SCHEDULE A

Schedule A

(See Clause 2.1 and 8.1)

SITE OF THE PROJECT

1 The Site

1.1 Site of the Two-Lane Project Highway shall include the land, buildings, Structures and road works as described in Annex-I of this Schedule-A.

1.2 The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.

1.3 An inventory of the Site including the land, buildings, Structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.

1.4 The alignment plans of the Project Highway are specified in Annex-III. In the case of sections where no modification in the existing alignment of the Project Highway is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be upgraded. The proposed profile of the project Highways shall be followed by the contractor with minimum FRL as indicated in the alignment plan. The contractor, however, improve/upgrade the Road Profile as indicated in Annex-III based on site/design requirement.

1.5 The status of the environment clearances obtained or awaited is given in Annex-IV.

Annex – I

(Schedule-A)

Site

1. Site

The Site of the Two Lane project highway comprises the section of State Highway No 4 commencing from Km 85.970 (Design Ch 81.1) to Km 102.345 (Design Ch. 96.0) in the state of Meghalaya. The Land, carriageway and structures comprising the site are described below.

2. Land

The Site of the Project Road comprises of ROW of about 9 m. The existing condition of the road is poor in most of the stretch. The terrain is hilly in the entire stretch.

3. Carriageway

The present carriageway of the Project Road is Single lane with average formation width of 6 m and carriageway width of 3.5 - 4.0 m with earthen shoulders of width 1.5 m on either side for the entire stretch. The type of the existing pavement is flexible.

4. Major Bridge

The Site includes the following Major Bridges:

S/no	Chainage (Km)	Type of Structures			No. of spans with span length	Total width (m)
		Foundation	Sub Structure	Super Structure		
NIL						

5. Road over-bridges (ROB)/ Road under-bridges (RUB)

The Site includes the following ROB (road over railway line)/ RUB (road under railway line):

Sl No	Chainage(km)	Type of structure		No of Span with Span length(m)	width (m)	ROB/RUB
		Foundation	Superstructure			
NIL						

6. Grade separators

The Site includes the following grade separators:

Sl No	Chainage(km)	Type of structure		No of Span with Span length(m)	width (m)
		Foundation	Superstructure		
NIL					

7. Minor Bridges

The Site includes the following Minor Bridges:

S. No.	Chainage (Km)	Type of Structures			No of Span with Span length(m)	Total width (m)
		Foundation	Sub Structure	Super Structure		
1	92.822	Open	Cement concrete	Wooden Bridge	1x8.20	4
2	93.535	Open	Cement concrete	Steel Truss and SPT	19.0+8.30	4
3	98.580	Open	Cement concrete	Steel Truss with Timber Decking	1x25.55	4

8. Railway level crossings

The Site includes the following railway level crossings:

Sl No	Location(km)	Remarks
NIL		

9. Underpasses (vehicular, non vehicular)

The Site includes the following underpasses:

Sl No	Chainage(km)	Type of structure	No of Span with Span length(m)	width (m)
NIL				

10. Culvert

S/No.	Existing Chainage (km)	CD Width	Type of Culvert	Span arrangement (No x Span/dia)
1	86.1	6.2	Slab	1 x 1.00
2	86.16	6.2	Slab	1 x 1.00
3	86.255	6	Slab	1 x 1.00
4	86.285	6.2	Slab	1 x 1.00
5	86.59	7	Slab	1 x 1.00
6	86.72	7.5	HP	2 x 0.90 dia
7	86.825	7.5	HP	1 x 0.90 dia
8	87.455	6.5	Slab	1 x 1.00
9	90.125	6.8	Slab	1 x 1.00
10	90.21	6.4	Slab	1 x 1.00
11	90.275	5.8	HP	1 x 0.90
12	90.43	6.5	HP	1 x 0.90
13	90.67	7	Slab	1 x 1.50
14	90.88	5.3	HP	1 x 0.90
15	91.07	5.3	HP	1 x 0.90
16	91.24	6.5	HP	1 x 0.90
17	91.3	5.6	HP	1 x 0.90
18	91.44	6.4	HP	2 x 0.90
19	91.595	7	HP	1 x 0.90
20	91.675	7	HP	1 x 0.90
21	91.78	6.2	HP	1 x 0.90
22	91.985	6.3	Slab	1 x 1.50
23	92.215	6.3	Slab	1 x 1.00
24	92.57	6.3	Slab	1 x 1.00
25	92.78	6	Slab	1 x 1.00
26	92.915	5.6	Slab	1 x 2.50

S/No.	Existing Chainage (km)	CD Width	Type of Culvert	Span arrangement (No x Span/dia)
27	93.08	6.1	Hp	1 x 0.90
28	93.2	5.4	Slab	1 x 6.00
29	93.315	6	HP	1 x 0.90
30	93.36	6.5	Slab	1 x 3.00
31	93.45	6.2	HP	1 x 0.90
32	93.965	7	HP	1 x 0.90
33	94.015	5.8	HP	1 x 0.90
34	94.205	7	HP	1 x 0.90
35	94.29	7.1	HP	1 x 0.90
36	94.385	5.6	HP	1 x 0.90
37	94.82	8.4	HP	1 x 0.90
38	95.015	5.2	HP	1 x 0.90
39	95.09	5.7	HP	1 x 0.90
40	95.255	5.5	Slab	1 x 1.00
41	95.5	6.8	HP	1 x 0.90
42	95.725	5.7	HP	1 x 0.90
43	95.91	7	HP	1 x 0.90
44	96.01	5.6	HP	1 x 0.90
45	96.11	5.2	HP	1 x 0.90
46	96.28	5.2	HP	1 x 0.90
47	96.59	5.2	HP	1 x 0.90
48	96.835	7.2	HP	1 x 0.90
49	96.925	5.6	HP	2 x 0.90
50	97.363	5.6	HP	1 x 0.90
51	97.825	7.2	HP	1 x 0.90
52	97.985	5.6	HP	1 x 0.90

S/No.	Existing Chainage (km)	CD Width	Type of Culvert	Span arrangement (No x Span/dia)
53	98.025	5.6	Slab	1 x 6.00
54	98.115	5.6	HP	1 x 0.90
55	98.185	5.3	HP	1 x 0.90
56	98.35	5.6	Slab	1 x 3.50
57	98.42	6.3	Slab	1 x 1.00
58	99.11	6	HP	1 x 0.90
59	99.15	7.5	HP	1 x 0.90
60	99.19	6.3	Slab	1 x 3.00
61	99.295	6	HP	1 x 0.90
62	99.39	7	Slab	1 x 1.50
63	99.59	6	HP	1 x 0.90
64	99.875	7.5	HP	1 x 0.90
65	100.025	7.5	HP	1 x 0.90
66	100.175	7.5	HP	1 x 0.90
67	100.34	4.2	Slab	1 x 1.50
68	100.465	7.5	Slab	1 x 1.50
69	100.495	6	HP	1 x 0.90
70	100.635	6.7	Slab	1 x 1.00
71	100.68	6.3	HP	1 x 0.90
72	100.9	7.5	HP	1 x 0.90
73	101.185	6.3	HP	1 x 0.90
74	101.515	6	Slab	1 x 1.00
75	101.565	4.6	Slab	1 x 1.00
76	101.74	6.2	HP	1 x 0.90
77	101.885	6	HP	1 x 0.90
78	101.96	7.5	HP	1 x 0.90

S/No.	Existing Chainage (km)	CD Width	Type of Culvert	Span arrangement (No x Span/dia)
79	102.075	7	Slab	1 x 1.00
80	102.18	6.2	HP	1 x 0.90
81	102.23	7.5	HP	1 x 0.90

11. Bus bays

The details of bus bays on the Site are as follows:

Sl No	Chainage(km)	Length(m)	Left Hand side	Right Hand side
NIL				

12. Truck Lay bays

The details of truck bays on the Site are as follows:

Sl No	Chainage(km)	Length(m)	Left Hand side	Right Hand side
NIL				

13. Road side drains

The details of the roadside drains are as follows:

S/NO	LOCATION IN KM	TYPE	REMARKS
1	100.700 to 100.900	RRM	Existing Lined Drain will be damaged during road widening

14. Major Junction

The details of the minor junctions are as follows:

Sn	Location	Name of Road	Type of Junction
NIL			

15. Minor Junction

The details of the minor intersections are as follows:

S/no	Location in km	Type of Crossing	Link	Specification	Remarks
NIL					

16. Bypasses

The details of Bypasses are as follows:

Sl. No.	Name of bypass (town)	Chainage(km)		Length(in km)	Carriageway	
		Fom(km)	To (km)		Width(m)	Type
NIL						

17. Other structures

Nil

Annex II

(Schedule-A)

Dates for providing Right of Way

The dates on which the Authority shall provide Right of Way to the Contractor on different parts of the Site are stated below:

Sl.No.	Location stretch		Length(m)	Width(m)	Date of providing ROW
	From(km)	To(km)			
1) Full ROW	NIL				90% of the land will be made available on the appointed date and remaining 10% in 90 days from appointed date
2) Part ROW	81+100	112+300	31063	9	
3) Balance ROW	81+100	82+200	122	15	
	82+200	82+700	500	7	
	82+700	83+600	900	15	
	83+600	84+000	400	7	
	84+000	84+500	500	15	
	84+500	85+150	650	7	
	85+150	91+200	6050	15	
	91+200	91+500	300	7	
	91+500	92+200	700	15	
	92+200	92+600	400	7	
	92+600	96+000	3400	15	

Annex – IIII

(Schedule-A)

Alignment Plans

The existing alignment of the project highway shall be modified in the following sections as per the alignment plan indicated below:

i) The alignment of the project highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. In any case,FRL of the project highway shall not be less than those indicated in the alignment plan. The contractor shall, however, improve/upgrade the Road profile as indicated in Annex-III in soft/hard copy based on site/design requirement.

ii) Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per IRC: SP: 99 & IRC: 67.

Annex – IV

(Schedule-A)

Environment Clearances

(i) Environmental clearance is not required.

(ii) Project road passes through non forest area. Hence, forest clearance is not required.

SCHEDULE B

Schedule B

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 with earthen shoulder and strengthening of the Project Highway as described in Annex-I of this Schedule-B and 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 earthen shoulder

1. **Development of Two-laning with earthen shoulders of stretch from Km 81.100(Kanai) to 96.000 (Rongara) of Ranikor – Baghmara section in the State of Meghalaya under SARDP-NE "Phase-A**

1.1 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 Hills/rolling terrain to the extent land is available. The total design length of project highway is 14.763. **Chainage equation has been applied on the stretch as per the table given in Appendix B1**

1.2 Width of carriageway

1.2.1 Two-Laning with earthen shoulder shall be undertaken. The paved carriageway shall be 7 (Seven) m wide in accordance with the typical cross sections drawings in the Manual.

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

S. No	Built-up stretch (Town ship)	Location (Km to km)	Width (m)	Typical cross section
Same as in rural areas i.e.10m (7+1.5*2)				

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 the minimum 30 km per hr for hill terrain.

2.3 Improvement of the existing road geometrics

In the following stretches, 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:

S.No.	Stretch (From km to km)	Type Of Deficiency	Remarks
NIL			

2.4 Right of Way

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

2.5 Type of shoulders

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

S. No.	Stretch		Fully paved shoulders/ footpaths
	From (km)	To (km)	
1	82.200	82.700	Drain Cum Footpath
2	83.600	84.000	
3	84.500	85.150	
4	91.200	91.500	
5	92.200	92.600	

The area between paved carriageway and drain in built-up area will be covered with paver block as per TCS-IV.

(b) In open country section the earthen shoulders shall be covered with 150 mm thick compacted layer of granular material. The width of shoulder is 1.5m on both sides.

Earthen Shoulder on Valley side includes crash barrier, parapet wall, etc.

Earthen Shoulder on hill side includes road side drain.

(c) Design and specification of paved shoulders and granular material shall confirm to the requirements specified in paragraphs 2.5 of the Manual.

2.6 Lateral and vertical clearances at underpasses

2.6.1 Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per the paragraph 2.11 of the Manual.

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

S. No.	Description	Design Chainage (km)	Span length	Remarks
NIL				

2.7 Lateral and vertical clearance at overpasses

2.7.1 Lateral and vertical clearances at overpasses shall be as per paragraph 2.12 of the Manual.

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

S. No.	Location (Chainage) From km to km	Number and length of spans	Remarks
NIL			

2.8 Service roads/Slip Road

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

S. No.	Length of Service road		Right hand side (RHS)/ Left hand side (LHS)/ or Both sides	Length (km) of service road
	(From	To		
NIL				

2.9 Grade separated structures

2.9.1 Grade separated structures shall be provided as per paragraph 2.14 of the Manual. The requisite particulars are given below:

S. No.	Location of structure	Length (m)	Number and length of spans	Approach gradient
NIL				

2.9.2 In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows:

S. No.	Location	Type of structure Length (m)	Cross road at		
			Existing level	Raised Level	Lowered Level
NIL					

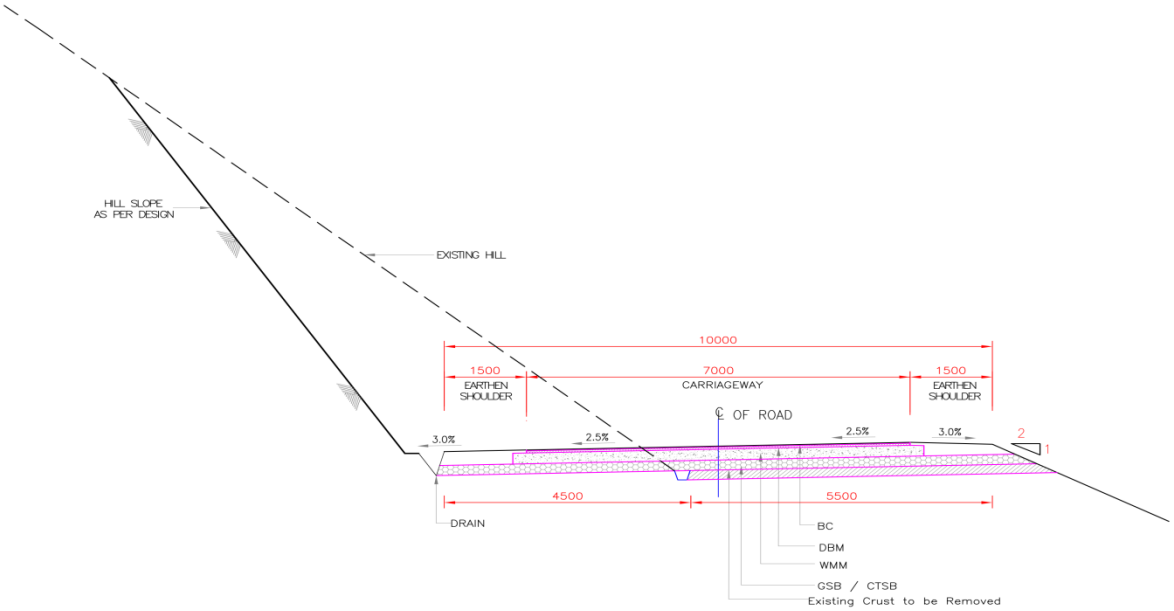
2.10 Cattle and Pedestrian under pass / over pass

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

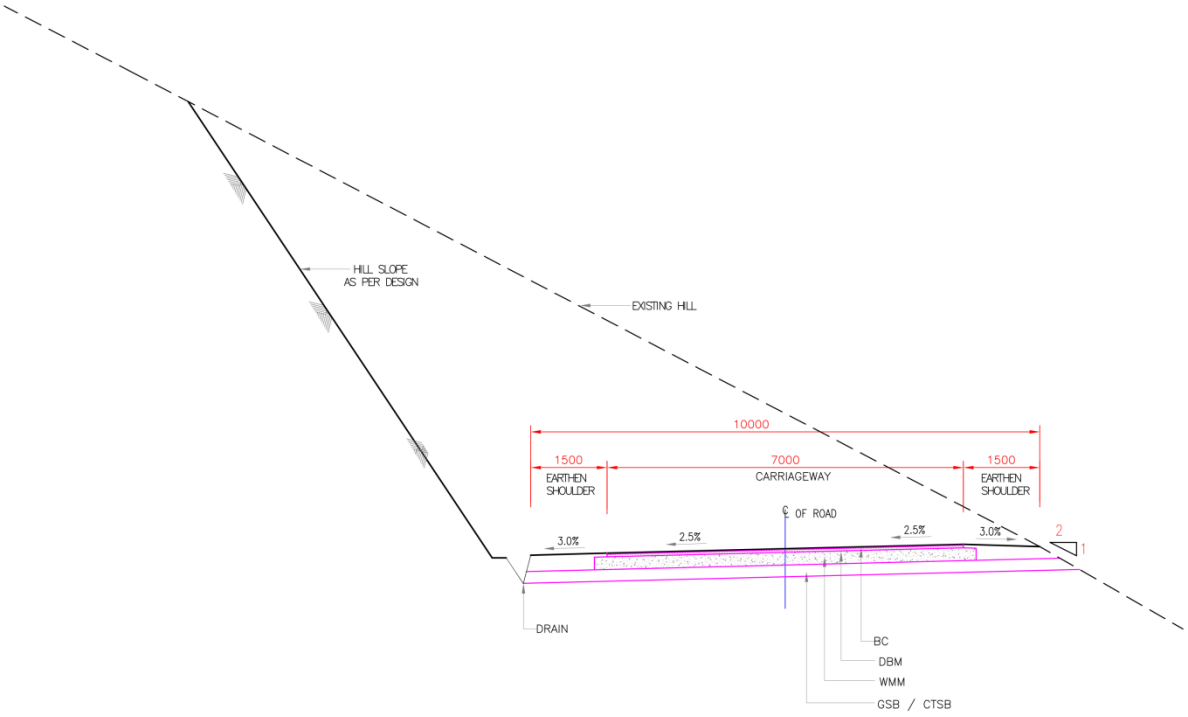
S. No.	Design Chainage km)	Span	Type of crossing
NIL			

2.11 Typical cross-sections of the Project Highway

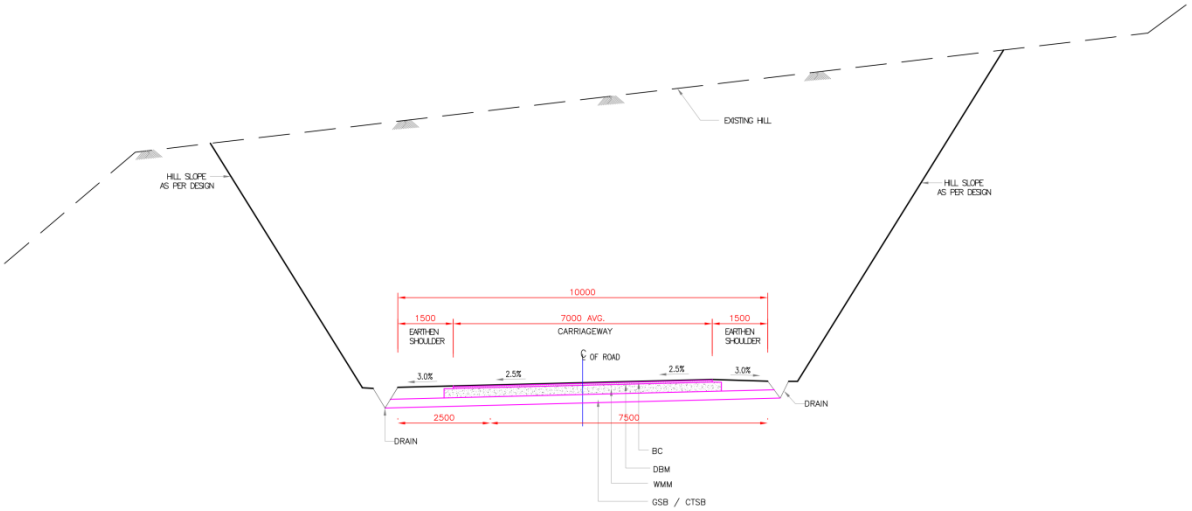
S.No.	Design Length(Km)	TCS Type	Remarks
1	4.079	1	Widening
2	2.694	2	New Construction
3	5.740	3	Box-Cut
4	2.250	4	Built-up



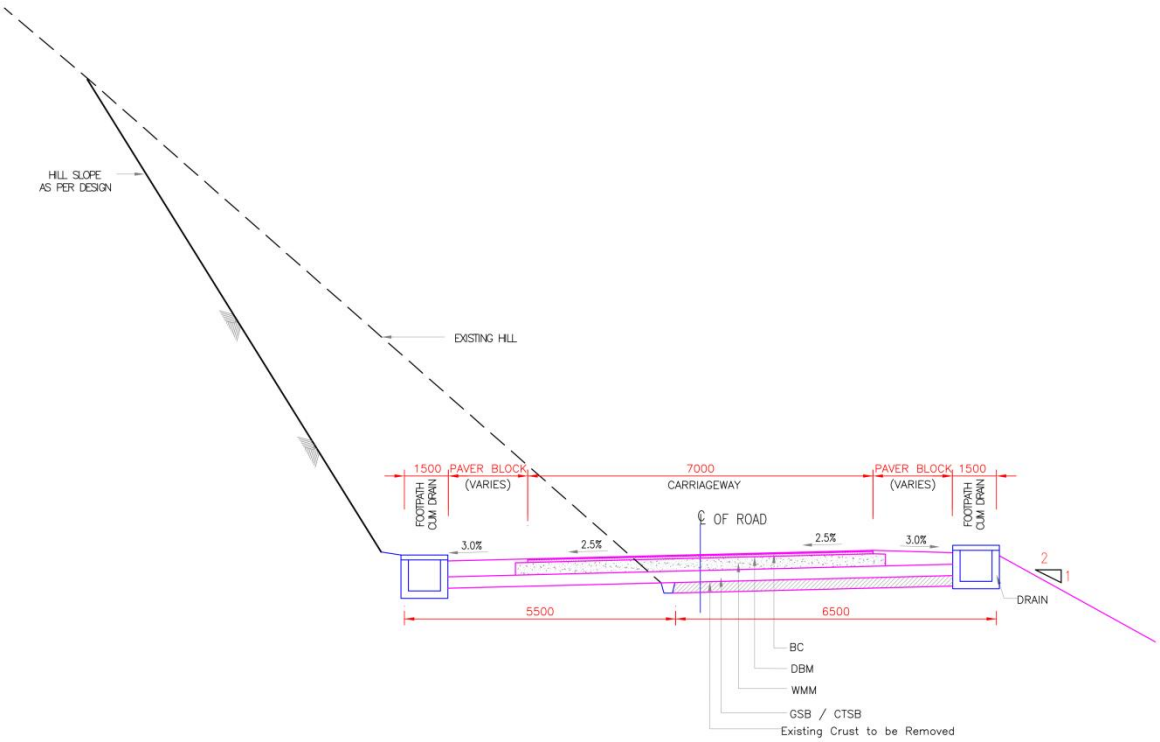
TCS–1 :– 2 LANE WITH EARTHEN SHOULDER FOR WIDENING



TCS–2 :– 2 LANE WITH EARTHEN SHOULDER FOR NEW CONSTRUCTION



TCS-3 :- 2 LANE WITH EARTHEN SHOULDER FOR BOX CUT SECTION



TCS-4 :- 2 LANE WITH EARTHEN SHOULDER FOR BUILT-UP SECTION

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 types and features given in the tables below:

(a) At-grade intersections

Major Intersection

S. No.	Location of intersection (km)	Type of intersection	Other features
NIL			

Minor Intersection

S. No	Location of Intersections	Type of Intersection	Other Features
1	82.165	Y	ODR.
2	94.225	Y	to school
3	94.365	Y	ODR.

(b) Grade separated intersection with/without ramps

S. No.	Location	Salient features	Minimum length of viaduct to be provided	Read to be carried over / under the structures
NIL				

4. Road embankment and cut section

4.1 Widening and improvement of the existing road embankment/cuttings and construction of new road embankment / cuttings shall conform to the standards and specifications 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.

4.2 Box cut section

The existing road shall be box cutting in the following sections.

Sr. No.	Chainage		Length		
	From	To	Total	OS/SMB/SR	HR Stretches
1	81.2	81.26	60	60	
2	81.88	82.2	320	320	
CHAINAGE EQUATION - 81300/81437					
3	82.7	83.6	900	900	
4	84	84.5	500	500	
5	85.18	85.2	20	20	
6	85.2	85.24	40		40
7	85.54	85.56	20	20	
8	85.72	85.76	40	40	
9	85.94	85.98	40	40	
10	87.42	87.48	60	60	
11	87.79	87.81	20	20	
12	87.68	87.7	20	20	
13	87.56	87.58	20	20	
14	88.03	88.05	20	20	
15	88.22	88.3	80	80	
16	88.3	88.34	40		40
17	88.54	88.58	40	40	
18	88.7	88.8	100	100	
19	88.84	88.86	20	20	
20	89.3	89.32	20	20	
21	89.42	89.46	40		40
22	89.46	89.56	100	100	
23	89.66	89.86	200		200
24	89.9	89.98	80		80
25	90.06	90.14	80	80	
26	90.14	90.4	260		260

Sr. No.	Chainage		Length		
	From	To	Total	OS/SMB/SR	HR Stretches
27	90.4	90.6	200	200	
28	90.6	90.7	100		100
29	90.7	90.8	100	100	
30	90.84	90.88	40	40	
31	90.93	90.95	20	20	
32	90.98	91.2	220	220	
33	91.5	91.74	240	240	
34	91.8	91.82	20	20	
35	91.88	91.9	20	20	
36	92.06	92.08	20	20	
37	92.62	93.9	1280	1280	
38	94.02	94.08	60	60	
39	94.34	94.36	20	20	
40	94.46	94.48	20	20	
41	94.57	94.59	20	20	
42	94.68	94.78	100	100	
43	95.08	95.16	80	80	
44	95.66	95.68	20	20	
45	95.76	95.78	20	20	

Note: i)Type of soil of existing cutting section shall be verified as per actual site conditions. Any variations in the type of soil specified in the table shall not constitute a Change of Scope or any deviation thereof.

ii) Contractor shall identify the locations and construct a boundary for proper disposal of cut material in consultation with Authority Engineer.

5. Pavement design

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

5.2 Type of pavement

The contractor is to adopt flexible pavement for the project highway as per manual and technical specifications.

5.3 Design requirements

Pavement design shall be as per section 5 of the Manual and technical specifications.

5.3.1 Design Period and strategy

Flexible pavement for new pavement or for widening and strengthening of the existing pavement shall be designed for minimum design period of 15 years. Stage construction shall not be permitted.

5.3.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the flexible pavement for design traffic of minimum 10 Million standard axles and 8% CBR. In case the MSA is more than specified above at the time of traffic survey done by EPC Contractor at the time of design of project highway, then the higher traffic will be adopted for design.

5.4 Reconstruction of stretches

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

Sl No.	Chainage		Length(Km)
	From	To	
1	81.100	81.3	0.200
2	81.437	81.85	0.413
3	82.037	82.143	0.106
4	84.9	85.15	0.25
5	86.07	86.9	0.83
6	86.96	87.17	0.21
7	88.98	89.15	0.17
8	89.21	89.3	0.09
9	91.5	91.6	0.1
10	94.1	94.3	0.2
11	94.4	95.12	0.72

Sl No.	Chainage		Length(Km)
	From	To	
12	95.21	96.00	0.94

6. Roadside drainage

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

RCC Covered Drain shall be provided in following stretches but not limited to:

S. No.	Stretch		Fully paved shoulders/ footpaths
	From (km)	To (km)	
1	82.200	82.700	Drain Cum Footpath
2	83.600	84.000	
3	84.500	85.150	
4	91.200	91.500	
5	92.200	92.600	

Lined Drain shall be provided in Soil & Soft Rock Areas and in hard rock stretches Unlined Drain shall be provided.

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 of more than 60(sixty) metre length and carriageway width different from 7.5 (seven point five) metres are mentioned in the table below:

S No	Bridge at Km	Span Arrangement	Carriageway Width(m)
NIL			

7.1.3 The following structures shall be provided with footpaths:

S.No.	Location at km	Remarks
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 the table below:

S. No.	Bridge at km	Utility service to be carried	Remarks
All Bridges shall have provisions for utility services to be carried over			

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 re-constructed as new culverts:

S.No	Existing Chainage	Proposed Chainage	No of Span/Row	Length of Span/Dia	Proposed Type of Culvert	Remarks
1	86.10	81.23	1	1.5	Box	Reconstruction
2	86.16	81.285	1	1.5	Box	Reconstruction
CHAINAGE EQUATION - 81300/81437						
3	86.255	81.51	1	1.5	Box	Reconstruction
4	86.285	81.74	1	1.5	Box	Reconstruction
5	86.59	81.84	1	1.5	Box	Reconstruction
6	86.72	81.958	1	3	Box	Reconstruction
7	86.825	82.06	1	1.5	Box	Reconstruction
8	87.455	82.68	1	1.5	Box	Reconstruction
9	90.125	84.94	1	1.5	Box	Reconstruction

S.No	Existing Chainage	Proposed Chainage	No of Span/Row	Length of Span/Dia	Proposed Type of Culvert	Remarks
10	90.21	85.025	1	1.5	Box	Reconstruction
11	90.275	85.08	1	1.5	Box	Reconstruction
12	90.43	85.25	1	1.5	Box	Reconstruction
13	90.67	85.46	1	1.5	Box	Reconstruction
14	90.88	85.64	1	1.5	Box	Reconstruction
15	91.07	85.83	1	1.5	Box	Reconstruction
16	91.24	86	1	1.5	Box	Reconstruction
17	91.3	86.065	1	1.5	Box	Reconstruction
18	91.44	86.21	1	3	Box	Reconstruction
19	91.595	86.36	1	1.5	Box	Reconstruction
20	91.675	86.433	1	1.5	Box	Reconstruction
21	91.78	86.545	1	1.5	Box	Reconstruction
22	91.985	86.755	1	1.5	Box	Reconstruction
23	92.215	86.945	1	1.5	Box	Reconstruction
24	92.57	87.27	1	1.5	Box	Reconstruction
25	92.78	87.46	1	1.5	Box	Reconstruction
26	92.915	87.605	1	3	Box	Reconstruction
27	93.08	87.745	1	1.5	Box	Reconstruction
28	93.2	87.85	1	6	Box	Reconstruction
29	93.315	87.96	1	1.5	Box	Reconstruction
30	93.36	88.005	1	3	Box	Reconstruction
31	93.45	88.088	1	1.5	Box	Reconstruction
32	93.965	88.61	1	1.5	Box	Reconstruction
33	94.015	88.67	1	1.5	Box	Reconstruction
34	94.205	88.815	1	1.5	Box	Reconstruction
35	94.29	88.89	1	1.5	Box	Reconstruction

S.No	Existing Chainage	Proposed Chainage	No of Span/Row	Length of Span/Dia	Proposed Type of Culvert	Remarks
36	94.385	88.972	1	1.5	Box	Reconstruction
37	94.82	89.415	1	1.5	Box	Reconstruction
38	95.01	89.575	1	1.5	Box	Reconstruction
39	95.09	89.655	1	1.5	Box	Reconstruction
40	95.255	89.795	1	1.5	Box	Reconstruction
41	95.5	90	1	1.5	Box	Reconstruction
42	95.725	90.135	1	1.5	Box	Reconstruction
43	95.91	90.3	1	1.5	Box	Reconstruction
44	96.01	90.4	1	1.5	Box	Reconstruction
45	96.11	90.49	1	1.5	Box	Reconstruction
46	96.28	90.63	1	1.5	Box	Reconstruction
47	96.59	90.89	1	1.5	Box	Reconstruction
48	96.835	91.025	1	1.5	Box	Reconstruction
49	96.925	91.1	1	1.5	Box	Reconstruction
50	97.363	91.482	1	1.5	Box	Reconstruction
51	97.825	91.845	1	1.5	Box	Reconstruction
52	97.985	91.965	1	1.5	Box	Reconstruction
53	98.025	92.005	1	6	Box	Reconstruction
54	98.115	92.115	1	1.5	Box	Reconstruction
55	98.185	92.185	1	1.5	Box	Reconstruction
56	98.35	92.34	1	1.5	Box	Reconstruction
57	98.42	92.4	1	1.5	Box	Reconstruction
58	99.11	92.945	1	1.5	Box	Reconstruction
59	99.15	92.985	1	1.5	Box	Reconstruction
60	99.19	93.04	1	3	Box	Reconstruction
61	99.295	93.142	1	1.5	Box	Reconstruction

S.No	Existing Chainage	Proposed Chainage	No of Span/Row	Length of Span/Dia	Proposed Type of Culvert	Remarks
62	99.39	93.238	1	1.5	Box	Reconstruction
63	99.59	93.428	1	1.5	Box	Reconstruction
64	99.875	93.71	1	1.5	Box	Reconstruction
65	100.025	93.87	1	1.5	Box	Reconstruction
66	100.175	94.005	1	1.5	Box	Reconstruction
67	100.34	94.12	1	1.5	Box	Reconstruction
68	100.465	94.242	1	1.5	Box	Reconstruction
69	100.495	94.272	1	1.5	Box	Reconstruction
70	100.635	94.37	1	1.5	Box	Reconstruction
71	100.68	94.422	1	1.5	Box	Reconstruction
72	100.9	94.635	1	1.5	Box	Reconstruction
73	101.185	94.922	1	1.5	Box	Reconstruction
74	101.515	95.11	1	1.5	Box	Reconstruction
75	101.565	95.215	1	1.5	Box	Reconstruction
76	101.74	95.39	1	1.5	Box	Reconstruction
77	101.885	95.535	1	1.5	Box	Reconstruction
78	101.96	95.61	1	1.5	Box	Reconstruction
79	102.075	95.72	1	1.5	Box	Reconstruction
80	102.18	95.832	1	1.5	Box	Reconstruction
81	102.23	95.9	1	1.5	Box	Reconstruction

Note: The culvert shall be measured in square direction only. The locations, orientation of the above mentioned structures are tentative and shall vary as per the actual site condition. For skew nallah locations the structure shall be provided in skew only. The height of the culvert is minimum clear height only above the invert level. The length and height proposed above is tentative and shall be reconfirmed based on the actual hydrologic calculation. Increase of total length & formation level based on hydrological calculation shall NOT be considered as CHANGE OF SCOPE.

7.2.3 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 section 7 of the Manual. Repairs and strengthening of existing structures where required shall be carried out.

S. No	Existing Chainage	Proposed Chainage	No of Span/ Row	Span Length/Dia	Type of Culvert
NIL					

7.2.4 Additional new culverts shall be constructed as per particulars given in the table below:

S.No	Proposed Chainage	No of Span/Row	Length of Span/Dia	Proposed Type of Culvert	Remarks
1	82.220	1	1.5	Box	New Construction
2	82.445	1	1.5	Box	New Construction
3	82.625	1	1.5	Box	New Construction
4	83.161	1	1.5	Box	New Construction
5	83.270	1	1.5	Box	New Construction
6	83.435	1	1.5	Box	New Construction
7	83.530	1	1.5	Box	New Construction
8	83.624	1	1.5	Box	New Construction
9	83.730	1	1.5	Box	New Construction
10	83.863	1	1.5	Box	New Construction
11	83.950	1	1.5	Box	New Construction
12	84.084	1	1.5	Box	New Construction
13	84.235	1	1.5	Box	New Construction
14	84.336	1	1.5	Box	New Construction
15	84.380	1	1.5	Box	New Construction
16	84.490	1	1.5	Box	New Construction
17	84.570	1	1.5	Box	New Construction
18	84.650	1	1.5	Box	New Construction

S.No	Proposed Chainage	No of Span/Row	Length of Span/Dia	Proposed Type of Culvert	Remarks
19	84.712	1	1.5	Box	New Construction
20	84.825	1	1.5	Box	New Construction
21	88.355	1	1.5	Box	New Construction
22	88.555	1	1.5	Box	New Construction
23	89.165	1	1.5	Box	New Construction
24	91.240	1	1.5	Box	New Construction
25	92.650	1	1.5	Box	New Construction
26	94.795	1	1.5	Box	New Construction

Note: The culvert shall be measured in square direction only. The locations, orientation of the above mentioned structures are tentative and shall vary as per the actual site condition. For skew nallah locations the structure shall be provided in skew only. The height of the culvert is minimum clear height only above the invert level. The length and height proposed above is tentative and shall be reconfirmed based on the actual hydrologic calculation. Increase of total length & formation level based on hydrological calculation shall NOT be considered as CHANGE OF SCOPE.

7.2.5 Repairs/replacements of railing/parapets, flooring and protection works of the existing culverts shall be undertaken as per site condition.

Sl. No.	Location at Km	Type of repair required
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 re-constructed/widened

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

S. No	Bridge Location (km)	Salient Detail of Existing Bridge	Adequacy or otherwise of the existing waterway, vertical clearance etc.	Remarks
NIL				

(ii) The following narrow bridges shall be widened:

S. No	Location (km)	Existing Width(m)	Extent of widening(m)	Cross-section at deck level for widening
NIL				

7.3.2 Additional new bridges

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

S No	Bridge at Km	Deck Width	Carriageway Width	Span Arrangement	Type of Super-Structure
CHAINAGE EQUATION - 81300/81437					
1	87.515	12	10.9	1x10	RCC Slab
2	88.185	12	10.9	1x30	PSC Girder
3	92.535	12	10.9	1x30	PSC Girder

Note: The span mentioned above is centre to centre of expansion joints measured in square direction only. The locations, orientation of the above-mentioned structures are tentative and shall vary as per the actual site condition. The span proposed above is tentative and shall be reconfirmed based on the actual hydrologic calculation. Increase of total length & formation level of the bridge based on hydrological calculation shall NOT be considered as CHANGE OF SCOPE.

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

Sl No	Location at Km	Type of bridge
NIL		

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

S. No	Location at Km	Remarks
NIL		

7.3.5 Drainage system for bridge decks

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

7.3.6 Structures in marine environment

Nil

7.4 Rail-road bridges

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual.

7.4.2 Road over bridges (road over rail) shall be provided at the following level crossing

Sl No	Location at Km	Length of Bridge
NIL		

7.4.3 Road under bridges (road under railway line) shall be provided at the following level crossings:

S. No.	Location of level crossing	Number and length of span
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 2.9 & 3 of this Annex-I

7.6 Repairs and strengthening of structures

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

A – Bridges

S. No.	Design Chainage (km)	Nature and extent of repairs / strengthening to be carried out
1	101.63	Painting, Wearing coat, cleaning of expansion joint, drainage spouts & waterway etc.

B – ROB / RUB

S. No.	Location of structure (km)	Nature and extent of repairs/strengthening to be carried out
NIL		

C – Overpasses/Underpasses and other structures

S. No.	Location of structure (km)	Nature and extent of repairs/strengthening to be carried out
NIL		

7.7 List of Major Bridges and Structures

The following is the list of the Major Bridges and structures.

Sl No	Location at Km	Span Arrangement	Remarks
NIL			

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.

8.2 Specifications of the reflecting sheeting.

Retro reflective sheeting should be of high intensity grade with micro prismatic retro reflective element type – 9 as per IRC specification shall be provided.

9. Roadside furniture

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

9.2 Overhead traffic signs: 2 Overhead signs(at start and end of project road shall be provided)

10. Compulsory afforestation

Total of 768 trees are identified to be affected in the proposed ROW. The trees/plants to be planted shall be strictly as per IRC SP 21:2009. The number of trees to be cut is an approximate number and any variation in the number shall not constitute a change of scope.

11. Hazardous locations

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

S. No.	Location stretch from (km) to (km)	LHS/RHS
This shall be Provided as per manual.		

12. Special requirements for hill roads

i) Breast wall shall be constructed as per table given below but not limited to.

Height (m)	Length (m)
3	90
4	30
5	85
6	800
Total	**975**

ii) Retaining wall shall be constructed as per table given below but not limited to

Height (m)	Length (m)
1.5	280
2.5	320
3	160
4	80
6	60
Total	**900**

iii) Parapet wall shall be constructed along valley side as per clause 9.4 of IRC SP 48 1998

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.

Appendix B1

Chainage Equation	
81+300	81+437

SCHEDULE C

Schedule – C

(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

The Contractor shall construct the Project Facilities in accordance with the provisions of this Agreement. Such Project Facilities shall include:

a) toll plazas;
b) roadside furniture;
c) pedestrian facilities;
d) tree plantation;
e) truck lay-bys;
f) bus-bays and bus shelters;
g) rest areas; and
h) Others to be specified

2 Description of Project Facilities

Each of the Project Facilities is described below:

S. No.	Project Facility	Location design ch. (km)	Design Requirements	Other essential details
1.	Toll Plazas	Nil	-	
2.	Road side furniture	Along project stretch	As per section 11 of manual	
3.	Pedestrian facility	Along project stretch	As per section 12 of manual	
4.	Tree Plantation	Along project stretch	As per section 11 of manual	
5.	Truck lay bye	Nil	-	
6	Bus bays & bus shelter	1 Nos	As per section of 12.6 of the manual	Location of bus byes is shown in table 1.1
7.	Rest area	Nil	Nil	
8.	Special Requirement for Hill Road	Along project stretch	As per section 13 of manual	

Table 1.1: Bus Bays

Sn.	Name of Habitation	Location (Km) (Designed Chainage
1	Kanai	82.423

SCHEDULE D

Schedule – D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1. Construction

The Contractor shall comply with the Specifications and Standards set forth in Annex-I of this Schedule-D for construction of the Project Highway:

2. Design Standards

The Project Highway including Project Facilities shall conform to design requirements set out in the following documents:

Manual of Standards and Specifications for Two Laning of State Highways published by the Indian Roads Congress – IRC: SP: 73-2007.

Annex – I
(Schedule-D)

Specifications and Standards for Construction

1 Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Two-Lane Highways published by IRC (referred to as "Manual" in this Schedule) and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2 Deviations from the Specifications and Standards

The terms "Concessionaire", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively.

Notwithstanding anything to the contrary contained in the Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:

Sl No.	Clause referred in Manual	Item	Provisions as per Manual	Modified Provisions
1	2.8.4	Radii of Horizontal Curves	Absolute Minimum Radius is 60 m	Absolute Minimum Radius proposed is 30 m to match with existing major bridge approaches. The location of stretches where the radius is less than absolute minimum can be identified by Plan and Profile drawings.
2	2.2	Design Speed	Absolute minimum speed is 40 kmph	Alignment is designed for minimum design speed of 30kmph.
3	2.15	Typical cross section	Typical cross sections of project highway are given in fig. 2.1 to 2.5 for various locations.	Modified TCS are as per Clause 2.11 of Schedule B

SCHEDULE H

Schedule-H
(See Clause 19.3)
Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs ----------

1.2 Proportions of the Contract Price for different stages of Construction of the Project Highway shall be as specified below:

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
Road works including culverts, widening and repair of culverts.	72.62%	**A- Widening and strengthening of existing road**	
		(1) Earthwork up to top of the sub-grade	17.76%
		(2) Sub-base Course	6.10%
		(3) Non Bituminous Base Course	3.80%
		(4) Bituminous Base Course	0.47%
		(5) Wearing Coat	3.87%
		(6) Widening and repair of culvert	0.00%
		B1- Reconstruction/ New 2-Lane realignment/bypass (Flexible Pavement)	
		(1) Earthwork up to top of the sub-grade	32.98%
		(2) Sub-base Course	9.15%
		(3) Non Bituminous Base Course	5.69%
		(4) Bituminous Base Course	0.56%
		(5) Wearing Coat	4.55%
		B2 - Reconstruction/ New 2-Lane realignment/bypass (Flexible Pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub-base Course	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%
		(4) Pavement Quality Control (PQC) Course	0.00%
		C1- Reconstruction/ New Service Road (Flexible Pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub-base Course	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(3) Non Bituminous Base Course	0.00%
		(4) Bituminous Base Course	0.00%
		(5) Wearing Coat	0.00%
		C2- Reconstruction/ New Service Road (Rigid Pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub-base Course	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%
		(4) Pavement Quality Control (PQC) Course	0.00%
		D - Re-Construction and new culverts on existing road, realignments on existing road, realignments,bypasses:	
		Culverts(Length<6m)	15.06%
Minor Bridges/Underpasses/Over passes	4.97%	**A1-<u>Widening and Repairs of Minor Bridges (Length>6m and <60m)</u>**	
		Minor bridges	0.00%
		A2-New <u>Minor Bridges (Length>6m and <60m)</u>	
		(1) Foundation+Sub Structure: On completion of the foundation work including foundations for wing and return walls ,abutments,piers upto the abutment/pier cap	60.52%
		(2) Super Structure: On completion of the super structure in all respect includong wearing coat, bearings, expansion joints, hand rails, crash barriers,road sign & markings, tests on completion etc. complete in all respect,	31.48%
		(3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use	8.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(4) Guide Bund and River Training Works: On completion of Guide Bund and River Training Works complete in all respect.	0.00%
		B.1- Widening and repair of Underpasses/overpasses	
		Underpasses/Overpasses	0.00%
		B.2- New Underpasses/overpasses	
		(1) Foundation+Sub Structure: On completion of the foundation work including foundations for wing and return walls ,abutments,piers upto the abutment/pier cap	0.00%
		(2) Super Structure: On completion of the super structure in all respect including wearing coat, bearings, expansion joints, hand rails, crash barriers,road sign & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass- wearing coat including expansion joint complete in all respect as specified and (b) in case of underpass rigid pavement including drainage facility complete in all respects as specified.	0.00%
		(3) Approaches: On completion of approaches including Retaining Walls, stone pitching, protection works complete in all respect and fit for use	0.00%
Major Bridge (length>60m) works and RUB/ROB/elevated sections/flyovers including	0.00%	**A.1 -<u>Widening and repairs of Major Bridges</u>**	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
viaducts, if any		(3) Super-structure (including bearings)	0.00%
		(4) Wearing coat including expansion joints	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%
		(6) Wing walls/Return Walls	0.00%
		(7) Guide bunds, River Training Works etc	0.00%
		(8) Approaches (including retaining walls, stone pitching and protection works)	0.00%
		A.2 -New <u>Major Bridges</u>	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat including expansion joints	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%
		(6) Wing walls/Return Walls	0.00%
		(7) Guide bunds, River Training Works etc	0.00%
		(8) Approaches (including retaining walls, stone pitching and protection works)	0.00%
		B.1-<u>Widening and repair of</u> **(a) ROB** **(b) RUB**	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat (a) in case of ROB - wearing coat including expansion joint complete in all respect as specified and (b) in case of RUB rigid pavement under RUB including drainage facility complete in all respects as specified.	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%
		(6) Wing walls/Return Walls	0.00%
		(7) Approaches (including retaining walls, stone pitching and protection works)	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		B.2-New ROB/RUB	
		(a) ROB	
		(b) RUB	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat (a) in case of ROB - wearing coat including expansion joint complete in all respect as specified and (b) in case of RUB rigid pavement under RUB including drainage facility complete in all respects as specified.	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%
		(6) Wing walls/Return Walls	0.00%
		(7) Approaches (including retaining walls, stone pitching and protection works)	0.00%
		C.1- Widening and repair of Elevated Sections/Flyovers/Grade Separators	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat including expansion joints.	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%
		(6) Wing walls/Return Walls	0.00%
		(7) Approaches (including retaining walls, stone pitching and protection works)	0.00%
		C.2- New Elevated Sections/Flyovers/Grade Separators	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat including expansion joints.	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(6) Wing walls/Return Walls	0.00%
		(7) Approaches (including retaining walls, stone pitching and protection works)	0.00%
Other works	22.41%	(i) Toll Plaza	0.00%
		(ii)Road side drains	23.55%
		(iii)Road signs, markings, km stones, safety devices, …	6.40%
		(iv)Project facilities	0.00%
		a) Bus bays	0.83%
		b) Truck lay bye	0.00%
		c) Rest Areas	0.00%
		d) Others	4.88%
		(v)Road side plantation	0.00%
		(vi) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROBs/RUBs	0.00%
		(vii)Safety and traffic management during construction	0.00%
		(viii)Protection works (Retaining Wall/ Breast Wall/Parapet Wall)	64.33%

1.3 Procedure of estimating the value of work done.

1.3.1 Road works

Procedure for estimating the value of road work done shall be as follows:

Table 1.3.1

Stage of Payment	Percentage - weightage	Payment Procedure
A- Widening and strengthening of existing road		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 5 (five) percent of the total length.
(1) Earthwork up to top of the sub-grade	17.76%	
(2) Sub-base Course	6.10%	
(3) Non Bituminous Base Course	3.80%	

Stage of Payment	Percentage - weightage	Payment Procedure
(4) Bituminous Base Course	0.47%	
(5) Wearing Coat	3.87%	
(6) Widening and repair of culvert	0.00%	Cost of completed culverts shall be determined pro rate with respect to the total number of culverts. Payment shall be made on the completion of atleast One culverts.
B1- Reconstruction/ New 2-Lane realignment/bypass (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 1 (One) km length whichever is less.
(1) Earthwork up to top of the sub-grade	32.98%	
(2) Sub-base Course	9.15%	
(3) Non Bituminous Base Course	5.69%	
(4) Bituminous Base Course	0.56%	
(5) Wearing Coat	4.55%	
B2- Reconstruction/ New 2-Lane realignment/bypass (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 1 (One) km length whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-base Course	0.00%	
(3) Dry Lean Concrete (DLC) Course	0.00%	
(4) Pavement Quality Control (PQC) Course	0.00%	
C1- Reconstruction/ New Service Road (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 1 (One) km length whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-base Course	0.00%	
(3) Non Bituminous Base Course	0.00%	
(4) Bituminous Base Course	0.00%	
(5) Wearing Coat	0.00%	
C2- Reconstruction/ New Service Road (Rigid Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 1 (One) km length whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	

Stage of Payment	Percentage - weightage	Payment Procedure
(2) Sub-base Course	0.00%	
(3) Dry Lean Concrete (DLC) Course	0.00%	
(4) Pavement Quality Control (PQC) Course	0.00%	
D - Re-Construction and new culverts on existing road, realignments on existing road, realignments,bypasses:		Cost of completed culverts shall be determined pro rate with respect to the total number of culverts. Payment shall be made on the completion of atleast One culverts.
Culverts(Length<6m)	15.06%	

@ For example, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows:

Cost per km = P **X** weightage for road work X weightage for bituminous work **X** (1/L)

Where P = Contract Price

L = Total length in km

Similarly, the rates per km for other stages shall be worked out accordingly.

1.3.2 Minor Bridge and Underpasses/Overpasses

Procedure for estimating the value of Minor Bridge works and Underpasses/Overpasses shall be stated in table 1.3.2

Table 1.3.2

Stage of Payment	Percentage - weightage	Payment Procedure
1	2	3
A1-<u>Widening and Repairs of Minor Bridges (Length>6m and <60m)</u>	0.00%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening and repair works of a minor bridge.
A2-New <u>Minor Bridges</u> **(i) Foundation+Sub Structure:** On completion of the foundation work including foundations for wing and return walls ,abutments,piers upto the abutment/pier cap	60.52%	**(i) Foundation+Sub Structure:** Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation+sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of foundation+ sub structure of each bridge subject to completion of atleast two foundations along with sub structure upto abutment/pier cap level of each bridge.

Stage of Payment	Percentage - weightage	Payment Procedure
1	2	3
(ii) Super Structure: On completion of the super structure in all respect including wearing coat, bearings, expansion joints, hand rails, crash barriers,road sign & markings, tests on completion etc. complete in all respect,	31.48%	In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. **(ii) Super Structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure of atleast one span in all respect as specified in the column of " Stage of Payment" in this sub clause.
(iii) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use	8.00%	**(iii) Approaches:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of " Stage of Payment" in this sub clause.
(iv) Guide Bund and River Training Works: On completion of Guide Bund and River Training Works complete in all respect.	0.00%	**(iv) Guide Bund and River Training Works:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of Guide Bunds and River Training Works in all respect as specified.
B.1- Widening and repair of Underpasses/overpasses	0.00%	Cost of each overpass/underpass shall be determined on pro rata basis with respect to the total linear length of the underpass/overpass. Payment shall be made on the completion of wiening & repair works of a underpass/overpass.
B.2- New Underpasses/overpasses **(i) Foundation+Sub Structure:** On completion of the foundation work including foundations for wing and return walls ,abutments,piers upto the abutment/pier cap	0.00%	**(i) Foundation+Sub Structure:** Cost of each Underpass/Overpass shall be determined on pro rata basis with respect to the total linear length (m) of the Underpass/Overpass. Payment against foundation+sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of foundation+ sub structure of each Underpass/Overpass subject to completion of atleast two foundations along with sub structure upto abutment/pier cap level of each Underpass/Overpass. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

Stage of Payment	Percentage - weightage	Payment Procedure
1	2	3
(ii) Super Structure: On completion of the super structure in all respect including wearing coat, bearings, expansion joints, hand rails, crash barriers, road sign & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass-wearing coat including expansion joint complete in all respect as specified and (b) in case of underpass rigid pavement including drainage facility complete in all respects as specified.	0.00%	**(ii) Super Structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure of atleast one span in all respect as specified in the column of " Stage of Payment" in this sub clause.
(iii) Approaches: On completion of approaches including Retaining Walls, stone pitching, protection works complete in all respect and fit for use	0.00%	**(iii) Approaches:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of " Stage of Payment" in this sub clause.

1.3.3 Major Bridge Works, ROB/RUB and Structures.

Procedure for estimating the value of Major Bridge Works, ROB/RUB and Structures work shall be as stated in table 1.3.3:

Table 1.3.3

Stage of Payment	Percentage - weightage	Payment Procedure
1	2	3
A1-Widening and Repairs of Major Bridges **(i) Foundation:**	0.00%	**(i) Foundation:** Cost of each Major bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major bridges. Payment against foundation shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of foundation of Major Bridge subject to completion of atleast two foundationsof the Major Bridge.

Stage of Payment	Percentage - weightage	Payment Procedure
(ii) Sub Structure:	0.00%	In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. **(ii) Sub Structure:** Payment against sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of sub structure of Major Bridge subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the major bridge.
(iii) Super Structure (including bearings)	0.00%	**(iii) Super Structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.
(iv) Wearing Coat including expansion joints.	0.00%	**Wearing Coat** Payment shall be made on completion of wearing coat including expansion joints complete in all respect as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%	**(v) Miscellaneous** Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc.complete in all respect as specified.
(vi) Wing walls/Return Walls	0.00%	**(vi) Wing walls/Return Walls** Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Guide bunds, River Training Works etc	0.00%	**(vii) Guide bunds, River Training Works etc** Payment shall be made on completion of all Guide bunds/River Training Works etc. complete in all respect as specified.
(viii) Approaches (including retaining walls, stone pitching and protection works)	0.00%	**(viii) Approaches:** Payment shall be made on completion of both approaches including stone pitching, protection works,etc. complete in all respects as specified.
A2-New Major Bridges		

Stage of Payment	Percentage - weightage	Payment Procedure
(i) Foundation:	0.00%	**(i) Foundation:** Cost of each Major bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major bridges. Payment against foundation shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of foundation of Major Bridge subject to completion of atleast two foundationsof the Major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub Structure:	0.00%	**(ii) Sub Structure:** Payment against sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of sub structure of Major Bridge subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the major bridge.
(iii) Super Structure (including bearings)	0.00%	**(iii) Super Structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.
(iv) Wearing Coat including expansion joints.	0.00%	**Wearing Coat** Payment shall be made on completion of wearing coat including expansion joints complete in all respect as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%	**(v) Miscellaneous** Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc.complete in all respect as specified.
(vi) Wing walls/Return Walls	0.00%	**(vi) Wing walls/Return Walls** Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Guide bunds, River Training Works etc	0.00%	**(vii) Guide bunds, River Training Works etc** Payment shall be made on completion of all Guide bunds/River Training Works etc. complete in all respect as specified.

Stage of Payment	Percentage - weightage	Payment Procedure
(viii) Approaches (including retaining walls, stone pitching and protection works)	0.00%	**(viii) Approaches:** Payment shall be made on completion of both approaches including stone pitching, protection works,etc. complete in all respects as specified.
B1 - Widening and repairs of **(a) ROB** **(b) RUB** **(i) Foundation:**	0.00%	**(i) Foundation:** Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of foundation of ROB/RUB subject to completion of atleast two foundations of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub Structure:	0.00%	**(ii) Sub Structure:** Payment against sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of sub structure of ROB/RUB subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the ROB/RUB.
(iii) Super Structure (including bearings)	0.00%	**(iii) Super Structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	0.00%	**(iv) Wearing Coat:** Payment shall be made on completion of (a) in case of ROB - wearing coat including expansion joint complete in all respect as specified and (b) in case of RUB rigid pavement under RUB including drainage facility complete in all respects as specified.

Stage of Payment	Percentage - weightage	Payment Procedure
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%	**(v) Miscellaneous** Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respect as specified.
(vi) Wing walls/Return Walls	0.00%	**(vi) Wing walls/Return Walls** Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Approaches (including retaining walls, stone pitching and protection works)	0.00%	**(viii) Approaches:** Payment shall be made on completion of both approaches including stone pitching, protection works,etc. complete in all respects as specified.
B2 - New **(a) ROB** **(b) RUB**		
(i) Foundation:	0.00%	**(i) Foundation:** Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of foundation of ROB/RUB subject to completion of atleast two foundations of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub Structure:	0.00%	**(ii) Sub Structure:** Payment against sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of sub structure of ROB/RUB subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the ROB/RUB.
(iii) Super Structure (including bearings)	0.00%	**(iii) Super Structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.

Stage of Payment	Percentage - weightage	Payment Procedure
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	0.00%	**(iv) Wearing Coat:** Payment shall be made on completion of (a) in case of ROB - wearing coat including expansion joint complete in all respect as specified and (b) in case of RUB rigid pavement under RUB including drainage facility complete in all respects as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%	**(v) Miscellaneous** Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc.complete in all respect as specified.
(vi) Wing walls/Return Walls	0.00%	**(vi) Wing walls/Return Walls** Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Approaches (including retaining walls, stone pitching and protection works)	0.00%	**(viii) Approaches:** Payment shall be made on completion of both approaches including stone pitching, protection works,etc. complete in all respects as specified.
C1 - Widening and repairs of Elevated Section/Flyovers/ Grade Separators		
(i) Foundation:	0.00%	**(i) Foundation:** Cost of each Structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against foundation shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of foundation of structures subject to completion of atleast two foundations of the structures. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub Structure:		**(ii) Sub Structure:**

Stage of Payment	Percentage - weightage	Payment Procedure
	0.00%	Payment against sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of sub structure of structures subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the structures.
(iii) Super Structure (including bearings)	0.00%	**(iii) Super Structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.
(iv) Wearing Coat including expansion joints.	0.00%	**Wearing Coat** Payment shall be made on completion of wearing coat including expansion joints complete in all respect as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%	**(v) Miscellaneous** Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc.complete in all respect as specified.
(vi) Wing walls/Return Walls	0.00%	**(vi) Wing walls/Return Walls** Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Approaches (including retaining walls, stone pitching and protection works)	0.00%	**(viii) Approaches:** Payment shall be made on completion of both approaches including stone pitching, protection works,etc. complete in all respects as specified.
C2 - New Elevated Section/Flyovers/ Grade Separators		
(i) Foundation:	0.00%	**(i) Foundation:** Cost of each Structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against foundation shall be made on pro rata basis on copletion of a stage i.e. not less

Stage of Payment	Percentage - weightage	Payment Procedure
		than 25% of the scope of foundation of structures subject to completion of atleast two foundations of the structures. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub Structure:	0.00%	**(ii) Sub Structure:** Payment against sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of sub structure of structures subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the structures.
(iii) Super Structure (including bearings)	0.00%	**(iii) Super Structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.
(iv) Wearing Coat including expansion joints.	0.00%	**Wearing Coat** Payment shall be made on completion of wearing coat including expansion joints complete in all respect as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%	**(v) Miscellaneous** Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc.complete in all respect as specified.
(vi) Wing walls/Return Walls	0.00%	**(vi) Wing walls/Return Walls** Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Approaches (including retaining walls, stone pitching and protection works)	0.00%	**(viii) Approaches:** Payment shall be made on completion of both approaches including stone pitching, protection works,etc. complete in all respects as specified.

1.3.4 Other works.

Procedure for estimating the value of other works done shall be as stated in table 1.3.4:

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
(i) Toll Plaza	0.00%	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
(ii)Road side drains	23.55%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(iii)Road signs, markings, km stones, safety devices, etc.	6.40%	
(iv)Project facilities	0.00%	Payment shall be made on pro rata basis for completed facilities.
a) Bus Bays	0.83%	
b) Truck Lay Bye	0.00%	
c) Rest Areas	0.00%	
d) Others	4.88%	
(v)Road side plantation	0.00%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(vi) Repair of Protection works other than approaches to the bridges, elevated sections/ flyovers/ grade separators and ROBs/RUBs.	0.00%	
(vii) Safety and traffic management during construction	0.00%	Payment shall be made on prorate basis every six month.
(viii)Protection works	64.33%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.

2. Procedure for payment for Maintenance

2.1 The cost for maintenance shall be as stated in Clause 14.1.1.

2.2 Payment for Maintenance shall be made in quarterly installments in accordance with the provisions of Clause 19.7.

SCHEDULE J

SCHEDULE - J

(See Clause 10.3(ii))

PROJECT COMPLETION SCHEDULE

1 Project Completion Schedule

During Construction period, the Contractor shall comply with the requirements set forth in this Schedule-J for each of the Project Milestones and the **Scheduled Completion Date**. Within 15 (fifteen) days of the date of each Project Milestone, the Contractor shall notify the Authority of such compliance along with necessary particulars thereof.

2 Project Milestone-I

(i) Project Milestone-I shall occur on the date falling on the 192nd (One hundred and ninety second) day from the Appointed Date (the "**Project Milestone-I**").

(ii) Prior to the occurrence of Project Milestone-I, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 10% (ten per cent) of the Contract Price.

3 Project Milestone-II

(i) Project Milestone-II shall occur on the date falling on the 329th (Three hundred and Twenty Ninth) day from the Appointed Date (the "Project Milestone-II").

(ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 35% (thirty per cent) of the Contract Price and should have started construction of all bridges.

4 Project Milestone-III

(i) Project Milestone-III shall occur on the date falling on the 466th (Four hundred and sixty sixth) day from the Appointed Date (the "Project Milestone-III").

(ii) Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 70% (sixty per cent) of the Contract Price and should have started construction of all project facilities.

5 Scheduled Completion Date

(i) The Scheduled Completion Date shall occur on the 548th (Five Hundred and forty eighth) day from the Appointed Date.

(ii) On or before the Scheduled Completion Date, the Contractor shall have completed construction in accordance with this Agreement.

6 Extension of time

Upon extension of any or all of the aforesaid Project Milestones or the Scheduled Completion Date, as the case may be, under and in accordance with the provisions of this Agreement, the Project Completion Schedule shall be deemed to have been amended accordingly.