

SCHEDULE - B
(See Clause 2.1)

Development of the Project Highway

1 Development of the Project Highway

Development of the Project Highway shall include design and construction of the Project Highway as described in this Schedule-B and in Schedule-C.

2 Two Lane with Paved shoulder

Two laning shall be done to strengthening of the existing lane along with construction of paved shoulders as described in Annex-I of this Schedule-B and Annex-I of Schedule-C.

3 Specifications and Standards

The Project Highway shall be designed and constructed in conformity with the Specifications and Standards specified in Annex-I of Schedule-D.

Annex - I
(Schedule-B)

1. Description of Two Lane with Paved Shoulder

The Site of the Two-Lane Project Highway comprises the section of National Highway -717A commencing from km 40+000 to km 61+100 i.e. the section of Kafer - Reshi section (Length 21.100 km) in the State of West Bengal. The land, carriageway and structures comprising the Site are described below.

1.1 WIDENING OF THE EXISTING HIGHWAY

The Project Highway shall follow the existing alignment unless otherwise specified by the Authority and shown in the alignment plans specified in Annexure III of Schedule-A. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for plain/rolling terrain to the extent land is available.

1.2 WIDTH OF CARRIAGEWAY

Two Lanning with paved shoulder shall be undertaken. The paved carriageway shall be 7m wide with 1.5m paved shoulder on both sides in accordance with the typical cross section drawings and as per IRC:SP:73-2018. On Horizontal Curves, roadways width should be increased to provide for extra widening at Curves as per Cl. 6.8.5 of IRC:SP:48-1998.

Provided that in the built-up areas the width of the carriageway shall be as specified in the following table:

Sl. No	Built-up Stretch (Township)	Start chainage	End chainage	Length (Km)	Width (m)	Typical Cross Section No.
1	Chumbang	47+620	47+790	0.170	10	TCS IX
2	Chumbang	47+790	47+840	0.050	10	TCS X
3	Chumbang	47+840	47+920	0.080	10	TCS IX

1.2.1 Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall conform to paragraph 1.1 above.

2. GEOMETRIC DESIGN AND GENERAL FEATURES

2.1 General

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the Manual.

2.2 Design speed

The design speed shall be minimum design speed of 40 km per hr. for Mountainous and Steep terrain.

2.3 Improvement of the existing road geometrics

2.3.1 Details of Bypass

Sr. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Remarks
	From	To		From	To		
Nil							

2.3.2 Realignment:

Sr. No.	Proposed Chainage		Length in (m)	Type of Cross Section	TCS No.
1.	40+090	40+120	30	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
2.	40+880	40+980	100	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
3.	41+070	41+280	210	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
4.	41+280	41+440	160	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
5.	41+440	41+680	240	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
6.	41+680	41+800	120	Elevated Structure (including box abutment length)	TCS XI
7.	41+800	41+860	60	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
8.	41+940	42+200	260	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
9.	42+300	42+460	160	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
10.	42+540	42+570	30	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
11.	42+690	42+910	220	Elevated Structure (including box abutment length)	TCS XI
12.	42+910	43+000	90	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
13.	44+580	44+640	60	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
14.	45+400	45+540	140	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
15.	45+540	45+680	140	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
16.	45+915	46+050	135	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
17.	46+270	46+290	20	Elevated Structure (including box abutment length)	TCS XI
18.	46+290	46+570	280	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
19.	46+780	46+970	190	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV

Sr. No.	Proposed Chainage		Length in (m)	Type of Cross Section	TCS No.
20.	47+050	47+150	100	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
21.	47+420	47+560	140	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
22.	48+020	48+100	80	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
23.	48+570	48+800	230	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
24.	49+030	49+070	40	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
25.	49+400	49+530	130	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
26.	49+830	49+880	50	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
27.	50+400	50+450	50	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
28.	50+480	50+710	230	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
29.	50+820	51+000	180	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
30.	51+200	51+320	120	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
31.	51+420	51+560	140	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
32.	51+640	51+940	300	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
33.	52+200	52+400	200	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
34.	52+440	52+600	160	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
35.	52+900	53+230	330	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
36.	53+300	53+460	160	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
37.	53+670	53+800	130	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
38.	54+820	54+880	60	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
39.	54+980	55+060	80	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII

Sr. No.	Proposed Chainage		Length in (m)	Type of Cross Section	TCS No.
40.	55+200	55+260	60	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
41.	55+420	55+460	40	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
42.	55+560	55+850	290	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
43.	55+920	55+940	20	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
44.	56+900	56+960	60	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
45.	57+960	58+000	40	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
46.	58+040	58+100	60	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
47.	58+340	58+380	40	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
48.	58+500	58+540	40	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
49.	58+660	58+740	80	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
50.	58+940	59+100	160	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
51.	59+200	59+340	140	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
52.	60+260	60+300	40	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
53.	60+460	60+500	40	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
	Total		6665		

2.4 Right of Way

Details of the Right of Way are given in Annex II of Schedule-A.

2.5 Type of shoulders

In built-up sections, 1.5m footpath cum drain and 2x1.5m paved shoulders shall be provided in the following stretches:

Sl. No.	Design Chainage		Length (m)	Fully Paved Shoulder/Foothpath	Reference to Cross Section (TCS)
	From	To			
1	40+000	41+680	1.680	Paved shoulder	TCS-I,II,IV & VIII
2	41+800	42+690	0.890	Paved shoulder	TCS-IV,V,VI,VII & VIII
3	42+910	46+270	3.360	Paved shoulder	TCS-I,V,VII & VIII
4	46+290	47+620	1.330	Paved shoulder	TCS-I,III & IV

Construction of upgradation of existing road to 2-lane with Paved shoulder from Kafer at km. 40.000 to Lava More at km. 61.100 in the section of Kafer to Reshi border of NH-717A on EPC Basis under SARDP-NE Phase 'A' in the State of West Bengal

Sl. No.	Design Chainage		Length (m)	Fully Paved Shoulder/Foothpath	Reference to Cross Section (TCS)
	From	To			
5	47+920	61+100	13.18	Paved shoulder	TCS-I to VIII
6	47+620	47+920	0.300	Raised Foothpath, Foothpath cum drain	TCS-IX to X

- (a) In open country, (Paved shoulders of 1.5 m width shall be provided and 1.0m earthen shoulder shall be provided).
- (b) Design and specifications of paved shoulders and granular material shall conform to the requirements specified in paragraphs 5.9.9 and 5.9.10 of the Manual.

2.6 Lateral and vertical clearances at underpasses

2.6.1 Lateral and vertical clearances at underpasses and provision of guard rails/crash barriers shall be as per paragraph 2.11 of 2-lanning Manual.

2.6.2 Lateral clearance: The width of the opening at the underpasses shall be as follows:

Sr. No.	Location Chainage (From km to km)	Span / Opening (m)	Remarks
Nil			

Vertical clearance: Vertical Clearance at underpasses/Flyovers shall not be less than 5.5 m and for Cattle underpass shall not be less than 4.5 m.

2.7 Lateral and vertical clearances at overpasses

2.7.1 Lateral and vertical clearances at overpasses shall be as per paragraph 2.11 of the 2-lanning Manual.

2.7.2 Lateral clearance: The width of the opening at the overpasses shall be as follows:

Sr. No.	Design Chainage (Km)	Span / Opening (m)	Remarks
Nil			

2.7.3 Vertical clearance: A minimum 5.5 m vertical clearance shall be provided at all points of the carriageway of the project highway.

2.8 Service roads

Service roads shall be constructed at the locations and for the lengths indicated below:

Sr. No.	Location of Service road (from km to km)	Right hand side (RHS)/ Left hand side (LHS)/ or Both sides	Length (km) of Service road
Nil			

Details of Slip Road

Sr. No.	Existing Chainage		Design Chainage		Right Hand side(RHS) or Left Hand side (LHS) or Both side	Length Km of Service Road
	From	To	From	To		
NIL						

2.9 Grade separated structures

- 2.9.1** Grade separated structures shall be provided as per paragraph 2.14 of the 2-lanning Manual. The requisite particulars are given below:
[Refer to paragraphs 2.14.1 of the Manual and provide details]

Sr. No.	Location of structure (Existing)	Location of structure (Design)	Length (m)	Number & length of Spans (m)	Approach Gradient	Remarks, if any
NIL						

- 2.9.2** In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows: [Refer to paragraphs 2.14.2 of the Manual and specify the type of vehicular under pass/ overpass structure and whether the cross road is to be carried at the existing level, raised or lowered]

Sr. No.	Location (Design Chainage)	Location (Design Chainage)	Type of Structure Length	Cross road at		
				Existing level	Raised Level	Lowered Level
NIL						

2.10 Cattle and pedestrian underpass /overpass

Cattle and pedestrian underpass/ overpass shall be constructed as follows:

[Refer to paragraphs 2.13.3 of the Manual and specify the requirements of Cattle and pedestrian underpass/ overpass].

2.11 Typical cross-sections of the Project Highway

Indicative typical cross section of the Project highway shall be Fig. 2.8 to 2.9 of the manual (IRC: SP: 73-2018).

Summary of TCS

TCS No.	Description	Total Length (m)
1	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	7790
2	Two lane with Paved shoulder Eccentric Left Widening (One Side Hill, One side Valley section)	1980
3	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	1900
4	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	3490

TCS No.	Description	Total Length (m)
5	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	985
6	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	1480
7	Two lane with Paved shoulder Realignment (Both Side Hill section)	1505
8	Two lane with Paved shoulder Realignment (Both Side Valley section)	1310
9	Two lane carriageway with Paved shoulders including both side drain cum footpath (Builtup Area-Mountainous terrain)	250
10	Two lane carriageway with raised footpath Builtup Area with retaining wall (Hill terrain)	50
11	Elevated Structure (including box abutment length)	360
Total		21100

Indicative Chainage with applicable Typical Cross section :

Sl. No	Proposed Chainage		Length (m)	Type of alignment	TCS No.
	From	To			
1	40+000	40+090	90	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
2	40+090	40+120	30	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
3	40+120	40+880	760	Two lane with Paved shoulder Eccentric Left Widening (One Side Hill, One side Valley section)	TCS II
4	40+880	40+980	100	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
5	40+980	41+070	90	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
6	41+070	41+280	210	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
7	41+280	41+440	160	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
8	41+440	41+680	240	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
9	41+680	41+800	120	Elevated Structure (including box abutment length)	TCS XI

Sl. No	Proposed Chainage		Length (m)	Type of alignment	TCS No.
	From	To			
10	41+800	41+860	60	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
11	41+860	41+940	80	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
12	41+940	42+200	260	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
13	42+200	42+300	100	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
14	42+300	42+460	160	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
15	42+460	42+540	80	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
16	42+540	42+570	30	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
17	42+570	42+690	120	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	TCS VI
18	42+690	42+910	220	Elevated Structure (including box abutment length)	TCS XI
19	42+910	43+000	90	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
20	43+000	43+360	360	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
21	43+360	44+580	1220	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
22	44+580	44+640	60	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
23	44+640	45+400	760	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
24	45+400	45+540	140	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
25	45+540	45+680	140	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
26	45+680	45+915	235	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
27	45+915	46+050	135	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
28	46+050	46+270	220	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
29	46+270	46+290	20	Elevated Structure (including box abutment	TCS XI

Construction of upgradation of existing road to 2-lane with Paved shoulder from Kafer at km. 40.000 to Lava More at km. 61.100 in the section of Kafer to Reshi border of NH-717A on EPC Basis under SARDP-NE Phase 'A' in the State of West Bengal

Sl. No	Proposed Chainage		Length (m)	Type of alignment	TCS No.
	From	To			
				length)	
30	46+290	46+570	280	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
31	46+570	46+780	210	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
32	46+780	46+970	190	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
33	46+970	47+050	80	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
34	47+050	47+150	100	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
35	47+150	47+420	270	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
36	47+420	47+560	140	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
37	47+560	47+620	60	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
38	47+620	47+790	170	Two lane carriageway with raised footpath Builtup Area (Hill terrain)	TCS IX
39	47+790	47+840	50	Two lane carriageway with Paved shoulders including both side drain cum footpath (Builtup Area-Mountainous terrain)	TCS X
40	47+840	47+920	80	Two lane carriageway with raised footpath Builtup Area (Hill terrain)	TCS IX
41	47+920	48+020	100	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	TCS VI
42	48+020	48+100	80	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
43	48+100	48+570	470	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
44	48+570	48+800	230	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
45	48+800	49+030	230	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
46	49+030	49+070	40	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
47	49+070	49+400	330	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I

Construction of upgradation of existing road to 2-lane with Paved shoulder from Kafer at km. 40.000 to Lava More at km. 61.100 in the section of Kafer to Reshi border of NH-717A on EPC Basis under SARDP-NE Phase 'A' in the State of West Bengal

Sl. No	Proposed Chainage		Length (m)	Type of alignment	TCS No.
	From	To			
				section)	
48	49+400	49+530	130	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
49	49+530	49+830	300	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
50	49+830	49+880	50	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
51	49+880	50+400	520	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
52	50+400	50+450	50	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
53	50+450	50+480	30	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
54	50+480	50+710	230	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
55	50+710	50+820	110	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
56	50+820	51+000	180	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
57	51+000	51+200	200	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
58	51+200	51+320	120	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
59	51+320	51+420	100	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
60	51+420	51+560	140	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
61	51+560	51+640	80	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
62	51+640	51+940	300	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
63	51+940	52+200	260	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
64	52+200	52+400	200	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV

Sl. No	Proposed Chainage		Length (m)	Type of alignment	TCS No.
	From	To			
65	52+400	52+440	40	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
66	52+440	52+600	160	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
67	52+600	52+900	300	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
68	52+900	53+230	330	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
69	53+230	53+300	70	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
70	53+300	53+460	160	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
71	53+460	53+670	210	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
72	53+670	53+800	130	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
73	53+800	54+820	1020	Two lane with Paved shoulder Eccentric Left Widening (One Side Hill, One side Valley section)	TCS II
74	54+820	54+880	60	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
75	54+880	54+980	100	Two lane with Paved shoulder Eccentric Left Widening (One Side Hill, One side Valley section)	TCS II
76	54+980	55+060	80	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
77	55+060	55+200	140	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	TCS VI
78	55+200	55+260	60	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
79	55+260	55+420	160	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
80	55+420	55+460	40	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
81	55+460	55+560	100	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
82	55+560	55+850	290	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII

Sl. No	Proposed Chainage		Length (m)	Type of alignment	TCS No.
	From	To			
83	55+850	55+920	70	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
84	55+920	55+940	20	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
85	55+940	56+900	960	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	TCS VI
86	56+900	56+960	60	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
87	56+960	57+960	1000	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
88	57+960	58+000	40	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
89	58+000	58+040	40	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
90	58+040	58+100	60	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
91	58+100	58+340	240	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
92	58+340	58+380	40	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
93	58+380	58+500	120	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
94	58+500	58+540	40	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
95	58+540	58+660	120	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
96	58+660	58+740	80	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
97	58+740	58+940	200	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
98	58+940	59+100	160	Two lane with Paved shoulder Realignment (Both Side Hill section)	TCS VII
99	59+100	59+200	100	Two lane with Paved shoulder Eccentric Left Widening (One Side Hill, One side Valley section)	TCS II
100	59+200	59+340	140	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV

Sl. No	Proposed Chainage		Length (m)	Type of alignment	TCS No.
	From	To			
101	59+340	60+260	920	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
102	60+260	60+300	40	Two lane with Paved shoulder Realignment (Both Side Valley section)	TCS VIII
103	60+300	60+460	160	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	TCS VI
104	60+460	60+500	40	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	TCS IV
105	60+500	61+100	600	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
Total Length			21100		

3. INTERSECTIONS AND GRADE SEPARATORS

All intersections and grade separators shall be as per Section 3 of the Manual. Existing intersections which are deficient shall be improved to the prescribed standards. Properly designed intersections shall be provided at the locations and of the types and features given in the tables below:

3.1 At-Grade Intersection:

3.1.1 Major intersections

At grade major intersections shall be improved at intersecting roads with the Project highway is given below:

Sl. No.	Design Chainage	Type of Intersection	Direction	Type of Road	Towards
			Left/Right	ER/BT/CC	
1	45+600	X		BT	Kalimpong village
2	61+100	Y	Right	BT	Lava More

3.1.2 Minor Intersections

At grade minor intersections shall be improved at intersecting roads with the Project highway is given below:

Sl. No.	Design Chainage	Type of Intersection	Direction	Type of Road	Towards
			Left/Right	ER/BT/CC	
1	40+350	Y	Left	ER	Loley Gaon
2	40+550	Y	Right	ER	Primling village
3	42+025	Y	Right	BT	Dabling village
4	44+865	Y	Left	ER	
5	55+560	Y	Right	BT	Gumbadhara village
6	57+220	Y	Right	BT	

4. Road Embankment and Cut Section

- (i) Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/ cuttings shall conform to the Specifications

Construction of upgradation of existing road to 2-lane with Paved shoulder from Kafer at km. 40.000 to Lava More at km. 61.100 in the section of Kafer to Reshi border of NH-717A on EPC Basis under SARDP-NE Phase 'A' in the State of West Bengal

and Standards given in section 4 of the Manual and the specified cross sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

(ii) Raising of the existing road:

The existing road shall be raised in the following sections:

Sl. No	Proposed Chainage		Length (m)	Typical Cross section	TCS No.
	From	To			
1.	40+000	40+090	90	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
2.	40+120	40+880	760	Two lane with Paved shoulder Eccentric Left Widening (One Side Hill, One side Valley section)	TCS II
3.	40+980	41+070	90	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
4.	41+860	41+940	80	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
5.	42+200	42+300	100	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
6.	42+460	42+540	80	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
7.	42+570	42+690	120	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	TCS VI
8.	43+000	43+360	360	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
9.	43+360	44+580	1220	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
10.	44+640	45+400	760	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
11.	45+680	45+915	235	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
12.	46+050	46+270	220	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
13.	46+570	46+780	210	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
14.	46+970	47+050	80	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
15.	47+150	47+420	270	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I

Sl. No	Proposed Chainage		Length (m)	Typical Cross section	TCS No.
	From	To			
16.	47+560	47+620	60	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
17.	47+620	47+790	170	Two lane carriageway with raised footpath Builtup Area (Hill terrain)	TCS IX
18.	47+790	47+840	50	Two lane carriageway with Paved shoulders including both side drain cum footpath (Builtup Area-Mountainous terrain)	TCS X
19.	47+840	47+920	80	Two lane carriageway with raised footpath Builtup Area (Hill terrain)	TCS IX
20.	47+920	48+020	100	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	TCS VI
21.	48+100	48+570	470	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
22.	48+800	49+030	230	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
23.	49+070	49+400	330	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
24.	49+530	49+830	300	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
25.	49+880	50+400	520	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
26.	50+450	50+480	30	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
27.	50+710	50+820	110	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
28.	51+000	51+200	200	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
29.	51+320	51+420	100	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
30.	51+560	51+640	80	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
31.	51+940	52+200	260	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
32.	52+400	52+440	40	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I

Construction of upgradation of existing road to 2-lane with Paved shoulder from Kafer at km. 40.000 to Lava More at km. 61.100 in the section of Kafer to Reshi border of NH-717A on EPC Basis under SARDP-NE Phase 'A' in the State of West Bengal

Sl. No	Proposed Chainage		Length (m)	Typical Cross section	TCS No.
	From	To			
33.	52+600	52+900	300	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
34.	53+230	53+300	70	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
35.	53+460	53+670	210	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
36.	53+800	54+820	1020	Two lane with Paved shoulder Eccentric Left Widening (One Side Hill, One side Valley section)	TCS II
37.	54+880	54+980	100	Two lane with Paved shoulder Eccentric Left Widening (One Side Hill, One side Valley section)	TCS II
38.	55+060	55+200	140	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	TCS VI
39.	55+260	55+420	160	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
40.	55+460	55+560	100	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	TCS V
41.	55+850	55+920	70	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
42.	55+940	56+900	960	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	TCS VI
43.	56+960	57+960	1000	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
44.	58+000	58+040	40	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
45.	58+100	58+340	240	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
46.	58+380	58+500	120	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
47.	58+540	58+660	120	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
48.	58+740	58+940	200	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	TCS III
49.	59+100	59+200	100	Two lane with Paved shoulder Eccentric Left Widening (One Side Hill, One side Valley section)	TCS II

Construction of upgradation of existing road to 2-lane with Paved shoulder from Kafer at km. 40.000 to Lava More at km. 61.100 in the section of Kafer to Reshi border of NH-717A on EPC Basis under SARDP-NE Phase 'A' in the State of West Bengal

Sl. No	Proposed Chainage		Length (m)	Typical Cross section	TCS No.
	From	To			
50.	59+340	60+260	920	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
51.	60+300	60+460	160	Two lane with Paved shoulder Concentric Widening (Both Side Valley section)	TCS VI
52.	60+500	61+100	600	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	TCS I
Total			14435		

5. PAVEMENT DESIGN

Pavement design shall be carried out for a design life of 15 years considering 25MSA.

5.1 Type of pavement

Flexible pavement shall be adopted for the Main carriageway in the open country and rigid pavement in the built up section as per the details given below:

Crust composition for flexible pavement:

BC	40 mm
BSM	110 mm
CTSB	200 mm
SUBGRADE	500 mm

Crust composition for Rigid Pavement:

PQC	300mm
DLC	150mm
GSB	150mm
SUBGRADE	500mm

5.2 Design requirements

5.2.1 Design Period and strategy

Flexible Pavement shall be designed.

5.2.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic of 25 million standard axles.

5.3 Reconstruction of stretches

The stretches mention in clause 4 (ii) of the same document shows the table of the existing road that shall be reconstructed.

6. ROAD SIDE DRAINAGE

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per Section 6 of the Manual.

Lined Drain Location:

TCS No.	Description	Length (m)	Side	Total Length (m)
1	Two lane with Paved shoulder Concentric Widening (One Side Hill, One side Valley section)	7790	1	7790
2	Two lane with Paved shoulder Eccentric Left Widening (One Side Hill, One side Valley section)	1980	1	1980
3	Two lane with Paved shoulder Eccentric Right Widening (One Side Hill, One side Valley section)	1900	1	1900
4	Two lane with Paved shoulder Realignment (One Side Hill, One side Valley section)	3490	1	3490
5	Two lane with Paved shoulder Concentric Widening (Both Side Hill section)	985	2	1970
7	Two lane with Paved shoulder Realignment (Both Side Hill section)	1505	2	3010
10	Two lane carriageway with raised footpath Builtup Area (Hill terrain)	50	1	50
Total		17700		20190

Catch Water Drains Location on Hill side (Cutting height is more than 10m)

Sr. No.	Left Side (m)	Right Side (m)
1	240	460

Therefore, total length of lined drain and catch water drain will be **20.890km**.

Foothpath cum Drains Location:

TCS No.	Description	Length (m)	Side	Total Length (m)
9	Two lane carriageway with raised footpath Builtup Area (Hill terrain)	250	2	500

7. DESIGN OF STRUCTURES**7.1 General**

- 7.1.1** All bridges, culverts and structures shall be designed and constructed in accordance with section 7 of the Manual and shall conform to the cross- sectional features and other details specified therein
- 7.1.2** Width of the carriageway of new bridges and structures shall be as follows:
[Refer to paragraph 7.1 (ii) of the Manual and specify the width of carriageway of new bridges and structures of more than 60 (sixty) meter length, if the carriageway width is different from 7.5 (seven point five) meter including kerb shyness in the table below.]

Sr. No.	Bridge (km)	Width of carriageway and Cross - Sectional feature
Nil		

- 7.1.3** The following structures shall be provided with footpaths:
[Refer to paragraph 7.1 (iii) of the Manual and provide details of new Structures with footpath.]

Sr. No.	Location at km		Remarks
	(Existing Chainage)	(Design Chainage)	
Nil			

- 7.1.4** All bridges shall be high-level bridges.

- 7.1.1** The following structures shall be designed to carry utility services specified in table below:

Sr. No.	Bridge (Km)	Utility service to be carried	Remarks
NIL			

- 7.1.2** Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections given in section 7 of the Manual.

7.2 Culverts

Overall width of all culverts shall be equal to the roadway width of the approaches.

7.2.1 Reconstruction of Existing Culverts:

The existing culverts at the following locations shall be reconstructed as new culverts:

Sl. No.	Ex. Chainage	Type	Size	Proposed Chainage	Proposed Size	Type	Proposal
1	39+320	Slab	1x0.6	40+155	1x3m	RCC Slab	Reconstruction
2	39+511	Slab	1x0.7	40+345	1x3m	RCC Slab	Reconstruction
3	40+130	Causeway	-	40+958	1x3m	RCC Slab	Reconstruction
4	40+273	Slab	1x0.6	41+084	1x3m	RCC Slab	Reconstruction
5	40+430	Slab	1x0.6	41+330	1x3m	RCC Slab	Reconstruction
6	40+607	Slab	1x0.5	41+494	1x3m	RCC Slab	Reconstruction
7	40+659	Slab	1x1	41+540	1x3m	RCC Slab	Reconstruction
8	41+086	Causeway	-	42+165	1x3m	RCC Slab	Reconstruction
9	41+287	Causeway	-	42+355	1x3m	RCC Slab	Reconstruction
10	42+510	Causeway	-	43+452	1x3m	RCC Slab	Reconstruction
11	43+650	Causeway	-	44+590	1x3m	RCC Slab	Reconstruction
12	43+810	Causeway	-	44+730	1x3m	RCC Slab	Reconstruction
13	43+999	Slab	1x0.9	44+915	1x3m	RCC Slab	Reconstruction
14	44+214	Causeway	-	45+130	1x3m	RCC Slab	Reconstruction

Sl. No.	Ex. Chainage	Type	Size	Proposed Chainage	Proposed Size	Type	Proposal
15	44+439	Slab	1x0.9	45+354	1x3m	RCC Slab	Reconstruction
16	44+892	Slab	1x1	45+745	1x3m	RCC Slab	Reconstruction
17	45+222	Slab	1x1	46+133	1x3m	RCC Slab	Reconstruction
18	45+358	Slab	1x1.25	46+262	1x3m	RCC Slab	Reconstruction
19	45+440	Causeway	-	46+400	1x3m	RCC Slab	Reconstruction
20	45+609	Slab	1x1	46+558	1x3m	RCC Slab	Reconstruction
21	46+080	Slab		47+073	1x3m	RCC Slab	Reconstruction
22	46+230	Slab	1x0.8	47+204	1x3m	RCC Slab	Reconstruction
23	46+355	Causeway	-	47+325	1x3m	RCC Slab	Reconstruction
24	46+500	Causeway	-	47+460	1x3m	RCC Slab	Reconstruction
25	46+585	Slab	1x0.9	47+541	1x3m	RCC Slab	Reconstruction
26	47+000	Causeway	-	47+930	1x3m	RCC Slab	Reconstruction
27	47+050	Causeway	-	47+990	1x3m	RCC Slab	Reconstruction
28	47+130	Causeway	-	48+065	1x3m	RCC Slab	Reconstruction
29	47+165	Causeway	-	48+090	1x3m	RCC Slab	Reconstruction
30	47+280	Slab	1x1	48+191	1x3m	RCC Slab	Reconstruction
31	47+370	Slab	1x0.7	48+280	1x3m	RCC Slab	Reconstruction
32	48+295	causway		49+220	1x3m	RCC Slab	Reconstruction
33	48+474	Causeway	-	49+395	1x3m	RCC Slab	Reconstruction
34	48+677	Slab	1x1	49+590	1x3m	RCC Slab	Reconstruction
35	48+815	Causeway	-	49+725	1x3m	RCC Slab	Reconstruction
36	49+145	Slab	1x1.1	50+052	1x3m	RCC Slab	Reconstruction
37	49+389	Slab	1x1	50+295	1x3m	RCC Slab	Reconstruction
38	49+660	Causeway	-	50+560	1x3m	RCC Slab	Reconstruction
39	49+934	Slab	1x0.9	50+955	1x3m	RCC Slab	Reconstruction
40	50+161	Slab	1x1	51+178	1x3m	RCC Slab	Reconstruction
41	50+239	Slab	1x1.1	51+315	1x3m	RCC Slab	Reconstruction
42	50+790	Slab	1x1	52+240	1x3m	RCC Slab	Reconstruction
43	51+391	Causeway	-	52+840	1x3m	RCC Slab	Reconstruction
44	51+660	Causeway	-	53+093	1x3m	RCC Slab	Reconstruction
45	51+760	Causeway	-	53+188	1x3m	RCC Slab	Reconstruction
46	52+890	Causeway	-	54+410	1x3m	RCC Slab	Reconstruction
47	53+090	Causeway	-	54+610	1x3m	RCC Slab	Reconstruction
48	53+378	Slab	1x0.9	54+884	1x3m	RCC Slab	Reconstruction
49	53+790	Causeway	-	55+275	1x3m	RCC Slab	Reconstruction
50	53+860	Causeway	-	55+350	1x3m	RCC Slab	Reconstruction
51	54+067	Causeway	-	55+545	1x3m	RCC Slab	Reconstruction
52	54+380	Causeway	-	55+704	1x3m	RCC Slab	Reconstruction
53	54+480	Causeway	-	55+774	1x3m	RCC Slab	Reconstruction
54	54+575	Causeway	-	55+855	1x3m	RCC Slab	Reconstruction
55	54+820	Causeway	-	56+072	1x3m	RCC Slab	Reconstruction
56	54+900	Causeway	-	56+155	1x3m	RCC Slab	Reconstruction

Construction of upgradation of existing road to 2-lane with Paved shoulder from Kafer at km. 40.000 to Lava More at km. 61.100 in the section of Kafer to Reshi border of NH-717A on EPC Basis under SARDP-NE Phase 'A' in the State of West Bengal

Sl. No.	Ex. Chainage	Type	Size	Proposed Chainage	Proposed Size	Type	Proposal
57	55+067	Causeway	-	56+320	1x3m	RCC Slab	Reconstruction
58	55+230	Causeway	-	56+474	1x3m	RCC Slab	Reconstruction
59	55+893	Slab	1x0.8	57+131	1x3m	RCC Slab	Reconstruction
60	55+964	Causeway	-	57+200	1x3m	RCC Slab	Reconstruction
61	56+080	Causeway	-	57+320	1x3m	RCC Slab	Reconstruction
62	56+130	Causeway	-	57+365	1x3m	RCC Slab	Reconstruction
63	56+180	Causeway	-	57+410	1x3m	RCC Slab	Reconstruction
64	56+240	Causeway	-	57+470	1x3m	RCC Slab	Reconstruction
65	56+324	Causeway	-	57+555	1x3m	RCC Slab	Reconstruction
66	56+432	Causeway	-	57+660	1x3m	RCC Slab	Reconstruction
67	56+505	Slab	1x0.6	57+730	1x3m	RCC Slab	Reconstruction
68	56+635	Causeway	-	57+855	1x3m	RCC Slab	Reconstruction
69	56+775	Causeway	-	57+990	1x3m	RCC Slab	Reconstruction
70	56+900	Causeway	-	58+098	1x3m	RCC Slab	Reconstruction
71	57+140	Causeway	-	58+332	1x3m	RCC Slab	Reconstruction
72	57+380	Slab	1x1.1	58+565	1x3m	RCC Slab	Reconstruction
73	57+500	Causeway	-	58+675	1x3m	RCC Slab	Reconstruction
74	58+880	Causeway	-	60+195	1x3m	RCC Slab	Reconstruction
75	58+950	Slab		60+260	1x3m	RCC Slab	Reconstruction
76	59+210	causway		60+520	1x3m	RCC Slab	Reconstruction
77	59+300	causway		60+600	1x3m	RCC Slab	Reconstruction
78	59+520	Causeway	-	60+772	1x3m	RCC Slab	Reconstruction
79	59+523	Causeway	-	60+820	1x3m	RCC Slab	Reconstruction
80	59+717	Slab	1x1.5	61+012	1x3m	RCC Slab	Reconstruction

7.2.2 Widening and Repairing of existing culverts

All existing culverts which are not to be reconstructed shall be widened to the roadway width of the Project Highway as per the typical cross section given in section 7 of the Manual. Repairs and strengthening of existing structures where required shall be carried out.

Sl. No.	Culvert Location (Km)	Type , Span, Height and width of existing culvert	Type of Repair Required
Nil			

7.2.3 Additional New culverts shall be constructed as per Particulars given in the table below:

S.No.	Proposed Chainage	Proposed Size	Type	Proposal
1	40+600	1x3m	RCC Slab	New Construction
2	42+030	1x3m	RCC Slab	New Construction
3	42+970	1x3m	RCC Slab	New Construction
4	43+840	1x3m	RCC Slab	New Construction
5	44+310	1x3m	RCC Slab	New Construction
6	46+800	1x3m	RCC Slab	New Construction
7	48+640	1x3m	RCC Slab	New Construction

Construction of upgradation of existing road to 2-lane with Paved shoulder from Kafer at km. 40.000 to Lava More at km. 61.100 in the section of Kafer to Reshi border of NH-717A on EPC Basis under SARDP-NE Phase 'A' in the State of West Bengal

S.No.	Proposed Chainage	Proposed Size	Type	Proposal
8	48+960	1x3m	RCC Slab	New Construction
9	53+840	1x3m	RCC Slab	New Construction
10	59+090	1x3m	RCC Slab	New Construction
11	59+605	1x3m	RCC Slab	New Construction

7.2.4 Repairs/ Replacement of Railing/Parapets, flooring and protection works of the existing culverts shall be undertaken as follows:

[Refer to paragraph 7.23 of the Manual and provide details]

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Type of Culvert	Span (m)	Type of Repair
NIL					
1= Replacement of Wearing coat, 2= Repair of parapet wall, 3= Repair of Substructure, 4=Repair of superstructure					

7.2.5 Floor Protection works shall be as specified in the relevant IRC codes and specifications.

7.3 Bridges

7.3.1 Existing Bridges to be retained

(i) The existing major bridges at the following locations shall be retained:

Sl. No.	Existing Chainage (Km)	Design Chainage (Km)	Design No. of Spans with span length (m)	Remarks
Nil				

(ii) The following narrow bridges shall be widened:

Sr. No.	Location (Km)	Existing Width (m)	Extent of Widening (m)	Cross-section at deck level for widening
NIL				

(iii) The following Minor bridges shall be reconstructed:

Sl. No.	Existing Chainage (Km)	Design Chainage (Km)	Design no. of Spans with span length (m)	Existing no. of Spans with span length (m)	Existing Structure	Proposed Structure
NIL						

7.3.2 Additional New Bridges

a. New major bridge at the following locations on the project highway shall be constructed.
GADs for the new bridges are attached in the drawings folder:

Sr. No.	Location		Span Arrangement	Total length (m)	Remarks
	Existing Chainage (Km)	Design Chainage (Km)			
NIL					

b. New minor bridges at the following locations on the project highway shall be constructed.
GADs for the new bridges are attached in the drawings folder:

Sr. No.	Design Chainage	Span Arrangement	Total length (m)	Remarks
NIL				

7.3.3 The railings of existing bridges shall be Reconstruction by crash barriers at the following locations:

Sr. No.	Location (km)	Remarks
Nil		

7.3.4 Repairs/ replacements of railing/parapets of the existing bridges shall be undertaken as follows:

Sl. No.	Existing Chainage (Km)	Design Chainage (Km)	Existing no. of Spans with span length (m)	Remarks
Nil				

7.3.5 Drainage system for bridge decks

An effective drainage system for bridge decks shall be provided as specified in paragraph 7.21 of the Manual.

7.3.6 Structures in marine environment

[Refer to paragraph 7.22 of the Manual and specify the necessary measures / treatments for protecting structures in marine environment, where applicable]

7.4 Rail - Road Bridges

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual. (Refer to paragraph 7.19 of the Manual and specify modification, if any)

7.4.2 Road Over-Bridges section

Road over-bridges (road over railway line) shall be provided at the following level crossings, as per manual:

Sl. No.	Location of Level crossing (Chainage km)	Length of bridge (m)	Type of structure	Remarks
NIL				

7.4.3 Road under-Bridges

Road under-bridges (road under railway line) shall be provided at the following level crossings, as per GAD drawings attached:

Sl. No.	Location of Level crossings (km)	Number and length of Span (m)
Nil		

7.5 Grade separated structures

(Refer to paragraph 7.20 of the Manual)

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2.9 and 3 of this Annex-I.

Sr. No.	Design Chainage	Span Arrangement	Total length (m)	Remarks
Nil				

7.6 Repairs and strengthening of bridges and structures

(Refer to paragraph 7.23 of the Manual and provide details)

All the existing bridges and structures to be repaired / strengthened, and the nature and extent of repairs/ strengthening required are given below:

A. Bridges

Sl. No.	Location / Design Chainage (In km)/Span	Side (LHS/RHS)	Nature and Extent of Repairs / Strengthening to be carried out
Nil			

B. ROB / RUB

Sl. No.	Location / Design Chainage (In km)	Side (LHS/RHS)	Nature and Extent of Repairs / Strengthening to be carried out
Nil			

C. Overpass / Underpass and Other structures

Sr. No.	Location / Design Chainage (In km)	Side (LHS/RHS)	Nature and Extent of Repairs/ Strengthening to be carried out
Nil			

7.7 List of Major Bridges and Structures

Viaduct: The minimum requirement of Viaducts are suggested as following which may vary as per final drawings and design approved by competent authority. The Contractor is required to conduct detail investigation to assess the work based on site survey, investigations and assessment before commencement of work. Viaduct shall be provided where embankment height is more than 12m. Tentative locations of the Viaduct are given below :

Sl. No.	Start Chainage	End Chainage	Span Arrangement upto Expansion joint (m)	Type	Width of Carriageway (m)	Length (m)
1	41+680	41+800	4x15 + 3x20	Voided Slab	11	120
2	42+690	42+910	5X20 + 4X15 + 3X20	Voided Slab	11	220
3	46+270	46+290	1x20	Voided Slab	11	20
Total Length						360

***NOTE:-** The viaduct length mention above is exclusive of box abutment length. For total length of the elevated structure refer clause 2.11 and clause 13 of the same document.

8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

8.1 Traffic control devices and road safety works shall be provided in accordance with Section 9 of the Manual.

- (a) Traffic Signs: Traffic signs include roadside signs, overhead signs and curb mounted signs along the entire Project Highway.
- (b) Pavement Marking: Pavement markings shall cover road marking for the entire Project

Highway.

- (c) Safety Barrier: Provide parapet along the project highway at all locations as specified in manual recommended in Schedule D.

8.2 Specifications of the reflecting sheeting.

Retro reflective sheeting should be of high intensity grade with encapsulated lens or with micro prismatic retro reflective element in accordance with ASTM Standard D 4956-04 and IRC 67:2010 shall be provided.

9. ROADSIDE FURNITURE

9.1 Roadside furniture shall be provided in accordance with the provisions of section 11 of the Manual.

- (a) Road Boundary Stone: For the entire Project Highway.
- (b) Pedestrian Guard Rail: The pedestrian facilities shall include the provision of the;
 - (i) Pedestrian guardrail: Provide pedestrian guardrail at each bus stop location.
 - (ii) Pedestrian Crossings: Provide pedestrian crossing facilities on Junctions.
- (c) Overhead traffic signs: Location and Size
 - (i) Full width Overhead signs: Full width Overhead signs shall be provided as suggested in manual recommended in Schedule D.
 - (ii) Cantilever Overhead signs: Overhead signs shall be provided as suggested in manual recommended in Schedule D.
 - (iii) Delineators: Delineators for the entire Project Highway at the locations as suggested in manual recommended in Schedule D

10. COMPULSORY AFFORESTATION

The number of Trees which are required to be planted by the contractor as compensatory afforestation should be as per Forest Conservation Act, twice the number of trees to be cut.

11. HAZARDOUS LOCATIONS

The safety barriers (Parapet wall) shall also be provided at valley side more than 3m length of the parapet wall should be 8.380Km. Parapet wall will construct at site as per requirement of location.

12. Special Requirement for Hill Roads

12.1 Retaining Wall: - The minimum requirement of Retaining wall are suggested as following which may vary as per final drawings and design approved by competent authority. The Contractor is required to conduct detail investigation to assess the work based on site survey, investigations and assessment before commencement of work.

Retaining Walls Locations LHS:

Filling Left					Filling Left				
Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)	Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)
1	41070.00	41080.00	10.00	4	95	48270.00	48280.00	10.00	6
2	41080.00	41090.00	10.00	4	96	48280.00	48290.00	10.00	5
3	41650.00	41660.00	10.00	5	97	48290.00	48300.00	10.00	5
4	41660.00	41670.00	10.00	6	98	48300.00	48310.00	10.00	6
5	42550.00	42560.00	10.00	4	99	48310.00	48320.00	10.00	6
6	42560.00	42570.00	10.00	5	100	48320.00	48330.00	10.00	7
7	42570.00	42580.00	10.00	4	101	48330.00	48340.00	10.00	7
8	42580.00	42590.00	10.00	5	102	48340.00	48350.00	10.00	7
9	42590.00	42600.00	10.00	5	103	48350.00	48360.00	10.00	7
10	42600.00	42610.00	10.00	6	104	48360.00	48370.00	10.00	7
11	42610.00	42620.00	10.00	8	105	48370.00	48380.00	10.00	7
12	42620.00	42630.00	10.00	8	106	48380.00	48390.00	10.00	7
13	42630.00	42640.00	10.00	9	107	48390.00	48400.00	10.00	7
14	42640.00	42650.00	10.00	10	108	48400.00	48410.00	10.00	7
15	42650.00	42660.00	10.00	10	109	48410.00	48420.00	10.00	7
16	42660.00	42670.00	10.00	11	110	48420.00	48430.00	10.00	6
17	42670.00	42680.00	10.00	11	111	48430.00	48440.00	10.00	6
18	42910.00	42920.00	10.00	6	112	48440.00	48450.00	10.00	6
19	42920.00	42930.00	10.00	5	113	48450.00	48460.00	10.00	5
20	43410.00	43420.00	10.00	4	114	48470.00	48480.00	10.00	5
21	43420.00	43430.00	10.00	4	115	48480.00	48490.00	10.00	5
22	45550.00	45560.00	10.00	5	116	48510.00	48520.00	10.00	5
23	45560.00	45570.00	10.00	7	117	48520.00	48530.00	10.00	4
24	45570.00	45580.00	10.00	8	118	48530.00	48540.00	10.00	4
25	45580.00	45590.00	10.00	7	119	48540.00	48550.00	10.00	4
26	45590.00	45600.00	10.00	7	120	48550.00	48560.00	10.00	5
27	45600.00	45610.00	10.00	7	121	48560.00	48570.00	10.00	5
28	45610.00	45620.00	10.00	6	122	48570.00	48580.00	10.00	5
29	45620.00	45630.00	10.00	6	123	48580.00	48590.00	10.00	5
30	45630.00	45640.00	10.00	6	124	48590.00	48600.00	10.00	4
31	45640.00	45650.00	10.00	5	125	48600.00	48610.00	10.00	4
32	45650.00	45660.00	10.00	4	126	48610.00	48620.00	10.00	5
33	46060.00	46070.00	10.00	5	127	48620.00	48630.00	10.00	7
34	46070.00	46080.00	10.00	7	128	48630.00	48640.00	10.00	9
35	46080.00	46090.00	10.00	8	129	48640.00	48650.00	10.00	10
36	46090.00	46100.00	10.00	8	130	48650.00	48660.00	10.00	8
37	46100.00	46110.00	10.00	8	131	48660.00	48670.00	10.00	5
38	46110.00	46120.00	10.00	7	132	55110.00	55120.00	10.00	6
39	46120.00	46130.00	10.00	5	133	55120.00	55130.00	10.00	5
40	46130.00	46140.00	10.00	6	134	55130.00	55140.00	10.00	4
41	46140.00	46150.00	10.00	7	135	57490.00	57500.00	10.00	4

Filling Left					Filling Left				
Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)	Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)
42	46150.00	46160.00	10.00	6	136	58270.00	58280.00	10.00	4
43	46160.00	46170.00	10.00	5	137	58280.00	58290.00	10.00	5
44	46170.00	46180.00	10.00	7	138	58290.00	58300.00	10.00	5
45	46180.00	46190.00	10.00	8	139	58300.00	58310.00	10.00	6
46	46190.00	46200.00	10.00	7	140	58310.00	58320.00	10.00	6
47	46200.00	46210.00	10.00	7	141	58320.00	58330.00	10.00	7
48	46210.00	46220.00	10.00	7	142	58330.00	58340.00	10.00	7
49	46220.00	46230.00	10.00	7	143	58340.00	58350.00	10.00	7
50	46230.00	46240.00	10.00	7	144	58350.00	58360.00	10.00	7
51	46240.00	46250.00	10.00	6	145	58360.00	58370.00	10.00	7
52	46250.00	46260.00	10.00	6	146	58370.00	58380.00	10.00	6
53	46290.00	46300.00	10.00	8	147	58380.00	58390.00	10.00	8
54	46300.00	46310.00	10.00	7	148	58390.00	58400.00	10.00	8
55	46310.00	46320.00	10.00	6	149	58400.00	58410.00	10.00	9
56	46320.00	46330.00	10.00	5	150	58410.00	58420.00	10.00	9
57	46390.00	46400.00	10.00	4	151	58420.00	58430.00	10.00	8
58	46490.00	46500.00	10.00	5	152	58430.00	58440.00	10.00	8
59	46500.00	46510.00	10.00	5	153	58440.00	58450.00	10.00	7
60	46510.00	46520.00	10.00	6	154	58450.00	58460.00	10.00	6
61	47920.00	47930.00	10.00	5	155	58460.00	58470.00	10.00	5
62	47930.00	47940.00	10.00	5	156	58470.00	58480.00	10.00	5
63	47940.00	47950.00	10.00	5	157	58480.00	58490.00	10.00	6
64	47950.00	47960.00	10.00	5	158	58490.00	58500.00	10.00	7
65	47960.00	47970.00	10.00	7	159	58500.00	58510.00	10.00	8
66	47970.00	47980.00	10.00	7	160	58510.00	58520.00	10.00	8
67	47980.00	47990.00	10.00	7	161	58520.00	58530.00	10.00	8
68	47990.00	48000.00	10.00	7	162	58530.00	58540.00	10.00	7
69	48000.00	48010.00	10.00	8	163	58540.00	58550.00	10.00	6
70	48010.00	48020.00	10.00	10	164	58550.00	58560.00	10.00	6
71	48020.00	48030.00	10.00	10	165	58560.00	58570.00	10.00	5
72	48030.00	48040.00	10.00	10	166	58570.00	58580.00	10.00	5
73	48040.00	48050.00	10.00	12	167	58580.00	58590.00	10.00	4
74	48050.00	48060.00	10.00	11	168	58590.00	58600.00	10.00	6
75	48060.00	48070.00	10.00	11	169	58600.00	58610.00	10.00	6
76	48070.00	48080.00	10.00	10	170	58610.00	58620.00	10.00	5
77	48080.00	48090.00	10.00	9	171	58660.00	58670.00	10.00	4
78	48090.00	48100.00	10.00	9	172	58670.00	58680.00	10.00	4
79	48100.00	48110.00	10.00	8	173	59100.00	59110.00	10.00	5
80	48110.00	48120.00	10.00	7	174	59110.00	59120.00	10.00	6
81	48120.00	48130.00	10.00	7	175	59120.00	59130.00	10.00	5
82	48130.00	48140.00	10.00	5	176	59130.00	59140.00	10.00	5
83	48140.00	48150.00	10.00	5	177	59140.00	59150.00	10.00	4

Filling Left					Filling Left				
Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)	Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)
84	48150.00	48160.00	10.00	5	178	59170.00	59180.00	10.00	5
85	48160.00	48170.00	10.00	4	179	59180.00	59190.00	10.00	7
86	48180.00	48190.00	10.00	4	180	59190.00	59200.00	10.00	7
87	48190.00	48200.00	10.00	5	181	59200.00	59210.00	10.00	8
88	48200.00	48210.00	10.00	5	182	59210.00	59220.00	10.00	9
89	48210.00	48220.00	10.00	5	183	59220.00	59230.00	10.00	9
90	48220.00	48230.00	10.00	6	184	59230.00	59240.00	10.00	12
91	48230.00	48240.00	10.00	5	185	59240.00	59250.00	10.00	11
92	48240.00	48250.00	10.00	5	186	59250.00	59260.00	10.00	11
93	48250.00	48260.00	10.00	6	187	59260.00	59270.00	10.00	6
94	48260.00	48270.00	10.00	6					
Total Length in (m)								1870	

Retaining Walls Locations RHS:

Filling Right					Filling Right				
Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)	Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)
1	41500.00	41510.00	10.00	5	109	48910.00	48920.00	10.00	5
2	41660.00	41670.00	10.00	4	110	48920.00	48930.00	10.00	5
3	42560.00	42570.00	10.00	4	111	48930.00	48940.00	10.00	5
4	42570.00	42580.00	10.00	6	112	48940.00	48950.00	10.00	5
5	42580.00	42590.00	10.00	6	113	48950.00	48960.00	10.00	5
6	42590.00	42600.00	10.00	5	114	48960.00	48970.00	10.00	5
7	42600.00	42610.00	10.00	6	115	48970.00	48980.00	10.00	5
8	42610.00	42620.00	10.00	7	116	48980.00	48990.00	10.00	5
9	42620.00	42630.00	10.00	7	117	48990.00	49000.00	10.00	5
10	42630.00	42640.00	10.00	8	118	49000.00	49010.00	10.00	4
11	42640.00	42650.00	10.00	9	119	49010.00	49020.00	10.00	5
12	42650.00	42660.00	10.00	10	120	49020.00	49030.00	10.00	5
13	42660.00	42670.00	10.00	11	121	49030.00	49040.00	10.00	5
14	42670.00	42680.00	10.00	11	122	49040.00	49050.00	10.00	6
15	42910.00	42920.00	10.00	7	123	49050.00	49060.00	10.00	5
16	42920.00	42930.00	10.00	6	124	49060.00	49070.00	10.00	4
17	42930.00	42940.00	10.00	4	125	49100.00	49110.00	10.00	4
18	42940.00	42950.00	10.00	4	126	49110.00	49120.00	10.00	4
19	42960.00	42970.00	10.00	4	127	53210.00	53220.00	10.00	8
20	45420.00	45430.00	10.00	4	128	54590.00	54600.00	10.00	4
21	45430.00	45440.00	10.00	5	129	54600.00	54610.00	10.00	4
22	45550.00	45560.00	10.00	5	130	54610.00	54620.00	10.00	4
23	45560.00	45570.00	10.00	5	131	55040.00	55050.00	10.00	4
24	45570.00	45580.00	10.00	6	132	55050.00	55060.00	10.00	5
25	45580.00	45590.00	10.00	6	133	55060.00	55070.00	10.00	5
26	45590.00	45600.00	10.00	6	134	55070.00	55080.00	10.00	4

Construction of upgradation of existing road to 2-lane with Paved shoulder from Kafer at km. 40.000 to Lava More at km. 61.100 in the section of Kafer to Reshi border of NH-717A on EPC Basis under SARDP-NE Phase 'A' in the State of West Bengal

Filling Right					Filling Right				
Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)	Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)
27	45600.00	45610.00	10.00	6	135	55080.00	55090.00	10.00	5
28	45610.00	45620.00	10.00	6	136	55090.00	55100.00	10.00	5
29	45620.00	45630.00	10.00	5	137	55100.00	55110.00	10.00	5
30	45630.00	45640.00	10.00	5	138	55110.00	55120.00	10.00	6
31	45640.00	45650.00	10.00	5	139	55120.00	55130.00	10.00	6
32	45650.00	45660.00	10.00	4	140	55130.00	55140.00	10.00	6
33	45670.00	45680.00	10.00	4	141	55140.00	55150.00	10.00	6
34	45680.00	45690.00	10.00	4	142	55150.00	55160.00	10.00	6
35	46140.00	46150.00	10.00	5	143	57100.00	57110.00	10.00	4
36	46150.00	46160.00	10.00	5	144	57110.00	57120.00	10.00	5
37	46160.00	46170.00	10.00	5	145	57120.00	57130.00	10.00	6
38	46170.00	46180.00	10.00	5	146	57130.00	57140.00	10.00	6
39	46180.00	46190.00	10.00	6	147	57140.00	57150.00	10.00	6
40	46190.00	46200.00	10.00	5	148	57150.00	57160.00	10.00	6
41	46200.00	46210.00	10.00	4	149	57160.00	57170.00	10.00	6
42	46220.00	46230.00	10.00	5	150	57170.00	57180.00	10.00	6
43	46240.00	46250.00	10.00	5	151	57180.00	57190.00	10.00	5
44	46250.00	46260.00	10.00	6	152	57190.00	57200.00	10.00	5
45	46290.00	46300.00	10.00	7	153	57200.00	57210.00	10.00	5
46	46300.00	46310.00	10.00	7	154	57210.00	57220.00	10.00	5
47	46310.00	46320.00	10.00	6	155	57220.00	57230.00	10.00	5
48	46320.00	46330.00	10.00	5	156	57230.00	57240.00	10.00	5
49	46350.00	46360.00	10.00	5	157	57240.00	57250.00	10.00	4
50	46360.00	46370.00	10.00	6	158	58140.00	58150.00	10.00	4
51	46370.00	46380.00	10.00	6	159	58150.00	58160.00	10.00	4
52	46380.00	46390.00	10.00	8	160	58270.00	58280.00	10.00	5
53	46390.00	46400.00	10.00	9	161	58280.00	58290.00	10.00	5
54	46400.00	46410.00	10.00	6	162	58290.00	58300.00	10.00	6
55	46410.00	46420.00	10.00	6	163	58300.00	58310.00	10.00	7
56	46420.00	46430.00	10.00	5	164	58310.00	58320.00	10.00	8
57	46430.00	46440.00	10.00	5	165	58320.00	58330.00	10.00	7
58	46440.00	46450.00	10.00	6	166	58330.00	58340.00	10.00	7
59	46450.00	46460.00	10.00	6	167	58340.00	58350.00	10.00	8
60	46460.00	46470.00	10.00	6	168	58350.00	58360.00	10.00	8
61	46470.00	46480.00	10.00	6	169	58360.00	58370.00	10.00	8
62	47910.00	47920.00	10.00	4	170	58370.00	58380.00	10.00	9
63	47920.00	47930.00	10.00	5	171	58380.00	58390.00	10.00	9
64	47930.00	47940.00	10.00	5	172	58390.00	58400.00	10.00	9
65	47940.00	47950.00	10.00	5	173	58400.00	58410.00	10.00	9
66	47950.00	47960.00	10.00	5	174	58410.00	58420.00	10.00	9
67	47960.00	47970.00	10.00	6	175	58420.00	58430.00	10.00	9
68	47970.00	47980.00	10.00	6	176	58430.00	58440.00	10.00	8

Filling Right					Filling Right				
Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)	Sl.No.	Chainge From	Chainge To	Length (m)	Height (m)
69	47980.00	47990.00	10.00	8	177	58440.00	58450.00	10.00	9
70	47990.00	48000.00	10.00	8	178	58450.00	58460.00	10.00	10
71	48000.00	48010.00	10.00	9	179	58460.00	58470.00	10.00	8
72	48010.00	48020.00	10.00	9	180	58470.00	58480.00	10.00	8
73	48020.00	48030.00	10.00	10	181	58480.00	58490.00	10.00	8
74	48030.00	48040.00	10.00	11	182	58490.00	58500.00	10.00	8
75	48040.00	48050.00	10.00	11	183	58500.00	58510.00	10.00	8
76	48050.00	48060.00	10.00	11	184	58510.00	58520.00	10.00	8
77	48060.00	48070.00	10.00	11	185	58520.00	58530.00	10.00	7
78	48070.00	48080.00	10.00	10	186	58530.00	58540.00	10.00	7
79	48080.00	48090.00	10.00	9	187	58540.00	58550.00	10.00	7
80	48090.00	48100.00	10.00	9	188	58550.00	58560.00	10.00	7
81	48100.00	48110.00	10.00	8	189	58560.00	58570.00	10.00	7
82	48110.00	48120.00	10.00	8	190	58570.00	58580.00	10.00	7
83	48120.00	48130.00	10.00	7	191	58580.00	58590.00	10.00	8
84	48130.00	48140.00	10.00	6	192	58590.00	58600.00	10.00	8
85	48140.00	48150.00	10.00	5	193	58600.00	58610.00	10.00	6
86	48260.00	48270.00	10.00	5	194	58610.00	58620.00	10.00	6
87	48270.00	48280.00	10.00	6	195	58620.00	58630.00	10.00	6
88	48280.00	48290.00	10.00	5	196	58630.00	58640.00	10.00	5
89	48290.00	48300.00	10.00	5	197	58640.00	58650.00	10.00	4
90	48300.00	48310.00	10.00	5	198	58650.00	58660.00	10.00	4
91	48310.00	48320.00	10.00	5	199	59220.00	59230.00	10.00	5
92	48360.00	48370.00	10.00	4	200	59230.00	59240.00	10.00	5
93	48370.00	48380.00	10.00	4	201	59240.00	59250.00	10.00	6
94	48630.00	48640.00	10.00	4	202	59250.00	59260.00	10.00	6
95	48640.00	48650.00	10.00	5	203	59260.00	59270.00	10.00	5
96	48650.00	48660.00	10.00	5	204	59340.00	59350.00	10.00	5
97	48660.00	48670.00	10.00	4	205	59350.00	59360.00	10.00	7
98	48800.00	48810.00	10.00	4	206	59360.00	59370.00	10.00	6
99	48810.00	48820.00	10.00	5	207	59370.00	59380.00	10.00	6
100	48820.00	48830.00	10.00	5	208	59380.00	59390.00	10.00	5
101	48830.00	48840.00	10.00	5	209	59390.00	59400.00	10.00	6
102	48840.00	48850.00	10.00	5	210	59400.00	59410.00	10.00	6
103	48850.00	48860.00	10.00	5	211	59410.00	59420.00	10.00	6
104	48860.00	48870.00	10.00	5	212	59420.00	59430.00	10.00	5
105	48870.00	48880.00	10.00	5	213	59430.00	59440.00	10.00	4
106	48880.00	48890.00	10.00	5	214	60760.00	60770.00	10.00	5
107	48890.00	48900.00	10.00	5	215	60790.00	60800.00	10.00	4
108	48900.00	48910.00	10.00	5					
Total Length in (m)								2150	

- 12.2 Breast Wall :** The minimum requirement of 4m height Breast wall are suggested as following which may vary as per final drawings and design approved by competent authority. The Contractor is required to conduct detail investigation to assess the work based on site survey, investigations and assessment before commencement of work. Hill cutting slope should not exceed 60 degrees, 1.5m benching to be provided at least every 10m height.

Breast Wall	Left Side Length (m)	Right Side Length (m)
	6.850	5.490

12.3 Hydroseeding

To control soil erosion and re-vegetate areas in hill side, hydroseeding to be provided in total area of 161120 m² by mechanical means.

13. CHANGE OF SCOPE

The length of Viaducts, Culverts, Retaining Walls, Breast Walls, Bridges etc. specified here in above shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

14. Details of Utility Shifting

The Details of Utilities to be shifted are as follow:-

Chainage in Km		Pole				Low Tension Overhead			High Tension Overhead			Isolator	Distribution transformer
From Km	To Km	Single	Double	Triple	Four	Single Phase	Two Phase	Three Phase	Single Phase	Two Phase	Three Phase		
40+000	61+100	69	24					✓			✓		2
Total		93											2