	368	1.9	1.71	2.125	80%
3	245+000	7225	1270	5876	5	368	1.88	1.79	2.08	86%
4	250+000	7225	1356	5765	8	368	1.8	1.67	2.095	80%
5	255+000	7225	1355	5790	7	368	1.84	1.72	2.051	84%
6	260+000	7225	1720	5509	9	368	1.85	1.7	2.075	82%
7	265+000	7225	1375	5910	10	368	2.11	1.91	2.115	90%

Annexure 4.5 Layer Thickness of Existing Pavement

Location	Granular	BT	Total thickness
235+000	310	50	360
240+000	290	40	330
245+000	305	60	365
250+000	280	50	330
255+000	285	70	355
260+000	290	80	370
265+000	320	60	380



Annexure 4.6 : Summary of Laboratory results of material from pits																			
S. No.	Chainage (km)	Modified Proctor		4-Days Soaked CBR (%)	FSI (%)	Atterberg's limit (%)			Gradation (% passing)							Classification	%		
		MDD (gm/cc)	OMC (%)			W <sub>L</sub>	W <sub>P</sub>	I <sub>P</sub>	100 mm	75 mm	19 mm	4.75 mm	2.00 mm	425 μm	75 μm		Gravel	Sand	Silt & Clay
1	235+000	2.099	7.90	10.50	10	NP	NP	NP	100	100	100	95	86	76	36	SM	5	59	36
2	240+000	2.030	8.80	9.35	20	22	14	8	100	100	100	95	89	75	58	CL	5	37	58
3	245+000	2.100	7.00	9.22	18	NP	NP	NP	100	100	100	96	87	67	17	SM	4	79	17
4	250+000	2.080	8.70	10.20	10	NP	NP	NP	100	100	100	94	80	66	36	SM	6	58	36
5	255+000	2.095	7.00	10.60	11	NP	NP	NP	100	100	100	96	84	72	23	SM	5	73	22
6	260+000	2.051	9.40	9.88	12	NP	NP	NP	100	100	100	87	86	83	24	SM	7	63	30
7	265+000	2.075	8.80	10.20	10	NP	NP	NP	100	100	100	97	90	82	41	SM	6	56	38

## Annexure - 4.7

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.

## INVENTORY &amp; CONDITION SURVEY FOR STRUCTURES

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

1) Project Name :	Vailoo-Khanabal
2) NH / SH No :	NH-01B
3) Chainage :	237+525
4) Type of Structures :	River Bridge
5) Year of Construction :	2012
6) Date of Inventory :	18.03.2019

**B) Waterways & Protection Works :**

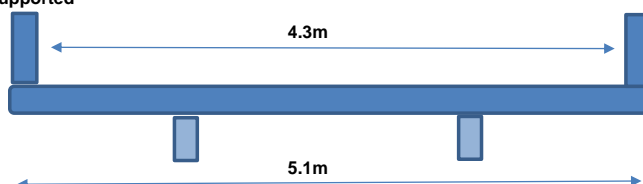
1) Name of River/Water Body/Bridge :	Nala
2) Flow Direction :	Left to Right
3) High Level Bridge / Submersible / Causeway :	High level bridge
4) HFL Data : Any mark of Flood Gauge :	1.0m above Ground level
5) HFL Data : Local Enquiry :	-
6) Obstruction in Waterways :	Island formation
7) Flow Pattern :	Meandering
8) Erosion of Banks :	Yes
9) Slope Pitching :	No
10) Toe Wall :	No
11) Flexible Apron :	No
12) Floor Protection :	No
13) Scour in River Bed :	Yes
14) Guide Bunds :	No



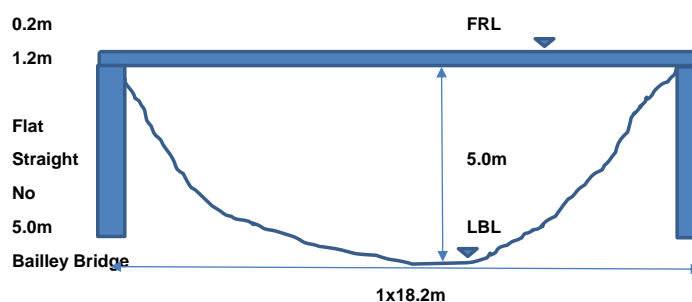
Side View

**C) Salient Features & Conditions of Different Components :**

1) Span Arrangement :	1x18.2m
2) Distance between c/c of Expansion Joint :	18.2m
3) Clear Width of Waterway :	17.0m
4) Bridge Statical System :	Simply Supported
5) Overall Width of Superstructures :	5.1m
6) Carriageway Width :	4.3m
7) Footpath Width :	-
8) Whether Footpath is raised or at grade :	-
9) Whether Footpath is one sided or both sided :	-
10) Railing Width :	0.2m
11) Railing Height :	1.2m
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 :	5.0m
16) Superstructures Type :	Bailey Bridge



Cross Section of Bridge



Elevation of Bridge



- 17) Overall Depth of Superstructures : .3m  
 18) No of Longitudinal Girders : 2  
 19) No of Cross Girders : 12  
 20) Condition of Superstructures : Spalling/Corrosion/Vibration

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 : Cracking/Spalling

26) Condition of Foundations :

27) Type of Bearings :

28) Condition of Bearings :

29) Type of Expansion Joints :

30) Condition of Expansion Joints :



#### Cross section of Bridge

31) Type of Wearing Coat : Bituminous

32) Condition of Wearing Coat : -

33) Type of Railing : Steel railing

34) Condition of Railing : Broken post

35) Drainage Spouts : -

36) Condition of Drainage Spouts : -

37) Weep holes : -

38) Condition of Weep holes : -

39) Approach Slab : -

40) Condition of Approach Slab : -

41) Retaining Wall / Wing Wall : Retaining wall

42) Material : RCC

43) Condition : Fair

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

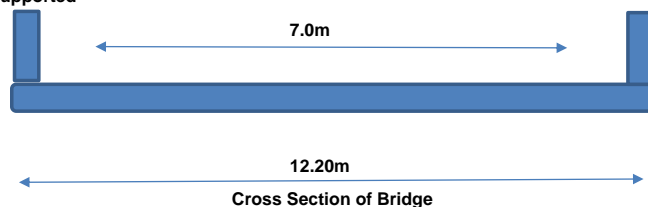
- |                           |                 |
|---------------------------|-----------------|
| 1) Project Name :         | Vailoo-Khanabal |
| 2) NH / SH No :           | NH-01B          |
| 3) Chainage :             | 239+278         |
| 4) Type of Structures :   | River Bridge    |
| 5) Year of Construction : | -               |
| 6) Date of Inventory :    | 18.03.2019      |

**B) Waterways & Protection Works :**

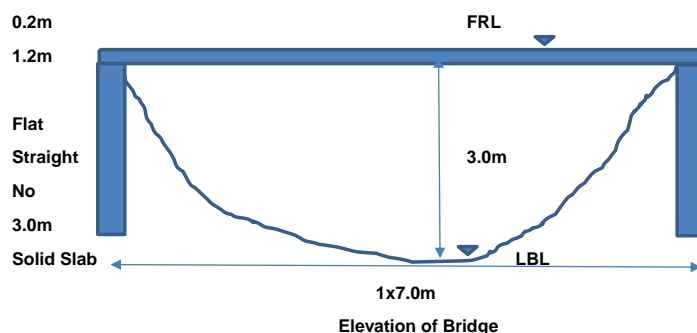
- |   |                         |
|---|-------------------------|
| 1) Name of River/Water Body/Bridge :            | Nala                    |
| 2) Flow Direction :                             | Left to Right           |
| 3) High Level Bridge / Submersible / Causeway : | High level bridge       |
| 4) HFL Data : Any mark of Flood Gauge :         | 0.5m above Ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 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 :                            | 1x7.0m           |
| 2) Distance between c/c of Expansion Joint :     | 7.0m             |
| 3) Clear Width of Waterway :                     | 6.0m             |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 12.20m           |
| 6) Carriageway Width :                           | 7.0m             |
| 7) Footpath Width :                              | -                |
| 8) Whether Footpath is raised or at grade :      | -                |
| 9) Whether Footpath is one sided or both sided : | -                |



- |  |            |
|--|------------|
| 10) Railing Width :                            | 0.2m       |
| 11) Railing Height :                           | 1.2m       |
| 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 :                | 3.0m       |
| 16) Superstructures Type :                     | Solid Slab |



17) Overall Depth of Superstructures : 0.5m  
18) No of Longitudinal Girders : -  
19) No of Cross Girders : -  
20) Condition of Superstructures : Exposed Reinforcement

21) Type of Abutment : Solid wall type

22) Type of Pier : -

23) Substructures Material : Masonry

24) Type of Foundation, if visible : Open

25) Condition of Substructures : Cracking/Spalling

26) Condition of Foundations :

27) Type of Bearings :

28) Condition of Bearings :

29) Type of Expansion Joints :

30) Condition of Expansion Joints :



31) Type of Wearing Coat :

32) Condition of Wearing Coat :

Bituminous

Riding Quality

Elevation of Bridge

33) Type of Railing :

34) Condition of Railing :

RCC solid parapet

Fair

35) Drainage Spouts :

36) Condition of Drainage Spouts :

37) Weep holes :

38) Condition of Weep holes :

39) Approach Slab :

40) Condition of Approach Slab :



RCC Railing

41) Retaining Wall / Wing Wall :

42) Material :

43) Condition :

Retaining wall

RCC

Fair

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

1) Project Name :	Vailoo-Khanabal
2) NH / SH No :	NH-01B
3) Chainage :	244+575
4) Type of Structures :	River Bridge
5) Year of Construction :	-
6) Date of Inventory :	18.03.2019

**B) Waterways & Protection Works :**

1) Name of River/Water Body/Bridge :	Nala
2) Flow Direction :	Left to Right
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
7) Flow Pattern :	Meandering
8) Erosion of Banks :	Yes
9) Slope Pitching :	No
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 :**

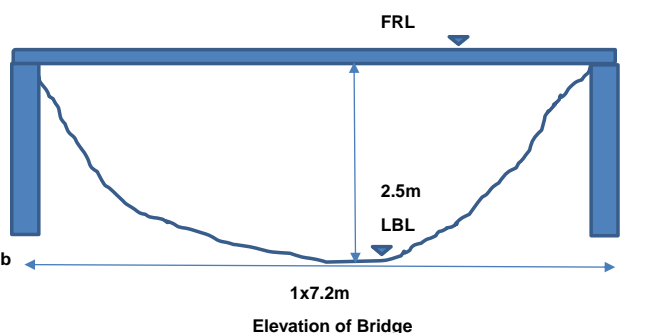
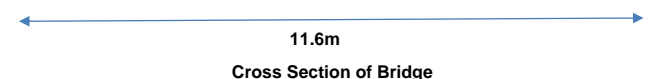
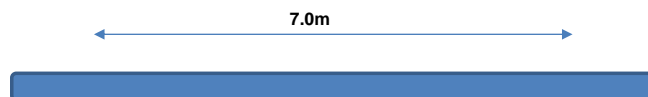
1) Span Arrangement :	1x7.2m
2) Distance between c/c of Expansion Joint :	7.2m
3) Clear Width of Waterway :	6.0m
4) Bridge Statical System :	Simply Supported

5) Overall Width of Superstructures :	11.6m
6) Carriageway Width :	7.0m

7) Footpath Width :	-
8) Whether Footpath is raised or at grade :	-
9) Whether Footpath is one sided or both sided :	-

10) Railing Width :	0.3m
11) Railing Height :	1.1m

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 :	2.5m
16) Superstructures Type :	Solid Slab



17) Overall Depth of Superstructures : **0.5m**  
 18) No of Longitudinal Girders : -  
 19) No of Cross Girders : -  
 20) Condition of Superstructures : **Exposed Reinforcement**

21) Type of Abutment : **Solid wall type**

22) Type of Pier : -

23) Substructures Material : **Masonry**

24) Type of Foundation, if visible : **Open**

25) Condition of Substructures : **Cracking/Spalling**

26) Condition of Foundations : -

27) Type of Bearings : -

28) Condition of Bearings : -

29) Type of Expansion Joints : -

30) Condition of Expansion Joints : -



31) Type of Wearing Coat : **Bituminous**

32) Condition of Wearing Coat : -

Side view of Bridge

33) Type of Railing : -

34) Condition of Railing : -

35) Drainage Spouts : -

36) Condition of Drainage Spouts : -

37) Weep holes : -

38) Condition of Weep holes : -

Utility Services

39) Approach Slab : -

40) Condition of Approach Slab : -

41) Retaining Wall / Wing Wall : **Retaining wall**

42) Material : **RCC**

43) Condition : **Fair**





## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.


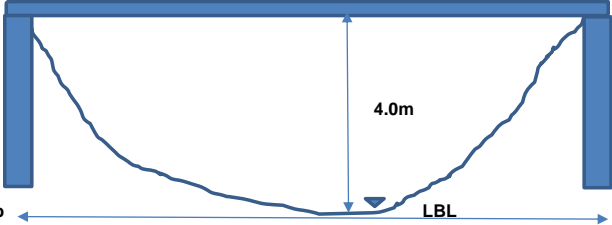
**A) General Information :**

- |                           |                 |
|---------------------------|-----------------|
| 1) Project Name :         | Vailoo-Khanabal |
| 2) NH / SH No :           | NH-01B          |
| 3) Chainage :             | 245+567         |
| 4) Type of Structures :   | River Bridge    |
| 5) Year of Construction : | -               |
| 6) Date of Inventory :    | 18.03.2019      |

**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 :         | 1.0m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 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 :                            | 1x7.0m           |  |
| 2) Distance between c/c of Expansion Joint :     | 7.0m             | <b>Elevation of Bridge</b>   |
| 3) Clear Width of Waterway :                     | 6.0m             |  |
| 4) Bridge Statical System :                      | Simply Supported |  |
| 5) Overall Width of Superstructures :            | 12.0m            |  |
| 6) Carriageway Width :                           | 7.0m             |  |
| 7) Footpath Width :                              | -                |  |
| 8) Whether Footpath is raised or at grade :      | -                |  |
| 9) Whether Footpath is one sided or both sided : | -                | <b>Cross Section of Bridge</b>   |
| 10) Railing Width :                              | -                |  |
| 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 :                  | 4.0m             |  |
| 16) Superstructures Type :                       | Solid Slab       | <b>Elevation of Bridge</b>   |

17) Overall Depth of Superstructures : **0.5m**  
 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 : **Masonry**

24) Type of Foundation, if visible : **Open**

25) Condition of Substructures : **Cracking/Spalling**

26) Condition of Foundations : -

27) Type of Bearings : -

28) Condition of Bearings : -

29) Type of Expansion Joints : -

30) Condition of Expansion Joints : -



**D/S of Bridge**

31) Type of Wearing Coat : **Bituminous**

32) Condition of Wearing Coat : -

33) Type of Railing : -

34) Condition of Railing : -

35) Drainage Spouts : -

36) Condition of Drainage Spouts : -

37) Weep holes : -

38) Condition of Weep holes : -

39) Approach Slab : -

40) Condition of Approach Slab : -

41) Retaining Wall / Wing Wall : **Retaining wall**

42) Material : **RCC**

43) Condition : **Good**

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

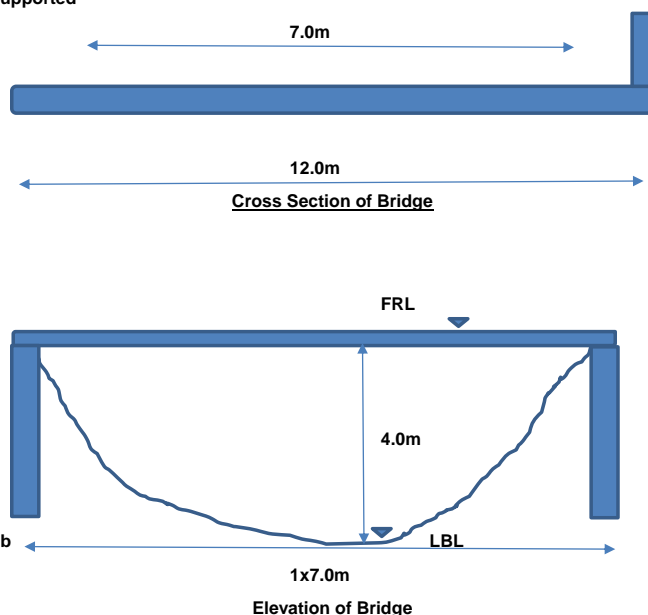
- |                           |                 |
|---------------------------|-----------------|
| 1) Project Name :         | Vailoo-Khanabal |
| 2) NH / SH No :           | NH-01B          |
| 3) Chainage :             | 246+200         |
| 4) Type of Structures :   | River Bridge    |
| 5) Year of Construction : | -               |
| 6) Date of Inventory :    | 18.03.2019      |

**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  |
| 7) Flow Pattern :                               | Meandering        |
| 8) Erosion of Banks :                           | Yes               |
| 9) Slope Pitching :                             | No                |
| 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 :                            | 1x7.0m           |
| 2) Distance between c/c of Expansion Joint :     | 7.0m             |
| 3) Clear Width of Waterway :                     | 6.0m             |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 12.0m            |
| 6) Carriageway Width :                           | 7.0m             |
| 7) Footpath Width :                              | -                |
| 8) Whether Footpath is raised or at grade :      | -                |
| 9) Whether Footpath is one sided or both sided : | -                |
| 10) Railing Width :                              | 0.2m             |
| 11) Railing Height :                             | 0.8m             |
| 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 :                  | 4.0m             |
| 16) Superstructures Type :                       | Solid Slab       |





17) Overall Depth of Superstructures : 0.5m  
 18) No of Longitudinal Girders :  
 19) No of Cross Girders : -  
 20) Condition of Superstructures : Cracking/Exposed Reinforcement

21) Type of Abutment : Solid wall type

22) Type of Pier : -

23) Substructures Material : Masonry

24) Type of Foundation, if visible : Open

25) Condition of Substructures : Cracking/Spalling

26) Condition of Foundations :

27) Type of Bearings :

28) Condition of Bearings :

29) Type of Expansion Joints :

30) Condition of Expansion Joints :



Elevation of Bridge/Abutment

31) Type of Wearing Coat : Bituminous

32) Condition of Wearing Coat : Riding Quality

33) Type of Railing :

34) Condition of Railing : Steel Railing(one side)  
Damaged

35) Drainage Spouts :

36) Condition of Drainage Spouts :

37) Weep holes :

38) Condition of Weep holes :

39) Approach Slab :

40) Condition of Approach Slab :



41) Retaining Wall / Wing Wall :

42) Material :

43) Condition :

Retaining wall

RCC

Fair

Steel Railing

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

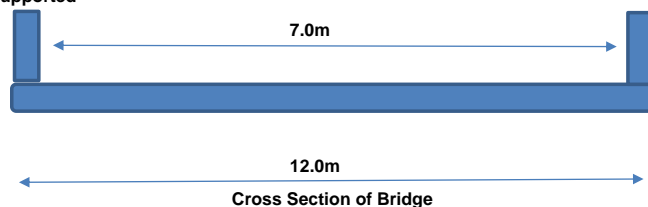
- |                           |                 |
|---------------------------|-----------------|
| 1) Project Name :         | Vailoo-Khanabal |
| 2) NH / SH No :           | NH-01B          |
| 3) Chainage :             | 249+775         |
| 4) Type of Structures :   | River Bridge    |
| 5) Year of Construction : | -               |
| 6) Date of Inventory :    | 18.03.2019      |

**B) Waterways & Protection Works :**

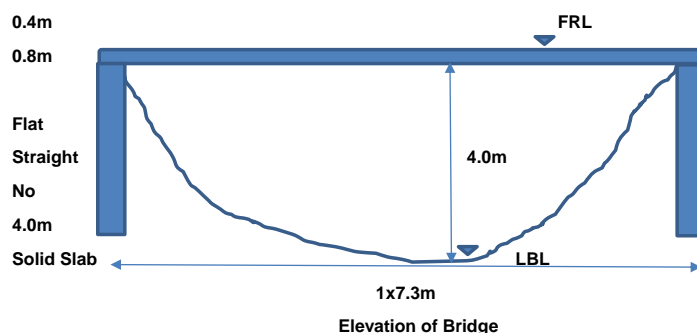
- |   |                         |
|---|-------------------------|
| 1) Name of River/Water Body/Bridge :            | Nala                    |
| 2) Flow Direction :                             | Right to Left           |
| 3) High Level Bridge / Submersible / Causeway : | High level bridge       |
| 4) HFL Data : Any mark of Flood Gauge :         | 1.2m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 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 :                            | 1x7.3m           |
| 2) Distance between c/c of Expansion Joint :     | 7.3m             |
| 3) Clear Width of Waterway :                     | 6.0m             |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 12.0m            |
| 6) Carriageway Width :                           | 7.0m             |
| 7) Footpath Width :                              | -                |
| 8) Whether Footpath is raised or at grade :      | -                |
| 9) Whether Footpath is one sided or both sided : | -                |



- |  |            |
|--|------------|
| 10) Railing Width :                            | 0.4m       |
| 11) Railing Height :                           | 0.8m       |
| 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 :                | 4.0m       |
| 16) Superstructures Type :                     | Solid Slab |



- 17) Overall Depth of Superstructures : **0.5m**  
 18) No of Longitudinal Girders :  
 19) No of Cross Girders : **-**  
 20) Condition of Superstructures : **Fair**



- 21) Type of Abutment : **Solid wall type**

- 22) Type of Pier : **-**

#### Elevation of Bridge

- 23) Substructures Material : **Masonry**  
 24) Type of Foundation, if visible : **-**  
 25) Condition of Substructures : **Cracking**

- 26) Condition of Foundations : **-**

- 27) Type of Bearings : **-**

- 28) Condition of Bearings : **-**

- 29) Type of Expansion Joints : **-**

- 30) Condition of Expansion Joints : **-**

- 31) Type of Wearing Coat : **Bituminous**  
 32) Condition of Wearing Coat : **Riding Quality**

- 33) Type of Railing : **RCC railing**  
 34) Condition of Railing : **Fair**

- 35) Drainage Spouts :  
 36) Condition of Drainage Spouts :

- 37) Weep holes :  
 38) Condition of Weep holes :

- 39) Approach Slab :  
 40) Condition of Approach Slab :



- 41) Retaining Wall / Wing Wall : **Retaining wall**  
 42) Material : **RCC**  
 43) Condition : **Fair**

#### Solid Slab/Abutment view

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

- |                           |                 |
|---------------------------|-----------------|
| 1) Project Name :         | Vailoo-Khanabal |
| 2) NH / SH No :           | NH-01B          |
| 3) Chainage :             | 250+255         |
| 4) Type of Structures :   | River Bridge    |
| 5) Year of Construction : | -               |
| 6) Date of Inventory :    | 18.03.2019      |

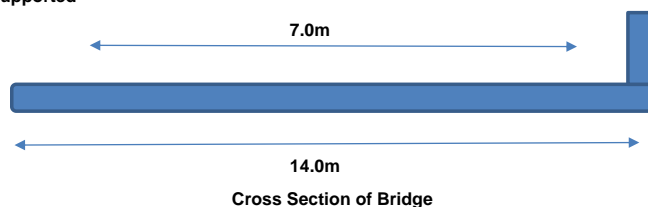
**B) Waterways & Protection Works :**

- |   |                         |
|---|-------------------------|
| 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 :         | 1.0m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 10) Toe Wall :                                  | No                      |
| 11) Flexible Apron :                            | No                      |
| 12) Floor Protection :                          | No                      |
| 13) Scour in River Bed :                        | Yes                     |
| 14) Guide Bunds :                               | No                      |

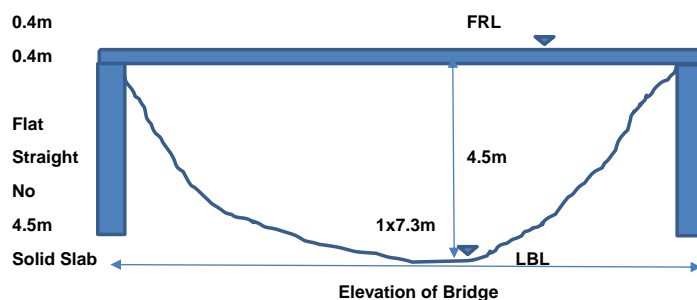
**C) Salient Features & Conditions of Different Components :**

- |  |                  |
|--|------------------|
| 1) Span Arrangement :                        | 1x7.3m           |
| 2) Distance between c/c of Expansion Joint : | 7.3m             |
| 3) Clear Width of Waterway :                 | 6.0m             |
| 4) Bridge Statical System :                  | Simply Supported |

- |  |       |
|--|-------|
| 5) Overall Width of Superstructures :            | 14.0m |
| 6) Carriageway Width :                           | 7.0m  |
| 7) Footpath Width :                              | -     |
| 8) Whether Footpath is raised or at grade :      | -     |
| 9) Whether Footpath is one sided or both sided : | -     |



- |  |            |
|--|------------|
| 10) Railing Width :                            | 0.4m       |
| 11) Railing Height :                           | 0.4m       |
| 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 :                | 4.5m       |
| 16) Superstructures Type :                     | Solid Slab |



17) Overall Depth of Superstructures :	0.5m
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 : Masonry

24) Type of Foundation, if visible : -

25) Condition of Substructures : Cracking

26) Condition of Foundations : -

27) Type of Bearings : -

28) Condition of Bearings : -

29) Type of Expansion Joints : -

30) Condition of Expansion Joints : -

31) Type of Wearing Coat : Bituminous

32) Condition of Wearing Coat : Riding Quality

33) Type of Railing : RCC railing(one side)

34) Condition of Railing : Good

35) Drainage Spouts : -

36) Condition of Drainage Spouts : -

37) Weep holes : -

38) Condition of Weep holes : -

39) Approach Slab : -

40) Condition of Approach Slab : -

41) Retaining Wall / Wing Wall : Retaining wall

42) Material : RCC

43) Condition : Fair



Side view of Bridge



Masonry Abutment



## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

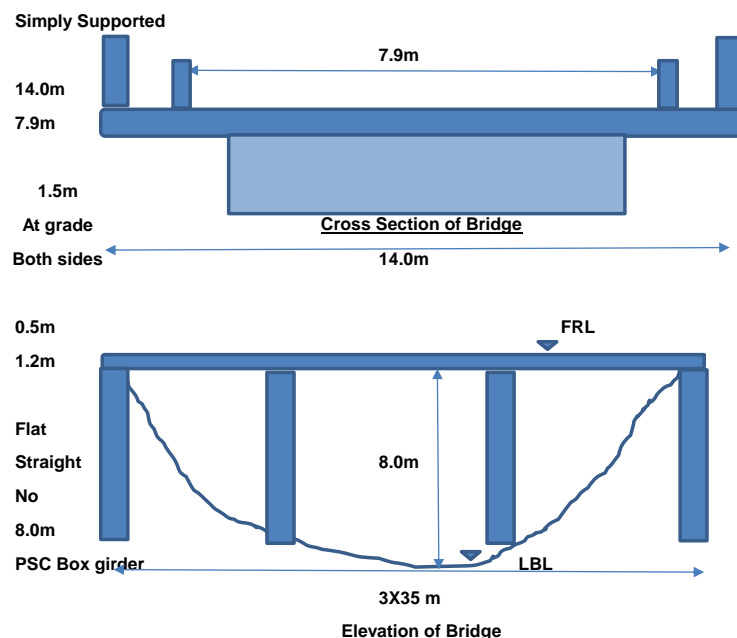
- |                           |                 |
|---------------------------|-----------------|
| 1) Project Name :         | Vailoo-Khanabal |
| 2) NH / SH No :           | NH-01B          |
| 3) Chainage :             | 250+500         |
| 4) Type of Structures :   | River Bridge    |
| 5) Year of Construction : | -               |
| 6) Date of Inventory :    | 18.03.2019      |

**B) Waterways & Protection Works :**

- |   |                         |
|---|-------------------------|
| 1) Name of River/Water Body/Bridge :            |                         |
| 2) Flow Direction :                             | Right to Left           |
| 3) High Level Bridge / Submersible / Causeway : | High level bridge       |
| 4) HFL Data : Any mark of Flood Gauge :         | 2.0m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 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 :**Cross Section of Bridge

- |  |                  |
|--|------------------|
| 1) Span Arrangement :                            | 3X35 m           |
| 2) Distance between c/c of Expansion Joint :     | 35m              |
| 3) Clear Width of Waterway :                     | 115.0m           |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 14.0m            |
| 6) Carriageway Width :                           | 7.9m             |
| 7) Footpath Width :                              | 1.5m             |
| 8) Whether Footpath is raised or at grade :      | At grade         |
| 9) Whether Footpath is one sided or both sided : | Both sides       |
| 10) Railing Width :                              | 0.5m             |
| 11) Railing Height :                             | 1.2m             |
| 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 :                  | 8.0m             |
| 16) Superstructures Type :                       | PSC Box girder   |



- 17) Overall Depth of Superstructures : 1.5m  
 18) No of Longitudinal Girders : -  
 19) No of Cross Girders : -  
 20) Condition of Superstructures : Cracking/Honeycombing/Vibration

- 21) Type of Abutment : Solid wall type  
 22) Type of Pier : Circular  
 23) Substructures Material : RCC  
 24) Type of Foundation, if visible : Open  
 25) Condition of Substructures : Good



New Bridge/Old bridge

- 26) Condition of Foundations : -  
 27) Type of Bearings : Elastomer  
 28) Condition of Bearings : -  
 29) Type of Expansion Joints : Strip seal  
 30) Condition of Expansion Joints : Dirtiness/soiled



Box Girder/Circular Pier

- 31) Type of Wearing Coat : Bituminous  
 32) Condition of Wearing Coat : Riding Quality with a few pot holes

- 33) Type of Railing : RCC railing  
 34) Condition of Railing : -

- 35) Drainage Spouts : Yes  
 36) Condition of Drainage Spouts : -

- 37) Weep holes : -  
 38) Condition of Weep holes : -

- 39) Approach Slab : Yes  
 40) Condition of Approach Slab : -



- 41) Retaining Wall / Wing Wall : Retaining wall  
 42) Material : RCC  
 43) Condition : Good

Abutment

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

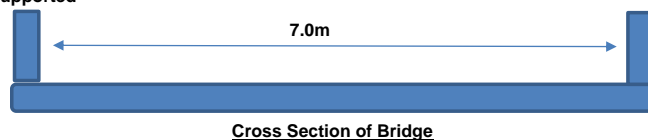
- |                           |                 |
|---------------------------|-----------------|
| 1) Project Name :         | Vailoo-Khanabal |
| 2) NH / SH No :           | NH-01B          |
| 3) Chainage :             | 250+610         |
| 4) Type of Structures :   | River Bridge    |
| 5) Year of Construction : | -               |
| 6) Date of Inventory :    | 18.03.2019      |

**B) Waterways & Protection Works :**

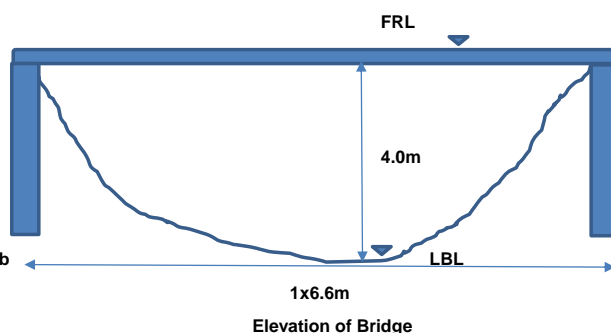
- |   |                         |
|---|-------------------------|
| 1) Name of River/Water Body/Bridge :            | Nala                    |
| 2) Flow Direction :                             | Right to Left           |
| 3) High Level Bridge / Submersible / Causeway : | High level bridge       |
| 4) HFL Data : Any mark of Flood Gauge :         | 0.5m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 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 :                            | 1x6.6m           |
| 2) Distance between c/c of Expansion Joint :     | 6.6m             |
| 3) Clear Width of Waterway :                     | 6.0m             |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 12.0m            |
| 6) Carriageway Width :                           | 7.0m             |
| 7) Footpath Width :                              | -                |
| 8) Whether Footpath is raised or at grade :      | -                |
| 9) Whether Footpath is one sided or both sided : | -                |



- |  |            |
|--|------------|
| 10) Railing Width :                            | 0.3m       |
| 11) Railing Height :                           | 1.1m       |
| 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 :                | 4.0m       |
| 16) Superstructures Type :                     | Solid slab |





- 17) Overall Depth of Superstructures : 0.5m  
 18) No of Longitudinal Girders : -  
 19) No of Cross Girders : -  
 20) Condition of Superstructures : Cracking



- 21) Type of Abutment : Solid wall type

Elevation of Bridge/Retaining wall

- 22) Type of Pier : -

- 23) Substructures Material : Masonry  
 24) Type of Foundation, if visible : Open  
 25) Condition of Substructures : Cracking

- 26) Condition of Foundations : -

- 27) Type of Bearings : -

- 28) Condition of Bearings : -

- 29) Type of Expansion Joints : -

- 30) Condition of Expansion Joints : -

- 31) Type of Wearing Coat : Bituminous  
 32) Condition of Wearing Coat : Riding Quality

- 33) Type of Railing : RCC railing  
 34) Condition of Railing : Fair

- 35) Drainage Spouts : Yes

- 36) Condition of Drainage Spouts : -

- 37) Weep holes : -

- 38) Condition of Weep holes : -

- 39) Approach Slab : -

- 40) Condition of Approach Slab : -



- 41) Retaining Wall / Wing Wall : Retaining wall  
 42) Material : RCC  
 43) Condition : Fair

Stone Masonry Abutment

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

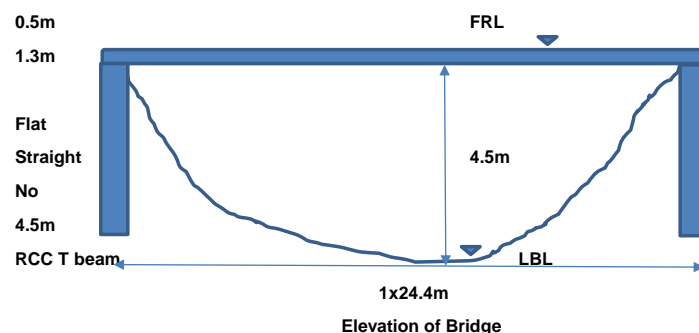
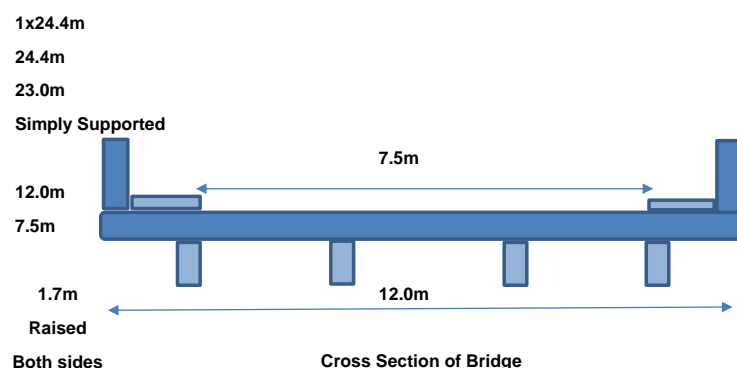
- |                           |                 |
|---------------------------|-----------------|
| 1) Project Name :         | Vailoo-Khanabal |
| 2) NH / SH No :           | NH-01B          |
| 3) Chainage :             | 250+875         |
| 4) Type of Structures :   | River Bridge    |
| 5) Year of Construction : | 2010            |
| 6) Date of Inventory :    | 18.03.2019      |

**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 :         | 1.5m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 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 :                            | 1x24.4m          |
| 2) Distance between c/c of Expansion Joint :     | 24.4m            |
| 3) Clear Width of Waterway :                     | 23.0m            |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 12.0m            |
| 6) Carriageway Width :                           | 7.5m             |
| 7) Footpath Width :                              | 1.7m             |
| 8) Whether Footpath is raised or at grade :      | Raised           |
| 9) Whether Footpath is one sided or both sided : | Both sides       |
| 10) Railing Width :                              | 0.5m             |
| 11) Railing Height :                             | 1.3m             |
| 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 :                  | 4.5m             |
| 16) Superstructures Type :                       | RCC T beam       |



17) Overall Depth of Superstructures :	2.25m
18) No of Longitudinal Girders :	4
19) No of Cross Girders :	3
20) Condition of Superstructures :	Good



21) Type of Abutment :	Solid wall type
------------------------	-----------------

22) Type of Pier :	-
--------------------	---

#### Bridge Carriageway with Raised footpath

23) Substructures Material :	RCC
24) Type of Foundation, if visible :	Open
25) Condition of Substructures :	Cracking/Spalling/Exposed Reinforcement

26) Condition of Foundations :	-
--------------------------------	---

27) Type of Bearings :	Elastomer
28) Condition of Bearings :	Good



29) Type of Expansion Joints :	Strip seal
30) Condition of Expansion Joints :	Dirtiness/Soiled

31) Type of Wearing Coat :	Bituminous
32) Condition of Wearing Coat :	Riding Quality

#### Elevation

33) Type of Railing :	RCC railing
34) Condition of Railing :	Fair

35) Drainage Spouts :	Yes
36) Condition of Drainage Spouts :	Chocked

37) Weep holes :	Yes
38) Condition of Weep holes :	Chocked

39) Approach Slab :	Yes
40) Condition of Approach Slab :	Settlement



41) Retaining Wall / Wing Wall :	Retaining wall
42) Material :	RCC
43) Condition :	Disintegrated

#### Elastomer Bearings

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

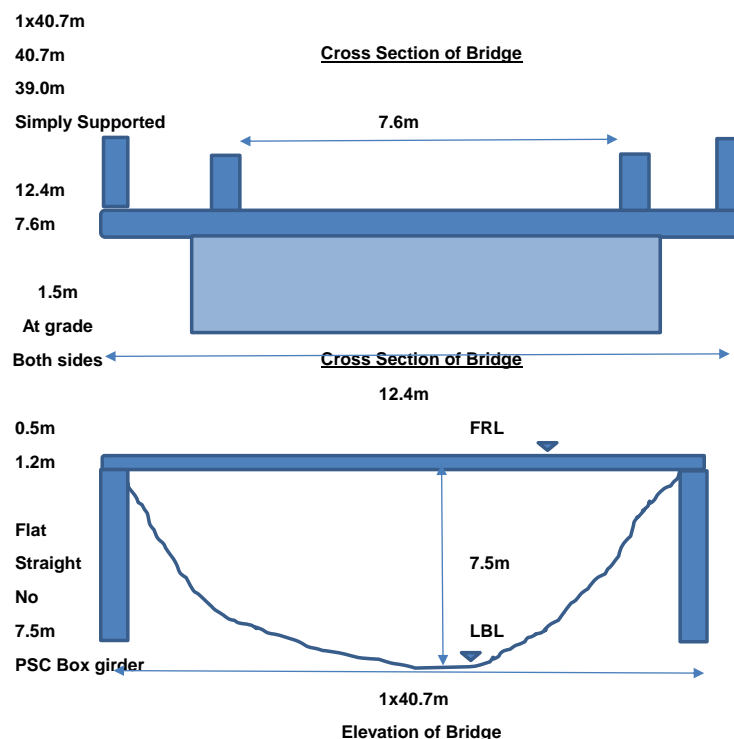
- |                           |                 |
|---------------------------|-----------------|
| 1) Project Name :         | Vailoo-Khanabal |
| 2) NH / SH No :           | NH-01B          |
| 3) Chainage :             | 251+225         |
| 4) Type of Structures :   | Hokam Nala      |
| 5) Year of Construction : | 2012            |
| 6) Date of Inventory :    | 18.03.2019      |

**B) Waterways & Protection Works :**

- |   |                         |
|---|-------------------------|
| 1) Name of River/Water Body/Bridge :            | Ariam Bridge            |
| 2) Flow Direction :                             | Right to Left           |
| 3) High Level Bridge / Submersible / Causeway : | High level bridge       |
| 4) HFL Data : Any mark of Flood Gauge :         | 1.5m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 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 :                            | 1x40.7m          |
| 2) Distance between c/c of Expansion Joint :     | 40.7m            |
| 3) Clear Width of Waterway :                     | 39.0m            |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 12.4m            |
| 6) Carriageway Width :                           | 7.6m             |
| 7) Footpath Width :                              | 1.5m             |
| 8) Whether Footpath is raised or at grade :      | At grade         |
| 9) Whether Footpath is one sided or both sided : | Both sides       |
| 10) Railing Width :                              | 0.5m             |
| 11) Railing Height :                             | 1.2m             |
| 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 :                  | 7.5m             |
| 16) Superstructures Type :                       | PSC Box girder   |





17) Overall Depth of Superstructures :	2.0m
18) No of Longitudinal Girders :	-
19) No of Cross Girders :	-
20) Condition of Superstructures :	Spalling
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 :	-
27) Type of Bearings :	Pot-Ptfe
28) Condition of Bearings :	Good
29) Type of Expansion Joints :	Strip seal
30) Condition of Expansion Joints :	Dirtiness
31) Type of Wearing Coat :	Bituminous
32) Condition of Wearing Coat :	Riding Quality with a few pot holes
33) Type of Railing :	RCC railing
34) Condition of Railing :	Good
35) Drainage Spouts :	Yes
36) Condition of Drainage Spouts :	-
37) Weep holes :	Yes
38) Condition of Weep holes :	Chocked
39) Approach Slab :	Yes
40) Condition of Approach Slab :	Settlement
41) Retaining Wall / Wing Wall :	Retaining wall
42) Material :	RCC
43) Condition :	Disintegrated

**PSC Box Girder****Pot-Ptfe Bearings****Bridge Information**

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

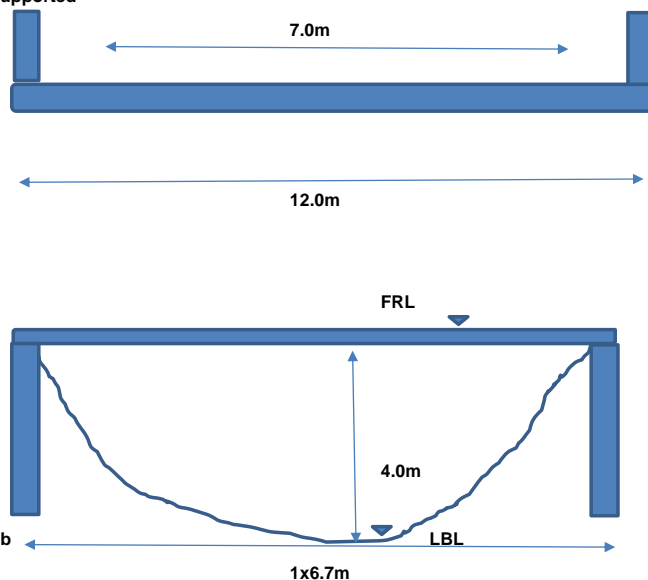
- |                           |            |
|---------------------------|------------|
| 1) Project Name :         | 44km-142km |
| 2) NH / SH No :           | NH-01B     |
| 3) Chainage :             | 251+350    |
| 4) Type of Structures :   | Nala       |
| 5) Year of Construction : | -          |
| 6) Date of Inventory :    | 18.03.2019 |

**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 :         | 0.5m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 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 :                            | 1x6.7m           |
| 2) Distance between c/c of Expansion Joint :     | 6.7m             |
| 3) Clear Width of Waterway :                     | 6.0m             |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 12.0m            |
| 6) Carriageway Width :                           | 7.0m             |
| 7) Footpath Width :                              | -                |
| 8) Whether Footpath is raised or at grade :      | -                |
| 9) Whether Footpath is one sided or both sided : | -                |
| 10) Railing Width :                              | 0.3m             |
| 11) Railing Height :                             | 0.3m             |
| 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 :                  | 4.0m             |
| 16) Superstructures Type :                       | Solid Slab       |



17) Overall Depth of Superstructures :	0.5m
18) No of Longitudinal Girders :	-
19) No of Cross Girders :	-
20) Condition of Superstructures :	Cracking
21) Type of Abutment :	Solid wall type
22) Type of Pier :	-
23) Substructures Material :	Masonry
24) Type of Foundation, if visible :	-
25) Condition of Substructures :	Cracking/Spalling
26) Condition of Foundations :	-
27) Type of Bearings :	-
28) Condition of Bearings :	-
29) Type of Expansion Joints :	-
30) Condition of Expansion Joints :	-
31) Type of Wearing Coat :	Bituminous
32) Condition of Wearing Coat :	Riding Quality with a few cracks
33) Type of Railing :	RCC Solid parapet
34) Condition of Railing :	-
35) Drainage Spouts :	Yes
36) Condition of Drainage Spouts :	-
37) Weep holes :	-
38) Condition of Weep holes :	-
39) Approach Slab :	-
40) Condition of Approach Slab :	-
41) Retaining Wall / Wing Wall :	Retaining wall
42) Material :	RCC
43) Condition :	Fair



## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

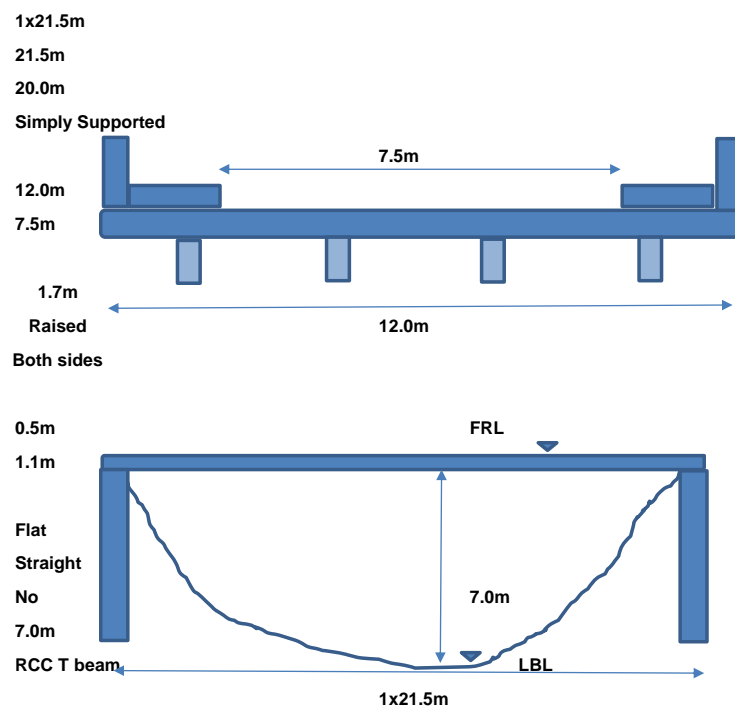
- |                           |            |
|---------------------------|------------|
| 1) Project Name :         | 44km-142km |
| 2) NH / SH No :           | NH-01B     |
| 3) Chainage :             | 251+400    |
| 4) Type of Structures :   | Nala       |
| 5) Year of Construction : | -          |
| 6) Date of Inventory :    | 18.03.2019 |

**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 :         | 1.5m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 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 :**Bridge Cross Section

- |  |                  |
|--|------------------|
| 1) Span Arrangement :                            | 1x21.5m          |
| 2) Distance between c/c of Expansion Joint :     | 21.5m            |
| 3) Clear Width of Waterway :                     | 20.0m            |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 12.0m            |
| 6) Carriageway Width :                           | 7.5m             |
| 7) Footpath Width :                              | 1.7m             |
| 8) Whether Footpath is raised or at grade :      | Raised           |
| 9) Whether Footpath is one sided or both sided : | Both sides       |
| 10) Railing Width :                              | 0.5m             |
| 11) Railing Height :                             | 1.1m             |
| 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 :                  | 7.0m             |
| 16) Superstructures Type :                       | RCC T beam       |





17) Overall Depth of Superstructures :	2.0m
18) No of Longitudinal Girders :	4
19) No of Cross Girders :	3
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 : **-**

27) Type of Bearings : **Elastomer**

28) Condition of Bearings : **Good**



**Elevation**

29) Type of Expansion Joints : **Strip seal**

30) Condition of Expansion Joints : **Dirtiness/Soiled**

31) Type of Wearing Coat : **Bituminous**

32) Condition of Wearing Coat : **Riding Quality**

33) Type of Railing : **RCC Railing**

34) Condition of Railing : **Good**

35) Drainage Spouts : **Yes**

36) Condition of Drainage Spouts : **Chocked**

37) Weep holes : **Yes**

38) Condition of Weep holes : **Chocked**

39) Approach Slab : **Yes**

40) Condition of Approach Slab : **Settlement**



41) Retaining Wall / Wing Wall : **Retaining wall**

42) Material : **RCC**

43) Condition : **Fair**

**Bearing and Pedestal**

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

- |                           |            |
|---------------------------|------------|
| 1) Project Name :         | 44km-142km |
| 2) NH / SH No :           | NH-01B     |
| 3) Chainage :             | 251+500    |
| 4) Type of Structures :   | Nala       |
| 5) Year of Construction : | -          |
| 6) Date of Inventory :    | 18.03.2019 |

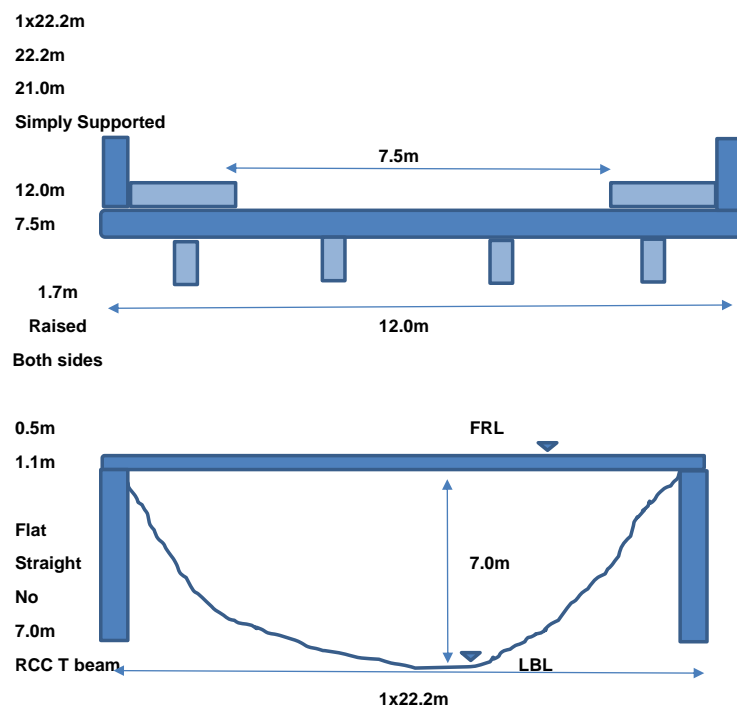
**B) Waterways & Protection Works :**

- |   |                         |
|---|-------------------------|
| 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 :         | 1.5m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |

- |                               |                  |
|-------------------------------|------------------|
| 6) Obstruction in Waterways : | Island formation |
| 7) Flow Pattern :             | Meandering       |
| 8) Erosion of Banks :         | Yes              |
| 9) Slope Pitching :           | No               |
| 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 :**Bridge Cross Section

- |  |                  |
|--|------------------|
| 1) Span Arrangement :                            | 1x22.2m          |
| 2) Distance between c/c of Expansion Joint :     | 22.2m            |
| 3) Clear Width of Waterway :                     | 21.0m            |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 12.0m            |
| 6) Carriageway Width :                           | 7.5m             |
| 7) Footpath Width :                              | 1.7m             |
| 8) Whether Footpath is raised or at grade :      | Raised           |
| 9) Whether Footpath is one sided or both sided : | Both sides       |
| 10) Railing Width :                              | 0.5m             |
| 11) Railing Height :                             | 1.1m             |
| 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 :                  | 7.0m             |
| 16) Superstructures Type :                       | RCC T beam       |



17) Overall Depth of Superstructures :	2.0m
18) No of Longitudinal Girders :	4
19) No of Cross Girders :	3
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 :	-
27) Type of Bearings :	Elastomer
28) Condition of Bearings :	Good
29) Type of Expansion Joints :	Strip seal
30) Condition of Expansion Joints :	Dirtiness/Soiled
31) Type of Wearing Coat :	Bituminous
32) Condition of Wearing Coat :	Riding Quality
33) Type of Railing :	RCC Railing
34) Condition of Railing :	Good
35) Drainage Spouts :	Yes
36) Condition of Drainage Spouts :	Chocked
37) Weep holes :	Yes
38) Condition of Weep holes :	Chocked
39) Approach Slab :	Yes
40) Condition of Approach Slab :	Settlement
41) Retaining Wall / Wing Wall :	Retaining wall
42) Material :	RCC
43) Condition :	Fair

Side View of BridgeBearing and Pedestal

## Annexure - 4.7

**Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from (i) Km 44.50 to Km 142.00 of Chattroo Village & (ii) Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244.in the state of Jammu & Kashmir.**

**INVENTORY & CONDITION SURVEY FOR STRUCTURES**

**Name of the Road :** Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani – Kishtwar – Chattroo - Khanabal Section of NH 244.

**A) General Information :**

- |                           |            |
|---------------------------|------------|
| 1) Project Name :         | 44km-142km |
| 2) NH / SH No :           | NH-01B     |
| 3) Chainage :             | 256+950    |
| 4) Type of Structures :   | Nala       |
| 5) Year of Construction : | -          |
| 6) Date of Inventory :    | 18.03.2019 |

**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 :         | 1.0m above ground level |
| 5) HFL Data : Local Enquiry :                   | -                       |
| 6) Obstruction in Waterways :                   | Island formation        |
| 7) Flow Pattern :                               | Meandering              |
| 8) Erosion of Banks :                           | Yes                     |
| 9) Slope Pitching :                             | No                      |
| 10) Toe Wall :                                  | No                      |
| 11) Flexible Apron :                            | No                      |
| 12) Floor Protection :                          | No                      |
| 13) Scour in River Bed :                        | Yes                     |
| 14) Guide Bunds :                               | No                      |

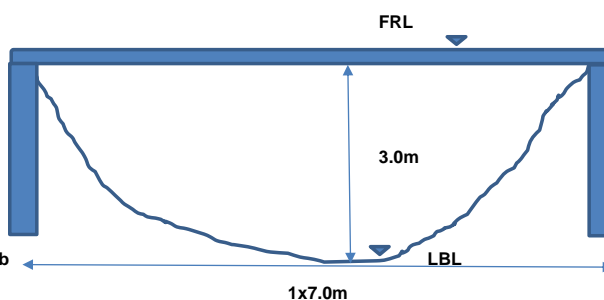
**C) Salient Features & Conditions of Different Components :**

- |  |                  |
|--|------------------|
| 1) Span Arrangement :                            | 1x7.0m           |
| 2) Distance between c/c of Expansion Joint :     | 7.0m             |
| 3) Clear Width of Waterway :                     | 6.0m             |
| 4) Bridge Statical System :                      | Simply Supported |
| 5) Overall Width of Superstructures :            | 12.7m            |
| 6) Carriageway Width :                           | 7.0m             |
| 7) Footpath Width :                              | -                |
| 8) Whether Footpath is raised or at grade :      | -                |
| 9) Whether Footpath is one sided or both sided : | -                |



- |                      |      |
|----------------------|------|
| 10) Railing Width :  | 0.3m |
| 11) Railing Height : | 0.3m |

- |  |            |
|--|------------|
| 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 :                | 3.0m       |
| 16) Superstructures Type :                     | Solid Slab |



17) Overall Depth of Superstructures :	0.5m
18) No of Longitudinal Girders :	-
19) No of Cross Girders :	-
20) Condition of Superstructures :	Cracking/Spalling
21) Type of Abutment :	Solid wall type
22) Type of Pier :	-
23) Substructures Material :	Masonry
24) Type of Foundation, if visible :	Open
25) Condition of Substructures :	Cracking/Spalling
26) Condition of Foundations :	-
27) Type of Bearings :	-
28) Condition of Bearings :	-
29) Type of Expansion Joints :	-
30) Condition of Expansion Joints :	-
31) Type of Wearing Coat :	Bituminous
32) Condition of Wearing Coat :	Riding Quality
33) Type of Railing :	RCC Solid parapet(one side)
34) Condition of Railing :	Fair
35) Drainage Spouts :	-
36) Condition of Drainage Spouts :	-
37) Weep holes :	-
38) Condition of Weep holes :	-
39) Approach Slab :	-
40) Condition of Approach Slab :	-
41) Retaining Wall / Wing Wall :	Retaining wall
42) Material :	RCC
43) Condition :	Fair

Side View of Bridge

## Annexure - 4.8

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244 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 Vent way (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection	Condition of					Overall Condition	Height above Bed Level		Presence of Scour	Remarks
				No	Clear Span					Type	Super structure	Sub structure	Condition	Return wall	Parapet/Railing		U/s side (m)	D/s side (m)		
1	235+130	Slab	0.3	1	2.00	2.60	7.00	2.60	16.20	No	Fair	Fair	Fair	Fair	Damaged	Fair	1.00	1.60	No	
2	235+337	Slab	0.3	1	2.00	3.60	7.00	3.60	10.30	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.60	1.20	No	
3	235+822	Slab	0.30	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.20	1.00	No	U/S Chocked
4	236+105	Slab	0.2	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.80	1.50	No	U/S Chocked
5	236+475	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.40	1.20	No	U/S Chocked
6	236+675	Slab	0.25	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.50	1.30	No	U/S Chocked
7	236+776	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.60	1.60	No	Damaged
8	236+922	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.40	1.20		U/S Chocked
9	237+232	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.30	1.10	No	U/S Chocked
10	237+345	Slab	0.3	1	4.70	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.20	1.00	No	U/S fully Chocked
11	237+773	Slab	0.3	1	1.20	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.20	1.10	No	U/S fully Chocked
12	238+015	Slab	0.3	1	3.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.20	1.00	No	U/S Chocked
13	238+426	Slab	0.3	1	3.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.30	1.10	No	U/S Chocked
14	238+755	Slab	0.3	1	2.00	3.60	7.00	3.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.20	1.00	No	

## Annexure - 4.8

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244 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)	Thick ness of Slab (m)	Span Arrangement		Total Vent way (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection	Condition of					Overall Condition	Height above Bed Level		Presenc e of Scour	Remarks
				No	Clear Span					Type	Super structure	Sub structure	Condi tion	Retu rn wall	Parapet/ Railing		U/s side (m)	D/s side (m)		
15	239+376	Slab	0.4	1	2.00	5.30	7.00	5.30	12.00	Masonry	Fair	Poor	Fair	Fair		Fair	3.50	4.50	No	Skew
16	239+534	Slab	0.2	1	0.80	1.60	7.00	1.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.20	0.60	No	fully Chocked
17	239+700	Slab	0.3	1	3.00	3.60	7.00	3.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.50	1.60	No	fully Chocked
18	239+860	Slab	0.3	1	3.20	3.60	7.00	3.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.40	1.20	No	fully Chocked
19	240+045	Slab	0.3	1	3.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	1.00	1.50	No	Damaged
20	240+295	Slab	0.3	1	3.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.50	1.20	No	Fully chocked
21	240+841	Slab	0.2	1	2.00	1.20	7.00	1.20	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.40	1.10	No	Fully chocked
22	240+877	Slab	0.3	1	1.00	3.60	7.00	3.60	12.00	Yes	Fair	Fair	Fair	Fair	Damaged	Fair	0.40	1.10	No	U/S chocked
23	241+779	Slab	0.3	1	0.30	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.50	1.20	No	
24	242+090	Slab	0.3	1	0.80	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.30	1.00	No	
25	242+332	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.30	1.10	No	
26	242+468	Slab	0.3	1	2.00	2.00	7.00	2.00	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.20	1.00	No	U/S chocked
27	242+615	Slab	0.2	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.10	1.00	No	U/S chocked
28	242+696	Slab	0.2	1	2.00	1.00	7.00	1.00	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.20	1.10	No	U/S chocked

## Annexure - 4.8

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244 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 Vent way (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection	Condition of					Overall Condition	Height above Bed Level		Presence of Scour	Remarks
				No	Clear Span					Type	Super structure	Sub structure	Condition	Return wall	Parapet/Railing		U/s side (m)	D/s side (m)		
29	243+420	Slab	0.2	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.20	1.10	No	U/S chocked
30	243+665	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.30	1.10	No	U/S fully Chocked
31	243+993	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.50	1.20	No	U/S fully Chocked
32	244+017	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	1.00	1.60	No	
33	244+597	Pipe	0.3	1	1.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	1.60	2.00	No	
34	244+868	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	1.50	2.20	No	
35	245+143	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	1.60	2.60	No	
36	246+217	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.5	1.6	No	U/S chocked
37	246+505	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.40	1.20	No	U/S chocked
38	246+776	Slab	0.3	1	3.40	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.30	1.10	No	U/S chocked
39	246+925	Slab	0.3	1	3.40	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.40	1.20	No	U/S chocked
40	247+177	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.50	1.30	No	
41	247+373	Slab	0.3	1	2.00	2.00	7.00	2.00	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.40	1.20	No	
42	247+709	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.50	4.00	No	



## Annexure - 4.8

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244 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 Vent way (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection	Condition of					Overall Condition	Height above Bed Level		Presence of Scour	Remarks
				No	Clear Span					Type	Super structure	Sub structure	Condition	Return wall	Parapet/Railing		U/s side (m)	D/s side (m)		
43	247+859	Slab	0.4	1	1.40	4.00	7.00	4.00	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	3.50	4.00	No	
44	248+005	Slab	0.4	1	1.80	4.00	7.00	4.00	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	2.50	3.00	No	
45	248+080	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	0.50	1.10	No	
46	248+268	Slab	0.3	1	3.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	2.60	1.20	No	
47	248+330	Slab	0.3	1	1.40	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	1.20	2.00	No	
48	248+605	Slab	0.2	1	2.00	2.00	7.00	2.00	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	1.20	1.40	No	
49	248+882	Slab	0.2	1	2.00	2.00	7.00	2.00	12.00	No	Fair	Fair	Fair	Fair	Damaged	Fair	1.00	1.20	No	
50	249+460	Slab	0.3	1	1.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Fair	Fair	1.10	1.40	No	
51	249+615	Slab	0.3	1	2.00	3.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Fair	Fair	1.40	1.80	No	
52	249+813	Slab	0.3	1	2.00	2.00	7.00	2.00	12.00	No	Fair	Fair	Fair	Fair	Fair	Fair	1.20	1.60	No	
53	249+844	Slab	0.3	1	3.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.60	1.00	No	fully chocked
54	249+907	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.40	0.60	No	fully chocked
55	249+960	Slab	0.3	1	2.00	1.60	7.00	1.60	12.00	No	Fair	Fair	Fair	Fair	Fair	Fair	0.50	1.20	No	U/S chocked
56	250+025	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	yes	Good	Good	Good	Good	Good	Good	0.60	1.20	No	

## Annexure - 4.8

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244 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)	Thick ness of Slab (m)	Span Arrangement		Total Vent way (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection	Condition of					Overall Condition	Height above Bed Level		Presenc e of Scour	Remarks
				No	Clear Span					Type	Super structure	Sub structure	Condi tion	Retu rn wall	Parapet/ Railing		U/s side (m)	D/s side (m)		
57	250+293	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Fair	Fair	0.50	1.10	No	U/S chocked
58	250+614	Slab	0.3	1	2.00	3.60	7.00	3.60	12.00	No	Fair	Fair	Fair	Fair	Fair	Fair	0.40	1.20	No	
59	250+739	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	Fair	Fair	0.50	1.30	No	
60	250+810	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.40	1.10	No	
61	251+001	Slab	0.3	1	2.40	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.50	1.20	No	
62	251+096	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.30	1.10	No	
63	251+378	Slab	0.3	1	3.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.50	1.20	No	Skew
64	251+561	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	Yes	Fair	Fair	Fair	Fair	NA	Fair	0.30	1.10	No	
65	251+713	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.40	1.20	No	
66	251+880	Slab	0.3	1	2.00	3.20	7.00	3.20	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.30	1.10	No	Skew
67	252+284	Slab	0.3	1	2.00	4.00	7.00	4.00	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.20	0.80	No	
68	252+718	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.40	1.00	No	
69	252+803	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.50	1.20	No	Skew
70	253+090	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.40	1.10	No	

## Annexure - 4.8

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244 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 Vent way (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection	Condition of					Overall Condition	Height above Bed Level		Presence of Scour	Remarks
				No	Clear Span					Type	Super structure	Sub structure	Condition	Return wall	Parapet/Railing		U/s side (m)	D/s side (m)		
71	253+219	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.30	1.20	No	
72	253+260	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.40	1.10	No	
73	253+580	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.50	1.20	No	
74	253+788	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.60	1.50	No	
75	254+270	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.50	1.20	No	
76	254+629	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.30	0.70	No	U/S chocked
77	254+780	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.20	0.80	No	U/S chocked
78	254+975	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.30	0.80	No	
79	255+273	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.40	0.90	No	
80	255+745	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.50	1.10	No	U/S chocked
81	256+115	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.60	1.10	No	
82	257+020	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.50	1.20	No	
83	257+076	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.40	1.10	No	Skew
84	257+375	Slab	0.3	1	1.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.50	1.30	No	

## Annexure - 4.8

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244 in the state of Jammu & Kashmir.

## CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structure (pipe, slab, box, Arch)	Thick ness of Slab (m)	Span Arrangement		Total Vent way (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection	Condition of					Overall Condition	Height above Bed Level		Presenc e of Scour	Remarks
				No	Clear Span					Type	Super structure	Sub structure	Condi tion	Retu rn wall	Parapet/ Railing		U/s side (m)	D/s side (m)		
85	257+900	Slab	0.3	1	1.40	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.40	1.10	No	
86	258+060	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.30	1.10	No	
87	258+445	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Fair	Fair	Fair	Fair	NA	Fair	0.20	1.20	No	
88	258+900	Slab	0.3	1	2.00	1.20	7.00	1.20	10.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.50	1.10	No	
89	259+145	Slab	0.3	1	2.00	2.00	7.00	2.00	15.80	No	Poor	Poor	Poor	Poor	Damaged	Poor	1.20	1.60	No	Skew
90	259+350	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	1.10	1.10	No	
91	259+585	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	1.20	1.20	No	
92	259+840	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	1.20	1.20	No	
93	259+905	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	1.20	1.20	No	
94	259+980	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.80	0.90	No	
95	260+103	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.20	1.10	No	
96	260+284	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.20	1.00	No	
97	260+395	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.30	1.10	No	
98	260+467	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.20	1.00	No	

## Annexure - 4.8

Consultancy Services for Feasibility Study, Preparation of Detailed Project Report and providing pre-construction services for upgradation to 2 lane with paved shoulder from Km 235.00 (Vailoo Village) to Km 269.00 (Khanabal) of Khellani- Kishtwar- Chattroo- Khanabal Section of NH 244 in the state of Jammu & Kashmir.

## CULVERTS INVENTORY AND CONDITION SURVEY

Sr. No.	Location (Ground) (Km) Survey Chainage	Type of structure s (pipe, slab, box, Arch)	Thick ness of Slab (m)	Span Arrangement		Total Vent way (No. x Length) (m)	Carriage way width (m) (L/s + R/s)	Total Length (m)	Width of Culvert (m)	Details of Protection	Condition of					Overall Condition	Height above Bed Level		Presenc e of Scour	Remarks
				No	Clear Span					Type	Super structure	Sub structure	Condi tion	Retu rn wall	Parapet/ Railing		U/s side (m)	D/s side (m)		
99	260+872	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	3.50	4.50	No	
100	261+603	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.20	0.60	No	
101	261+938	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.50	1.60	No	
102	262+023	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.40	1.20	No	
103	262+153	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	1.00	1.50	No	
104	262+304	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.50	1.20	No	
105	262+590	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.40	1.10	No	
106	262+858	Slab	0.3	1	2.00	2.60	7.00	2.60	12.00	No	Poor	Poor	Poor	Poor	Damaged	Poor	0.6	1.1	No	

<b>Annexure 4.9</b>				
<b>Coarse Aggregate</b>				
<b>Sample ID</b>	<b>AIV*</b>	<b>Water absorption</b>	<b>Specific Gravity</b>	<b>FI &amp; EI</b>
Agg-01/10 mm	21	1	2.724	74.4
Agg-01/20 mm	34	0.85	2.859	28.7
Agg-02/10 mm	23	0.95	2.702	16.1
Agg-02/20 mm	21	0.8	2.758	44.1
Agg-03/10 mm	25	0.5	2.982	44.9
Agg-03/20 mm	22	0.9	2.689	46.2
Agg-03/40 mm	24	0.6	2.652	67.4
Agg-04/10 mm	25	0.4	2.62	38.9
Agg-04/20 mm	28	1.05	2.658	51.8
Agg-04/40 mm	26	0.9	2.642	48.6

Annexure 4.9											
Fine Aggregates											
Sample ID	AIV*							FM	Silt & Clay Content (%)	Water Absorption	Specific Gravity
	10	4.75	2.36	1.18	0.6	0.3	0.15			(%)	
Sand-01	100	97	89	76	62	32	9	2.3	8.5	1.25	2.64
Sand-02	99	95	87	79	56	13	3	3.4	2.5	1.02	2.7
Sand-03	100	94	88	76	51	27	9	2.5	9	1.21	2.64
Sand-04	100	99	90	73	63	34	10	2.2	10	1	2.68

Annexure 4.10 DGPS & TBM Points						
Point	Chainage	Offset From Existing CL	Easting(m)	Northing(m)	Elevation (m)	TBM GPS Details
1	00+000	11.9248	533235.115	3713945.381	2018.701	GPS12PL
2	00+088	-8.21	533239.922	3714044.6	2021.486	GPS12APL
3	00+419	-4.298	533011.337	3714272.321	2020.811	TBM108
4	00+652	10.653	532795.096	3714359.015	2015.373	TBM107
5	00+939	7.319	532562.021	3714515.19	2009.272	TBM106
6	01+176	8.441	532345.02	3714609.699	2004.926	TBM105
7	01+358	-5.502	532195.705	3714715.2	1995.103	TBM104
8	01+620	-4.77	531959.756	3714826.893	1990.074	TBM103
9	01+876	-7.2	531705.999	3714843.215	1987.577	TBM102
10	02+060	-5.389	531521.279	3714838.855	1986.045	TBM101
11	02+368	11.847	531224.718	3714773.284	1983.487	TBM100
12	02+536	-5.335	531073.188	3714716.722	1977.181	TBM99
13	02+789	8.418	530824.365	3714675.473	1984.67	TBM98
14	02+971	-4.007	530647.348	3714724.489	1982.766	TBM97
15	03+183	-5.835	530446.51	3714790.542	1981.098	GPS11APL
16	03+319	-5.662	530316.362	3714830.646	1979.208	GPS11PL
17	03+435	5.683	530200.262	3714848.867	1977.707	TBM96
18	03+635	4.916	530019.132	3714931.904	1972.106	TBM95
19	03+880	-5.542	529847.884	3715107.749	1969.122	TBM94
20	04+083	11.07	529685.804	3715230.078	1964.713	TBM93
21	04+386	4.946	529476.123	3715447.421	1947.273	TBM92
22	04+674	-5.064	529219.077	3715575.523	1948.024	TBM91
23	04+782	10.373	529111.235	3715570.998	1950.225	TBM90
24	05+007	-4.581	528890.2	3715609.634	1949.356	TBM89
25	05+247	11.644	528665.88	3715692.89	1944.032	TBM88
26	05+456	10.817	528492.355	3715811.689	1942.301	TBM87
27	05+732	-5.495	528381.189	3716067.19	1937.768	TBM86
28	05+958	-4.484	528215.521	3716220.263	1937.255	TBM85
29	06+092	-6.357	528116.21	3716312.382	1930.963	GPS10APL
30	06+335	-10.24	527898.739	3716421.38	1921.059	GPS10PL
31	06+460	-7.962	527778.268	3716458.999	1914.742	TBM84
32	06+924	8.661	527421.792	3716723.027	1897.668	TBM83
33	07+123	5.433	527261.175	3716837.491	1889.002	TBM82
34	07+439	-5.95	527037.216	3717061.466	1881.483	TBM81
35	07+753	8.127	526748.512	3717177.374	1884.863	TBM80
36	08+033	-4.763	526563.252	3717387.634	1874.779	TBM79
37	08+279	-5.627	526363.792	3717531.639	1872.38	TBM78
38	08+590	-10.412	526125.649	3717718.779	1865.278	TBM77
39	08+842	-12.889	525939.877	3717890.989	1861.562	TBM76
40	09+077	5.196	525713.592	3717962.455	1854.146	TBM75
41	09+263	-4.771	525540.22	3718030.582	1848.186	GPS9APL
42	09+427	6.139	525379.302	3718061.225	1843.795	GPS9PL
43	09+561	5.231	525282.601	3718156.395	1843.12	TBM74
44	09+882	5.747	525039.813	3718362.159	1841.949	TBM73
45	10+051	-5.601	524910.897	3718473.519	1837.236	TBM72
46	10+348	5.959	524675.335	3718651.973	1826.617	TBM71
47	10+567	-8.839	524539.802	3718827.994	1819.308	TBM70
48	11+066	-5.738	524169.988	3719053.161	1810.627	TBM69
49	11+266	-6.297	523976.271	3719092.914	1810.767	TBM68
50	11+407	-9.082	523841.272	3719139.934	1806.611	TBM67
51	11+669	11.553	523585.307	3719069.198	1807.228	TBM66
52	11+824	-7.215	523443.533	3719137.103	1806.44	TBM65
53	12+067	6.072	523209.447	3719200.171	1802.448	TBM64
54	12+234	5.252	523052.868	3719259.519	1800.985	GPS8APL
55	12+357	-6.103	522972.326	3719354.325	1797.841	GPS8PL
56	12+686	-8.4437	522673.831	3719496.533	1788.343	TBM63



Annexure 4.10 DGPS & TBM Points						
Point	Chainage	Offset From Existing CL	Easting(m)	Northing(m)	Elevation (m)	TBM GPS Details
57	12+895	-7.537	522467.947	3719456.262	1787.528	TBM62
58	13+085	9.793	522308.66	3719349.696	1785.95	TBM61
59	13+323	-6.93	522081.606	3719324.904	1784.205	TBM60
60	13+571	-7.522	521895.601	3719476.135	1779.779	TBM59
61	13+796	4.197	521700.014	3719588.552	1775.216	TBM58
62	14+056	5.12	521498.172	3719753.125	1770.245	TBM57
63	14+292	8.139	521384.36	3719959.145	1765.507	TBM56
64	14+529	13.207	521340.078	3720196.647	1758.328	TBM55
65	14+705	-12.385	521483.467	3720301.25	1757.884	TBM54
66	14+894	-12.498	521604.212	3720450.764	1758.333	TBM53
67	15+107	8.479	521586.191	3720668.549	1757.547	TBM52
68	15+293	-6.896	521651.661	3720844.567	1758.704	TBM51
69	15+490	-5.278	521672.854	3721040.201	1758.864	GPS7APL
70	15+666	-14.113	521689.233	3721215.839	1754.711	GPS7PL
71	15+848	-21.662	521718.312	3721390.192	1753.777	TBM50
72	16+133	5.522	521781.447	3721669.024	1756.931	TBM49
73	16+426	-4.468	521908.101	3721930.866	1758.925	TBM48
74	16+680	-6.729	521956.11	3722176.584	1759.147	TBM47
75	16+852	-11.054	521993.608	3722345.575	1756.42	TBM46
76	17+104	5.349	521993.954	3722598.755	1755.401	TBM45
77	17+318	-10.22	522011.21	3722813.499	1749.392	TBM44
78	17+614	6.029	521933.022	3723098.92	1735.682	TBM43
79	17+922	-6.202	521883.646	3723399.38	1733.388	TBM42
80	18+196	-7.089	521839.367	3723670.428	1730.2	TBM41
81	18+468	-5.52	521716.813	3723915.526	1725.102	GPS6APL
82	18+609	-5.942	521665.863	3724045.111	1720.727	GPS6PL
83	18+891	16.949	521564.58	3724310.742	1716.952	TBM40
84	19+169	3.975	521508.784	3724580.55	1713.63	TBM39
85	19+352	15.256	521404.047	3724729.288	1711.255	TBM38
86	19+485	0.305	521340.345	3724846.558	1706.872	TBM37
87	19+747	13.385	521175.828	3725047.562	1700.281	TBM36
88	19+863	11.257	521138.213	3725162.74	1701.496	TBM35
89	20+028	-4.622	521075.2921	3725310.315	1701.947	TBM34
90	20+267	-4.511	520916.8346	3725489.553	1698.08	TBM33
91	20+542	-4.597	520717.8696	3725678.457	1691.391	TBM32
92	20+701	-4.814	520614.884	3725798.833	1686.951	TBM31
93	20+967	-3.832	520449.543	3726006.933	1683.941	TBM30
94	21+145	-4.027	520367.712	3726150.874	1680.423	TBM29
95	21+363	-6.259	520487.639	3726333.142	1679.578	GPS5APL
96	21+481	-7.768	520484.495	3726453.034	1675.785	GPS5PL
97	21+648	-6.477	520423.059	3726607.728	1670.691	TBM28
98	22+343	-4.632	520198.907	3727225.25	1659.216	TBM27
99	22+482	-6.658	520131.109	3727343.399	1658.575	TBM26
100	22+697	5.772	519994.1	3727511.158	1657.574	TBM25
101	22+908	-7.743	519887.802	3727693.204	1654.327	TBM24
102	23+168	7.469	519759.889	3727918.093	1650.813	TBM23
103	23+475	-4	519621.695	3728192.027	1646.812	TBM22
104	23+697	5.909	519475.829	3728360.559	1644.342	TBM21
105	23+936	5.402	519341.839	3728558.276	1642.825	TBM20
106	24+135	-4.313	519309.387	3728754.218	1641.204	TBM19
107	24+290	6.083	519220.21	3728861.102	1639.35	TBM18
108	24+426	-5.033	519152.353	3728977.267	1637.01	TBM17
109	24+574	6.728	519063.217	3729094.365	1635.249	TBM16
110	24+725	-6.862	518996.183	3729231.32	1632.653	TBM15
111	24+866	-6.167	518878.173	3729310.324	1633.185	TBM14
112	24+955	-5.165	518854.313	3729389.241	1634.483	GPS4APL

Annexure 4.10 DGPS & TBM Points						
Point	Chainage	Offset From Existing CL	Easting(m)	Northing(m)	Elevation (m)	TBM GPS Details
113	25+105	-5.656	518761.493	3729510.317	1634.702	GPS4PL
114	25+206	-4.395	518664.117	3729540.338	1633.115	TBM13
115	25+326	7.534	518549.358	3729512.832	1630.544	TBM12
116	25+482	9.585	518392.717	3729516.94	1630.002	TBM11
117	25+695	5.259	518210.759	3729628.939	1629.044	TBM10
118	25+990	-4.748	517962.34	3729787.986	1628.919	TBM9
119	26+212	7.095	517758.684	3729872.462	1626.457	TBM8
120	26+444	-5.358	517593.039	3730034.837	1624.21	TBM7
121	26+604	-4.345	517462.178	3730128.418	1621.103	TBM6
122	26+782	10.463	517285.14	3730137.31	1619.559	TBM5
123	27+015	5.937	517066.185	3730221.089	1617.822	TBM4
124	27+296	5.001	516840.806	3730385.067	1615.258	TBM3
125	27+530	7.416	516666.19	3730534.875	1612.968	TBM2
126	27+766	-8.251	516464.246	3730656.975	1611.417	TBM1
127	28+012	4.377	516231.862	3730738.423	1614.114	GPS3PL
128	28+078	7.372	516175.714	3730776.519	1613.855	GPS3APL

# Traffic Demand Forecast

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Annexure 5 : Projected Traffic at Barakpura																			
Pcu Factor	0.5	1	1	3	3	1.5	3	4.5	4.5	4.5	0.5	2	4						
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	3-Axle	Multi Axle	Agricultural Tractor With Trailor	Bicycle	Cycle Rickshaw	Animal Drawn Vehicles						
2019	2096	430	4378	13	125	328	325	10	4	41	81	11	2	7750	94	7844	8055	7985	71
2020	2306	473	4816	14	131	344	341	11	4	43	85	12	2	8483	99	8581	8751	8677	74
2021	2513	497	5249	14	138	362	358	11	4	45	89	12	2	9192	104	9295	9427	9349	78
2022	2739	521	5722	15	145	380	376	12	5	47	94	13	2	9962	109	10071	10158	10077	82
2023	2986	548	6237	16	152	399	395	12	5	50	98	13	2	10798	114	10913	10950	10864	86
2024	3255	575	6798	17	160	419	415	13	5	52	103	14	3	11707	120	11827	11807	11717	90
2025	3547	604	7410	17	168	440	436	13	5	55	109	15	3	12695	126	12821	12734	12640	94
2026	3831	634	8002	18	176	462	457	14	6	58	114	15	3	13658	132	13790	13646	13547	99
2027	4138	666	8643	19	185	485	480	15	6	61	120	16	3	14696	139	14835	14626	14522	104
2028	4469	699	9334	20	194	509	504	16	6	64	126	17	3	15814	146	15960	15679	15569	109
2029	4826	734	10081	21	204	534	529	16	7	67	132	18	3	17019	153	17172	16810	16695	115
2030	5212	770	10887	22	214	561	556	17	7	70	139	19	3	18317	161	18478	18025	17904	121
2031	5577	809	11649	23	224	589	584	18	7	74	145	20	4	19555	169	19724	19196	19069	127
2032	5968	849	12465	25	236	618	613	19	8	77	153	21	4	20877	177	21054	20445	20312	133
2033	6385	892	13337	26	247	649	643	20	8	81	160	22	4	22290	186	22476	21776	21636	140
2034	6832	937	14271	27	260	682	676	21	8	85	168	23	4	23799	195	23994	23195	23049	147
2035	7311	983	15270	28	273	716	709	22	9	89	177	24	4	25411	205	25616	24709	24555	154
2036	7749	1032	16186	30	287	752	745	23	9	94	186	25	5	26907	215	27122	26133	25972	162
2037	8214	1084	17157	31	301	789	782	24	10	99	195	26	5	28492	226	28718	27641	27471	170
2038	8707	1138	18187	33	316	829	821	25	10	104	205	28	5	30170	238	30408	29235	29057	178
2039	9229	1195	19278	34	332	870	862	27	11	109	215	29	5	31947	249	32197	30923	30736	187
2040	9783	1255	20435	36	348	914	905	28	11	114	226	31	6	33830	262	34092	32708	32511	196
2041	10370	1318	21661	38	366	969	960	29	12	121	237	32	6	35860	278	36137	34670	34437	206
2042	10992	1384	22960	41	384	1027	1017	31	12	128	249	34	6	38011	294	38305	36750	36477	217
2043	11652	1453	24338	43	403	1088	1078	32	13	136	261	35	6	40292	312	40604	38955	38639	227
2044	12351	1525	25798	46	423	1154	1143	34	14	144	274	37	7	42709	331	43040	41293	40928	239
2045	13092	1602	27346	48	444	1223	1212	36	14	153	288	39	7	45272	350	45622	43770	43354	251

Annexure 5 : Projected Traffic at Barakpora																			
Pcu Factor	0.5	1	1	3	3	1.5	3	4.5	4.5	4.5	0.5	2	4						
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	3-Axle	Multi Axle	Agricultural Tractor With Trailor	Bicycle	Cycle Rickshaw	Animal Drawn Vehicles						
2046	13878	1682	28987	51	467	1296	1284	37	15	162	302	41	7	47988	371	48360	46396	45924	263
2047	14710	1766	30726	54	490	1374	1361	39	16	172	318	43	8	50868	394	51261	49180	48646	276
2048	15593	1854	32570	58	515	1456	1443	41	16	182	333	45	8	53920	417	54337	52131	51530	290
2049	16529	1947	34524	61	540	1544	1530	43	17	193	350	48	9	57155	442	57597	55259	54585	305

# Improvement Proposal

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Annexure 8.1(a)									
HORIZONTAL CURVE DETAILS									
HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (m)	Design Speed (Kmph)	Deviation Angle	Lc-length of circular curve (m)	Superelevation (%)
1	148+589	533228.605	3713956.395	0	0	PROJECT START			
2	148+674	533241.338	3714043.438	150	45	50	37.90	54.228	-7.00
3	148+804	533176.275	3714158.065	150	45	50	17.93	1.942	-7.00
4	148+937	533077.115	3714248.896	250	50	65	25.95	63.221	-7.00
5	149+164	532857.147	3714314.226	250	50	65	25.06	59.330	-7.00
6	149+449	532641.962	3714505.262	400	30	65	27.56	162.398	-4.70
7	149+661	532433.922	3714557.282	250	50	65	19.95	37.065	-7.00
8	149+877	532254.765	3714678.091	800	30	80	6.20	56.507	-3.60
9	149+990	532154.776	3714730.803	1200	0	80	1.33	27.771	-2.50
10	150+092	532065.545	3714780.515	300	40	65	8.25	3.197	-6.30
11	150+255	531911.882	3714839.110	200	60	65	27.75	36.869	-7.00
12	150+403	531763.438	3714821.205	200	60	65	19.19	6.990	-7.00
13	150+547	531621.833	3714852.114	300	40	65	20.48	67.229	-6.30
14	150+732	531437.906	3714825.722	500	45	80	10.00	42.284	-5.70
15	150+872	531304.273	3714781.869	150	30	40	17.52	15.858	-4.70
16	150+958	531218.228	3714780.890	100	20	40	25.65	24.766	-7.00
17	151+047	531137.905	3714741.191	200	35	50	12.25	7.753	-5.60
18	151+367	530824.048	3714662.631	390	115	100	32.36	105.285	-7.00
19	151+674	530529.662	3714760.047	2000	0	100	1.54	53.859	-2.50
20	151+902	530311.000	3714825.927	2000	0	100	2.75	95.987	-2.50
21	152+163	530053.560	3714890.196	500	95	100	31.83	182.748	-7.00
22	152+429	529866.158	3715083.207	2000	0	100	3.69	128.842	-2.50
23	152+611	529731.009	3715205.553	700	20	65	4.22	31.543	-2.70
24	152+705	529656.611	3715263.544	1200	0	80	2.91	61.030	-2.50
25	152+817	529572.151	3715336.573	360	60	80	10.63	6.788	-7.00
26	152+980	529469.525	3715465.493	170	40	50	29.34	47.068	-6.50
27	153+080	529376.184	3715503.458	1200	0	80	2.70	56.606	-2.50
28	153+271	529202.605	3715583.797	150	45	50	24.94	20.295	-7.00
29	153+417	529055.973	3715583.530	800	30	80	5.37	44.988	-3.60
30	153+593	528879.190	3715599.824	500	45	80	22.39	150.372	-5.70
31	153+769	528721.569	3715682.417	1200	0	80	4.35	91.104	-2.50
32	153+909	528592.624	3715737.961	300	75	80	18.76	23.236	-7.00
33	154+085	528460.528	3715857.177	200	35	50	29.66	68.538	-5.60
34	154+207	528421.888	3715974.202	200	25	40	9.95	9.739	-3.60
35	154+259	528397.199	3716020.201	500	0	50	4.57	39.850	-2.50
36	154+344	528363.042	3716098.169	170	40	50	28.53	44.662	-6.50
37	154+523	528220.699	3716208.614	500	0	50	5.65	49.292	-2.50
38	154+705	528087.433	3716334.886	650	35	80	21.18	205.236	-4.40
39	154+891	527913.689	3716406.074	1200	0	80	3.12	65.317	-2.50
40	155+045	527768.579	3716456.498	500	25	65	9.89	61.336	-3.80
41	155+163	527650.160	3716475.823	100	45	40	34.30	14.856	-7.00
42	155+303	527548.433	3716572.572	500	45	80	10.33	45.149	-5.70
43	155+493	527435.433	3716727.497	200	35	50	25.35	53.487	-5.60
44	155+658	527289.922	3716806.648	300	40	65	20.45	67.082	-6.30
45	155+767	527217.768	3716889.637	800	0	65	4.61	64.413	-2.50
46	155+908	527117.313	3716987.947	800	0	65	4.04	56.425	-2.50
47	156+029	527024.559	3717066.722	200	35	50	24.35	49.987	-5.60
48	156+249	526810.761	3717128.003	150	45	50	26.79	25.144	-7.00
49	156+411	526691.649	3717238.251	800	30	80	6.87	65.940	-3.60
50	156+601	526567.956	3717383.888	400	30	65	17.69	93.484	-4.70
51	156+724	526463.430	3717449.128	500	25	65	6.53	32.026	-3.80
52	156+882	526339.847	3717547.448	700	30	70	12.75	125.798	-3.10

Annexure 8.1(a)									
HORIZONTAL CURVE DETAILS									
HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (m)	Design Speed (Kmph)	Deviation Angle	Lc-length of circular curve (m)	e : Super elevation (%)
53	157+054	526183.398	3717622.919	150	45	50	26.44	24.215	-7.00
54	157+258	526058.024	3717784.496	600	35	80	14.67	118.640	-4.70
55	157+433	525918.566	3717891.580	300	40	65	14.78	37.373	-6.30
56	157+585	525777.818	3717950.577	500	45	80	7.76	22.726	-5.70
57	157+763	525605.859	3717996.593	600	35	80	8.71	56.258	-4.70
58	157+890	525488.896	3718047.926	200	35	50	14.53	15.713	-5.60
59	158+020	525358.441	3718068.979	100	70	50	42.70	4.525	-7.00
60	158+161	525269.797	3718181.897	200	35	50	16.11	21.234	-5.60
61	158+301	525155.387	3718264.281	500	45	80	7.97	24.541	-5.70
62	158+417	525071.839	3718344.194	500	45	80	6.25	9.564	-5.70
63	158+601	524926.051	3718455.953	1200	0	80	2.72	56.933	-2.50
64	158+694	524849.659	3718508.958	500	45	80	6.66	13.087	-5.70
65	158+838	524741.121	3718604.685	1200	0	80	2.79	58.511	-2.50
66	158+950	524653.211	3718674.906	300	40	65	19.57	62.454	-6.30
67	159+085	524581.545	3718790.423	150	45	50	26.95	25.550	-7.00
68	159+260	524428.343	3718883.340	250	25	50	37.18	137.222	-4.40
69	159+422	524367.510	3719037.107	70	30	40	32.73	9.990	-7.00
70	159+513	524288.691	3719093.708	70	30	40	64.59	48.911	-7.00
71	159+617	524191.718	3719040.161	100	20	40	42.37	53.957	-7.00
72	159+734	524076.355	3719067.788	1200	0	80	3.22	67.521	-2.50
73	159+836	523975.135	3719086.080	200	35	50	13.83	13.289	-5.60
74	159+949	523871.621	3719132.335	165	45	50	26.75	32.047	-6.70
75	160+087	523732.060	3719125.809	250	50	65	16.86	23.562	-7.00
76	160+246	523579.658	3719071.733	100	70	50	42.63	4.403	-7.00
77	160+400	523435.990	3719132.993	1200	0	80	4.03	84.364	-2.50
78	160+582	523263.879	3719192.476	500	45	80	6.26	9.596	-5.70
79	160+760	523088.536	3719232.343	300	75	80	30.64	85.445	-7.00
80	160+952	522947.255	3719366.189	400	55	80	10.27	16.717	-7.00
81	161+115	522810.822	3719455.398	300	40	65	15.42	40.713	-6.30
82	161+242	522688.653	3719494.538	100	45	40	31.43	9.849	-7.00
83	161+368	522564.941	3719464.466	300	25	50	7.20	12.690	-3.70
84	161+473	522459.226	3719452.489	120	45	40	35.58	29.526	-5.90
85	161+588	522371.765	3719373.608	150	30	40	29.77	47.946	-4.70
86	161+688	522273.061	3719352.133	250	35	50	9.76	7.589	-4.40
87	161+837	522131.705	3719294.921	150	45	50	45.83	74.986	-7.00
88	162+007	521972.101	3719365.302	150	45	50	30.79	35.616	-7.00
89	162+122	521904.588	3719460.265	150	45	50	21.00	9.986	-7.00
90	162+336	521725.648	3719579.090	500	25	65	3.64	6.726	-3.80
91	162+453	521623.904	3719637.715	500	25	65	13.97	96.910	-3.80
92	162+696	521447.697	3719807.404	400	55	80	26.20	127.893	-7.00
93	163+083	521310.246	3720187.482	150	45	50	72.73	145.418	-7.00
94	163+435	521613.119	3720416.940	230	55	65	58.39	179.382	-7.00
95	163+666	521589.659	3720659.017	200	35	50	23.29	46.307	-5.60
96	163+855	521647.431	3720839.413	500	45	80	12.03	59.952	-5.70
97	164+096	521671.549	3721079.717	1000	30	80	4.37	46.321	-2.80
98	164+344	521677.436	3721328.012	300	75	80	14.7983	2.483	-7.00
99	164+446	521705.859	3721426.122	1200	0	80	1.7604	36.870	-2.50
100	164+637	521753.500	3721611.725	300	75	80	16.8355	13.150	-7.00
101	164+862	521870.449	3721804.590	500	45	80	16.4709	98.735	-5.70
102	165+024	521911.764	3721961.400	500	25	65	4.0573	10.407	-3.80
103	165+102	521937.045	3722035.586	200	35	50	16.17	21.444	-5.60
104	165+217	521942.401	3722151.387	500	0	50	11.3631	99.162	-2.50



Annexure 8.1(a)									
HORIZONTAL CURVE DETAILS									
HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (m)	Design Speed (Kmph)	Deviation Angle	Lc-length of circular curve (m)	e : Super elevation (%)
105	165+307	521964.107	3722238.375	800	0	65	4.5899	64.087	-2.50
106	165+462	521989.466	3722391.208	700	35	80	6.5366	44.860	-4.10
107	165+659	521999.416	3722588.672	1200	0	80	3.0032	62.899	-2.50
108	165+739	521999.252	3722667.942	300	25	50	7.0526	11.927	-3.70
109	165+833	522010.722	3722762.264	300	25	50	17.1002	64.536	-3.70
110	166+082	521966.727	3723007.607	1200	0	80	6.5933	138.090	-2.50
111	166+233	521923.045	3723152.660	500	25	65	7.0685	36.685	-3.80
112	166+348	521876.524	3723257.997	200	35	50	23.4933	47.007	-5.60
113	166+543	521875.377	3723454.195	500	45	80	11.4204	54.661	-5.70
114	166+816	521819.746	3723721.530	400	55	80	17.5678	67.647	-7.00
115	167+083	521688.326	3723955.497	500	45	80	10.6818	48.217	-5.70
116	167+341	521605.941	3724199.717	1000	50	100	6.4229	62.101	-4.40
117	167+740	521521.065	3724591.676	480	110	100	23.1059	83.571	-7.00
118	168+082	521322.626	3724871.691	2000	0	100	2.0699	72.253	-2.50
119	168+235	521238.453	3725000.055	300	25	50	9.6632	25.596	-3.70
120	168+342	521164.660	3725079.417	150	45	50	32.1068	39.055	-7.00
121	168+482	521138.158	3725218.206	150	45	50	25.6549	22.164	-7.00
122	168+655	521034.973	3725357.828	800	60	100	7.0672	38.676	-5.60
123	168+797	520936.957	3725460.997	2000	0	100	1.2711	44.369	-2.50
124	168+949	520834.642	3725573.591	700	70	100	7.8675	26.119	-6.30
125	169+134	520691.976	3725692.755	600	35	80	12.069	91.386	-4.70
126	169+275	520605.066	3725803.755	2000	0	100	2.462	85.938	-2.50
127	169+437	520510.967	3725935.201	500	45	80	7.0225	16.283	-5.70
128	169+549	520434.731	3726018.047	2000	0	100	1.2653	44.166	-2.50
129	169+692	520332.164	3726134.569	60	75	40	83.5594	12.503	-7.00
130	169+828	520432.207	3726244.886	200	35	50	11.4519	4.975	-5.60
131	169+958	520500.859	3726360.269	150	45	50	45.607	74.399	-7.00
132	170+104	520462.668	3726504.257	300	40	65	9.4972	9.727	-6.30
133	170+231	520410.161	3726620.265	300	40	65	10.9905	17.546	-6.30
134	170+386	520374.087	3726772.138	300	25	50	16.247	60.069	-3.70
135	170+484	520379.030	3726870.203	200	25	40	14.0715	24.119	-3.60
136	170+578	520360.785	3726962.468	350	0	40	17.4334	106.495	-2.50
137	170+666	520370.607	3727052.191	30	0	30	63.6686	33.337	-7.00
138	170+718	520324.806	3727081.458	100	20	40	21.7547	17.969	-7.00
139	170+847	520249.171	3727186.845	150	30	40	18.0214	17.180	-4.70
140	170+941	520172.834	3727242.945	100	45	40	29.3985	6.310	-7.00
141	171+048	520128.364	3727341.482	200	25	40	16.6496	33.118	-3.60
142	171+144	520064.874	3727414.677	500	0	50	9.3784	81.842	-2.50
143	171+206	520032.582	3727467.248	500	0	50	4.6472	40.555	-2.50
144	171+450	519887.953	3727664.800	500	45	80	14.652	82.863	-5.70
145	171+593	519835.248	3727798.218	500	45	80	7.3475	19.119	-5.70
146	171+727	519770.454	3727915.575	1200	0	80	2.9506	61.796	-2.50
147	171+853	519704.232	3728022.157	1200	0	80	4.6026	96.396	-2.50
148	172+049	519614.314	3728196.732	500	45	80	10.1088	43.216	-5.70
149	172+187	519530.432	3728306.604	1200	0	80	2.6016	54.487	-2.50
150	172+454	519358.006	3728512.372	360	60	80	27.1245	110.428	-7.00
151	172+643	519315.682	3728698.104	1200	0	80	3.5815	75.010	-2.50
152	172+763	519295.913	3728819.412	100	45	40	46.1909	35.618	-7.00
153	172+907	519174.028	3728903.348	150	30	40	34.8351	61.198	-4.70
154	173+035	519128.097	3729025.471	150	30	40	18.7855	19.180	-4.70
155	173+196	519025.712	3729150.131	150	30	40	18.8456	19.338	-4.70
156	173+300	518988.317	3729249.875	100	45	40	46.7691	36.627	-7.00

Annexure 8.1(a)									
HORIZONTAL CURVE DETAILS									
HIP No.	HIP Chainage (Km)	Easting-X	Northing-Y	Radius (m)	Transition Length (m)	Design Speed (Kmph)	Deviation Angle	Lc-length of circular curve (m)	e : Super elevation (%)
157	173+428	518863.604	3729301.991	80	25	40	59.2163	57.682	-7.00
158	173+533	518848.043	3729411.265	100	20	40	34.2794	39.829	-7.00
159	173+695	518736.759	3729533.207	100	45	40	44.5902	32.825	-7.00
160	173+824	518604.434	3729540.203	150	45	50	19.7647	6.744	-7.00
161	173+937	518495.539	3729507.453	150	45	50	27.4365	26.829	-7.00
162	174+072	518361.307	3729532.812	150	45	50	25.9932	23.050	-7.00
163	174+205	518254.212	3729612.613	400	30	65	10.3331	42.138	-4.70
164	174+302	518166.747	3729655.951	200	35	50	12.9519	10.211	-5.60
165	174+445	518055.812	3729746.784	400	30	65	17.4281	91.671	-4.70
166	174+723	517796.187	3729851.058	1000	0	65	16.4433	286.989	-2.50
167	174+929	517634.276	3729979.043	300	40	65	11.0676	17.950	-6.30
168	175+056	517550.862	3730076.340	300	40	65	21.4082	72.093	-6.30
169	175+193	517428.371	3730141.428	100	45	40	29.1551	5.885	-7.00
170	175+310	517310.022	3730139.010	250	30	50	20.6007	59.888	-4.40
171	175+421	517204.848	3730176.110	500	25	65	4.7025	16.037	-3.80
172	175+536	517093.669	3730205.335	200	35	50	23.4913	47.000	-5.60
173	175+657	516997.886	3730280.761	400	30	65	12.9174	60.180	-4.70
174	175+760	516903.845	3730325.217	100	20	40	24.4637	22.697	-7.00
175	175+832	516857.184	3730380.365	150	30	40	17.0716	14.693	-4.70
176	175+932	516772.145	3730434.947	150	30	40	20.9799	24.925	-4.70
177	176+042	516706.504	3730524.220	150	30	40	26.6373	39.736	-4.70
178	176+410	516378.000	3730691.864	200	35	50	12.7397	9.470	-5.60
179	176+508	516283.301	3730715.997	200	35	50	13.4849	12.071	-5.60
180	176+532	516211.734	3730755.043	0	0	PROJECT END			

Annexure 8.1(b)							
Vertical Alignment Details							
Sl. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
1	148.589	1545.9	3.43	PROJECT START			
2	148.682	2022.1	-2.8	-6.19	Hog	95	15.3
3	148.822	2018.3	3.3	6.07	Sag	65	10.7
4	148.934	2022.0	-1.2	-4.54	Hog	70	15.4
5	149.124	2019.7	-3.7	-2.49	Hog	100	40.1
6	149.283	2013.7	-0.3	3.48	Sag	100	28.8
7	149.406	2013.4	-3.5	-3.22	Hog	60	18.6
8	149.483	2010.7	-2.5	0.98	Sag	60	61.0
9	149.671	2006.1	-1.2	1.33	Sag	60	45.0
10	149.754	2005.1	-4.8	-3.66	Hog	65	17.8
11	149.983	1994.1	-1.1	3.69	Sag	100	27.1
12	150.069	1993.1	-1.7	-0.55	Hog	60	109.5
13	150.175	1991.4	-3.4	-1.68	Hog	60	35.6
14	150.295	1987.3	1.0	4.33	Sag	80	18.5
15	150.415	1988.5	-0.9	-1.90	Hog	150	79.1
16	150.612	1986.7	-1.5	-0.61	Hog	60	99.0
17	150.713	1985.1	0.5	2.04	Sag	85	41.6
18	151.292	1988.1	-2.5	-3.02	Hog	185	61.3
19	151.487	1983.2	-0.2	2.28	Sag	60	26.3
20	151.605	1983.0	-1.3	-1.07	Hog	60	56.3
21	151.693	1981.9	-0.7	0.56	Sag	60	108.2
22	151.851	1980.7	-2.7	-1.98	Hog	60	30.3
23	151.918	1978.9	-1.0	1.69	Sag	60	35.6
24	152.018	1977.9	-3.2	-2.21	Hog	80	36.2
25	152.116	1974.7	-2.3	0.90	Sag	60	67.0
26	152.274	1971.0	-0.5	1.82	Sag	100	55.0
27	152.511	1969.8	-5.2	-4.66	Hog	150	32.2
28	152.968	1946.0	-0.1	5.12	Sag	200	39.0
29	153.158	1945.9	2.8	2.87	Sag	100	34.9
30	153.281	1949.4	0.8	-2.03	Hog	60	29.6
31	153.433	1950.5	-0.5	-1.26	Hog	60	47.6
32	153.668	1949.4	-3.1	-2.67	Hog	60	22.5
33	153.879	1942.8	0.4	3.50	Sag	100	28.6
34	153.993	1943.2	-1.3	-1.63	Hog	60	36.7
35	154.136	1941.4	-2.7	-1.37	Hog	60	43.7

Annexure 8.1(b)							
Vertical Alignment Details							
Sl. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
36	154.206	1939.5	-1.6	1.07	Sag	60	56.0
37	154.370	1936.9	0.8	2.37	Sag	100	42.2
38	154.524	1938.1	-4.9	-5.74	Hog	100	17.4
39	154.662	1931.3	-3.6	1.31	Sag	60	46.0
40	154.730	1928.8	-4.9	-1.25	Hog	60	48.2
41	154.806	1925.1	-3.6	1.30	Sag	60	46.1
42	154.921	1920.9	-4.7	-1.14	Hog	60	52.8
43	154.985	1917.9	-4.0	0.68	Sag	60	88.1
44	155.061	1914.9	-5.7	-1.63	Hog	60	36.8
45	155.166	1908.9	-1.0	4.66	Sag	60	12.9
46	155.243	1908.2	-4.4	-3.44	Hog	60	17.5
47	155.308	1905.3	-2.3	2.17	Sag	60	27.7
48	155.394	1903.3	-5.3	-3.02	Hog	60	19.9
49	155.687	1887.8	-1.2	4.11	Sag	250	60.9
50	155.933	1884.9	-3.4	-2.19	Hog	100	45.8
51	156.051	1880.9	-1.0	2.36	Sag	60	25.4
52	156.146	1880.0	5.2	6.16	Sag	90	14.6
53	156.277	1886.7	-4.3	-9.45	Hog	145	15.4
54	156.453	1879.2	-2.2	2.12	Sag	60	28.4
55	156.531	1877.5	-3.1	-0.94	Hog	60	63.6
56	156.644	1873.9	0.1	3.19	Sag	120	37.7
57	156.829	1874.0	-4.9	-5.01	Hog	100	19.9
58	156.922	1869.4	-1.5	3.43	Sag	60	17.5
59	156.991	1868.4	-2.6	-1.13	Hog	60	53.3
60	157.059	1866.6	-0.9	1.69	Sag	60	35.5
61	157.133	1865.9	-3.4	-2.46	Hog	60	24.4
62	157.212	1863.2	-0.4	2.97	Sag	60	20.2
63	157.400	1862.4	-4.1	-3.62	Hog	90	24.9
64	157.489	1858.8	-2.6	1.48	Sag	60	40.5
65	157.625	1855.3	-3.6	-1.00	Hog	60	60.3
66	157.703	1852.5	-2.1	1.47	Sag	60	40.8
67	157.769	1851.1	-4.4	-2.35	Hog	60	25.5
68	157.854	1847.4	-1.9	2.55	Sag	60	23.5
69	157.939	1845.8	-2.6	-0.68	Hog	60	88.0
70	158.076	1842.3	1.8	4.40	Sag	75	17.1

Annexure 8.1(b)							
Vertical Alignment Details							
Sl. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
71	158.178	1844.1	-2.3	-4.16	Hog	65	15.6
72	158.263	1842.1	-0.2	2.13	Sag	60	28.2
73	158.351	1841.9	0.9	1.08	Sag	60	55.5
74	158.423	1842.6	-1.6	-2.42	Hog	60	24.8
75	158.564	1840.4	-5.7	-4.18	Hog	65	15.6
76	158.736	1830.5	-1.9	3.85	Sag	60	15.6
77	158.915	1827.2	-3.5	-1.66	Hog	60	36.3
78	158.989	1824.5	-1.7	1.81	Sag	60	33.2
79	159.065	1823.2	-4.5	-2.80	Hog	60	21.4
80	159.194	1817.4	-0.9	3.62	Sag	150	41.5
81	159.332	1816.1	-1.9	-1.01	Hog	60	59.6
82	159.399	1814.8	-1.6	0.32	Sag	60	186.4
83	159.523	1812.9	-1.9	-0.32	Hog	63	199.8
84	159.689	1809.7	1.1	3.00	Sag	80	26.8
85	159.787	1810.8	-1.1	-2.15	Hog	60	27.9
86	159.880	1809.8	-3.0	-1.95	Hog	60	30.7
87	160.027	1805.3	2.8	5.80	Sag	90	15.5
88	160.127	1808.1	-1.6	-4.42	Hog	70	15.8
89	160.282	1805.6	1.7	3.32	Sag	60	18.1
90	160.386	1807.3	-1.6	-3.26	Hog	100	30.7
91	160.559	1804.6	-2.9	-1.30	Hog	60	46.1
92	160.631	1802.5	-0.5	2.42	Sag	60	24.8
93	160.759	1801.9	-1.6	-1.12	Hog	60	53.5
94	160.885	1799.9	-4.3	-2.67	Hog	60	22.5
95	160.985	1795.7	-2.3	1.98	Sag	60	30.2
96	161.081	1793.5	-5.0	-2.73	Hog	60	22.0
97	161.188	1788.1	1.3	6.26	Sag	90	14.4
98	161.309	1789.7	-2.4	-3.65	Hog	70	19.2
99	161.406	1787.4	0.6	3.02	Sag	60	19.9
100	161.480	1787.8	-2.7	-3.33	Hog	60	18.0
101	161.552	1785.9	-0.9	1.75	Sag	60	34.3
102	161.628	1785.2	2.4	3.37	Sag	60	17.8
103	161.697	1786.9	-0.8	-3.21	Hog	60	18.7
104	161.844	1785.7	-2.2	-1.39	Hog	60	43.3
105	161.931	1783.8	-0.9	1.25	Sag	60	48.1

Annexure 8.1(b)							
Vertical Alignment Details							
Sl. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
106	162.009	1783.1	-2.4	-1.52	Hog	60	39.5
107	162.099	1780.9	-1.9	0.58	Sag	60	103.7
108	162.241	1778.2	-2.4	-0.57	Hog	60	104.9
109	162.385	1774.7	-0.7	1.75	Sag	60	34.4
110	162.463	1774.2	-2.1	-1.41	Hog	60	42.6
111	162.603	1771.2	-1.4	0.68	Sag	60	88.5
112	162.801	1768.4	-5.0	-3.55	Hog	100	28.2
113	162.896	1763.7	-6.0	-0.97	Hog	60	61.7
114	163.004	1757.2	1.7	7.61	Sag	80	10.5
115	163.104	1758.9	-1.1	-2.77	Hog	60	21.7
116	163.211	1757.7	1.6	2.74	Sag	60	21.9
117	163.291	1759.0	-0.7	-2.29	Hog	60	26.2
118	163.391	1758.3	0.9	1.56	Sag	60	38.4
119	163.487	1759.2	-1.9	-2.78	Hog	60	21.6
120	163.570	1757.7	0.4	2.33	Sag	60	25.8
121	163.684	1758.2	-2.0	-2.44	Hog	60	24.6
122	163.762	1756.6	1.6	3.62	Sag	60	16.6
123	163.825	1757.6	3.3	1.67	Sag	60	35.9
124	163.897	1760.0	-0.3	-3.58	Hog	80	22.4
125	164.035	1759.6	-2.5	-2.18	Hog	60	27.5
126	164.104	1757.9	-1.4	1.08	Sag	60	55.7
127	164.258	1755.8	0.3	1.67	Sag	100	60.0
128	164.442	1755.9	-0.5	-0.77	Sag	60	78.0
129	164.524	1756.2	0.3	0.77	Hog	60	66.9
130	164.606	1755.7	-0.6	-0.90	Sag	70	31.7
131	164.723	1757.5	1.6	2.21	Hog	60	24.4
132	164.814	1756.7	-0.9	-2.46	Sag	60	44.7
133	164.904	1757.2	0.5	1.34	Sag	60	20.0
134	164.986	1760.1	3.5	3.00	Hog	90	16.1
135	165.069	1758.3	-2.1	-5.60	Sag	60	21.7
136	165.222	1759.3	0.7	2.76	Hog	60	30.1
137	165.444	1756.3	-1.3	-2.00	Sag	60	26.4
138	165.547	1757.3	0.9	2.27	Hog	60	29.5
139	165.654	1756.1	-1.1	-2.03	Hog	60	33.0
140	165.724	1754.1	-2.9	-1.82	Sag	60	44.0

Annexure 8.1(b)							
Vertical Alignment Details							
Sl. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
141	165.807	1752.8	-1.6	1.36	Hog	60	25.0
142	166.018	1744.4	-4.0	-2.40	Hog	80	35.3
143	166.152	1736.0	-6.2	-2.26	Sag	130	26.1
144	166.310	1734.1	-1.2	4.98	Sag	60	61.6
145	166.387	1733.9	-0.3	0.97	Hog	60	47.5
146	166.456	1732.8	-1.5	-1.26	Sag	60	148.6
147	166.605	1731.2	-1.1	0.40	Sag	60	103.5
148	166.781	1730.2	-0.5	0.58	Hog	60	39.4
149	166.951	1726.7	-2.1	-1.52	Sag	60	119.6
150	167.054	1725.1	-1.6	0.50	Hog	90	42.4
151	167.158	1721.2	-3.7	-2.12	Sag	60	33.2
152	167.313	1718.3	-1.9	1.80	Sag	60	36.1
153	167.414	1718.1	-0.2	1.66	Hog	60	84.7
154	167.632	1716.1	-0.9	-0.71	Hog	60	70.0
155	167.779	1713.4	-1.8	-0.86	Sag	60	52.6
156	167.893	1712.7	-0.6	1.14	Hog	80	31.9
157	167.985	1709.8	-3.2	-2.51	Hog	60	113.1
158	168.085	1706.1	-3.7	-0.53	Sag	60	62.0
159	168.177	1703.6	-2.7	0.97	Hog	60	294.0
160	168.300	1700.0	-2.9	-0.20	Sag	150	32.6
161	168.422	1702.0	1.7	4.61	Hog	60	31.6
162	168.518	1701.8	-0.2	-1.90	Sag	60	93.5
163	168.686	1702.5	0.4	0.64	Hog	200	60.4
164	168.825	1698.5	-2.9	-3.31	Sag	60	56.8
165	168.961	1696.0	-1.8	1.06	Hog	60	39.7
166	169.060	1692.7	-3.3	-1.51	Sag	60	49.6
167	169.139	1691.0	-2.1	1.21	Hog	60	31.5
168	169.254	1686.4	-4.0	-1.90	Sag	120	26.6
169	169.383	1687.0	0.5	4.50	Hog	60	50.9
170	169.481	1686.3	-0.7	-1.18	Hog	80	22.1
171	169.624	1680.1	-4.3	-3.62	Sag	130	24.9
172	169.786	1681.5	0.9	5.23	Hog	60	26.3
173	169.969	1679.0	-1.4	-2.28	Hog	90	43.9
174	170.077	1675.3	-3.4	-2.05	Sag	60	109.3
175	170.166	1672.7	-2.9	0.55	Hog	60	153.3

Annexure 8.1(b)							
Vertical Alignment Details							
Sl. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
176	170.253	1669.9	-3.3	-0.39	Sag	60	91.9
177	170.480	1663.9	-2.6	0.65	Sag	60	80.2
178	170.602	1661.6	-1.9	0.75	Sag	60	32.2
179	170.688	1661.6	0.0	1.86	Hog	60	48.3
180	170.778	1660.4	-1.3	-1.24	Sag	60	27.0
181	170.845	1661.1	1.0	2.23	Hog	60	18.6
182	170.932	1659.1	-2.3	-3.22	Sag	60	28.0
183	171.029	1659.0	-0.1	2.14	Hog	60	163.2
184	171.329	1657.6	-0.5	-0.37	Hog	60	32.3
185	171.431	1655.2	-2.3	-1.86	Sag	100	80.7
186	171.559	1653.8	-1.1	1.24	Hog	60	123.8
187	171.625	1652.8	-1.6	-0.49	Sag	60	43.5
188	171.708	1652.6	-0.2	1.38	Hog	60	18.7
189	171.777	1650.2	-3.4	-3.21	Sag	60	18.1
190	171.875	1650.1	-0.1	3.32	Hog	100	42.1
191	171.958	1648.1	-2.5	-2.38	Sag	60	38.2
192	172.198	1645.9	-0.9	1.57	Sag	60	293.6
193	172.400	1644.5	-0.7	0.20	Hog	60	123.2
194	172.573	1642.5	-1.2	-0.49	Sag	60	52.2
195	172.684	1642.5	0.0	1.15	Hog	120	63.5
196	172.818	1639.9	-1.9	-1.89	Sag	60	118.5
197	172.995	1637.4	-1.4	0.51	Hog	60	134.0
198	173.070	1636.0	-1.9	-0.45	Sag	60	43.2
199	173.185	1635.4	-0.5	1.39	Hog	60	21.6
200	173.277	1632.4	-3.3	-2.78	Sag	120	30.1
201	173.387	1633.3	0.7	3.99	Hog	60	89.0
202	173.459	1633.3	0.1	-0.67	Sag	60	28.1
203	173.550	1635.3	2.2	2.13	Hog	60	22.7
204	173.713	1634.6	-0.5	-2.65	Hog	60	105.1
205	173.802	1633.6	-1.0	-0.57	Hog	60	21.6
206	173.866	1631.2	-3.8	-2.78	Sag	60	16.5
207	174.113	1630.8	-0.2	3.63	Hog	60	112.0
208	174.348	1629.2	-0.7	-0.54	Sag	120	77.5
209	174.516	1630.6	0.8	1.55	Hog	120	44.3
210	174.671	1627.7	-1.9	-2.71	Sag	80	47.1



Annexure 8.1(b)							
Vertical Alignment Details							
Sl. No.	VIP Chainage	VIP Level (m)	Gradient (%)	% Change in grade	Type of Curve	Curve Length (m)	K Value
211	174.754	1627.5	-0.2	1.70	Hog	60	24.1
212	174.844	1625.1	-2.7	-2.49	Sag	100	40.7
213	175.056	1624.7	-0.2	2.46	Hog	60	18.9
214	175.138	1622.0	-3.4	-3.18	Sag	60	19.9
215	175.233	1621.6	-0.4	3.02	Hog	60	264.9
216	175.384	1620.7	-0.6	-0.23	Hog	60	29.9
217	175.450	1619.0	-2.6	-2.01	Sag	60	25.5
218	175.560	1618.7	-0.2	2.35	Hog	70	16.0
219	175.631	1615.4	-4.6	-4.39	Sag	60	13.2
220	175.716	1615.4	-0.1	4.53	Sag	60	162.5
221	175.844	1615.7	0.3	0.37	Hog	60	153.8
222	175.957	1615.6	-0.1	-0.39	Hog	60	29.4
223	176.044	1613.7	-2.2	-2.04	Sag	60	37.2
224	176.115	1613.3	-0.5	1.61	Hog	60	145.5
225	176.180	1612.7	-1.0	-0.41	Sag	60	136.3
226	176.381	1611.7	-0.5	0.44	Sag	100	30.7
227	176.478	1614.4	2.7	3.26	Hog	60	21.2
228	176.532	1614.3	-0.1	PROJECT END			

Annexure 8.2										
Structure Proposals ( Bridges )										
Sr.No	Design Chainage	Start Chainage	End Chainage	Type of Structure	Proposed Span Arrangement	Total Length of Bridge (m)	Total Deck Width (m)	Type of Superstructure	Proposed Lane	Recommendation/ Observation
1	151+096	151+081	151+111	Minor Bridge (Wangon Bridge)	1 x 30	30	12.5	Composite Steel Plate Girder	2-lane	New 2 Lane Bridge
2	152+790	152+785	152+795	Minor Bridge	1 x 10	10	2x11	RCC Solid Slab	4-Lane	New 4 Lane Bridge
3	158+054	158+049	158+059	Minor Bridge	1 x 10	10	12.5	RCC Solid Slab	2-lane	New 2 Lane Bridge
4	159+083	159+078	159+088	Minor Bridge	1 x 10	10	2x11	RCC Solid Slab	4-Lane	New 4 Lane Bridge
5	159+297	159+292	159+302	Minor Bridge	1 x 10	10	2x11	RCC Solid Slab	4-Lane	New 4 Lane Bridge
6	163+289	163+284	163+294	Minor Bridge	1 x 10	10	2x11	RCC Solid Slab	4-Lane	New 4 Lane Bridge
7	163+794	163+789	163+799	Minor Bridge	1 x 10	10	12.5	RCC Solid Slab	2-lane	New 2 Lane Bridge
8	163+984	163+932	164+037	Major Bridge (HILLAR Bridge)	3 X 35	105	12.5	PSC Box Girder	2-Lane	Retained with repair, rehabilitation and protection work
9	164+119	164+114	164+124	Minor Bridge	1 x 10	10	12.5	RCC Solid Slab	2-lane	New 2 Lane Bridge
10	164+396	164+384	164+408	Minor Bridge	1x 24.4	24.4	12	RCC T Girder	2-lane	Retained without Widening
11	164+729	164+709	164+749	Minor Bridge	1 x 40.7	40.7	12.4	PSC Box Girder	2-lane	Retained without Widening
12	164+833	164+828	164+838	Minor Bridge	1 x 10	10	12.5	RCC Solid Slab	2-lane	New 2 Lane Bridge
13	164+949	164+937	164+962	Minor Bridge	1 x 25	25	1x11	PSC I Girder	4-Lane	Retained existing bridge with additional 2-lane Bridge

Annexure 8.2										
Structure Proposals ( Bridges )										
Sr.No	Design Chainage	Start Chainage	End Chainage	Type of Structure	Proposed Span Arrangement	Total Length of Bridge (m)	Total Deck Width (m)	Type of Superstructure	Proposed Lane	Recommendation/ Observation
14	165+010	164+998	165+023	Minor Bridge	1 x 25	25	1x11	PSC I Girder	4-Lane	Retained existing bridge with additional 2-lane Bridge
15	170+454	170+449	170+459	Minor Bridge	1 x 10	10	12.5	RCC Solid Slab	2-lane	New 2 Lane Bridge

Annexure 8.3								
Structure Proposal ( Culverts)								
Sr. No.	Design Chainage	Proposed Span ( W x H)	Proposed Type	Length	Width	Proposal	Deck Width	Remarks
1	148+654	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
2	148+861	3x2	RCC BOX	3	20	Re-construction	2 x 11	4 Lane
3	149+354	6x4	RCC BOX	6	20	Re-construction	2 x 11	4 Lane
4	149+629	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
5	149+999	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
6	150+219	4x3	RCC BOX	4	20	Re-construction	2 x 11	4 Lane
7	150+279	4x3	RCC BOX	4	20	Re-construction	2 x 11	4 Lane
8	150+314	4x3	RCC BOX	4	20	<b>New construction</b>	2 x 11	4 Lane
9	150+447	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
10	150+757	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
11	150+870	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
12	151+298	2X2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
13	151+540	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
14	151+951	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
15	152+280	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
16	152+901	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
17	153+060	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
18	153+224	3x3	RCC BOX	3	20	Re-construction	2 x 11	4 Lane
19	153+384	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
20	153+569	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
21	153+819	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
22	154+344	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
23	154+421	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
24	155+314	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
25	155+614	4x3	RCC BOX	4	20	Re-construction	2 x 11	4 Lane
26	155+856	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
27	155+992	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
28	156+139	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
29	156+220	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
30	156+944	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
31	157+189	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
32	157+517	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
33	157+541	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
34	158+121	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
35	158+392	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
36	158+667	2X2	RCC BOX	2	15	Re-construction	12.00	2 Lane
37	159+741	3x3	RCC BOX	3	20	Re-construction	2 x 11	4 Lane
38	160+029	4x3	RCC BOX	4	20	Re-construction	2 x 11	4 Lane
39	160+300	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
40	160+449	3x2	RCC BOX	3	15	Re-construction	12.00	2 Lane

Annexure 8.3								
Structure Proposal ( Culverts)								
Sr. No.	Design Chainage	Proposed Span ( W x H)	Proposed Type	Length	Width	Proposal	Deck Width	Remarks
41	160+701	6x4	RCC BOX	6	15	Re-construction	12.00	2 Lane
42	160+897	4x3	RCC BOX	4	15	Re-construction	12.00	2 Lane
43	161+233	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
44	161+383	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
45	161+529	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
46	161+604	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
47	161+792	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
48	161+854	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
49	162+129	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
50	162+406	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
51	162+984	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
52	163+139	2X2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
53	163+337	4x3	RCC BOX	4	20	Re-construction	2 x 11	4 Lane
54	163+368	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
55	163+431	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
56	163+484	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
57	163+549	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
58	163+817	4x3	RCC BOX	4	15	Re-construction	12.00	2 Lane
59	164+134	4x3	RCC BOX	2	15	Re-construction	12.00	2 Lane
60	164+259	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
61	164+334	4x3	RCC BOX	4	15	Re-construction	12.00	2 Lane
62	164+525	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
63	164+620	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
64	164+902	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
65	165+085	3x3	RCC BOX	3	20	Re-construction	2 x 11	4 Lane
66	165+237	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
67	165+404	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
68	165+607	3X3	RCC BOX	3	20	<b>New construction</b>	2 x 11	4 Lane
69	165+808	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
70	166+242	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
71	166+327	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
72	166+614	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
73	166+743	4x3	RCC BOX	4	20	Re-construction	2 x 11	4 Lane
74	166+784	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
75	167+104	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
76	167+312	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
77	167+794	4x3	RCC BOX	4	20	Re-construction	2 x 11	4 Lane
78	168+153	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
79	168+304	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
80	168+499	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane

Annexure 8.3								
Structure Proposal ( Culverts)								
Sr. No.	Design Chainage	Proposed Span ( W x H)	Proposed Type	Length	Width	Proposal	Deck Width	Remarks
81	168+797	4x3	RCC BOX	4	15	Re-construction	12.00	2 Lane
82	169+269	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
83	169+639	6x4	RCC BOX	6	15	Re-construction	12.00	2 Lane
84	170+423	4x3	RCC BOX	6	15	Re-construction	2 x 11	4 Lane
85	170+545	2x2	RCC BOX	2	15.1	Re-construction	2 x 11	4 Lane
86	170+601	2x2	RCC BOX	2	15.1	Re-construction	2 x 11	4 Lane
87		4x3	Side Drain of 50m long on Right Side				12.00	2 Lane
88	170+897	4x3	RCC BOX	4	20	Re-construction	2 x 11	4 Lane
89	171+422	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
90	171+582	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
91	171+967	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
92	172+422	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
93	172+667	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
94	172+872	6x3	RCC BOX	6	20	Re-construction	2 x 11	4 Lane
95	173+107	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
96	173+364	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
97	173+431	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
98	173+504	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
99	173+627	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
100	173+808	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
101	173+919	2x2	RCC BOX	2	15	Re-construction	12.00	2 Lane
102	173+991	2X2	RCC BOX	2	15	Re-construction	12.00	2 Lane
103	174+396	3X2	RCC BOX	3	15	Re-construction	12.00	2 Lane
104	175+127	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
105	175+462	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
106	175+547	4x3	RCC BOX	4	20	Re-construction	2 x 11	4 Lane
107	175+677	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
108	175+828	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
109	176+114	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane
110	176+382	2x2	RCC BOX	2	20	Re-construction	2 x 11	4 Lane

Annexure 8.4 : Equivalent Single Axle Load Calculation for Barakpora									
Year	Standard Bus	LCV	2 Axle	3 Axle	MAV	Yearly Design ESA	Cummulative Design ESA	MSA	Design Period
VDF	1.04	1.10	2.94	1.82	4.38				
2019	155	368	365	11	5	307055	307055	Base Year	
2020	163	386	383	12	5	322408	629462		
2021	171	406	402	12	6	338528	967990		
2022	179	426	423	13	6	355454	1323445		
2023	188	447	444	13	6	373227	1696672		
2024	198	470	466	14	6	391888	2088560		
2025	208	493	489	15	7	411483	2500043		
2026	218	518	514	15	7	432057	2932100		
2027	229	544	539	16	7	453660	3385759	3.3858	5-year
2028	240	571	566	17	8	476343	3862102		
2029	252	599	595	18	8	500160	4362262		
2030	265	629	624	19	9	525168	4887430		
2031	278	661	655	20	9	551426	5438856		
2032	292	694	688	21	9	578998	6017854	6.0179	10-year
2033	307	729	723	22	10	607947	6625801		
2034	322	765	759	23	10	638345	7264146		
2035	338	803	797	24	11	670262	7934408		
2036	355	843	837	25	11	703775	8638183		
2037	373	886	878	26	12	738964	9377147	9.3771	15-year
2038	392	930	922	28	13	775912	10153060		
2039	411	976	968	29	13	814708	10967767		
2040	432	1025	1017	31	14	855443	11823211		
2041	453	1076	1068	32	15	898215	12721426		
2042	476	1130	1121	34	15	943126	13664552	13.665	20-year
2043	500	1187	1177	35	16	990282	14654834		
2044	525	1246	1236	37	17	1039797	15694631		
2045	551	1308	1298	39	18	1091786	16786417		
2046	579	1374	1363	41	19	1146376	17932793		
2047	608	1443	1431	43	20	1203694	19136487	19.136	25-year
2048	638	1515	1502	45	21	1263879	20400366		
2049	670	1590	1578	48	22	1327073	21727439		

### Annexure 8.5 Improvement Proposal

Sr. No.	Chainage		Length	TCS Type	TCS DETAILS
	From	To			
1	148+589	148+790	201.5	TCS-1	2-Lane Left side Cut
2	148+790	150+290	1500	TCS-3	4-Lane Urban
3	150+290	150+490	200	TCS-4	4-Lane Urban(15m)
4	150+490	150+940	450	TCS-3	4-Lane Urban
5	150+940	151+082	142	TCS-2	2-Lane Rural
6	151+082	151+112	30	Minor Bridge	Wangon Bridge(Out of Scope )
7	151+112	151+240	128	TCS-2	2-Lane Rural
8	151+240	151+690	450	TCS-3	4-Lane Urban
9	151+690	152+290	600	TCS-2	2-Lane Rural
10	152+290	152+786	496	TCS-3	4-Lane Urban
11	152+786	152+796	10	Minor Bridge	
12	152+796	152+890	94	TCS-3	4-Lane Urban
13	152+890	153+090	200	TCS-4	4-Lane Urban(15m)
14	153+090	153+490	400	TCS-3	4-Lane Urban
15	153+490	154+090	600	TCS-2	2-Lane Rural
16	154+090	156+290	2200	TCS-3	4-Lane Urban
17	156+290	156+490	200	TCS-4	4-Lane Urban(15m)
18	156+490	157+740	1250	TCS-3	4-Lane Urban
19	157+740	158+050	310	TCS-2	2-Lane Rural
20	158+050	158+060	10	Minor Bridge	
21	158+060	158+910	850	TCS-2	2-Lane Rural
22	158+910	159+079	169	TCS-3	4-Lane Urban
23	159+079	159+089	10	Minor Bridge	
24	159+089	159+293	204	TCS-3	4-Lane Urban
25	159+293	159+303	10	Minor Bridge	
26	159+303	160+440	1137	TCS-3	4-Lane Urban
27	160+440	161+140	700	TCS-2	2-Lane Rural
28	161+140	163+285	2145	TCS-3	4-Lane Urban
29	163+285	163+295	10	Minor Bridge	
30	163+295	163+740	445	TCS-3	4-Lane Urban
31	163+740	163+790	50	TCS-2	2-Lane Rural
32	163+790	163+800	10	Minor Bridge	
33	163+800	163+933	132.5	TCS-2	2-Lane Rural
34	163+933	164+038	105	Major Bridge	Hiller Bridge(Out of Scope )
35	164+038	164+115	77.5	TCS-2	2-Lane Rural
36	164+115	164+125	10	Minor Bridge	
37	164+125	164+385	259.8	TCS-2	2-Lane Rural
38	164+385	164+409	24.4	Minor Bridge	
39	164+409	164+710	300.45	TCS-2	2-Lane Rural
40	164+710	164+750	40.7	Minor Bridge	
41	164+750	164+829	78.65	TCS-2	2-Lane Rural



### Annexure 8.5 Improvement Proposal

Sr. No.	Chainage		Length	TCS Type	TCS DETAILS
	From	To			
42	164+829	164+839	10	Minor Bridge	
43	164+839	164+890	51	TCS-2	2-Lane Rural
44	164+890	164+938	47.5	TCS-3	4-Lane Urban
45	164+938	164+963	25	Minor Bridge	
46	164+963	164+999	36	TCS-3	4-Lane Urban
47	164+999	165+024	25	Minor Bridge	
48	165+024	166+990	1966.5	TCS-3	4-Lane Urban
49	166+990	167+590	600	TCS-2	2-Lane Rural
50	167+590	168+690	1100	TCS-3	4-Lane Urban
51	168+690	169+790	1100	TCS-2	2-Lane Rural
52	169+790	170+260	470	TCS-3	4-Lane Urban
53	170+260	170+450	190	TCS-4	4-Lane Urban(15m)
54	170+450	170+460	10	Minor Bridge	
55	170+460	170+780	320	TCS-4	4-Lane Urban(15m)
56	170+780	171+590	810	TCS-3	4-Lane Urban
57	171+590	172+410	820	TCS-2	2-Lane Rural
58	172+410	173+090	680	TCS-3	4-Lane Urban
59	173+090	173+590	500	TCS-4	4-Lane Urban(15m)
60	173+590	173+890	300	TCS-3	4-Lane Urban
61	173+890	175+090	1200	TCS-2	2-Lane Rural
62	175+090	175+160	70	TCS-3	4-Lane Urban
63	175+160	175+300	140	TCS-4	4-Lane Urban(15m)
64	175+300	176+390	1090	TCS-3	4-Lane Urban
65	176+390	176+532	142.03536	TCS-2	2-Lane Rural

# Economic Analysis

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Annexure- 10							
Economic & Financial Analysis of Vailoo Donipawa Section NH-244 (NPV & IRR)							
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	76.14			76.14		76.14
	2021	76.14			76.14		76.14
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			5.08	5.08	1.77	3.31
5	2026		1.02		1.02	1.95	0.94
6	2027		1.02		1.02	2.16	1.14
7	2028		1.02		1.02	2.38	1.36
8	2029		1.02		1.02	2.63	1.61
9	2030		1.02	5.58	6.60	2.90	3.70
10	2031		1.02		1.02	3.18	2.16
11	2032		1.02		1.02	3.49	2.47
12	2033		1.02		1.02	3.82	2.81
13	2034		1.02		1.02	4.19	3.18
14	2035			6.14	6.14	4.60	1.54
15	2036		1.02		1.02	5.01	3.99
16	2037		1.02		1.02	5.46	4.44
17	2038		1.02		1.02	5.94	4.93
18	2039		1.02		1.02	6.47	5.46
19	2040			6.76	6.76	7.05	0.30
20	2041		1.02		1.02	7.68	6.67
21	2042		1.02		1.02	8.31	7.29
22	2043		1.02		1.02	8.99	7.97
23	2044		1.02		1.02	9.72	8.70
24	2045			7.43	7.43	10.51	3.08
25	2046		1.02		1.02	11.37	10.35
26	2047		1.02		1.02	12.29	11.28
27	2048		1.02		1.02	13.29	12.28
28	2049		1.02		1.02	14.38	13.36
29	2050		1.02		1.02	15.55	14.53
				IRR			-0.8%
Note: All Figures in INR Crores				NPV	-117.85		

Annexure- 10							
Economic & Financial Analysis of Vailoo Donipawa Section NH-244 (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	76.14			87.56		87.56
	2021	76.14			87.56		87.56
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			5.08	5.84	1.77	4.07
5	2026		1.02		1.17	1.95	0.79
6	2027		1.02		1.17	2.16	0.99
7	2028		1.02		1.17	2.38	1.21
8	2029		1.02		1.15	2.63	1.47
9	2030			5.58	6.42	2.90	3.52
10	2031		1.02		1.17	3.18	2.01
11	2032		1.02		1.17	3.49	2.32
12	2033		1.02		1.17	3.82	2.66
13	2034		1.02		1.17	4.19	3.03
14	2035			6.14	7.06	4.60	2.46
15	2036		1.02		1.17	5.01	3.84
16	2037		1.02		1.17	5.46	4.29
17	2038		1.02		1.17	5.94	4.78
18	2039		1.02		1.17	6.47	5.31
19	2040			6.76	7.77	7.05	0.72
20	2041		1.02		1.17	7.68	6.51
21	2042		1.02		1.17	8.31	7.14
22	2043		1.02		1.17	8.99	7.82
23	2044		1.02		1.17	9.72	8.55
24	2045			7.43	8.55	10.51	1.96
25	2046		1.02		1.17	11.37	10.20
26	2047		1.02		1.17	12.29	11.12
27	2048		1.02		1.17	13.29	12.13
28	2049		1.02		1.17	14.38	13.21
29	2050		1.02		1.17	15.55	14.38
				IRR			-1.62%
Note: All Figures in INR Crores				NPV	-123.48		

Annexure- 10							
Economic & Financial Analysis of Vailoo Donipawa Section NH-244 (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	76.14			76.14		76.14
	2021	76.14			76.14		76.14
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			5.08	5.08	1.50	3.57
5	2026		1.02		1.02	1.66	0.64
6	2027		1.02		1.02	1.83	0.82
7	2028		1.02		1.02	2.02	1.01
8	2029		0.00		0.00	2.23	2.23
9	2030			5.58	5.58	2.46	3.12
10	2031		1.02		1.02	2.70	1.69
11	2032		1.02		1.02	2.96	1.95
12	2033		1.02		1.02	3.25	2.23
13	2034		1.02		1.02	3.56	2.55
14	2035			6.14	6.14	3.91	2.23
15	2036		1.02		1.02	4.26	3.24
16	2037		1.02		1.02	4.64	3.62
17	2038		1.02		1.02	5.05	4.04
18	2039		1.02		1.02	5.50	4.49
19	2040			6.76	6.76	5.99	0.76
20	2041		1.02		1.02	6.53	5.51
21	2042		1.02		1.02	7.06	6.05
22	2043		1.02		1.02	7.64	6.62
23	2044		1.02		1.02	8.26	7.24
24	2045			7.43	7.43	8.93	1.50
25	2046		1.02		1.02	9.66	8.65
26	2047		1.02		1.02	10.45	9.43
27	2048		1.02		1.02	11.30	10.28
28	2049		1.02		1.02	12.22	11.21
29	2050		1.02		1.02	13.22	12.20
				IRR			-1.72%
Note: All Figures in INR Crores				NPV	-120.35		

Annexure- 10							
Economic & Financial Analysis of Vailoo Donipawa Section NH-244 (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	76.14			87.56		87.56
	2021	76.14			87.56		87.56
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			5.08	5.84	1.50	4.33
5	2026		1.02		1.17	1.66	0.49
6	2027		1.02		1.17	1.83	0.66
7	2028		1.02		1.17	2.02	0.85
8	2029		0.00		1.15	2.23	1.08
9	2030			5.58	6.42	2.46	3.96
10	2031		1.02		1.17	2.70	1.53
11	2032		1.02		1.17	2.96	1.80
12	2033		1.02		1.17	3.25	2.08
13	2034		1.02		1.17	3.56	2.40
14	2035			6.14	7.06	3.91	3.15
15	2036		1.02		1.17	4.26	3.09
16	2037		1.02		1.17	4.64	3.47
17	2038		1.02		1.17	5.05	3.88
18	2039		1.02		1.17	5.50	4.34
19	2040			6.76	7.77	5.99	1.78
20	2041		1.02		1.17	6.53	5.36
21	2042		1.02		1.17	7.06	5.89
22	2043		1.02		1.17	7.64	6.47
23	2044		1.02		1.17	8.26	7.09
24	2045			7.43	8.55	8.93	0.39
25	2046		1.02		1.17	9.66	8.49
26	2047		1.02		1.17	10.45	9.28
27	2048		1.02		1.17	11.30	10.13
28	2049		1.02		1.17	12.22	11.05
29	2050		1.02		1.17	13.22	12.05
				IRR			-2.60%
Note: All Figures in INR Crores				NPV	-141.41		