

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. [Rehabilitation and augmentation]

[Rehabilitation and augmentation] shall include [Two-Laning and Strengthening] of the Project Highway as described in Annex-I of this Schedule-B and in 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-Laning with Paved/Hard Shoulder

[Note: Description of the Project Highway shall be given by the Authority in detail together with explanatory drawings (where necessary) to explain the Authority's requirements precisely in order to avoid subsequent changes in the Scope of the Project. The particulars that must be specified in this Schedule-B are listed below as per the requirements of the Manual of Specifications and Standards for [Two Laning of Highways (IRC:SP:73-2018)], referred to as the Manual. If any standards, specifications or details are not given in the Manual, the minimum design/construction requirements shall be specified in this Schedule. In addition to these particulars, all other essential project specific details, as required, should be provided in order to define the Scope of the Project clearly and precisely.]

1. Widening of the Existing Highway

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

(ii) Width of Carriageway

(a) Two-Laning with hard shoulders shall be undertaken. The paved carriageway shall be 7(seven) m wide in accordance with the typical cross sections drawings.

Provided that in the built-up areas [refer to paragraphs 2.1 (ii) (a) of the Manual and provide necessary details]: the width of the carriageway shall be as specified in the following table:

Sl. No.	Built-up stretch (Township)	Location (km to km)		Width (m) of carriageway	Typical cross section (Ref. to Manual)	Remarks
1	Old Akhegwo Village	283.000	283.045	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing attached)	7 m Carriageway+2x1.5m Paved shoulder+2x1.0 m Footpath on covered RCC drain+(1+3)m utility corridor
2	Old Akhegwo Village	283.045	283.265	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing attached)	7 m Carriageway+2x1.5m Paved shoulder
3	Meluri Town	307.045	308.510	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing attached)	7 m Carriageway+2x1.5m Paved shoulder

4	Meluri Town	308.510	309.495	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing attached)	7 m Carriageway+2x1.5m Paved shoulder+2x1.0 m Footpath on covered RCC drain+(1+3)m utility corridor
5	Meluri Town	309.495	309.710	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing attached)	7 m Carriageway+2x1.5m Paved shoulder
6	Meluri Town	309.710	310.010	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing attached)	7 m Carriageway+2x1.5m Paved shoulder+2x1.0 m Footpath on covered RCC drain+(1+3)m utility corridor
7	Meluri Town	310.010	310.180	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing attached)	7 m Carriageway+2x1.5m Paved shoulder
8	Meluri Town	310.510	310.690	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing attached)	7 m Carriageway+2x1.5m Paved shoulder+2x1.0 m Footpath on covered RCC drain+(1+3)m utility corridor

- (b) Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall conform to paragraph 1(i) above

2. Geometric Design and General Features

(i) General

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

(ii) Design speed

The design speed shall be as per section 2.2 of IRC 73: 2018 for Mountainous and Steep terrain. However, in exceptional cases the minimum design speed of 30 km per hour may be adopted and 20 km per hour for hair pin bend locations shall be adopted in accordance with IRC 52:2019.

(iii) Improvement of the existing road geometrics

In the sections, where improvement of the existing road geometrics to the prescribed standards is not possible, the existing road geometrics shall be improved to the extent possible within the given right of way and proper road signs and safety measures shall be provided

(iv) Right of Way

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

(v) Type of shoulders

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

Sl. No.	Stretch (from km to km)		Fully paved shoulders/ footpaths	Reference to cross section
1	283.000	283.045	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
2	283.045	283.265	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
3	307.045	307.145	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
4	307.145	307.230	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
5	307.230	307.450	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
6	307.450	307.580	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
7	307.580	307.620	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
8	307.620	307.760	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-7
9	307.760	307.845	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
10	307.845	307.890	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
11	307.890	307.930	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
12	307.930	307.970	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
13	307.970	308.110	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
14	308.110	308.330	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-7

Sl. No.	Stretch (from km to km)		Fully paved shoulders/ footpaths	Reference to cross section
15	308.330	308.410	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
16	308.410	308.465	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
17	308.465	308.510	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
18	308.510	309.105	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
19	309.105	309.240	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
20	309.240	309.495	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
21	309.495	309.540	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
22	309.540	309.710	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
23	309.710	310.010	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
24	310.010	310.180	2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
25	310.510	310.570	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
26	310.570	310.690	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5A

(b) Width of Shoulder in open country shall be mentioned in the following Table:

Type of Section		Width of Shoulder (m)		
		Hard	Earthen	Total
Open Country with isolated built-up area	Hill Side	1.5	-	1.5
	Valley Side	1.5	1.0	2.5

[Hard shoulders of 1.5m width with compacted layer of granular material shall be provided].

- (c) Design and specifications of earthen shoulders and granular material shall conform to the requirements specified in the relevant Manual.

(vi) Lateral and vertical clearances at underpasses

- (a) Lateral and vertical clearances at underpasses and provision of guardrails/ crash barriers shall be as per the provision of relevant Manual.

Nil

- (b) Lateral clearance: The width of the opening at the underpasses shall be as follows:

Nil

(vii) Lateral and vertical clearances at overpasses

Nil

(viii) Service roads

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

Nil

(ix) Grade separated structures

Nil

(x) Cattle and pedestrian underpass /overpass

Nil

(xi) Typical cross-sections of the Project Highway is as per attached Drawings

TCS TYPE	DESCRIPTION
TCS-1	Typical cross section of Two Lane carriageway with hard shoulder in rural area with R. R. Masonry open Triangular drain on hill side (New Construction)
TCS-1A	Typical cross section of Two Lane carriageway with hard shoulder in rural area with R. R. Masonry open Triangular drain on hill side (Reconstruction)
TCS-2	Typical cross section of Two Lane carriageway with hard shoulder in rural area with breast wall on hill side (New Construction)
TCS-2A	Typical cross section of Two Lane carriageway with hard shoulder in rural area with breast wall on hill side (Reconstruction)
TCS-3	Typical cross section of Two Lane carriageway with paved shoulder in rural area with both side R. R. Masonry open Triangular drain (New Construction)
TCS-3A	Typical cross section of Two Lane carriageway with hard shoulder in rural area with both side R. R. Masonry open Triangular drain (Reconstruction)

TCS TYPE	DESCRIPTION
TCS-4	Typical cross section of Two Lane carriageway with hard shoulder in rural area with retaining wall on valley side and R. R. Masonry open Triangular drain on hill side (New Construction)
TCS-4A	Typical cross section of Two Lane carriageway with hard shoulder in rural area with retaining wall on valley side and R. R. Masonry open Triangular drain on hill side (Reconstruction)
TCS-5	Typical cross section of Two Lane carriageway with earthen shoulder in built-up area with both side footpath cum RCC cover drain (Reconstruction)
TCS-5A	Typical cross section of Two Lane carriageway with earthen shoulder in built-up area with both side footpath cum RCC cover drain (New Construction)
TCS-6	Typical cross section of Two Lane carriageway in built-up area with one side footpath and breast wall on hill side (Reconstruction)
TCS-6A	Typical cross section of Two Lane carriageway in built-up area with one side footpath and breast wall on hill side (New Construction)
TCS-7	Typical cross section of Two Lane carriageway in built-up area with breast wall on hill side and retaining wall on valley side(Reconstruction)

Chainage (m)		Length (m)	TCS No.
From	To		
283000	283045	45.0	TCS-5
283045	283265	220.0	TCS-6
283265	283340	75.0	TCS-1
283340	283440	100.0	TCS-1A
283440	283490	50.0	TCS-1
283490	283530	40.0	TCS-1A
283530	283640	110.0	TCS-1
283640	283680	40.0	TCS-2A
283680	283730	50.0	TCS-2
283730	283770	40.0	TCS-1A
283770	283840	70.0	TCS-1
283840	283890	50.0	TCS-1A
283890	283990	100.0	TCS-1
283990	284090	100.0	TCS-2A
284090	284150	60.0	TCS-1
284150	284220	70.0	TCS-1A
284220	284310	90.0	TCS-2A
284310	284350	40.0	TCS-1
284350	284490	140.0	TCS-2A

Chainage (m)		Length (m)	TCS No.
From	To		
284490	284580	90.0	TCS-1
284580	284620	40.0	TCS-1A
284620	284670	50.0	TCS-1
284670	284720	50.0	TCS-2A
284720	284760	40.0	TCS-1A
284760	284880	120.0	TCS-2A
284880	284955	75.0	TCS-1A
284955	285000	45.0	TCS-2
285000	285070	70.0	TCS-2A
285070	285230	160.0	TCS-1A
285230	285290	60.0	TCS-2A
285290	285430	140.0	TCS-1A
285430	285500	70.0	TCS-2
285500	285710	210.0	TCS-2A
285710	285770	60.0	TCS-1A
285770	285815	45.0	TCS-1
285815	285900	85.0	TCS-1A
285900	285950	50.0	TCS-1
285950	286020	70.0	TCS-2A
286020	286070	50.0	TCS-1A
286070	286155	85.0	TCS-1
286155	286205	50.0	TCS-3A
286205	286250	45.0	TCS-1A
286250	286290	40.0	TCS-1
286290	286345	55.0	TCS-3
286345	286410	65.0	TCS-2A
286410	286490	80.0	TCS-1A
286490	286690	200.0	TCS-1
286690	286730	40.0	TCS-1A
286730	286770	40.0	TCS-2
286770	286865	95.0	TCS-2A
286865	286905	40.0	TCS-1
286905	286970	65.0	TCS-2A
286970	287020	50.0	TCS-1A
287020	287060	40.0	TCS-1
287060	287120	60.0	TCS-1A
287120	287165	45.0	TCS-1
287165	287310	145.0	TCS-1A
287310	287355	45.0	TCS-2
287355	287410	55.0	TCS-1A
287410	287455	45.0	TCS-2
287455	287710	255.0	TCS-2A

Chainage (m)		Length (m)	TCS No.
From	To		
287710	287905	195.0	TCS-1
287905	287980	75.0	TCS-2A
287980	288060	80.0	TCS-1A
288060	288120	60.0	TCS-3
288120	288160	40.0	TCS-2A
288160	288240	80.0	TCS-2
288240	288410	170.0	TCS-1A
288410	288465	55.0	TCS-1
288465	288510	45.0	TCS-2A
288510	288570	60.0	TCS-1
288570	288670	100.0	TCS-3A
288670	288735	65.0	TCS-1
288735	288810	75.0	TCS-2A
288810	288870	60.0	TCS-4A
288870	289030	160.0	TCS-1A
289030	289110	80.0	TCS-2A
289110	289190	80.0	TCS-1A
289190	289280	90.0	TCS-1
289280	289320	40.0	TCS-4A
289320	289405	85.0	TCS-3
289405	289530	125.0	TCS-2
289530	289710	180.0	TCS-1A
289710	289780	70.0	TCS-4A
289780	289910	130.0	TCS-2A
289910	289960	50.0	TCS-2
289960	290020	60.0	TCS-2A
290020	290070	50.0	TCS-2
290070	290120	50.0	TCS-1A
290120	290165	45.0	TCS-1
290165	290310	145.0	TCS-2A
290310	290390	80.0	TCS-1A
290390	290465	75.0	TCS-2
290465	290505	40.0	TCS-2A
290505	290670	165.0	TCS-1
290670	290770	100.0	TCS-2
290770	290820	50.0	TCS-4A
290820	290885	65.0	TCS-2
290885	291010	125.0	TCS-1A
291010	291090	80.0	TCS-2A
291090	291130	40.0	TCS-2
291130	291190	60.0	TCS-1A
291190	291235	45.0	TCS-2

Chainage (m)		Length (m)	TCS No.
From	To		
291235	291310	75.0	TCS-2A
291310	291455	145.0	TCS-1A
291455	291495	40.0	TCS-3
291495	291610	115.0	TCS-1A
291610	291720	110.0	TCS-2A
291720	291790	70.0	TCS-2
291790	292005	215.0	TCS-2A
292005	292060	55.0	TCS-1A
292060	292115	55.0	TCS-1
292115	292155	40.0	TCS-1A
292155	292195	40.0	TCS-3
292195	292250	55.0	TCS-2A
292250	292290	40.0	TCS-3
292290	292460	170.0	TCS-1A
292460	292560	100.0	TCS-1
292560	292605	45.0	TCS-3
292605	292645	40.0	TCS-2
292645	292705	60.0	TCS-1A
292705	292745	40.0	TCS-4
292745	292810	65.0	TCS-1A
292810	292910	100.0	TCS-1
292910	292960	50.0	TCS-1A
292960	293035	75.0	TCS-1
293035	293090	55.0	TCS-2A
293090	293170	80.0	TCS-4A
293170	293220	50.0	TCS-4
293220	293260	40.0	TCS-4A
293260	293310	50.0	TCS-2
293310	293355	45.0	TCS-1
293355	293460	105.0	TCS-1A
293460	293530	70.0	TCS-2A
293530	293590	60.0	TCS-1A
293590	293660	70.0	TCS-1
293660	293720	60.0	TCS-4A
293720	293850	130.0	TCS-1A
293850	294050	200.0	TCS-1
294050	294110	60.0	TCS-2A
294110	294310	200.0	TCS-1A
294310	294355	45.0	TCS-1
294355	294570	215.0	TCS-1A
294570	294620	50.0	TCS-1
294620	294690	70.0	TCS-4A

Chainage (m)		Length (m)	TCS No.
From	To		
294690	294740	50.0	TCS-1A
294740	294780	40.0	TCS-4A
294780	294820	40.0	TCS-1A
294820	294880	60.0	TCS-1
294880	294940	60.0	TCS-1A
294940	295000	60.0	TCS-1
295000	295040	40.0	TCS-1A
295040	295160	120.0	TCS-3
295160	295240	80.0	TCS-1A
295240	295310	70.0	TCS-2A
295310	295470	160.0	TCS-1A
295470	295515	45.0	TCS-1
295515	295575	60.0	TCS-1A
295575	295620	45.0	TCS-1
295620	295660	40.0	TCS-1A
295660	295720	60.0	TCS-1
295720	295820	100.0	TCS-1A
295820	295880	60.0	TCS-2
295880	295920	40.0	TCS-1
295920	295960	40.0	TCS-2A
295960	296040	80.0	TCS-4A
296040	296110	70.0	TCS-2A
296110	296155	45.0	TCS-1A
296155	296195	40.0	TCS-1
296195	296260	65.0	TCS-1A
296260	296320	60.0	TCS-1
296320	296360	40.0	TCS-1A
296360	296430	70.0	TCS-1
296430	296520	90.0	TCS-1A
296520	296680	160.0	TCS-1
296680	296730	50.0	TCS-2
296730	296805	75.0	TCS-1A
296805	296845	40.0	TCS-1
296845	296890	45.0	TCS-2
296890	297055	165.0	TCS-1A
297055	297100	45.0	TCS-1
297100	297140	40.0	TCS-1A
297140	297180	40.0	TCS-2A
297180	297270	90.0	TCS-1A
297270	297310	40.0	TCS-2A
297310	297350	40.0	TCS-2
297350	297440	90.0	TCS-1A

Chainage (m)		Length (m)	TCS No.
From	To		
297440	297530	90.0	TCS-4A
297530	297660	130.0	TCS-2A
297660	297740	80.0	TCS-1A
297740	297845	105.0	TCS-1
297845	297890	45.0	TCS-1A
297890	297935	45.0	TCS-4A
297935	297980	45.0	TCS-1A
297980	298040	60.0	TCS-2A
298040	298390	350.0	TCS-1A
298390	298440	50.0	TCS-4A
298440	298580	140.0	TCS-1A
298580	298630	50.0	TCS-1
298630	298715	85.0	TCS-1A
298715	298800	85.0	TCS-1
298800	298855	55.0	TCS-2A
298855	298895	40.0	TCS-4A
298895	298935	40.0	TCS-2A
298935	299160	225.0	TCS-1A
299160	299280	120.0	TCS-2A
299280	299395	115.0	TCS-1
299395	299440	45.0	TCS-1A
299440	299490	50.0	TCS-2A
299490	299590	100.0	TCS-4A
299590	299630	40.0	TCS-2A
299630	299680	50.0	TCS-4A
299680	299720	40.0	TCS-1
299720	299770	50.0	TCS-1A
299770	299840	70.0	TCS-1
299840	299910	70.0	TCS-2A
299910	300040	130.0	TCS-1
300040	300090	50.0	TCS-1A
300090	300140	50.0	TCS-4A
300140	300180	40.0	TCS-2
300180	300235	55.0	TCS-1A
300235	300290	55.0	TCS-1
300290	300370	80.0	TCS-1A
300370	300480	110.0	TCS-2
300480	300550	70.0	TCS-1A
300550	300615	65.0	TCS-1
300615	300665	50.0	TCS-1A
300665	300740	75.0	TCS-1
300740	300785	45.0	TCS-1A

Chainage (m)		Length (m)	TCS No.
From	To		
300785	300830	45.0	TCS-1
300830	300945	115.0	TCS-1A
300945	300985	40.0	TCS-1
300985	301100	115.0	TCS-1A
301100	301150	50.0	TCS-1
301150	301190	40.0	TCS-1A
301190	301240	50.0	TCS-1
301240	301340	100.0	TCS-1A
301340	301455	115.0	TCS-2A
301455	301500	45.0	TCS-1
301500	301545	45.0	TCS-1A
301545	301605	60.0	TCS-1
301605	301750	145.0	TCS-2A
301750	301980	230.0	TCS-2
301980	302130	150.0	TCS-1A
302130	302180	50.0	TCS-2A
302180	302270	90.0	TCS-1A
302270	302310	40.0	TCS-1
302310	302370	60.0	TCS-1A
302370	302610	240.0	TCS-1
302610	302820	210.0	TCS-1A
302820	302910	90.0	TCS-2A
302910	302980	70.0	TCS-4A
302980	303170	190.0	TCS-1A
303170	303240	70.0	TCS-1
303240	303280	40.0	TCS-1A
303280	303340	60.0	TCS-1
303340	303420	80.0	TCS-2A
303420	303670	250.0	TCS-1A
303670	303760	90.0	TCS-1
303760	304260	500.0	TCS-1A
304260	304340	80.0	TCS-2A
304340	304390	50.0	TCS-1A
304390	304440	50.0	TCS-2A
304440	304485	45.0	TCS-2
304485	304720	235.0	TCS-1A
304720	304795	75.0	TCS-1
304795	304850	55.0	TCS-1A
304850	304890	40.0	TCS-2
304890	304930	40.0	TCS-2A
304930	305010	80.0	TCS-1
305010	305055	45.0	TCS-2A

Chainage (m)		Length (m)	TCS No.
From	To		
305055	305115	60.0	TCS-1
305115	305210	95.0	TCS-1A
305210	305260	50.0	TCS-4A
305260	305310	50.0	TCS-2A
305310	305360	50.0	TCS-1A
305360	305440	80.0	TCS-2A
305440	305555	115.0	TCS-1A
305555	305630	75.0	TCS-1
305630	305670	40.0	TCS-1A
305670	305710	40.0	TCS-1
305710	305780	70.0	TCS-2A
305780	306045	265.0	TCS-1A
306045	306100	55.0	TCS-1
306100	306140	40.0	TCS-4A
306140	306260	120.0	TCS-1A
306260	306310	50.0	TCS-4A
306310	306410	100.0	TCS-1A
306410	306490	80.0	TCS-4A
306490	306660	170.0	TCS-1A
306660	306720	60.0	TCS-2A
306720	306820	100.0	TCS-1A
306820	306870	50.0	TCS-4A
306870	306910	40.0	TCS-2A
306910	307045	135.0	TCS-1A
307045	307145	100.0	TCS-6
307145	307230	85.0	TCS-6A
307230	307450	220.0	TCS-6
307450	307580	130.0	TCS-6A
307580	307620	40.0	TCS-6
307620	307760	140.0	TCS-7
307760	307845	85.0	TCS-6
307845	307890	45.0	TCS-6A
307890	307930	40.0	TCS-6
307930	307970	40.0	TCS-6A
307970	308110	140.0	TCS-6
308110	308330	220.0	TCS-7
308330	308410	80.0	TCS-6
308410	308465	55.0	TCS-6A
308465	308510	45.0	TCS-6
308510	309105	595.0	TCS-5
309105	309240	135.0	TCS-5
309240	309495	255.0	TCS-5

Chainage (m)		Length (m)	TCS No.
From	To		
309495	309540	45.0	TCS-6A
309540	309710	170.0	TCS-6
309710	310010	300.0	TCS-5
310010	310180	170.0	TCS-6
310180	310255	75.0	TCS-4A
310255	310295	40.0	TCS-4
310295	310360	65.0	TCS-1
310360	310430	70.0	TCS-2A
310430	310510	80.0	TCS-4A
310510	310570	60.0	TCS-5
310570	310690	120.0	TCS-5A
310690	310730	40.0	TCS-4A
310730	310910	180.0	TCS-4
310910	311000	90.0	TCS-1
311000	311080	80.0	TCS-2A
311080	311120	40.0	TCS-1
311120	311205	85.0	TCS-4A
311205	311255	50.0	TCS-2
311255	311300	45.0	TCS-4A
311300	311370	70.0	TCS-1A
311370	311420	50.0	TCS-2
311420	311460	40.0	TCS-2A
311460	311530	70.0	TCS-1
311530	311635	105.0	TCS-3
311635	311760	125.0	TCS-1A
311760	311800	40.0	TCS-1
311800	311930	130.0	TCS-2A
311930	312070	140.0	TCS-1A
312070	312110	40.0	TCS-2A
312110	312220	110.0	TCS-1A
312220	312260	40.0	TCS-2A
312260	312310	50.0	TCS-1
312310	312355	45.0	TCS-1A
312355	312520	165.0	TCS-1
312520	312680	160.0	TCS-1A
312680	312860	180.0	TCS-3
312860	312930	70.0	TCS-1A
312930	312990	60.0	TCS-4A
312990	313110	120.0	TCS-1A
313110	313190	80.0	TCS-2A
313190	313235	45.0	TCS-1A
313235	313285	50.0	TCS-1

Chainage (m)		Length (m)	TCS No.
From	To		
313285	313405	120.0	TCS-1A
313405	313535	130.0	TCS-1
313535	313630	95.0	TCS-2A
313630	313730	100.0	TCS-1A
313730	313785	55.0	TCS-1
313785	313870	85.0	TCS-1A
313870	313920	50.0	TCS-1
313920	314040	120.0	TCS-1A
314040	314090	50.0	TCS-2A
314090	314305	215.0	TCS-1A
314305	314360	55.0	TCS-1
314360	314405	45.0	TCS-2A
314405	314460	55.0	TCS-1
314460	314520	60.0	TCS-3
314520	314600	80.0	TCS-1
314600	314815	215.0	TCS-1A
314815	314855	40.0	TCS-2
314855	314900	45.0	TCS-1A
314900	314950	50.0	TCS-1
314950	314990	40.0	TCS-1A
314990	315040	50.0	TCS-2
315040	315090	50.0	TCS-3
315090	315135	45.0	TCS-1
315135	315190	55.0	TCS-4A
315190	315370	180.0	TCS-1A
315370	315420	50.0	TCS-1
315420	315540	120.0	TCS-1A
315540	315590	50.0	TCS-1
315590	316020	430.0	TCS-1A
316020	316155	135.0	TCS-3
316155	316195	40.0	TCS-1A
316195	316240	45.0	TCS-4A
316240	316330	90.0	TCS-2A
316330	316510	180.0	TCS-1A
316510	316555	45.0	TCS-2A
316555	316595	40.0	TCS-2
316595	316745	150.0	TCS-1A
316745	316805	60.0	TCS-1
316805	316965	160.0	TCS-1A
316965	317090	125.0	TCS-1
317090	317130	40.0	TCS-1A
317130	317170	40.0	TCS-1

Chainage (m)		Length (m)	TCS No.
From	To		
317170	317320	150.0	TCS-1A
317320	317380	60.0	TCS-4A
317380	317420	40.0	TCS-1
317420	317460	40.0	TCS-1A
317460	317580	120.0	TCS-2
317580	317770	190.0	TCS-1A
317770	317860	90.0	TCS-2A
317860	317980	120.0	TCS-1A
317980	318080	100.0	TCS-4A
318080	318155	75.0	TCS-1A
318155	318210	55.0	TCS-1
318210	318280	70.0	TCS-2
318280	318325	45.0	TCS-1
318325	318390	65.0	TCS-1A
318390	318470	80.0	TCS-2A
318470	318575	105.0	TCS-1A
318575	318645	70.0	TCS-2
318645	318705	60.0	TCS-2A
318705	318755	50.0	TCS-1
318755	318840	85.0	TCS-1A
318840	318910	70.0	TCS-2A
318910	318980	70.0	TCS-1A
318980	319035	55.0	TCS-1
319035	319230	195.0	TCS-1A
319230	319320	90.0	TCS-2A
319320	319360	40.0	TCS-2
319360	319505	145.0	TCS-1
319505	319545	40.0	TCS-1A
319545	319590	45.0	TCS-4A
319590	319660	70.0	TCS-2A
319660	319855	195.0	TCS-1A
319855	319895	40.0	TCS-1
319895	319945	50.0	TCS-3
319945	319990	45.0	TCS-2A
319990	320045	55.0	TCS-1
320045	320120	75.0	TCS-1A
320120	320195	75.0	TCS-2A
320195	320245	50.0	TCS-1
320245	320285	40.0	TCS-1A
320285	320330	45.0	TCS-2
320330	320495	165.0	TCS-1
320495	320560	65.0	TCS-1A

Chainage (m)		Length (m)	TCS No.
From	To		
320560	320620	60.0	TCS-1
320620	320670	50.0	TCS-1A
320670	320715	45.0	TCS-1
320715	320820	105.0	TCS-2A
320820	320870	50.0	TCS-1
320870	320980	110.0	TCS-1A
320980	321060	80.0	TCS-2A
321060	321255	195.0	TCS-4A
321255	321300	45.0	TCS-1
321300	321350	50.0	TCS-1A
321350	321510	160.0	TCS-3
321510	321610	100.0	TCS-1A
321610	321660	50.0	TCS-2A
321660	322320	660.0	TCS-1A
322320	322370	50.0	TCS-1
322370	322470	100.0	TCS-1A
322470	322610	140.0	TCS-2A
322610	322655	45.0	TCS-1A
322655	322720	65.0	TCS-3
322720	322845	125.0	TCS-1
322845	323070	225.0	TCS-1A
323070	323130	60.0	TCS-2
323130	323280	150.0	TCS-1A
323280	323380	100.0	TCS-2A
323380	323660	280.0	TCS-1A
323660	323730	70.0	TCS-1
323730	323820	90.0	TCS-1A
323820	323870	50.0	TCS-1
323870	323920	50.0	TCS-4A
323920	323970	50.0	TCS-1
323970	324010	40.0	TCS-1A
324010	324050	40.0	TCS-1
324050	324365	315.0	TCS-1A
324365	324405	40.0	TCS-1
324405	324445	40.0	TCS-1A
324445	324505	60.0	TCS-1
324505	324590	85.0	TCS-1A
324590	324660	70.0	TCS-2A
324660	325330	670.0	TCS-1A
325330	325420	90.0	TCS-2
325420	325440	20.0	TCS-2A

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:

(i) At-grade intersections

Major Intersections

Sl. No.	Location of Intersection (km)	Type of intersection	Other features	Remarks
1	283.000	Y-Type	5-Legged	
2	308.605	Y-Type	3-Legged	

Minor Intersections

Sl. No.	Location of Intersection (km)	Type of intersection	Other features
1	283.150	Y-Type	3-Legged
2	284.934	Y-Type	3-Legged
3	304.570	Y-Type	3-Legged
4	304.784	Y-Type	3-Legged
5	306.938	Y-Type	3-Legged
6	307.595	Y-Type	3-Legged
7	308.218	Y-Type	3-Legged
8	308.430	T-Type	3-Legged
9	308.614	Y-Type	3-Legged
10	308.871	Y-Type	3-Legged
11	308.890	Y-Type	3-Legged
12	309.275	Y-Type	3-Legged
13	309.310	Y-Type	3-Legged
14	310.566	T-Type	3-Legged
15	310.672	Y-Type	3-Legged
16	314.166	Y-Type	3-Legged

(ii) Grade separated intersection with/without ramps

Sl. No.	Location (km)	Salient features	Minimum length of viaduct to be provided	Road to be carried over/under the structures
Nil				

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 IRC: S: 73-2018 and the specified typical cross section. Deficiencies in the plan and profile of the existing road shall be corrected.
- (ii) Raising of the existing road [Refer to the provision of relevant Manual and specify sections to be raised]

The existing road shall be raised in the following sections:

Sl. No.	Section (from km to km)	Length	Extent of raising [Top of finished road level]
Nil			

5. Pavement Design

- (i) Pavement design shall be carried out in accordance with section 5 of the IRC:SP:73-2018 and IRC 37-2018.
- (ii) Type of pavement

Flexible Pavement as per IRC 37-2018 (or latest) shall be adopted.

- (iii) Design requirements

Notwithstanding anything to the contrary contained in this agreement or the manual, the contractor shall design the pavement of main carriageway for design traffic of 20 MSA with a minimum design period of 20 years. CBR value as obtained at site shall be taken for design if CBR is less than 10%. Maximum value of CBR to be taken for design shall not exceed 10%. Bituminous Grade VG 40 shall be used for BC.

- (iv) Reconstruction of stretches

The following stretches of the existing road shall be reconstructed. These shall be designed as new pavement.

Sl. No.	Stretch From km to km		Remarks	TCS Type
1	283.000	283.045	Reconstruction	TCS-5
2	283.045	283.265	Reconstruction	TCS-6
3	283.340	283.440	Reconstruction	TCS-1A
4	283.490	283.530	Reconstruction	TCS-1A
5	283.640	283.680	Reconstruction	TCS-2A
6	283.730	283.770	Reconstruction	TCS-1A
7	283.840	283.890	Reconstruction	TCS-1A
8	283.990	284.090	Reconstruction	TCS-2A
9	284.150	284.220	Reconstruction	TCS-1A
10	284.220	284.310	Reconstruction	TCS-2A
11	284.350	284.490	Reconstruction	TCS-2A
12	284.580	284.620	Reconstruction	TCS-1A
13	284.670	284.720	Reconstruction	TCS-2A
14	284.720	284.760	Reconstruction	TCS-1A
15	284.760	284.880	Reconstruction	TCS-2A
16	284.880	284.955	Reconstruction	TCS-1A
17	285.000	285.070	Reconstruction	TCS-2A
18	285.070	285.230	Reconstruction	TCS-1A
19	285.230	285.290	Reconstruction	TCS-2A
20	285.290	285.430	Reconstruction	TCS-1A
21	285.500	285.710	Reconstruction	TCS-2A
22	285.710	285.770	Reconstruction	TCS-1A
23	285.815	285.900	Reconstruction	TCS-1A
24	285.950	286.020	Reconstruction	TCS-2A
25	286.020	286.070	Reconstruction	TCS-1A
26	286.155	286.205	Reconstruction	TCS-3A
27	286.205	286.250	Reconstruction	TCS-1A
28	286.345	286.410	Reconstruction	TCS-2A
29	286.410	286.490	Reconstruction	TCS-1A
30	286.690	286.730	Reconstruction	TCS-1A
31	286.770	286.865	Reconstruction	TCS-2A
32	286.905	286.970	Reconstruction	TCS-2A
33	286.970	287.020	Reconstruction	TCS-1A
34	287.060	287.120	Reconstruction	TCS-1A
35	287.165	287.310	Reconstruction	TCS-1A
36	287.355	287.410	Reconstruction	TCS-1A
37	287.455	287.710	Reconstruction	TCS-2A
38	287.710	287.710	Reconstruction	TCS-1A
39	287.905	287.980	Reconstruction	TCS-2A
40	287.980	288.060	Reconstruction	TCS-1A
41	288.120	288.160	Reconstruction	TCS-2A
42	288.240	288.410	Reconstruction	TCS-1A
43	288.465	288.510	Reconstruction	TCS-2A
44	288.570	288.670	Reconstruction	TCS-3A
45	288.735	288.810	Reconstruction	TCS-2A
46	288.810	288.870	Reconstruction	TCS-4A
47	288.870	289.030	Reconstruction	TCS-1A
48	289.030	289.110	Reconstruction	TCS-2A

Sl. No.	Stretch From km to km		Remarks	TCS Type
49	289.110	289.190	Reconstruction	TCS-1A
50	289.280	289.320	Reconstruction	TCS-4A
51	289.530	289.710	Reconstruction	TCS-1A
52	289.710	289.780	Reconstruction	TCS-4A
53	289.780	289.910	Reconstruction	TCS-2A
54	289.960	290.020	Reconstruction	TCS-2A
55	290.070	290.120	Reconstruction	TCS-1A
56	290.165	290.310	Reconstruction	TCS-2A
57	290.310	290.390	Reconstruction	TCS-1A
58	290.465	290.505	Reconstruction	TCS-2A
59	290.770	290.820	Reconstruction	TCS-4A
60	290.885	291.010	Reconstruction	TCS-1A
61	291.010	291.090	Reconstruction	TCS-2A
62	291.130	291.190	Reconstruction	TCS-1A
63	291.235	291.310	Reconstruction	TCS-2A
64	291.310	291.455	Reconstruction	TCS-1A
65	291.495	291.610	Reconstruction	TCS-1A
66	291.610	291.720	Reconstruction	TCS-2A
67	291.790	292.005	Reconstruction	TCS-2A
68	292.005	292.060	Reconstruction	TCS-1A
69	292.115	292.155	Reconstruction	TCS-1A
70	292.195	292.250	Reconstruction	TCS-2A
71	292.290	292.460	Reconstruction	TCS-1A
72	292.645	292.705	Reconstruction	TCS-1A
73	292.745	292.810	Reconstruction	TCS-1A
74	292.910	292.960	Reconstruction	TCS-1A
75	293.035	293.090	Reconstruction	TCS-2A
76	293.090	293.170	Reconstruction	TCS-4A
77	293.220	293.260	Reconstruction	TCS-4A
78	293.355	293.460	Reconstruction	TCS-1A
79	293.460	293.530	Reconstruction	TCS-2A
80	293.530	293.590	Reconstruction	TCS-1A
81	293.660	293.720	Reconstruction	TCS-4A
82	293.720	293.850	Reconstruction	TCS-1A
83	294.050	294.110	Reconstruction	TCS-2A
84	294.110	294.310	Reconstruction	TCS-1A
85	294.355	294.570	Reconstruction	TCS-1A
86	294.620	294.690	Reconstruction	TCS-4A
87	294.690	294.740	Reconstruction	TCS-1A
88	294.740	294.780	Reconstruction	TCS-4A
89	294.780	294.820	Reconstruction	TCS-1A
90	294.880	294.940	Reconstruction	TCS-1A
91	295.000	295.040	Reconstruction	TCS-1A
92	295.160	295.240	Reconstruction	TCS-1A
93	295.240	295.310	Reconstruction	TCS-2A
94	295.310	295.470	Reconstruction	TCS-1A
95	295.515	295.575	Reconstruction	TCS-1A
96	295.620	295.660	Reconstruction	TCS-1A

Sl. No.	Stretch From km to km		Remarks	TCS Type
97	295.720	295.820	Reconstruction	TCS-1A
98	295.920	295.960	Reconstruction	TCS-2A
99	295.960	296.040	Reconstruction	TCS-4A
100	296.040	296.110	Reconstruction	TCS-2A
101	296.110	296.155	Reconstruction	TCS-1A
102	296.195	296.260	Reconstruction	TCS-1A
103	296.320	296.360	Reconstruction	TCS-1A
104	296.430	296.520	Reconstruction	TCS-1A
105	296.730	296.805	Reconstruction	TCS-1A
106	296.890	297.055	Reconstruction	TCS-1A
107	297.100	297.140	Reconstruction	TCS-1A
108	297.140	297.180	Reconstruction	TCS-2A
109	297.180	297.270	Reconstruction	TCS-1A
110	297.270	297.310	Reconstruction	TCS-2A
111	297.350	297.440	Reconstruction	TCS-1A
112	297.440	297.530	Reconstruction	TCS-4A
113	297.530	297.660	Reconstruction	TCS-2A
114	297.660	297.740	Reconstruction	TCS-1A
115	297.845	297.890	Reconstruction	TCS-1A
116	297.890	297.935	Reconstruction	TCS-4A
117	297.935	297.980	Reconstruction	TCS-1A
118	297.980	298.040	Reconstruction	TCS-2A
119	298.040	298.390	Reconstruction	TCS-1A
120	298.390	298.440	Reconstruction	TCS-4A
121	298.440	298.580	Reconstruction	TCS-1A
122	298.630	298.715	Reconstruction	TCS-1A
123	298.800	298.855	Reconstruction	TCS-2A
124	298.855	298.895	Reconstruction	TCS-4A
125	298.895	298.935	Reconstruction	TCS-2A
126	298.935	299.160	Reconstruction	TCS-1A
127	299.160	299.280	Reconstruction	TCS-2A
128	299.395	299.440	Reconstruction	TCS-1A
129	299.440	299.490	Reconstruction	TCS-2A
130	299.490	299.590	Reconstruction	TCS-4A
131	299.590	299.630	Reconstruction	TCS-2A
132	299.630	299.680	Reconstruction	TCS-4A
133	299.720	299.770	Reconstruction	TCS-1A
134	299.840	299.910	Reconstruction	TCS-2A
135	300.040	300.090	Reconstruction	TCS-1A
136	300.090	300.140	Reconstruction	TCS-4A
137	300.180	300.235	Reconstruction	TCS-1A
138	300.290	300.370	Reconstruction	TCS-1A
139	300.480	300.550	Reconstruction	TCS-1A
140	300.615	300.665	Reconstruction	TCS-1A
141	300.740	300.785	Reconstruction	TCS-1A
142	300.830	300.945	Reconstruction	TCS-1A
143	300.985	301.100	Reconstruction	TCS-1A
144	301.150	301.190	Reconstruction	TCS-1A

Package -I: Akegwo- Akash Bridge

Sl. No.	Stretch From km to km		Remarks	TCS Type
145	301.240	301.340	Reconstruction	TCS-1A
146	301.340	301.455	Reconstruction	TCS-2A
147	301.500	301.545	Reconstruction	TCS-1A
148	301.605	301.750	Reconstruction	TCS-2A
149	301.980	302.130	Reconstruction	TCS-1A
150	302.130	302.180	Reconstruction	TCS-2A
151	302.180	302.270	Reconstruction	TCS-1A
152	302.310	302.370	Reconstruction	TCS-1A
153	302.610	302.820	Reconstruction	TCS-1A
154	302.820	302.910	Reconstruction	TCS-2A
155	302.910	302.980	Reconstruction	TCS-4A
156	302.980	303.170	Reconstruction	TCS-1A
157	303.240	303.280	Reconstruction	TCS-1A
158	303.340	303.420	Reconstruction	TCS-2A
159	303.420	303.670	Reconstruction	TCS-1A
160	303.760	304.260	Reconstruction	TCS-1A
161	304.260	304.340	Reconstruction	TCS-2A
162	304.340	304.390	Reconstruction	TCS-1A
163	304.390	304.440	Reconstruction	TCS-2A
164	304.485	304.720	Reconstruction	TCS-1A
165	304.795	304.850	Reconstruction	TCS-1A
166	304.890	304.930	Reconstruction	TCS-2A
167	305.010	305.055	Reconstruction	TCS-2A
168	305.115	305.210	Reconstruction	TCS-1A
169	305.210	305.260	Reconstruction	TCS-4A
170	305.260	305.310	Reconstruction	TCS-2A
171	305.310	305.360	Reconstruction	TCS-1A
172	305.360	305.440	Reconstruction	TCS-2A
173	305.440	305.555	Reconstruction	TCS-1A
174	305.630	305.670	Reconstruction	TCS-1A
175	305.710	305.780	Reconstruction	TCS-2A
176	305.780	306.045	Reconstruction	TCS-1A
177	306.100	306.140	Reconstruction	TCS-4A
178	306.140	306.260	Reconstruction	TCS-1A
179	306.260	306.310	Reconstruction	TCS-4A
180	306.310	306.410	Reconstruction	TCS-1A
181	306.410	306.490	Reconstruction	TCS-4A
182	306.490	306.660	Reconstruction	TCS-1A
183	306.660	306.720	Reconstruction	TCS-2A
184	306.720	306.820	Reconstruction	TCS-1A
185	306.820	306.870	Reconstruction	TCS-4A
186	306.870	306.910	Reconstruction	TCS-2A
187	306.910	307.045	Reconstruction	TCS-1A
188	307.045	307.145	Reconstruction	TCS-6
189	307.230	307.450	Reconstruction	TCS-6
190	307.580	307.620	Reconstruction	TCS-6
191	307.620	307.760	Reconstruction	TCS-7
192	307.760	307.845	Reconstruction	TCS-6

Sl. No.	Stretch From km to km		Remarks	TCS Type
193	307.890	307.930	Reconstruction	TCS-6
194	307.970	308.110	Reconstruction	TCS-6
195	308.110	308.330	Reconstruction	TCS-7
196	308.330	308.410	Reconstruction	TCS-6
197	308.465	308.510	Reconstruction	TCS-6
198	308.510	309.105	Reconstruction	TCS-5
199	309.105	309.240	Reconstruction	TCS-5
200	309.240	309.495	Reconstruction	TCS-5
201	309.540	309.710	Reconstruction	TCS-6
202	309.710	310.010	Reconstruction	TCS-5
203	310.010	310.180	Reconstruction	TCS-6
204	310.180	310.255	Reconstruction	TCS-4A
205	310.360	310.430	Reconstruction	TCS-2A
206	310.430	310.510	Reconstruction	TCS-4A
207	310.510	310.570	Reconstruction	TCS-5
208	310.690	310.730	Reconstruction	TCS-4A
209	311.000	311.080	Reconstruction	TCS-2A
210	311.120	311.205	Reconstruction	TCS-4A
211	311.255	311.300	Reconstruction	TCS-4A
212	311.300	311.370	Reconstruction	TCS-1A
213	311.420	311.460	Reconstruction	TCS-2A
214	311.635	311.760	Reconstruction	TCS-1A
215	311.800	311.930	Reconstruction	TCS-2A
216	311.930	312.070	Reconstruction	TCS-1A
217	312.070	312.110	Reconstruction	TCS-2A
218	312.110	312.220	Reconstruction	TCS-1A
219	312.220	312.260	Reconstruction	TCS-2A
220	312.310	312.355	Reconstruction	TCS-1A
221	312.520	312.680	Reconstruction	TCS-1A
222	312.860	312.930	Reconstruction	TCS-1A
223	312.930	312.990	Reconstruction	TCS-4A
224	312.990	313.110	Reconstruction	TCS-1A
225	313.110	313.190	Reconstruction	TCS-2A
226	313.190	313.235	Reconstruction	TCS-1A
227	313.285	313.405	Reconstruction	TCS-1A
228	313.535	313.630	Reconstruction	TCS-2A
229	313.630	313.730	Reconstruction	TCS-1A
230	313.785	313.870	Reconstruction	TCS-1A
231	313.920	314.040	Reconstruction	TCS-1A
232	314.040	314.090	Reconstruction	TCS-2A
233	314.090	314.305	Reconstruction	TCS-1A
234	314.360	314.405	Reconstruction	TCS-2A
235	314.600	314.815	Reconstruction	TCS-1A
236	314.855	314.900	Reconstruction	TCS-1A
237	314.950	314.990	Reconstruction	TCS-1A
238	315.135	315.190	Reconstruction	TCS-4A
239	315.190	315.370	Reconstruction	TCS-1A
240	315.420	315.540	Reconstruction	TCS-1A

Package -I: Akegwo- Akash Bridge

Sl. No.	Stretch From km to km		Remarks	TCS Type
241	315.590	316.020	Reconstruction	TCS-1A
242	316.155	316.195	Reconstruction	TCS-1A
243	316.195	316.240	Reconstruction	TCS-4A
244	316.240	316.330	Reconstruction	TCS-2A
245	316.330	316.510	Reconstruction	TCS-1A
246	316.510	316.555	Reconstruction	TCS-2A
247	316.595	316.745	Reconstruction	TCS-1A
248	316.805	316.965	Reconstruction	TCS-1A
249	317.090	317.130	Reconstruction	TCS-1A
250	317.170	317.320	Reconstruction	TCS-1A
251	317.320	317.380	Reconstruction	TCS-4A
252	317.420	317.460	Reconstruction	TCS-1A
253	317.580	317.770	Reconstruction	TCS-1A
254	317.770	317.860	Reconstruction	TCS-2A
255	317.860	317.980	Reconstruction	TCS-1A
256	317.980	318.080	Reconstruction	TCS-4A
257	318.080	318.155	Reconstruction	TCS-1A
258	318.325	318.390	Reconstruction	TCS-1A
259	318.390	318.470	Reconstruction	TCS-2A
260	318.470	318.575	Reconstruction	TCS-1A
261	318.645	318.705	Reconstruction	TCS-2A
262	318.755	318.840	Reconstruction	TCS-1A
263	318.840	318.910	Reconstruction	TCS-2A
264	318.910	318.980	Reconstruction	TCS-1A
265	319.035	319.230	Reconstruction	TCS-1A
266	319.230	319.320	Reconstruction	TCS-2A
267	319.505	319.545	Reconstruction	TCS-1A
268	319.545	319.590	Reconstruction	TCS-4A
269	319.590	319.660	Reconstruction	TCS-2A
270	319.660	319.855	Reconstruction	TCS-1A
271	319.945	319.990	Reconstruction	TCS-2A
272	320.045	320.120	Reconstruction	TCS-1A
273	320.120	320.195	Reconstruction	TCS-2A
274	320.245	320.285	Reconstruction	TCS-1A
275	320.495	320.560	Reconstruction	TCS-1A
276	320.620	320.670	Reconstruction	TCS-1A
277	320.715	320.820	Reconstruction	TCS-2A
278	320.870	320.980	Reconstruction	TCS-1A
279	320.980	321.060	Reconstruction	TCS-2A
280	321.060	321.255	Reconstruction	TCS-4A
281	321.300	321.350	Reconstruction	TCS-1A
282	321.510	321.610	Reconstruction	TCS-1A
283	321.610	321.660	Reconstruction	TCS-2A
284	321.660	322.320	Reconstruction	TCS-1A
285	322.370	322.470	Reconstruction	TCS-1A
286	322.470	322.610	Reconstruction	TCS-2A
287	322.610	322.655	Reconstruction	TCS-1A
288	322.845	323.070	Reconstruction	TCS-1A

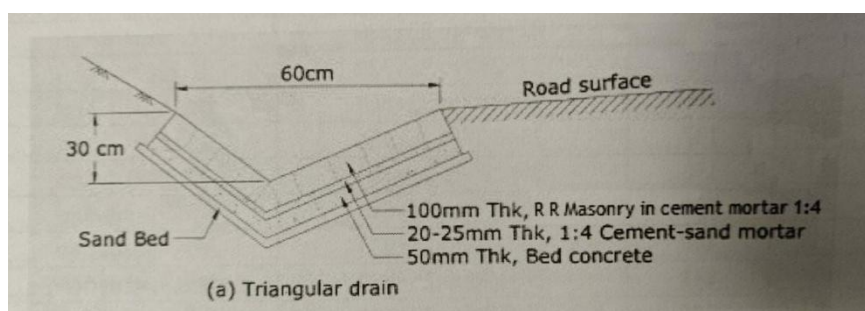
Sl. No.	Stretch From km to km		Remarks	TCS Type
289	323.130	323.280	Reconstruction	TCS-1A
290	323.280	323.380	Reconstruction	TCS-2A
291	323.380	323.660	Reconstruction	TCS-1A
292	323.730	323.820	Reconstruction	TCS-1A
293	323.870	323.920	Reconstruction	TCS-4A
294	323.970	324.010	Reconstruction	TCS-1A
295	324.050	324.365	Reconstruction	TCS-1A
296	324.405	324.445	Reconstruction	TCS-1A
297	324.505	324.590	Reconstruction	TCS-1A
298	324.590	324.660	Reconstruction	TCS-2A
299	324.660	325.330	Reconstruction	TCS-1A
300	325.420	325.440	Reconstruction	TCS-2A

*- Annexure-II of Schedule-B

6. Roadside Drainage

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per Section 6 of the Manual (IRC: SP: 73-2018).

Drain Type	Side	Length (m)
RCC Covered Drain	Both side	3020
R. R. Masonry Triangular Drain	Both/One side	42370
Total=		45390 m



Note 1: The length of side drains given above are minimum and it may vary as per site condition. In case of increase of length, no positive change of scope will be payable.

Note 2: Box cut sections will have drains on both sides.

7. Design of Structures

(i) General

(a) All bridges, culverts and structures shall be designed and constructed in accordance

with the provision of relevant Manual and shall conform to the cross- sectional features and other details specified therein.

- (b) Width of the carriageway of new bridges and structures shall be as follows:

Sl. No.	Bridge at km	Width of carriageway and cross-sectional features*
1	289.303	Carriageway Width = 11.0 m Width of Crash Barrier = 1.0m (2x0.5m) Overall width = 12m
2	289.416	Carriageway Width = 11.0 m Width of Crash Barrier = 1.0m (2x0.5m) Overall width = 12m
3	292.936	Carriageway Width = 11.0 m Width of Crash Barrier = 1.0m (2x0.5m) Overall width = 12m
4	293.958	Carriageway Width = 11.0 m Width of Crash Barrier = 1.0m (2x0.5m) Overall width = 12m
5	301.881	Carriageway Width = 11.0 m Width of Crash Barrier = 1.0m (2x0.5m) Overall width = 12m

- (c) The following structures shall be provided with footpaths:

[Refer to the provision of relevant Manual and provide details of new Structures with footpath.]

Sl. No.	Bridge at km	Width of carriageway and cross-sectional features
Nil		

- (d) All bridges shall be high-level bridges.

[Refer to the provision of relevant Manual and state if there is any exception]

- (e) The following structures shall be designed to carry utility services specified in table below:

[Refer to the provision of relevant Manual and provide details]

Sl. No.	Bridge at km	Utility service to be carried	Remarks
Nil			

- (f) Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections given in the provision of relevant Manual.

(ii) Culverts

- (a) Overall width of all culverts shall be equal to the roadway width of the approaches.
(b) Distance between any two culverts shall not be more than 200 m.

(c) Minimum of five culverts per Km shall be provided.

(d) Reconstruction of existing culverts:

The existing culverts at the following locations shall be re-constructed as new culverts:

Sl. No.	Design Chainage (km)	Size (m)
1	283.167	1X2.0X2.0
2	283.258	1X2.0X2.0
3	283.748	1X2.0X3.0
4	284.001	1X2.0X2.0
5	284.229	1X2.0X2.0
6	284.324	1X2.0X2.0
7	284.494	1X2.0X2.0
8	284.581	1X2.0X2.0
9	284.882	1X2.0X2.0
10	285.181	1X2.0X2.0
11	285.427	1X2.0X2.0
12	285.569	1X2.0X2.0
13	285.698	1X2.0X2.0
14	285.971	1X2.0X2.0
15	286.113	1X2.0X2.0
16	286.237	1X4.0X4.0
17	286.590	1X2.0X3.0
18	287.008	1X2.0X2.0
19	287.173	1X2.0X2.0
20	287.286	1X2.0X3.0
21	287.383	1X2.0X2.0
22	287.497	1X2.0X2.0
23	287.608	1X2.0X2.0
24	287.809	1X3.0X4.0
25	287.928	1X2.0X2.0
26	288.059	1X2.0X2.0
27	288.174	1X2.0X2.0
28	288.408	1X2.0X2.0
29	288.657	1X2.0X2.0
30	288.988	1X2.0X2.0
31	289.177	1X2.0X2.0
32	289.702	1X2.0X2.0
33	290.132	1X3.0X4.0
34	290.288	1X2.0X2.0
35	290.894	1X2.0X2.0
36	291.001	1X2.0X2.0
37	291.159	1X2.0X2.0
38	291.311	1X2.0X2.0

Sl. No.	Design Chainage (km)	Size (m)
39	291.594	1X2.0X2.0
40	291.717	1X2.0X2.0
41	291.920	1X2.0X2.0
42	292.123	1X2.0X2.0
43	292.296	1X2.0X2.0
44	292.533	1X2.0X3.0
45	293.066	1X2.0X2.0
46	293.578	1X2.0X3.0
47	294.287	1X3.0X4.0
48	294.566	1X2.0X2.0
49	294.815	1X3.0X4.0
50	295.040	1X2.0X2.0
51	295.173	1X2.0X2.0
52	295.641	1X4.0X4.0
53	295.875	1X2.0X2.0
54	296.336	1X3.0X4.0
55	296.469	1X2.0X2.0
56	296.877	1X2.0X2.0
57	297.114	1X2.0X2.0
58	297.234	1X2.0X2.0
59	297.416	1X2.0X2.0
60	297.628	1X2.0X2.0
61	297.848	1X2.0X2.0
62	298.001	1X2.0X2.0
63	298.254	1X2.0X2.0
64	298.568	1X2.0X2.0
65	298.718	1X2.0X2.0
66	298.804	1X2.0X2.0
67	298.990	1X2.0X2.0
68	299.303	1X2.0X2.0
69	299.401	1X2.0X2.0
70	299.840	1X2.0X2.0
71	300.053	1X2.0X2.0
72	300.300	1X2.0X2.0
73	300.428	1X2.0X3.0
74	300.509	1X2.0X3.0
75	300.652	1X2.0X2.0
76	300.775	1X2.0X2.0
77	300.899	1X2.0X3.0
78	301.176	1X2.0X3.0
79	301.533	1X4.0X4.0
80	302.171	1X2.0X2.0
81	302.504	1X4.0X5.0
82	302.735	1X2.0X2.0
83	303.042	1X2.0X2.0
84	303.267	1X4.0X4.0
85	303.493	1X2.0X2.0
86	303.575	1X2.0X3.0

Sl. No.	Design Chainage (km)	Size (m)
87	303.962	1X2.0X2.0
88	304.093	1X2.0X2.0
89	304.337	1X3.0X4.0
90	304.710	1X2.0X2.0
91	305.036	1X2.0X2.0
92	305.298	1X2.0X2.0
93	305.548	1X2.0X3.0
94	305.649	1X2.0X2.0
95	305.966	1X2.0X2.0
96	306.044	1X2.0X2.0
97	306.337	1X2.0X2.0
98	306.531	1X2.0X2.0
99	306.616	1X2.0X3.0
100	306.912	1X2.0X2.0
101	307.518	1X3.0X4.0
102	307.747	1X2.0X2.0
103	308.189	1X2.0X2.0
104	308.398	1X2.0X3.0
105	308.670	1X2.0X2.0
106	308.769	1X2.0X2.0
107	309.135	1X3.0X4.0
108	309.354	1X2.0X3.0
109	309.728	1X2.0X2.0
110	309.979	1X2.0X2.0
111	310.285	1X3.0X4.0
112	310.562	1X2.0X2.0
113	310.800	1X2.0X2.0
114	310.915	1X2.0X2.0
115	311.005	1X2.0X2.0
116	311.190	1X2.0X2.0
117	311.375	1X2.0X2.0
118	311.698	1X2.0X2.0
119	312.150	1X2.0X3.0
120	312.325	1X2.0X3.0
121	312.732	1X3.0X4.0
122	313.195	1X2.0X3.0
123	313.471	1X2.0X3.0
124	313.702	1X2.0X3.0
125	314.130	1X2.0X2.0
126	314.303	1X2.0X2.0
127	314.656	1X2.0X2.0
128	314.871	1X2.0X3.0
129	315.268	1X3.0X4.0
130	315.367	1X3.0X4.0
131	315.507	1X2.0X3.0
132	315.938	1X2.0X3.0
133	315.997	1X2.0X3.0
134	316.322	1X3.0X4.0

Sl. No.	Design Chainage (km)	Size (m)
135	316.362	1X3.0X4.0
136	316.611	1X2.0X3.0
137	316.864	1X2.0X3.0
138	317.035	1X2.0X3.0
139	317.447	1X4.0X5.0
140	317.715	1X2.0X3.0
141	317.795	1X2.0X3.0
142	317.928	1X2.0X3.0
143	318.262	1X3.0X4.0
144	318.394	1X3.0X4.0
145	318.571	1X2.0X3.0
146	318.668	1X2.0X3.0
147	318.774	1X2.0X3.0
148	319.046	1X2.0X3.0
149	319.216	1X2.0X3.0
150	319.500	1X2.0X3.0
151	319.684	1X2.0X2.0
152	319.862	1X2.0X3.0
153	320.073	1X2.0X2.0
154	320.258	1X3.0X4.0
155	320.444	1X2.0X2.0
156	320.812	1X2.0X2.0
157	321.207	1X2.0X3.0
158	321.786	1X2.0X3.0
159	322.004	1X2.0X2.0
160	322.380	1X2.0X2.0
161	322.644	1X2.0X2.0
162	322.736	1X2.0X3.0
163	322.780	1X2.0X2.0
164	322.856	1X2.0X2.0
165	323.043	1X2.0X2.0
166	323.154	1X2.0X2.0
167	323.399	1X2.0X3.0
168	323.645	1X2.0X2.0
169	323.867	1X2.0X2.0
170	323.995	1X2.0X3.0
171	324.054	1X3.0X4.0
172	324.130	1X2.0X2.0
173	324.210	1X2.0X2.0
174	324.513	1X2.0X2.0
175	325.023	1X2.0X3.0

Note : The above Design Chainages are indicative and may vary as per site requirement to be approved by Authority's Engineer.

(c) Widening 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 the provision of relevant Manual. Repairs and strengthening of existing structures where required shall be carried out.

Sl. No.	Culvert location	Type, span, height and width of existing culvert (m)	Repairs to be carried out [specify]
Nil			

(d) Additional new culverts shall be constructed as per particulars given in the table below:

Sl. No.	Design	Size
1	283.400	1X2.0X2.0
2	283.550	1X2.0X3.0
3	284.764	1X2.0X2.0
4	286.463	1X2.0X2.0
5	286.850	1X2.0X2.0
6	289.573	1X2.0X2.0
7	290.490	1X2.0X2.0
8	290.700	1X2.0X2.0
9	292.675	1X2.0X2.0
10	293.483	1X2.0X2.0
11	294.170	1X2.0X2.0
12	295.440	1X2.0X2.0
13	296.090	1X2.0X2.0
14	296.750	1X2.0X2.0
15	299.135	1X2.0X2.0
16	299.621	1X2.0X2.0
17	301.025	1X2.0X2.0
18	301.355	1X2.0X2.0
19	307.130	1X2.0X2.0
20	309.544	1X2.0X2.0
21	310.380	1X2.0X2.0
22	311.730	1X2.0X2.0
23	312.537	1X2.0X2.0
24	320.650	1X2.0X2.0
25	321.025	1X2.0X2.0
26	321.555	1X4.0X5.0
27	322.125	1X2.0X2.0
28	323.270	1X2.0X2.0
29	324.400	1X2.0X3.0
30	324.850	1X2.0X2.0
31	325.320	1X2.0X2.0

Note : The above Design Chainages are indicative and may vary as per site requirement to be approved by Authority's Engineer.

- (e) Repairs/replacements of railing/parapets, flooring and protection works of the existing culverts shall be undertaken as follows:

[Refer to the provision of relevant Manual and provide details]

Sl. No.	Location at km	Type of repair required
Nil		

- (f) Floor protection works shall be as specified in the relevant IRC Codes and Specifications

(iii) Bridges

- (a) Existing bridges to be re- constructed/widened

- (i) The existing bridges at the following locations shall be re-constructed as new Structures.

Sl. No.	Bridge location (km)	Salient details of existing bridge		Adequacy or otherwise of the existing waterway, vertical clearance, etc*	Remarks
		Type of Structures	Span Arrangement and Total Vent way (No. x Length) (m)		
1	289.540	Steel bridge	1 x 19.25	Insufficient width and not conform to IRC Loadings.	1 x 24 (RCC T Girder)
2	294.178	RCC Slab	1 x 24.2		1 x 30 (PSC I Girder)
3	302.335	RCC Slab	1 x 15.1		1 x 30 (PSC I Girder)

- (ii) The following narrow bridges shall be widened:

Sl. No.	Location (km)	Existing width (m)	Extent of widening (m)	Cross-section at deck level for widening @
Nil				

- (b) Additional new bridges

New bridges at the following locations on the Project Highway shall be constructed. GADs for the new bridges are attached in the drawings folder.

Sl. No.	Location (km)	Total length (m)	Remarks, if any
1	289.303	1 x 10	RCC Solid Slab

2	292.936	1 x 10	RCC Solid Slab
---	---------	--------	----------------

- (c) The railings of existing bridges shall be replaced by crash barriers at the following locations:
[Refer to the provision of relevant Manual and provide details:]

Sl. No.	Location at km	Remarks
Nil		

- (d) Repairs/replacements of railing/parapets of the existing bridges shall be undertaken as follows:
[Refer to the provision of relevant Manual and provide details]

Sl. No.	Location at km	Remarks
Nil		

- (e) Drainage system for bridge decks

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

- (f) Structures in marine environment

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

(iv) Rail-road bridges

- (a) Design, construction and detailing of ROB/RUB shall be as specified in the provision of relevant Manual. [Refer to the provision of relevant Manual and specify modification, if any]
(b) Road over-bridges

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

Sl. No.	Location of Level crossing (Chainage km)	Length of bridge (m)
Nil		

- (c) 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 crossing (Chainage km)	Number and length of span (m)
Nil		

(v) Grade separated structures

[Refer to the provision of relevant Manual]

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2 (ix) and 3 of this Annex-I.

(vi) Repairs and strengthening of bridges and structures

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 of bridge (km)	Nature and extent of repairs/ strengthening to be carried out
Nil		

(b) ROB / RUB

Sl. No.	Location of ROB/RUB (km)	Nature and extent of repairs/ strengthening to be carried out
Nil		

(c) Overpasses/Underpasses and other structures

Sl. No.	Location of Structure (km)	Nature and extent of repairs/ strengthening to be carried out
Nil		

(vii) List of Major Bridges and Structures

The following is the list of the Major Bridges and Structures:

Sl. No.	Location (km)
Nil	

8. Traffic Control Devices and Road Safety Works

(i) Traffic control devices and road safety works shall be provided in accordance with the provision of relevant Manual. The minimum requirement may be taken as below:

Sl. No.	Traffic Signage, Road Marking and other appurtenances	Quantity	Unit
1	90 cm equilateral triangle	1006	nos
2	Stop Sign (90 cm high octagon)	23	nos
3	60 cm circular	20	nos
4	Direction Sign <.0.9 sqm	32	nos
5	Direction Sign >0.9 sqm	15	nos
6	Delineator/Object /Hazard Marker	4667	nos
7	Rumble Strip	21	nos
8	Road stud	25308	nos
9	Painting	14276	sqm

- (ii) Specifications of the reflective sheeting.

9. Roadside Furniture

- (i) Roadside furniture shall be provided in accordance with the provisions of the relevant Manual.
- (ii) Overhead traffic signs: location and size

Sl No.	Location (km)	Remarks
1	283.00	Full Width
2	325.440	Full Width

10. Compulsory Afforestation

Compensatory afforestation shall be in accordance with section 11 of the relevant Manual.

11. Hazardous Locations

11.1 "W" Metal Beam crash barrier of minimum length of 4055m and Wire rope Crash Barrier of minimum length of 2790m shall be provided at the locations of bridge approaches, high embankment (3.0m and more) ,at sharp curves and valley sides of the road. Typical details of crash barrier are given in manual. Increase in length if any as per site requirement will not constitute change of scope.

11.2 Rest of the complete length of the project highway shall have parapet wall as per IRC SP 48:1998.

12. Special Requirement for Hill Roads

Refer to section 13 of IRC: SP: 73-2018. The minimum quantity of protection work may be taken as below:

Type of Protection Work		
Protection Work	Unit	Quantity
Breast wall, 1.5m height	Running Meter	4540
Breast wall, 3.0m height	Running Meter	6760
Retaining wall, 2m height	Running Meter	2450

Type of Protection Work		
Protection Work	Unit	Quantity
Retaining wall, 3m height	Running Meter	470
Retaining wall, 5m height	Running Meter	40
Seeding & Mulching with Jute Net	Sqm	282620
Chute for Culvert	No.	At Every Culvert location

Note:

- (i) The Contractor shall be responsible for accurate assessment of the actual requirement as per site situation & prepare designs for slope protection & stabilization as per the specifications & standards stipulated in schedule 'D' and submit the same to the AE for review through the proof consultant and implement it accordingly thereafter.
- (ii) Any increase in quantity over and above the minimum qty. as mentioned in above table or through change in specifications will not be considered as change of scope. Therefore contractor shall make thorough investigation at site and assess the requirement of slope protection and slide prone zone and other safety features at his own before submission of bid.
- (iii) The length of Retaining Wall shown above is minimum, to be constructed at site for proper geometrics and will not be converted to Breast Wall. Any reduction in the total length of Retaining Wall constructed at site shall constitute of negative change of scope.
- (iv) Entire slope/formation which has been cut, apart from the above tabulated lengths/area shall have to be stabilized by the Contractor using techniques approved by AE.

13. Change of Scope

The length of Structures and bridges specified hereinabove 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. Utility Shifting

Shifting of obstructing existing utilities indicated in Schedule A to an appropriate location in accordance with the standards and specification of concerned Utility Owning Department is part of the scope of work of the Contractor/Concessionaire. The bidders may visit the site and assess the quantum of shifting of utilities for the projects before submission of their bid. Copy of utility relocation plan is enclosed. The specification of concerned Utility Owning Department shall be applicable and followed.

Note-I:

- a) The type/spacing/size/specifications of poles/towers/lines/cables to be used in shifting work shall be as per the guidelines of utility owning department and it is to be agreed solely between the contractor/Concessionaire and the utility owning department. No change of scope shall be admissible and no cost shall be paid for using different type/spacing/size/specifications in shifted work in comparison to those in the existing work or for making any overhead crossing to underground as per requirement of utility

owning department and/or construction of project highway. The contractor/concessionaire shall carry out joint inspection with utility owning department and get the estimates from the utility owning department. The assistance of the Authority is limited to giving forwarding letter on the proposal of contractor/concessionaire to utility owning department whenever asked by the contractor/concessionaire. The decision/ approval of utility owning department shall be on the contractor/concessionaire.

b) The supervision charges at the rates/charges applicable of the utility owning department shall be paid directly by the Authority to the utility Owning department as and when contractor/concessionaire furnishes demand of utility Owning Department along with a copy of estimated cost given by later.

c) The dismantled material/scrap of existing Utility to be shifted/Dismantled shall belong to the contractor/concessionaire who would be free to dispose-off the dismantled material as deemed fit by them unless the contractor/concessionaire is required to deposit the dismantled material may be availed by the contractor/concessionaire as per estimate agreed between them.

d) The utilities shall be handed over after shifting work is completed to utility Owning Department to their entire satisfaction. The maintenance liability shall rest with the Utility Owning Department after Handing over Process is complete as far as utility shifting works are concerned.

Note-II:

Utility Shifting/Relocation Plan and drawings incorporating the details, such as the length and category of lines, types of circuits, type and number of poles, size and type of conductor/cable, the number and type of crossings and the capacity and the number of transformer, the length and category of pipes etc., shall be prepared by the Contractor in consultation with Utility Owning Department and the Authority's Engineer as per the site requirement.

(Schedule-B1)

1.The shifting of utilities

(i) Electrical utilities

The site includes the following electrical utilities:-

a) Extra High-Tension Lines (EHT Lines)*

SL. NO	Chainage		Length (in Km)				Crossings			
	From	To	400KV	220KV	110KV	66KV	400KV	220KV	110KV	66KV
	NIL									

b) High Tension/Low Tension Lines (HT/LT Lines)*

S. No	Chainage		Length (in Km)			Crossings			Transformers	
	From (Km)	To (Km)	33KV	11KV	LT	33KV	11KV	LT	No	Capacity
1	283.636	285.550	1.914							
2	306.117	307.772	1.655							
3	308.05	309.180		1.13						
4	309.180	309.240					0.060			
5	309.240	309.413		0.173						
6	309.413	309.501					0.088			
7	309.501	310.700		1.199						
8	307.118	308.929			1.811					
9	308.929	309.061						0.132		
10	308.880	309.050			0.170					
11	309.050	309.240						0.190		
12	309.800	310.500			0.700					
13	309.240								1	

(ii) Public Health utilities (Water/Sewage Pipe Lines)*

The site includes the following Public Health utilities:-

S.	Chainage	Length(in Km)	Crossings
----	----------	---------------	-----------

No	From (Km)	To (Km)	Water Supply line	Water Supply line
1	283.000	304.500	1.100	
2	304.500	325.440	8.430	

(iii) Any Other line

Note: Variation upto 10% in quantities of Utilities to be shifted will not constitute Change of Scope.

DPR for development of International Connectivity Routes to improve the efficiency of freight movement in the state of Nagaland under Bharatmala Pariyojana .

Package -I: Akegwo- Akash Bridge

Appendix B-I of Annexure -I

(Schedule-B)

The plan & profile and GAD of structures of the project highway are given in soft copy.