Schedule - B

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 lane with paved shoulder shall strengthening of the existing two lane along with construction of paved shoulders as described in Annex-I & Annex-II 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)

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 0+000 to km 13+000 i.e. the Bagrakot to Kafer section (Design length 13.000 km) in the State of West Bengal. The land, carriageway and structures comprising the Site are described below.

1. WIDENING OF THE EXISTING HIGHWAY

1.1 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 mountainous & steep terrain to the extent land is available.

1.2 WIDTH OF CARRIAGEWAY

1.2.1 Two Lanning with paved shoulder shall be undertaken. The paved carriageway including paved shoulders shall be 10 m wide in accordance with the typical cross section drawings in the Manual.

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

Sr. No.	Built-up Stretch (Township)	Location/Design Chainage (Km)		Width (m)	Typical Cross Section
		From	To		
NIL					

1.2.2 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)	TCS TYPE
	From	To		From	To		
1	0+000	3+500	3500	0+000	3+800	3800	Four lane divided carriage way with raised median (ROB Approach) (from Km 0+000 to 0+400) & 2-lane highway in plain/rolling terrain (from Km 0+400 to 3+800)

2.3.2 Realignment:

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
1	3.860	3.915	0.055	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
2	3.970	4.120	0.150	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
3	4.190	4.340	0.150	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
4	4.460	4.520	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
5	4.610	4.690	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
6	4.725	4.750	0.025	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
7	4.890	4.900	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
8	4.930	5.050	0.120	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
9	5.130	5.230	0.100	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
10	5.400	5.590	0.190	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
11	6.140	6.220	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
12	6.270	6.270	0.000	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
13	6.580	6.710	0.130	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
14	7.040	7.120	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
15	7.280	7.360	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
16	7.440	7.450	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
17	8.460	8.520	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
18	10.020	10.030	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
19	10.160	10.240	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
20	10.340	10.360	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
21	10.420	10.480	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
22	10.520	10.550	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
23	10.620	10.650	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
24	10.720	10.760	0.040	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
25	10.790	10.820	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
26	10.910	10.930	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
27	10.980	11.000	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
28	11.090	11.140	0.050	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
29	11.940	11.970	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
30	12.200	12.280	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
31	12.360	12.500	0.140	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
32	12.570	12.590	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
33	12.820	12.910	0.090	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
34	12.940	13.000	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II

2.4 Right of Way

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

2.5 Median

The median in built up areas shall be paved and railings of steel and suitable antiglare measures such as plastic screens shall be provided at the center of median to reduce headlight glare from opposite traffic. The total height of screen including the height of the barrier shall be 1.5m and spacing shall be such as to effectively cut the glare.

Sl. no	Design Chainage		Median	Reference to Cross Section (TCS)
	From	To		
1	C 610+360	C 611+400	Steel Railing with Antiglare measure of approved quality and height shall be 1.5m.	V
2A	A 0+000	A 0+300		IV (Left)
2B	A 0+000	A 0+400		IV (Right)

2.6 Type of shoulders

In built-up sections, footpaths/ fully paved shoulders shall be provided and in the following stretches:

Sl. no	Design Chainage		Fully Paved Shoulder/Footpath	Reference to Cross Section (TCS)
	From	To		
1	0+400	3+800	Paved & Earthen	III

(a) In open country, (Paved shoulders of 1.5 m width shall be provided and balance 1.0 m width shall be covered with 150 mm thick compacted layer of granular material).

(b) Design and specifications of paved shoulders and granular material shall conform to the requirements specified in paragraphs 5.10 and 5.11 of the Manual.

2.7 Lateral and vertical clearances at underpasses

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

2.7.2 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.

2.8 Lateral and vertical clearances at overpasses

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

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

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

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

2.9 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						

2.10 Grade separated structures

2.10.1 Grade separated structures shall be provided as per paragraph 2.13 of the 2-lanning Manual. The requisite particulars are given below:

Sr. No.	Location of structure (Existing)	Location of structure (Design)	Length (m)	Number and length of Spans(m)	Approach Gradient	Remarks, if any
1		0+020	160.9	1x25+1x45.4+1x40.5+2x25	2.5%	ROB+Loop

2.10.2 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:

Sr. No.	Location (Design Chainage)	Type of Structure Length	Cross road at		
			Existing level	Raised Level	Lowered Level
1.	0+020	160.9	171.015	172.0129	-

2.11 Cattle and pedestrian underpass /overpass

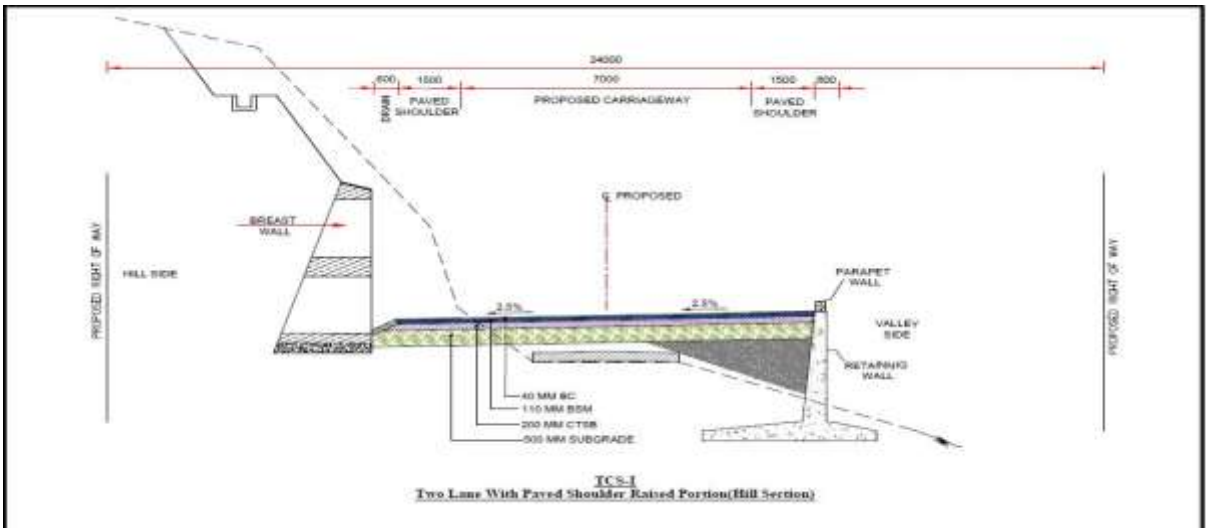
Cattle and pedestrian underpass/ overpass shall be constructed as follows:

Sr. No.	Location	Type of crossing
NIL		

2.12 Typical cross-sections of the Project Highway

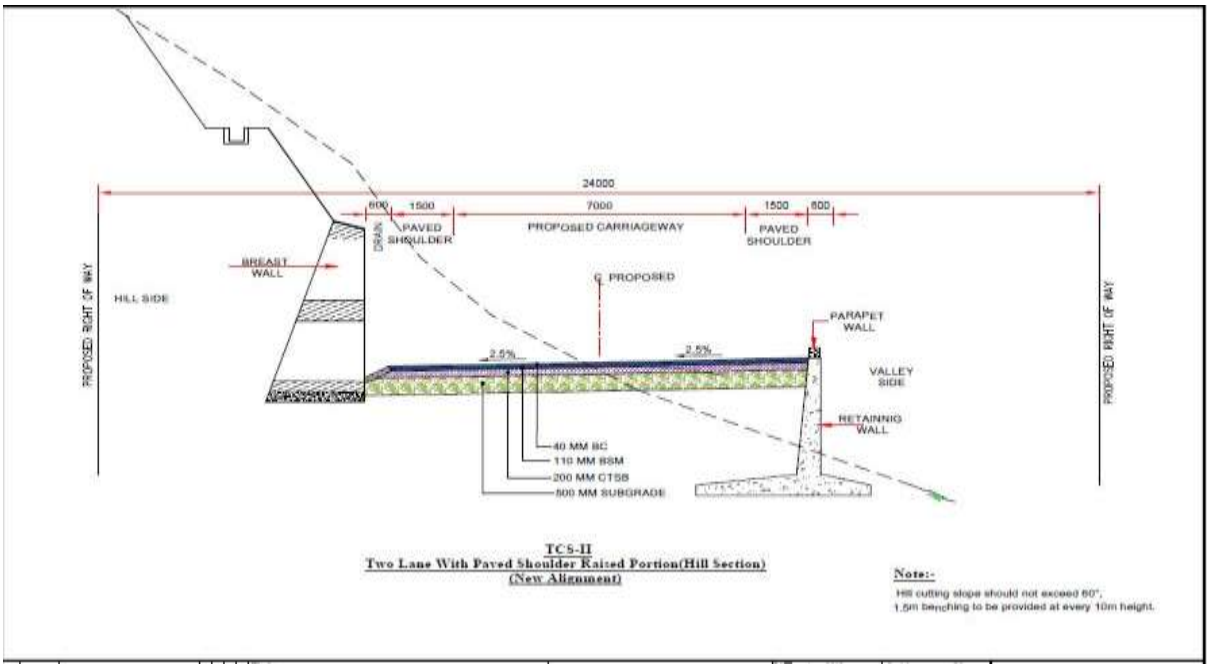
Indicative typical cross section of the Project highway shall be Fig. 2.11 to 2.12 for existing road section and Bypasses & Realignment, Fig. 2.13 for built-up section of the manual (IRC: SP: 73-2015).

TCS-I



TCS-I
Two Lane With Paved Shoulder Raised Portion(Hill Section)

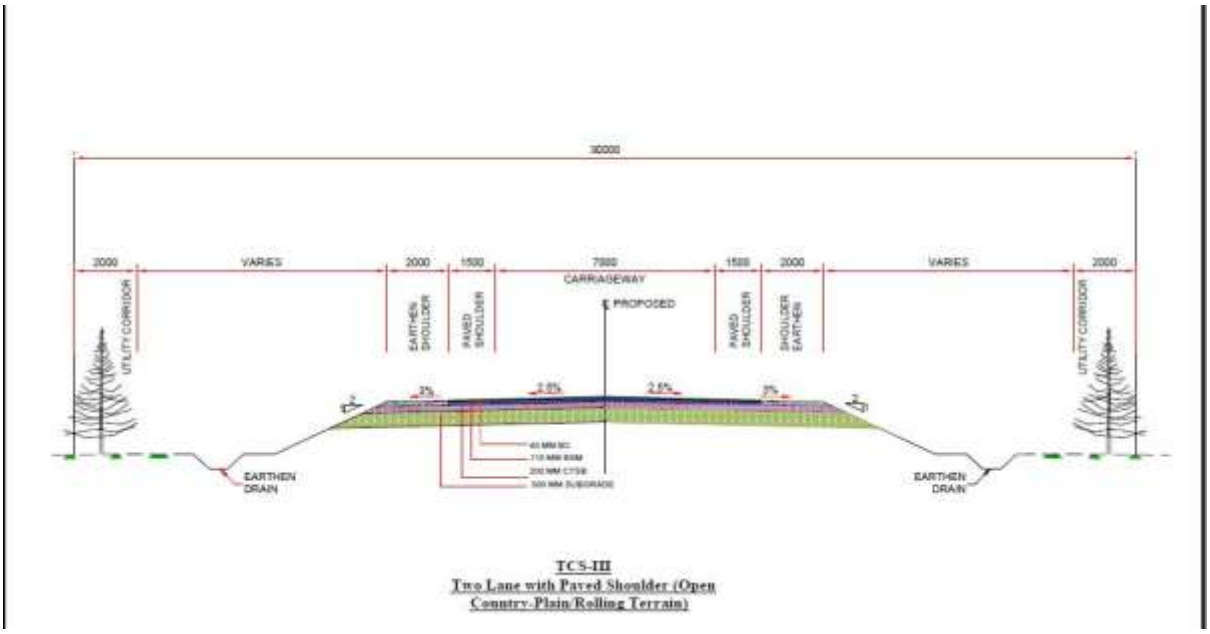
TCS-II



TCS-II
Two Lane With Paved Shoulder Raised Portion(Hill Section)
(New Alignment)

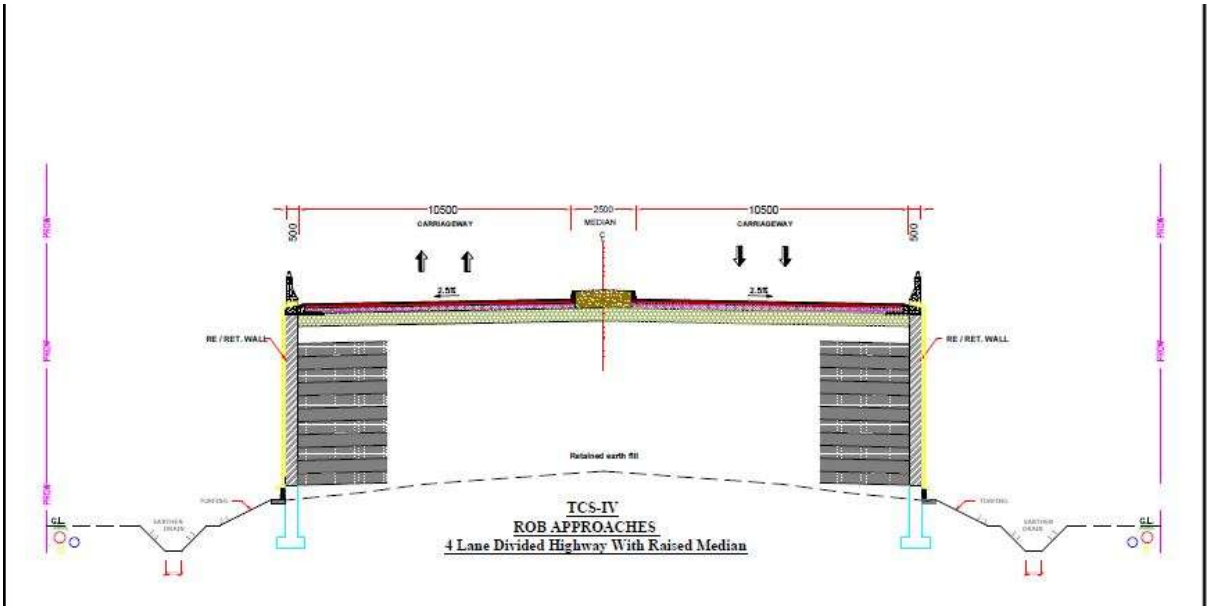
Note:-
Hill cutting slope should not exceed 60°.
1.5m benching to be provided at every 10m height.

TCS-III

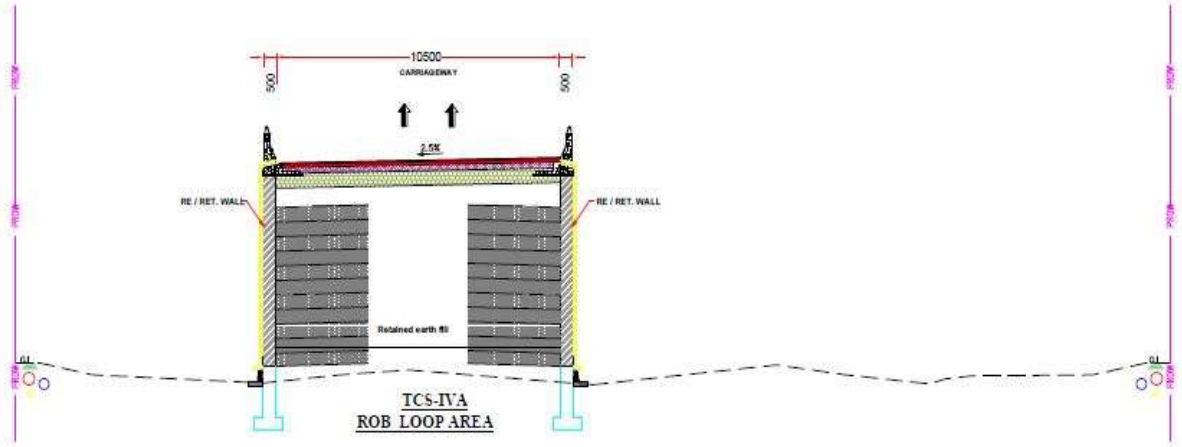


TCS-III
Two Lane with Paved Shoulder (Open Country-Plain/Rolling Terrain)

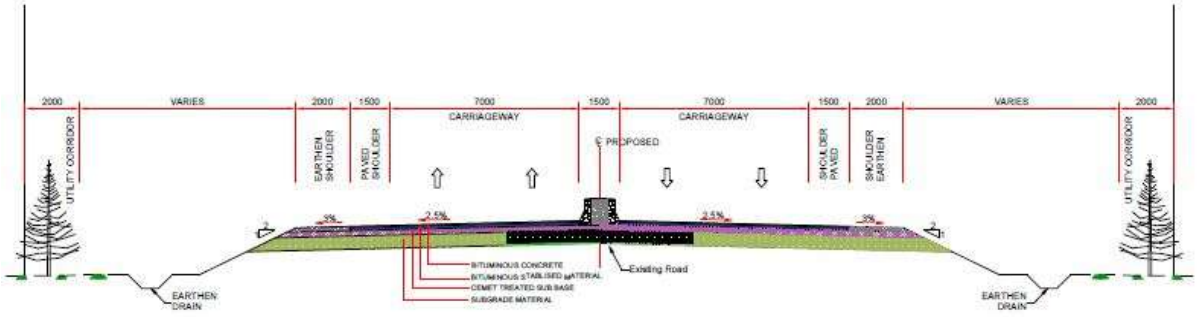
TCS-IV



TCS-IVA

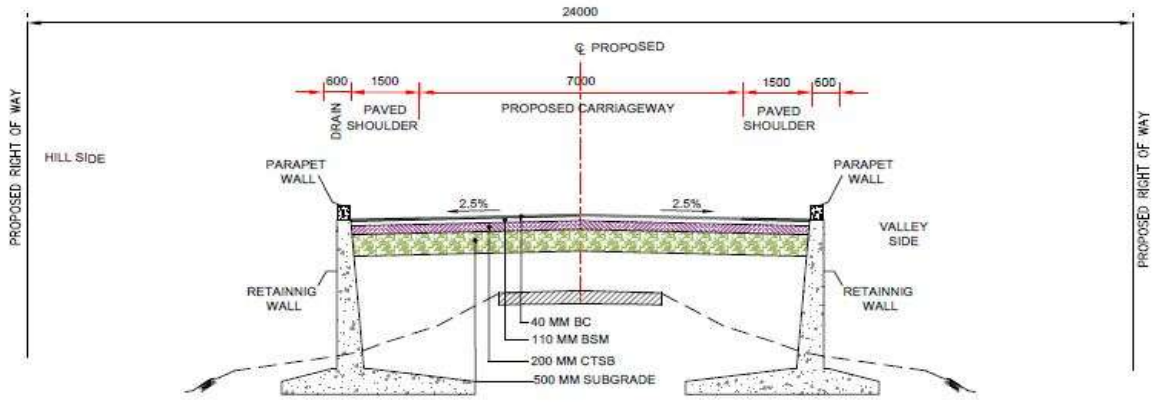


TCS-V



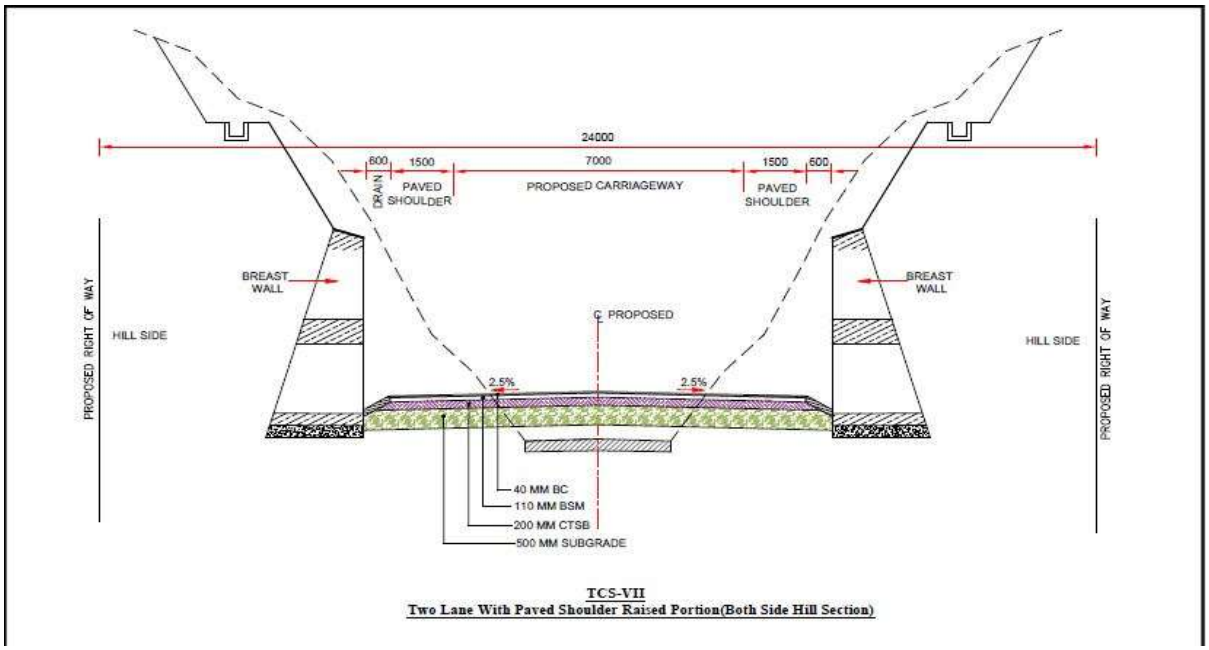
TCS-V
Open Country - Plain/Rolling Terrain
4 Lane Divided Highway With Raised Median(At NH-31 Widening)
Median width restricted to avoid Oil pipe line in MCW

TCS-VI



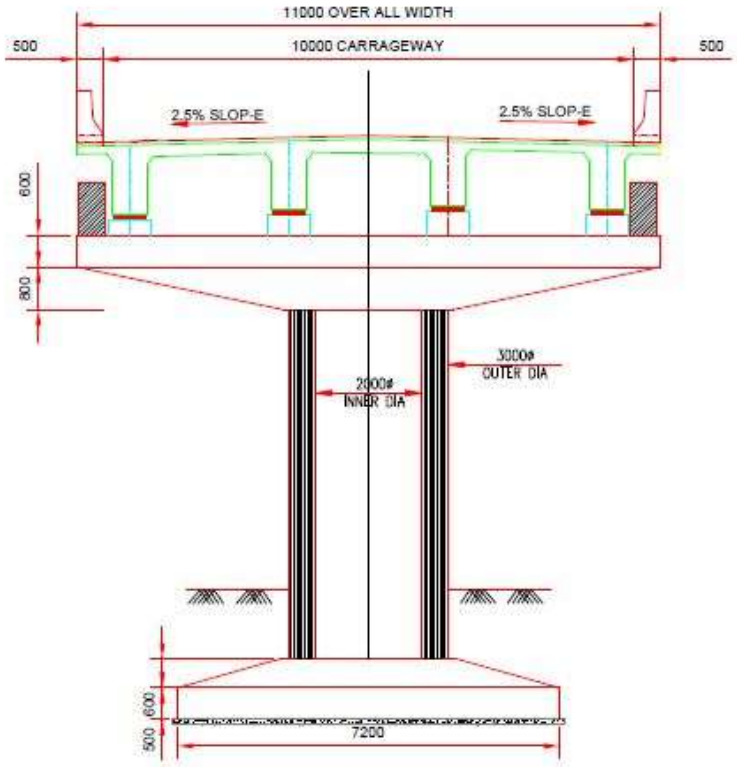
TCS-VI
Two Lane With Paved Shoulder (Both Side Valley Section)

TCS-VII



TCS-VII
Two Lane With Paved Shoulder Raised Portion(Both Side Hill Section)

TCS-VIII



TCS-VIII
Typical Cross Section for 2 Lane Elevated Section

Type of Cross Section Description	TCS	Length in Km
Two lane with paved shoulder Raised portion (Hill section)	I	2.900
Two lane with paved shoulder Raised portion(Hill section), New Alignment	II	2.190
Type of Cross Section of 2-lane with paved shoulder (Open country-plain/rolling terrain) Bypass Section	III	3.400
Type of Cross Section of 4-lane divided highway with raised median	IV	0.400
Two lane with paved shoulder Raised portion (Both Side Valley section)	VI	0.310
Two lane with paved shoulder Raised portion (Both Side Hill section)	VII	1.780
Typical Cross Section for 2 Lane Elevated Structure	VIII	2.020
	Total	**13.000**

TCS ON ROB APPROACH AND RAMP					
Sr. No.	**Proposed Chainage**		**Length**	**Section**	**TCS**
	From (Km)	**To (Km)**	**in (Km)**		
1	A+0.000	A+0.300	0.3	On ROB Approach	IV
2	A+0.300	A+0.800	0.5	Ramp A-A	IVA
3	B+0.300	B+0.700	0.4	Ramp B-B	IVA
4	C+610.360	C+611.400	1.04	On NH-31	V
	Total		**2.24**		

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 Intersections:

3.1.1 Major intersections

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

Sr. No.	Location (Existing Chainage) (km)	Location (Design Chainage) (km)	Salient Feature	Minimum Length of Viaduct	Road to be carried Under structure
1	610+765 of NH-31	0+000	T- Junction (with NH-31)	-	-

3.1.2 Minor Intersections

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

SL. No.	Existing Chainage	Design Chainage	Type of intersection	Direction	Type of Road	Going to
				Left/Right	E/BT/CC	
1	Bypass	0+950	Y	Right	-	Tea garden
2	Bypass	1+130	X	Both	-	Tea garden
3	Bypass	2+000	Y	Left	-	Tea garden
4	Bypass	2+220	Y	Left & Right	-	Tea garden
5	Bypass	2+600	Y	Left & Right	-	Tea garden
6	3+500	3+800	Y	Left	BT Road	Jn. of Bypass and Exist. Road

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 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 (4.990 km):

Sr. No.	Proposed Chainage		Length in (Km)	Type of Cross Section Description	TCS
	From (Km)	To (Km)			
1	3.800	3.860	0.060	Two lane with paved shoulder Raised portion(Hill section)	I
2	3.915	3.970	0.055	Two lane with paved shoulder Raised portion(Hill section)	I
3	4.340	4.400	0.060	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
4	4.690	4.725	0.035	Two lane with paved shoulder Raised portion(Hill section)	I
5	4.850	4.890	0.040	Two lane with paved shoulder Raised portion(Hill section)	I
6	4.900	4.930	0.030	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
7	5.050	5.130	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
8	5.230	5.400	0.170	Two lane with paved shoulder Raised portion(Hill section)	I
9	5.590	5.660	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
10	5.660	5.820	0.160	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
11	5.820	5.880	0.060	Two lane with paved shoulder Raised portion(Hill section)	I
12	5.880	5.920	0.040	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
13	5.920	6.140	0.220	Two lane with paved shoulder Raised portion(Hill section)	I
14	6.220	6.270	0.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
15	6.270	6.350	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
16	6.350	6.580	0.230	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
17	7.360	7.400	0.040	Two lane with paved shoulder Raised portion(Hill section)	I
18	7.400	7.420	0.020	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
19	7.420	7.440	0.020	Two lane with paved shoulder Raised portion(Hill section)	I
20	8.420	8.460	0.040	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
21	8.520	8.620	0.100	Two lane with paved shoulder Raised portion(Hill section)	I
22	8.620	9.670	1.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
23	9.670	10.020	0.350	Two lane with paved shoulder Raised portion(Hill section)	I
24	10.100	10.160	0.060	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
25	10.240	10.290	0.050	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
26	10.290	10.340	0.050	Two lane with paved shoulder Raised portion(Hill section)	I
27	10.360	10.420	0.060	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
28	10.550	10.620	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
29	10.760	10.790	0.030	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
30	10.820	10.910	0.090	Two lane with paved shoulder Raised portion(Hill section)	I
31	10.930	10.980	0.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
32	11.000	11.090	0.090	Two lane with paved shoulder Raised portion(Hill section)	I
33	11.140	11.530	0.390	Two lane with paved shoulder Raised portion(Hill section)	I
34	11.530	11.560	0.030	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
35	11.560	11.940	0.380	Two lane with paved shoulder Raised portion(Hill section)	I

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
36	11.970	12.050	0.080	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
37	12.050	12.200	0.150	Two lane with paved shoulder Raised portion(Hill section)	I
38	12.280	12.360	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
39	12.500	12.570	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
40	12.620	12.630	0.010	Two lane with paved shoulder Raised portion(Hill section)	I
41	12.630	12.680	0.050	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
42	12.680	12.820	0.140	Two lane with paved shoulder Raised portion(Hill section)	I

5. PAVEMENT DESIGN

Pavement design shall be carried out in accordance with Section 5 of the Manual.

5.1 Type of pavement

The Pavement shall be flexible.
Crust composition for flexible pavement:

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

5.2 Design requirements

5.2.1 Design Period and strategy

As per clause 5.4.1, 5.9 & 5.10 of IRC: SP: 73- 2015

5.2.2 Design Traffic

As per clause 5.4.1, 5.9 & 5.10 of IRC: SP: 73- 2015

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 of Schedule B of the document shows the table of the existing road that shall be reconstructed. These shall be designed as new pavement.

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 and Unlined drains are provided in following stretches:

Lined Drains Location:

Sr. No.	Type of Cross Section Description	TCS	TCS Length (Km)	Total Length (Km)
1	Two lane with paved shoulder Raised portion(Hill section)	I	2.90*1	2.9
2	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II	2.19*1	2.19
3	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII	1.78*2	3.56
			Total	**8.65**

Unlined Drains Location:

Sr. No.	Type of Cross Section Description	TCS	TCS Length (Km)	Total Length (Km)
1	Type of Cross Section of 2-lane with paved shoulder (Open country- plain/rolling terrain)	III	3.40*2	6.8
2	Type of Cross Section of 4-lane divided highway with raised median	IV	0.70*2	1.4
3	Type of Cross Section of 4-lane divided highway with raised median (At NH-31 Widening)	V	1.04*2	2.08
			Total	**10.28**

Therefore total length of Lined and Unlined Drains are provided below:

Drain type	Unit	Length
(i) Lined Drain	Km	8.65
(ii) Unlined Drain	Km	10.28

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:

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

7.1.3 The following structures shall be provided with footpaths:

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

7.1.4 All bridges shall be high-level bridges.

7.1.5 The following structures shall be designed to carry utility services specified in table below:

Sr. No.	Bridge (Km)	Utility service to be carried	Remarks
1	1+382	10 m	As per site requirement
2	3+585	40 m	

7.1.6 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

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

7.2.2 Reconstruction of Existing Culverts:

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

Sl. No.	Existing Chainage (Km)	Type of Culvert	Existing No. of Spans with Span Length x Vertical Clearance (In m)	Recommendation	Design Chainage (Km)	Type of Culvert	No. of Spans with Span Length (m)
1	3+685	RCC SLAB	1X3.25	Reconstruction	3+997	RCC SLAB	2X3
2	4+617	RCC SLAB	1X3	Reconstruction	5+080	RCC SLAB	1X3
3	4+652	RCC SLAB	1X3	Reconstruction	5+150	RCC SLAB	1X3
4	4+800	RCC SLAB	1X1.5	Reconstruction	5+280	RCC SLAB	1X3
5	4+860	RCC SLAB	1X3	Reconstruction	5+340	RCC SLAB	1X3
6	4+956	RCC SLAB	1X2	Reconstruction	5+440	RCC SLAB	1X3
7	5+372	RCC SLAB	1X2	Reconstruction	5+850	RCC SLAB	1X3
8	5+452	RCC SLAB	1X1.5	Reconstruction	5+920	RCC SLAB	1X3
9	5+836	RCC SLAB	1X1.5	Reconstruction	6+280	RCC SLAB	1X3
10	7+120	RCC SLAB	1X1.5	Reconstruction	8+520	RCC SLAB	1X3
11	7+366	Causeway	-	Reconstruction	8+750	RCC SLAB	1X3
12	7+665	RCC SLAB	1X1	Reconstruction	9+040	RCC SLAB	1X3
13	7+950	Causeway	-	Reconstruction	9+280	RCC SLAB	1X3

Sl. No.	Existing Chainage (Km)	Type of Culvert	Existing No. of Spans with Span Length x Vertical Clearance (In m)	Recommendation	Design Chainage (Km)	Type of Culvert	No. of Spans with Span Length (m)
14	8+230	Causeway	-	Reconstruction	9+540	RCC SLAB	1X3
15	8+288	Causeway	-	Reconstruction	9+620	RCC SLAB	1X3
16	8+457	Causeway	-	Reconstruction	9+780	RCC SLAB	1X3
17	8+532	Causeway	-	Reconstruction	9+870	RCC SLAB	1X3
18	8+612	RCC SLAB	1X1	Reconstruction	9+930	RCC SLAB	1X3
19	8+655	Causeway	-	Reconstruction	9+980	RCC SLAB	1X3
20	8+988	Causeway		Reconstruction	10+280	RCC SLAB	1X3
21	9+027	Causeway		Reconstruction	10+300	RCC SLAB	1X3
22	9+180	Causeway		Reconstruction	10+420	RCC SLAB	1X3
23	9+440	RCC SLAB	1X3.1	Reconstruction	10+585	RCC SLAB	1X3
24	9+600	Causeway		Reconstruction	10+760	RCC SLAB	1X3
25	9+780	Causeway		Reconstruction	10+900	RCC SLAB	1X3
26	9+983	RCC SLAB	1X2	Reconstruction	11+000	RCC SLAB	1X3
27	10+046	RCC SLAB	1X2.1	Reconstruction	11+140	RCC SLAB	1X3
28	10+209	Causeway		Reconstruction	11+280	RCC SLAB	1X3
29	10+261	Causeway		Reconstruction	11+350	RCC SLAB	1X3
30	10+386	Causeway		Reconstruction	11+480	RCC SLAB	1X3
31	10+419	Causeway		Reconstruction	11+500	RCC SLAB	1X3
32	11+018	Causeway		Reconstruction	12+090	RCC SLAB	1X3
33	11+120	RCC SLAB	1X2	Reconstruction	12+225	RCC SLAB	1X3
34	11+822	Causeway		Reconstruction	12+850	RCC SLAB	1X3
35	11+950	Causeway		Reconstruction	12+950	RCC SLAB	1X3

7.2.3 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			

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

Sl. No.	Design Chainage (Km)	Type of Culvert	No. of Spans with Span Length (In m)
1	1+264	RCC SLAB	1X3
2	2+247	RCC SLAB	1X3
3	2+807	RCC SLAB	1X3
4	3+342	RCC SLAB	1X3
5	3+778	RCC SLAB	1X3
6	3+818	RCC SLAB	1X3
7	4+104	RCC SLAB	1X3
8	4+680	RCC SLAB	1X3

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

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Type of Culvert	Span (m)	Type of Repair
NIL					

7.2.6 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)	Existing no. of Spans with span length (m)	Proposed no. of Spans with span length (m)	Proposed structure	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.	Location		Span Arrangement	Total length (m)	Remarks
	Existing Chainage(Km)	Design Chainage(Km)			
1	-	1+382	1x10	10	New Construction
2	-	3+585	1x40	40	New Construction

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 7.20 of the Manual.

7.3.6 Structures in marine environment

NIL

7.4 Rail - Road Bridges

7.4.1 Design, construction and detailing of ROB shall be as specified in paragraph 7.19 of the Manual.

7.4.2 Road Over-Bridges and Loop section combined

Road over-bridges (road over railway line) and loop 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
1	0+020	(1X25) + (1X45.4) + (1X40.5) + (2X25)	PSC, RDSO(Steel)	ROB+LOOP

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

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2.10 and 3 of this Annex-I of Schedule-B.

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

7.6 Repairs and strengthening of bridges and structures

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 (Km)	End Chainage (Km)	Span Arrangement	Width of Carriageway (m)	Length (m)
1	4+120	4+190	1X30+2X20	11	70
2	4+400	4+460	3x20	11	60
3	4+520	4+610	1X20+1X30+2X20	11	90
4	4+750	4+850	5X20	11	100
5	6+710	7+040	2X20+3X30+4X20+2X30+3X20	11	330
6	7+120	7+280	3X20+2X30+2X20	11	160
7	7+450	8+420	5X20+5X30+7X20+7X30+6X20+7X30+2X20	11	970
8	10+030	10+100	1X30+2X20	11	70
9	10+480	10+520	1X40	11	40
10	10+650	10+720	1X30+2X20	11	70
11	12+590	12+620	1X30	11	30
12	12+910	12+940	1X30	11	30
Total Length					**2020**

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 W-beam crash barrier 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**

NIL

11 HAZARDOUS LOCATIONS

The safety barriers shall also be provided at the following hazardous length**:**

Sl. No.	Design Chainage			Remarks
	From	To	Length (m)	
1	0+000	13+000	5539	Deficient curve ≤ 25m and embankment Height more than 3m

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):

Sl. No.	Chainage		Height (m)	Length (m)		Sl. No.	Chainage		Height (m)	Length (m)
	From (m)	To (m)					From (m)	To (m)		
1	3570	3580	8	10		26	4690	4700	8	10
2	3580	3590	7	10		27	4700	4710	7	10
3	3970	3980	6	10		28	4710	4720	6	10
4	3990	4000	7	10		29	4730	4740	9	10
5	4000	4010	8	10		30	4840	4850	6	10
6	4010	4020	9	10		31	4850	4860	8	10
7	4020	4030	9	10		32	4900	4910	7	10
8	4030	4040	10	10		33	4910	4920	6	10
9	4040	4050	11	10		34	4920	4930	6	10
10	4050	4060	11	10		35	4930	4940	6	10
11	4060	4070	7	10		36	4940	4950	7	10
12	4070	4080	7	10		37	4950	4960	7	10
13	4080	4090	9	10		38	7100	7110	9	10
14	4090	4100	10	10		39	7280	7290	10	10
15	4100	4110	11	10		40	7390	7400	6	10
16	4190	4200	7	10		41	7400	7410	8	10
17	4330	4340	9	10		42	7410	7420	6	10
18	4340	4350	9	10		43	7420	7430	7	10
19	4350	4360	9	10		44	7430	7440	9	10
20	4360	4370	9	10		45	8420	8430	11	10
21	4370	4380	9	10		46	8430	8440	10	10
22	4380	4390	9	10		47	8440	8450	9	10
23	4500	4510	9	10		48	8450	8460	8	10
24	4610	4620	8	10		49	10100	10110	6	10
25	4680	4690	8	10		50	10140	10150	6	10
Sl.	Chainage		Height	Length						

No.	From (m)	To (m)	(m)	(m)
51	10150	10160	9	10
52	10160	10170	10	10
53	10170	10180	8	10
54	10210	10220	8	10
55	10220	10230	9	10
56	10230	10240	9	10
57	10240	10250	9	10
58	10250	10260	7	10
59	10260	10270	8	10
60	10270	10280	7	10
61	10290	10300	8	10
62	10300	10310	7	10
63	12620	12630	7	10
64	12630	12640	7	10
65	12640	12650	6	10
66	12650	12660	6	10
67	12660	12670	6	10
68	12720	12730	6	10
			Total	**680**

Retaining Walls Locations (RHS):

Sl. No.	Chainage		Height (m)	Length (m)		Sl. No.	Chainage		Height (m)	Length (m)
	From (m)	To (m)					From (m)	To (m)		
1	3570	3580	8.0	10		19	4500	4510	10.0	10
2	3580	3590	7.0	10		20	4850	4860	7.0	10
3	4100	4110	7.0	10		21	4860	4870	7.0	10
4	4190	4200	10.0	10		22	4870	4880	7.0	10
5	4200	4210	7.0	10		23	4890	4900	9.0	10
6	4230	4240	7.0	10		24	4900	4910	10.0	10
7	4240	4250	6.0	10		25	4910	4920	10.0	10
8	4320	4330	8.0	10		26	4920	4930	12.0	10
9	4330	4340	11.0	10		27	4960	4970	8.0	10
10	4340	4350	10.0	10		28	7040	7050	10.0	10
11	4350	4360	9.0	10		29	7280	7290	10.0	10
12	4360	4370	11.0	10		30	7290	7300	8.0	10
13	4370	4380	11.0	10		31	7300	7310	7.0	10
14	4380	4390	11.0	10		32	7330	7340	7.0	10
15	4460	4470	10.0	10		33	7340	7350	9.0	10
16	4470	4480	9.0	10		34	7350	7360	9.0	10
17	4480	4490	9.0	10		35	7360	7370	9.0	10
18	4490	4500	9.0	10		36	7370	7380	12.0	10
37	7400	7410	10.0	10		77	11050	11060	8.0	10

Sl. No.	Chainage		Height (m)	Length (m)
	From (m)	To (m)		
38	7410	7420	11.0	10
39	8420	8430	11.0	10
40	8430	8440	11.0	10
41	8440	8450	10.0	10
42	8450	8460	9.0	10
43	8460	8470	8.0	10
44	8470	8480	8.0	10
45	9970	9980	7.0	10
46	9980	9990	7.0	10
47	9990	10000	10.0	10
48	10000	10010	10.0	10
49	10010	10020	11.0	10
50	10100	10110	11.0	10
51	10110	10120	9.0	10
52	10120	10130	7.0	10
53	10130	10140	9.0	10
54	10140	10150	10.0	10
55	10150	10160	11.0	10
56	10180	10190	11.0	10
57	10190	10200	10.0	10
58	10200	10210	10.0	10
59	10210	10220	10.0	10
60	10240	10250	12.0	10
61	10250	10260	11.0	10
62	10260	10270	9.0	10
63	10270	10280	9.0	10
64	10280	10290	10.0	10
65	10320	10330	11.0	10
66	10330	10340	9.0	10
67	10340	10350	8.0	10
68	10460	10470	9.0	10
69	10520	10530	8.0	10
70	10580	10590	7.0	10
71	10590	10600	6.0	10
72	10630	10640	8.0	10
73	11000	11010	10.0	10
74	11010	11020	7.0	10
75	11030	11040	9.0	10
76	11040	11050	9.0	10

Sl. No.	Chainage		Height (m)	Length (m)
	From (m)	To (m)		
78	11220	11230	7.0	10
79	11330	11340	7.0	10
80	12210	12220	9.0	10
81	12220	12230	9.0	10
82	12230	12240	8.0	10
83	12240	12250	7.0	10
84	12250	12260	6.0	10
85	12260	12270	6.0	10
86	12350	12360	8.0	10
87	12360	12370	10.0	10
88	12370	12380	8.0	10
89	12490	12500	9.0	10
90	12500	12510	9.0	10
91	12510	12520	9.0	10
92	12520	12530	9.0	10
93	12530	12540	7.0	10
94	12550	12560	6.0	10
95	12560	12570	9.0	10
96	12570	12580	12.0	10
97	12620	12630	11.0	10
98	12630	12640	10.0	10
99	12640	12650	10.0	10
100	12650	12660	10.0	10
101	12660	12670	10.0	10
102	12670	12680	8.0	10
103	12680	12690	6.0	10
104	12690	12700	6.0	10
105	12700	12710	6.0	10
106	12710	12720	6.0	10
107	12940	12950	11.0	10
			Total	**1070**

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.

	Left Side Length (m)	Right Side Length (m)
Breast Wall	**2880**	**2310**

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.

Indicative Chainages with applicable Typical Cross section :

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
1	0.000	0.400	0.400	Type of Cross Section of 4-lane divided highway with raised median	IV
2	0.400	3.800	3.400	Type of Cross Section of 2-lane with paved shoulder (Open country- plain/rolling terrain)	III
3	3.800	3.860	0.060	Two lane with paved shoulder Raised portion(Hill section)	I
4	3.860	3.915	0.055	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
5	3.915	3.970	0.055	Two lane with paved shoulder Raised portion(Hill section)	I
6	3.970	4.120	0.150	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
7	4.120	4.190	0.070	Typical Cross Section for 2 Lane Elevated Structure	VIII
8	4.190	4.340	0.150	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
9	4.340	4.400	0.060	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
10	4.400	4.460	0.060	Typical Cross Section for 2 Lane Elevated Structure	VIII
11	4.460	4.520	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
12	4.520	4.610	0.090	Typical Cross Section for 2 Lane Elevated Structure	VIII
13	4.610	4.690	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
14	4.690	4.725	0.035	Two lane with paved shoulder Raised portion(Hill section)	I
15	4.725	4.750	0.025	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
16	4.750	4.850	0.100	Typical Cross Section for 2 Lane Elevated Structure	VIII
17	4.850	4.890	0.040	Two lane with paved shoulder Raised portion(Hill	I

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
				section)	
18	4.890	4.900	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
19	4.900	4.930	0.030	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
20	4.930	5.050	0.120	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
21	5.050	5.130	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
22	5.130	5.230	0.100	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
23	5.230	5.400	0.170	Two lane with paved shoulder Raised portion(Hill section)	I
24	5.400	5.590	0.190	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
25	5.590	5.660	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
26	5.660	5.820	0.160	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
27	5.820	5.880	0.060	Two lane with paved shoulder Raised portion(Hill section)	I
28	5.880	5.920	0.040	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
29	5.920	6.140	0.220	Two lane with paved shoulder Raised portion(Hill section)	I
30	6.140	6.220	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
31	6.220	6.270	0.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
32	6.270	6.270	0.000	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
33	6.270	6.350	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
34	6.350	6.580	0.230	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
35	6.580	6.710	0.130	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
36	6.710	7.040	0.330	Typical Cross Section for 2 Lane Elevated Structure	VIII
37	7.040	7.120	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
38	7.120	7.280	0.160	Typical Cross Section for 2 Lane Elevated Structure	VIII
39	7.280	7.360	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
40	7.360	7.400	0.040	Two lane with paved shoulder Raised portion(Hill section)	I
41	7.400	7.420	0.020	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
42	7.420	7.440	0.020	Two lane with paved shoulder Raised portion(Hill	I

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
				section)	
43	7.440	7.450	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
44	7.450	8.420	0.970	Typical Cross Section for 2 Lane Elevated Structure	VIII
45	8.420	8.460	0.040	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
46	8.460	8.520	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
47	8.520	8.620	0.100	Two lane with paved shoulder Raised portion(Hill section)	I
48	8.620	9.670	1.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
49	9.670	10.020	0.350	Two lane with paved shoulder Raised portion(Hill section)	I
50	10.020	10.030	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
51	10.030	10.100	0.070	Typical Cross Section for 2 Lane Elevated Structure	VIII
52	10.100	10.160	0.060	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
53	10.160	10.240	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
54	10.240	10.290	0.050	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
55	10.290	10.340	0.050	Two lane with paved shoulder Raised portion(Hill section)	I
56	10.340	10.360	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
57	10.360	10.420	0.060	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
58	10.420	10.480	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
59	10.480	10.520	0.040	Typical Cross Section for 2 Lane Elevated Structure	VIII
60	10.520	10.550	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
61	10.550	10.620	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
62	10.620	10.650	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
63	10.650	10.720	0.070	Typical Cross Section for 2 Lane Elevated Structure	VIII
64	10.720	10.760	0.040	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
65	10.760	10.790	0.030	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
66	10.790	10.820	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
67	10.820	10.910	0.090	Two lane with paved shoulder Raised portion(Hill section)	I
68	10.910	10.930	0.020	Two lane with paved shoulder Raised portion(Hill	II

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
				section), New Alignment	
69	10.930	10.980	0.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
70	10.980	11.000	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
71	11.000	11.090	0.090	Two lane with paved shoulder Raised portion(Hill section)	I
72	11.090	11.140	0.050	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
73	11.140	11.530	0.390	Two lane with paved shoulder Raised portion(Hill section)	I
74	11.530	11.560	0.030	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
75	11.560	11.940	0.380	Two lane with paved shoulder Raised portion(Hill section)	I
76	11.940	11.970	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
77	11.970	12.050	0.080	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
78	12.050	12.200	0.150	Two lane with paved shoulder Raised portion(Hill section)	I
79	12.200	12.280	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
80	12.280	12.360	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
81	12.360	12.500	0.140	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
82	12.500	12.570	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
83	12.570	12.590	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
84	12.590	12.620	0.030	Typical Cross Section for 2 Lane Elevated Structure	VIII
85	12.620	12.630	0.010	Two lane with paved shoulder Raised portion(Hill section)	I
86	12.630	12.680	0.050	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
87	12.680	12.820	0.140	Two lane with paved shoulder Raised portion(Hill section)	I
88	12.820	12.910	0.090	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
89	12.910	12.940	0.030	Typical Cross Section for 2 Lane Elevated Structure	VIII
90	12.940	13.000	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
		Total	**13.000**		

TCS ON ROB APPROACH AND RAMP					
Sr. No.	**Proposed Chainage**		**Length**	**Section**	**TCS**
	From (Km)	**To (Km)**	**in (Km)**		
1	A+0.000	A+0.300	0.3	On ROB Approach	IV
2	A+0.300	A+0.800	0.5	Ramp A-A	IVA
3	B+0.300	B+0.700	0.4	Ramp B-B	IVA
4	C+610.360	C+611.400	1.04	On NH-31	V
	Total		**2.24**		

14 Details of Utility Shifting

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

Sl. No.	**Location**		**Nature of Utility to be shifted**	**Side**
	Chainage in Km		**a) Electrical Lines** **b) Cable Lines** **c) Water Supply Line**	
	From Km	**To Km**	**d) Gas Pipe Line**	
1	3.75	3.85	Drinking Water Supply for Bagrakote	LHS