SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1. The Site

(i) The Project Road starts from km 28.000 (existing) / km 25.250 (design) and endsat km 41.850 (existing) / design km 36.460 at Kurti Bridge (500m before Kataltali town). The existing length of this road is 13.850 km and design length is 11.210 km.

Project Highway shall include the land, buildings, structures and road works asdescribed in Annex-I of this Schedule-A.

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

(iii) 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.(i) of this Agreement.

(iv) 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.

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

Annex – I
(Schedule – A)

Site

[Note: Through suitable drawings and description in words, the land, buildings, structures and road works comprising the Site shall be specified briefly but precisely in this Annex-I. All the chainages/ location referred to in Annex-I to Schedule-A shall be existing chainages.]

1. Site

1.1 The Project road starts from km 28.000 (existing) / km 25.250 (design) and endsat km 41.850 (existing) / design km 36.460 at Kurti Bridge (500m before Kataltali town). The existing length of this road is 13.850 km and design length is 11.210 km. Project Highway shall include the land, buildings, structures and road works asdescribed in Annex-I of this Schedule-A.

1.2 The instant work is balance work. At several locations work has been carried out which may be partially/fully complete. Some of the partially/fully completed works might have been deteriorated. The EPC Contractor shall have to assess the level of deterioration of such works and carry out the required remedial measures/rectification work as per codal provisions and then proceed for the next stage of work. It is stipulated that rectification to be carried in any partially/completed work shall not qualify for Change in Scope under Article 13 of this Contract Agreement.

2. Land

The site of the Project Highway comprises the land as described below :

Sl. No.	Chainage (m)		Total PROW (m)
	From	To	
1	25.250	26.750	30
2	26.750	26.900	36
3	26.900	31.400	30
4	31.400	31.750	30
5	31.750	31.900	36
6	31.900	32.200	30
7	32.200	32.400	32
8	32.400	36.460	30

3. Carriageway

The present carriageway of the Project Highway is as described below :

Sl. No.	Chainage (km)		Carriageway Width (m)	Remarks
	From	To		
1	28.000	34.250	-	Dharmanagar Bypass
2	34.250	35.200	5.5	
3	35.200	41.800	-	Kadamtala Bypass
4	41.800	41.850	5.5	

The type of the existing pavement is Flexible.

4. Major Bridges

The Site includes the following Major Bridges

Sl. No.	Chainage (km)	Type of Structure			No. of Spans with span length (m)	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 Spans with Span length (m)	Width (m)	ROB/ RUB
		Foundation	Super Structure			
Nil						

6 Grade separators

The Site includes the following grade separators:

Sl. No.	Chainage (km)	Type of Structure		No. of Spans with Span length (m)	Width (m)
		Foundation	Super Structure		
Nil					

7 Minor bridges

The Site includes the following minor bridges:

Sl. No.	Chainage (km)	Type of Structure			No. of Spans withspan length(m)	Width (m)
		Foundation	Sub-Structure	Super-structure		
1	29+375	OPEN	RCC	RCC GIRDER	1 No., **Length = 35m**	12.5
2	29+950	WELL	RCC	RCC GIRDER	3 No., **Length = 58m**	11
3	30+650	-	-	RCC GIRDER	2 No., **Length = 11.9m**	12
4	31+450	-	-	RCC GIRDER	2 No., **Length = 18m**	11.9
5	35+675	-	-	RCC GIRDER	2 No., **Length = 17.9m**	12.1

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 Spans with Span length (m)	Width (m)
Nil				

10 Culverts:

The Site has the following culverts:

Sl. No.	Chainage (km)	Type of Culvert	Span / Opening with span length (m)	Width (m)
1	28+250	SLAB	1x1.9	9.5
2	28+350	SLAB	1x3.2	9.1
3	28+750	PIPE	1x1	10.0
4	28+750	SLAB	1x3	9.0
5	28+800	PIPE	2x1	10.0
6	28+900	PIPE	2x1	10.0
7	29+200	PIPE	1x1	13.4
8	29+600	SLAB	1x3	8.5
9	29+700	PIPE	1x1	10.0
10	29+800	PIPE	1x1	10.0
11	30+850	PIPE	2x1	10.0
12	30+950	PIPE	1x1	10.0
13	31+050	PIPE	1x1	10.0
14	31+100	PIPE	1x1	12.5
15	33+400	PIPE	1x1	10.05
16	33+500	PIPE	1x1	12.6
17	33+900	PIPE	1x1	10.5
18	34+050	PIPE	1x1	10.5
19	34+150	PIPE	1x1	10.5
20	34+600	PIPE	1x1	14.9
21	35+250	PIPE	1x1	13.5
22	35+750	PIPE	1x1	16.0
23	35+800	PIPE	1x1	15.4
24	35+900	PIPE	1x1	10.5
25	36+250	PIPE	1x1	10.3

Sl. No.	Chainage (km)	Type of Culvert	Span / Opening with span length (m)	Width (m)
26	36+450	PIPE	1x1	10.3
27	36+700	PIPE	1x1	12.5
28	37+800	SLAB	1x1.2	14.0
29	37+950	PIPE	1x1	15.2
30	38+300	PIPE	1x1	12.6
31	38+750	PIPE	1x1	12.6
32	38+850	PIPE	1x1	10.3
33	39+050	PIPE	1x1	15.2
34	39+650	SLAB	1x0.5	11.9
35	39+800	PIPE	1x1	10.2
36	40+050	PIPE	1x1	10.1
37	40+150	BOX	1x1	11.95
38	40+700	PIPE	2x1	10.2
39	40+800	PIPE	1x1	10.4
40	40+900	PIPE	2x1	10.3
41	41+200	PIPE	2x1	10.3
42	41+750	PIPE	1x1	11.9
43	41+800	PIPE	1x1	15.1

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 lay byes 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:

Sl. No.	Location		Type	
	From km	To km	Masonry/cc (Pucca)	Earthen (Kutcha)
Nil				

14 Major junctions

The detail of major junction is as follows:

Sl. No.	Location (km)		At grade	Separated	Category of Cross Road			
	From	To			NH	SH	MDR	Others
Nil								

(NH: National Highway, SH: State Highway, MDR: Major District Road)

15 Minor junctions

The details of the minor junctions are as follows:

Sl. No.	Existing Chainage (km)	Type of Junction	
		T / Y – Junction	Cross Road
1	Realignment / Bypass	-	4 Arm (+)
2	Realignment / Bypass	-	4 Arm (+)
3	Realignment / Bypass	-	4 Arm (+)
4	28+125	-	4 Arm (+)
5	Realignment / Bypass	T	-
6	Realignment / Bypass	-	4 Arm (+)
7	29+450	Y	-
8	Realignment / Bypass	-	4 Arm (+)
9	30+300	T	-
10	30+450	T	-
11	31+575	T	-
12	Realignment / Bypass	-	4 Arm (+)
13	Realignment / Bypass	-	4 Arm (+)
14	32+800	Y	-
15	Realignment / Bypass	-	4 Arm (+)
16	Realignment / Bypass	-	4 Arm (+)
17	33+500	T	-
18	Realignment / Bypass	-	4 Arm (+)
19	34+575	T	-
20	Realignment / Bypass	-	4 Arm (+)
21	Realignment / Bypass	-	4 Arm (+)

Sl. No.	Existing Chainage (km)	Type of Junction	
		T / Y – Junction	Cross Road
22	34+750	T	-
23	35+150	Y	-
24	35+925	Y	-
25	37+250	T	-
26	37+525	-	4 Arm (+)
27	37+625	T	-
28	37+700	Y	-
29	37+975	T	-
30	38+050	T	-
31	39+025	T	-
32	39+300	-	4 Arm (+)
33	40+350	T	-
34	40+575	T	-
35	Realignment / Bypass	-	4 Arm (+)
36	41+800	Y	-

16 Bypasses

The details of the existing road sections proposed to be bypassed are as follows:

Sl. No.	Name of Bypass (town)	Chainage (km)		Length (km)
		From	To	
Nil				

17 Other structures

Nil

Annex - II
(Schedule-A)

Dates for providing Right of Way of construction Zone

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

Sl. No.	From km to km (Design chainage)	Length (Km) (Design Length)	Proposed Width (m)	Date of providing ROW*
1	2	3	4	5
(i) Full Right of Way (Full Width)				
(a) Stretch	25.250 to 30.950	5.700	45	On Appointed Date
(b) Stretch	30.950 to 32.200	1.250	30	
(c) Stretch	32.200 to 36.460	4.260	36	
(ii) Part Right of Way (Part Width)				
(a) Stretch (b) Stretch (c) Stretch	NIL			
(iii) Balance Right of Way (Width)				
(a) Stretch (b) Stretch (c) Stretch	NIL			

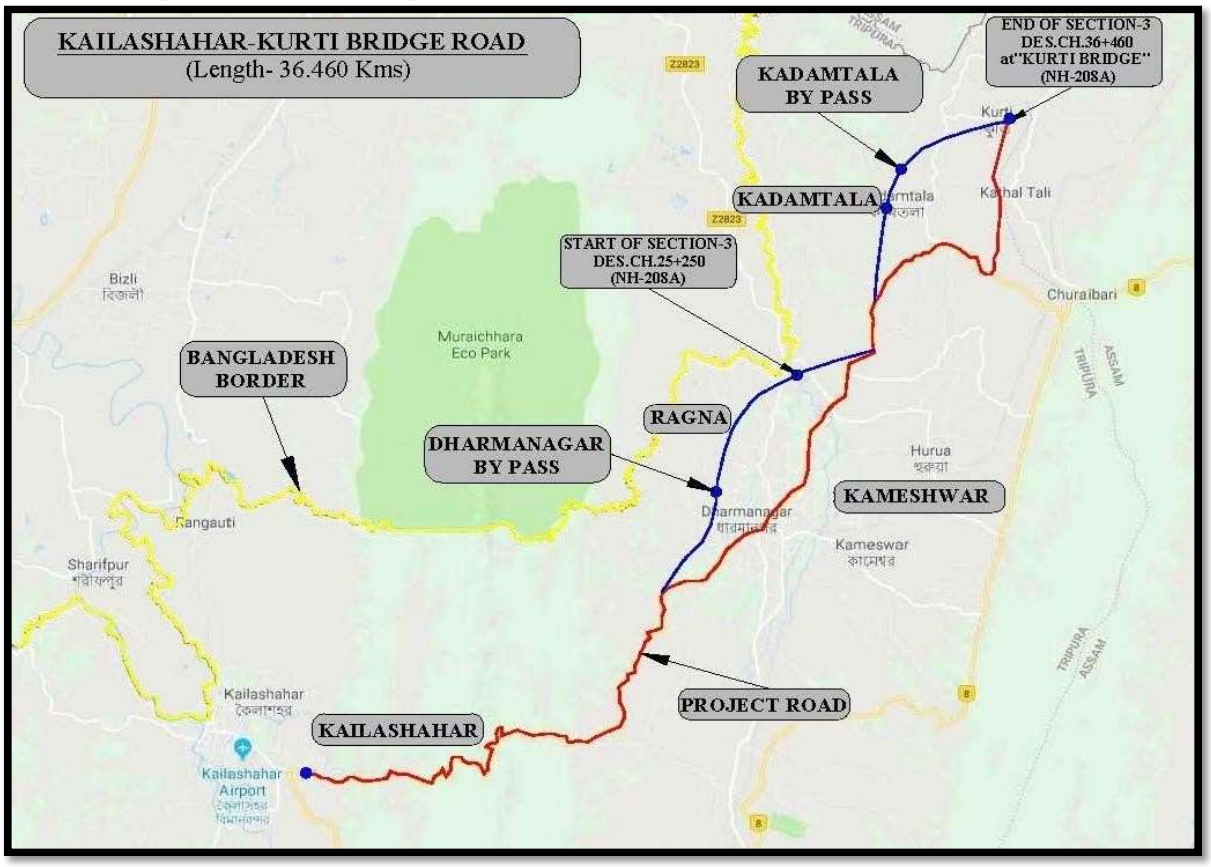
*The dates specified herein shall in no case be beyond 150 (one hundred and fifty) days after the Appointed Date.

Annex - III
(Schedule-A)

Alignment Plans

The existing alignment of the Project Highway shall be modified in the followingsections as per the alignment plan indicated below:

An alignment plan is given in soft copy.



(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, the finished road level of the project highway shall not be less than those indicated in the alignment plan. The contractor shall, however, improve/upgradethe Road profile as indicated in Annex-III based on site/design requirement.

(ii) Traffic Signage plan of the Project Highway showing numbers & location of trafficsigns 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

The following clearances have been obtained:

Sl. No.	**Clearances**	**Present Status**
1	Environment clearance	Not Required
2	Forest Clearance	Not Required

Annex – V
(Schedule-A)

Existing Utilities:

a) **Electrical Utilities**

Sl. No	Type of Utility	Unit	Quantity	Location/stretch (LHS/RHS)
A	Electrical Utilities			
A1	Electrical Poles	Nos.	127	As per site condition
A2	Electrical cables	m	5300 33KV/ 11KV/ LT	
A3	Transformers (11/0.43 KV, 63 KVA)	Nos.	5	
B	Water/Sewagepipeline			
B1	Sewage	m	Nil	As per site condition
B2	Water supply	m	2000 m	
C	Felling of Tress	Nos.	As per Site condition	

SCHEDULE - B

SCHEDULE - B
(See Clause 2.1)

Development of the Project Highway

1 Development of the Project Highway

Development of the Project Highway shall include design and construction of theProject 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 Annexure I of this Schedule-B & in Schedule-C.

3 Specifications and Standards

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

Annex-I
(Schedule-B)

DESCRIPTIONOF TWO LANE WITH PAVED SHOULDER

The Project Road starts at design km 25.250 on Dharmanagar bypass and ends at design km 36.460 at Kurti bridge (500m before Kataltali town). The design length of this road is 11.210 km.

(i) WIDENING OF THE EXISTING HIGHWAY :

The Project Highway shall follow the proposed alignment as 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 Plain / Rolling terrain to the extent land is available. The instant work is balance work. At several locations work has been carried out which may be partially/fully complete. Some of the partially/fully completed works might have been deteriorated. The EPC Contractor shall have to assess the level of deterioration of such works and carry out the required remedial measures/rectification work as per codal provisions and then proceed for the next stage of work. It is stipulated that rectification to be carried in any partially/completed work shall not qualify for Change in Scope under Article 13 of this Contract Agreement.

(ii) WIDTH OF CARRIAGEWAY

(a) Two-Laning with paved shoulders shall be undertaken. The paved carriageway shall be 7(seven) m wide in accordance with the typical cross sections drawings in the Manual (IRC SP-73:2018).

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 (Including paved shoulder) shall be as specified in the following table:

Sl. No	Built-up Stretch (Township)	Location / Design Chainage (km)		Paved Width (m)	Typical Cross Section
		From	To		
1.	Kadamtala	31.000	31.900	12	Refer TCS - 3

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

2. GEOMETRIC DESIGN AND GENERAL FEATURES

(i) General

Geometric design and general features of the Project Highway shall be in accordancewith Section 2 of the two-lane manual.

(ii) Design speed

The design speed shall be the minimum design speed of 80 km per hr for Plain/Rolling terrain and 40 km per hr for Hilly/Mountainous terrain.

(iii) Improvement of the existing road geometrics

[Refer to paragraph 2.1 (v) of the manual and provide details]

In the following sections where improvement of the existing road geometrics to the prescribed standard is not possible, the existing road geometrics shall be improvedto the extent possible within the given ROW and proper road signs and safety measures shall be provided:

Sl. No.	Stretch (from km to km)	Type of deficiency	Remarks
Nil			

(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, Footpath/Fully paved shoulders shall be provided in the following stretches:

Sl. No.	Stretch (km)		Fully Paved shoulders/Footpath	References to Cross Section
	From	To		
1	31.000	31.900	2.5m wide paved shoulder + 1.0m wide footpath cum RCC lined drain	Refer TCS - 3

(b) In open country, [paved shoulders of 2.5 m width shall be provided and balance 1.5 m width shall be covered with local earth material.

(c) Design and specifications of paved shoulders and granular material shall conformto 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 Two-lane manual.

(b) Lateral and clearance: The width of the opening at the underpasses shall be asfollows:

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

(vii) Lateral and vertical clearances at overpasses

(a) Lateral and vertical clearances at overpasses shall be as the provision ofrelevant Manual.

(b) Lateral clearance: The width of the opening at the overpasses shallbe as follows:

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

(Viii) Service roads

Service roads shall be constructed at the locations and for the lengths indicatedbelow:
[Refer to the provision of relevant Manual and provide details]

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

(IX) Grade separated structures

(a) Grade separated structures shall be provided as per provision of the relevant Manual. The requisite particulars are given below:
[Refer to the provision of relevant Manual and provide details]

Sl. No.	Location of structure	Length (m)	Number and length of spans (m)	Approach Gradient	Remarks, If any
Nil					

(b) In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows: [Refer to the

Provision of relevant Manual and specify the type of vehicular under pass/ overpass structure and whether the cross road is to be carried at the existing level, raised or lowered]

Sl. No.	Location	Type of structure Length (m)	Cross road at			Remarks, If any
			Existing level	Raised Level	Lowered Level	
Nil						

(X) Cattle and pedestrian underpass /overpass

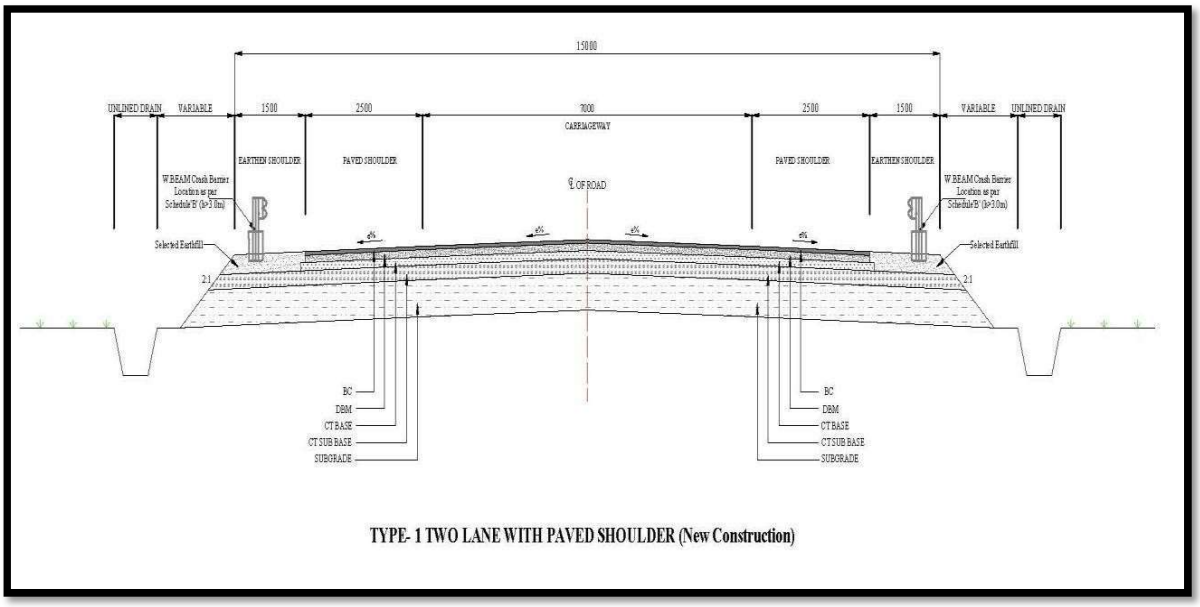
Cattle and pedestrian underpass/ overpass shall be constructed as follows:

[Refer to the provision of relevant Manual and specify the requirements of Cattle and pedestrian underpass/ overpass]

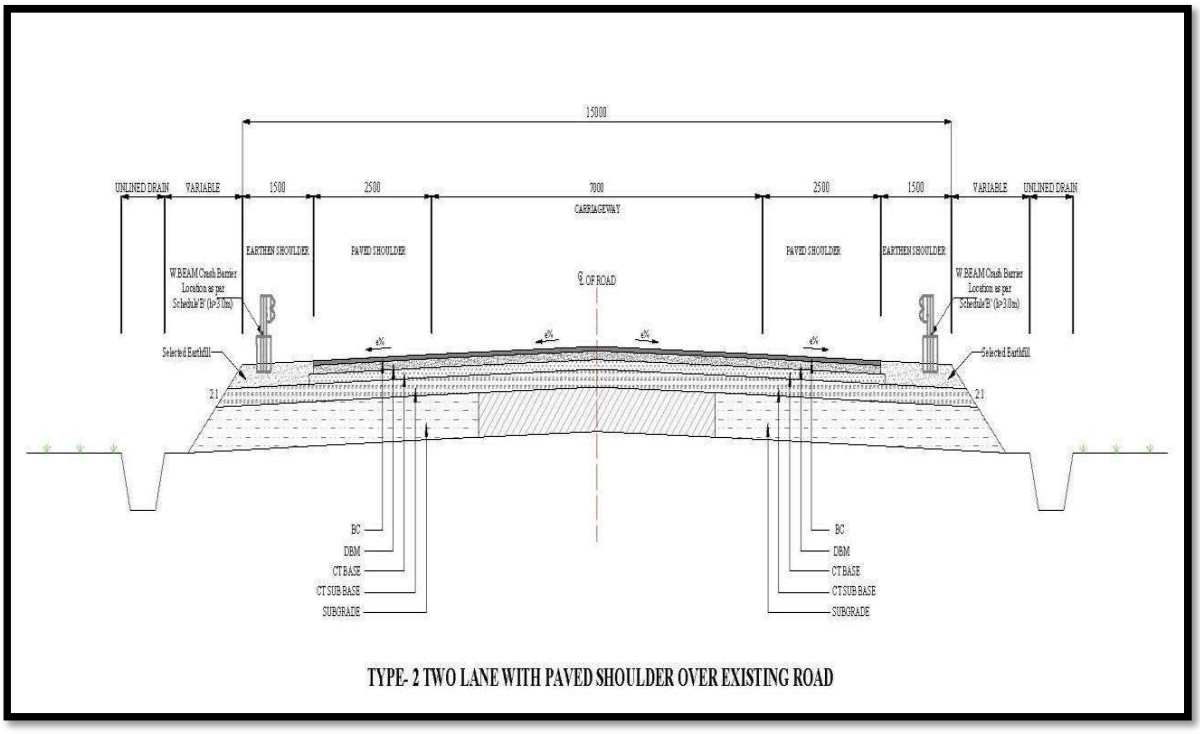
Sl. No.	Location	Type of Crossing
Nil		

(XI) Typical cross-sections of the Project Highway

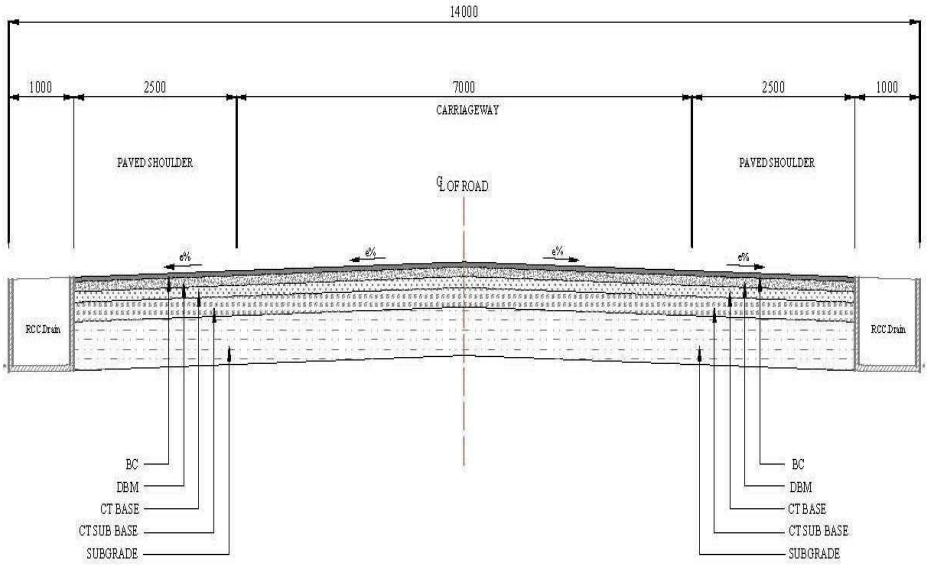
Typical Cross section of Project Road is as shown below –



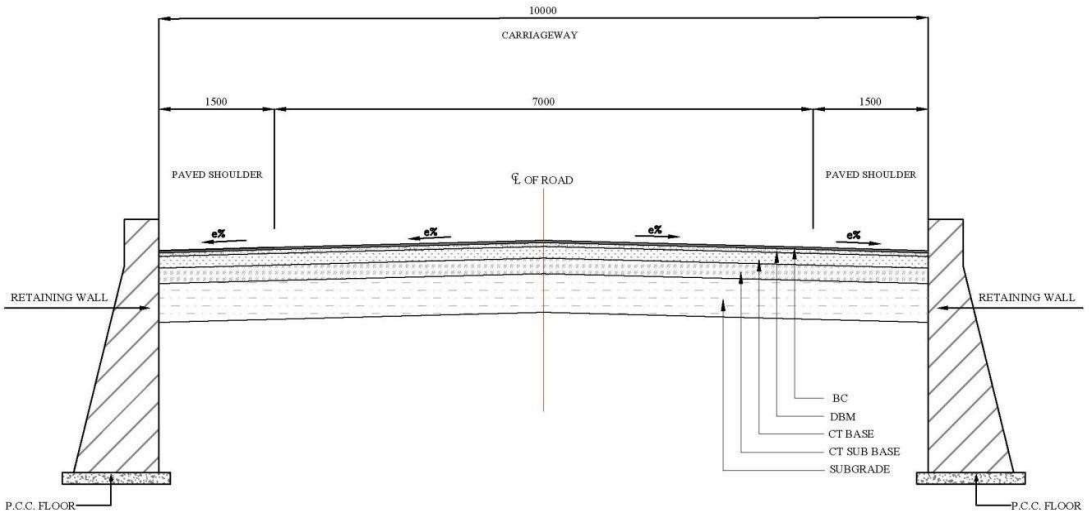
TYPE- 1 TWO LANE WITH PAVED SHOULDER (New Construction)



TYPE- 2 TWO LANE WITH PAVED SHOULDER OVER EXISTING ROAD



TYPE- 3 TWO LANE WITH PAVED SHOULDER WITH RCC DRAIN (Built-up Section)



TYPE- 6 TWO LANE + PAVED SHOULDER (Both Side)RETAINING WALL

Widening pattern of the Project Highway are tabulated below-

Sl. No.	Design Chainage		Bridge Length (km)	Length (km)	TCS Type	Description
	From (km)	To (km)				
1	25.250	25.255		0.005	TCS-6	Two lane with PS (BHS Retaining wall)
2	25.255	25.400		0.145	TCS-1	Two lane with Paved Shoulder (New Construction)
3	25.400	25.415		0.015	TCS-6	Two lane with PS (BHS Retaining wall)
4	25.415	25.690		0.275	TCS-1	Two lane with Paved Shoulder (New Construction)
5	25.690	25.705		0.015	TCS-6	Two lane with PS (BHS Retaining wall)
6	25.705	25.770		0.065	TCS-1	Two lane with Paved Shoulder (New Construction)
7	25.770	25.785		0.015	TCS-6	Two lane with PS (BHS Retaining wall)
8	25.785	27.030	0.010	1.235	TCS-1	Two lane with Paved Shoulder (New Construction)
9	27.030	27.055		0.025	TCS-6	Two lane with PS (BHS Retaining wall)
10	27.055	27.250		0.195	TCS-1	Two lane with Paved Shoulder (New Construction)
11	27.250	27.285		0.035	TCS-6	Two lane with PS (BHS Retaining wall)
12	27.285	27.650	0.050	0.315	TCS-1	Two lane with Paved Shoulder (New Construction)
13	27.650	27.680		0.030	TCS-6	Two lane with PS (BHS Retaining wall)
14	27.680	29.600	0.025	1.895	TCS-1	Two lane with Paved Shoulder (New Construction)
15	29.600	29.625		0.025	TCS-6	Two lane with PS (BHS Retaining wall)
16	29.625	31.000		1.375	TCS-1	Two lane with Paved Shoulder (New Construction)
17	31.000	31.900		0.900	TCS-3	Two lane with PS with RCC drain
18	31.900	32.760	0.015	0.845	TCS-1	Two lane with Paved Shoulder (New Construction)
19	32.760	32.805		0.045	TCS-6	Two lane with PS (BHS Retaining wall)
20	32.805	33.640		0.835	TCS-1	Two lane with Paved Shoulder (New Construction)
21	33.640	33.665		0.025	TCS-6	Two lane with PS (BHS Retaining wall)
22	33.665	33.980		0.315	TCS-1	Two lane with Paved Shoulder (New Construction)
23	33.980	34.000		0.020	TCS-6	Two lane with PS (BHS Retaining wall)
24	34.000	35.900		1.900	TCS-1	Two lane with Paved Shoulder (New Construction)
25	35.900	35.920		0.020	TCS-6	Two lane with PS (BHS Retaining wall)

Sl. No.	Design Chainage		Bridge Length (km)	Length (km)	TCS Type	Description
	From (km)	To (km)				
26	35.920	36.350		0.430	TCS-1	Two lane with Paved Shoulder (New Construction)
27	36.350	36.460		0.110	TCS-2	Two lane with PS over existing road
	Total		**0.100**	**11.110**		

3. INTERSECTIONS AND GRADE SEPARATORS

All intersections and grade separators shall be as per the provision of relevant Manual. Existing intersections which are deficient shall be improved to the prescribed standards.

[Refer to the provision of relevant Manual and specify the requirements. Explain where necessary with drawings/sketches/general arrangement]

Properly designed intersections shall be provided at the locations and of the types and features given in the tables below:

(i) At-Grade Intersections:

Sl. No.	Location of Intersection (Design Chainage)	Type of Intersection	Other Features	
			Side	Village Name
1	25+550	+	BHS	To Village
2	26+290	+	BHS	To Village
3	27+380	+	BHS	To Village
4	28+380	T	BHS	To Village
5	29+420	+	BHS	To Village
6	29+930	+	BHS	To Village
7	31+990	+	BHS	To Village
8	32+600	+	BHS	To Village
9	33+000	+	BHS	To Village
10	33+380	+	BHS	To Village
11	33+600	+	BHS	To Village
12	30+610	T	LHS	Kadamtala
13	33+880	+	BHS	To Village
14	34+080	+	BHS	To Village
15	30+840	T	LHS	Kadamtala
16	31+220	Y	LHS	Kadamtala
17	35+210	+	BHS	To Village
18	35+650	T	LHS	Bagan (school)
19	36+360	+	BHS	RHS – Towards Churaibari Junction LHS – Towards Premtala

(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 and the specified cross-sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

NOTE- The bidders are advised to go through the scope of work defined in schedule B. Section 4 of the manual inter-alia stipulates that the contractor shall carry out necessary survey & investigation, identify problematic ground locations, if any requiring treatment for finalizing structural features and design of embankment and cut section and establishing improved ground properties. Therefore, the identification of problematic ground location requiring treatment & improving ground properties for embankment/cut section is included in scope of work.

(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]
Refer design plan & profile			

5 PAVEMENT DESIGN

(i) Pavement design shall be carried out in accordance with the provision of relevantManual.

(ii) Type of pavement

Flexible pavement shall be adopted for Project Highway.

(iii) Pavement length

(a) The design length of the project road is 11.210 km**.** The details are given below:

Item No.	Description	Total Scope in km	Balance Work Quantity in km
Road Works including Culverts, Widening and Repair of Culverts			
A	Widening and Strengthening of Existing Road		
1.	Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc	0.900	0.329
2.	Sub Base Courses	0.900	0.325
3.	Non-Bituminous Base Course	0.900	0.325
4.	Bituminous Base Course	0.900	0.385
5.	Wearing Coat	0.900	0.900
B	Reconstruction/ New two-lane alignment/ Bypass (Flexible Pavement)		
1.	Earthwork up to top of the sub-grade	10.310	8.938
2.	Sub Base Courses	10.310	9.018
3.	Non-Bituminous Base Course	10.310	9.308
4.	Bituminous Base Course	10.310	9.720
5.	Wearing Coat	10.310	10.310

(b) Minimum balance Earthwork up to top of subgrade:

S.l No.	Design Chainage		Length (m)	Side	Remarks
	From	To			
1	25+250	28+915	3665	BHS	
2	28+995	29+470	475	BHS	
3	29+597	29+700	103	BHS	
4	29+850	29+870	20	BHS	
5	30+190	30+210	20	BHS	
6	30+360	30+380	20	BHS	
7	30+610	30+630	20	BHS	
8	30+870	30+895	25	BHS	
9	30+940	31+070	65	RHS	
10	31+170	31+190	10	RHS	
11	31+290	31+305	15	BHS	
12	31+335	31+360	25	BHS	
13	31+415	31+467	26	RHS	
14	31+467	31+480	13	BHS	
15	31+480	31+650	85	RHS	
16	31+650	31+660	10	BHS	
17	31+660	31+860	100	RHS	
18	31+860	31+870	10	BHS	

19	31+900	36+460	4560	BHS	
	Total		**9267**		

(c) Minimum balance CTSB work:

S.l No.	Design Chainage		Length (m)	Side	Remarks
	From	To			
1	25+250	29+470	4220	BHS	
2	29+597	29+700	103	BHS	
3	29+850	29+870	20	BHS	
4	30+230	30+250	20	BHS	
5	30+360	30+380	20	BHS	
6	30+610	30+630	20	BHS	
7	30+870	30+895	25	BHS	
8	30+940	31+080	70	RHS	
9	31+335	31+360	25	BHS	
11	31+415	31+465	25	RHS	
12	31+465	31+480	15	BHS	
13	31+480	31+630	75	RHS	
14	31+630	31+670	40	BHS	
15	31+670	31+860	95	RHS	
16	31+860	31+870	10	BHS	
17	31+900	36+460	4560	BHS	
	Total		**9343**		

(d) Minimum balance WMM work:

S.l No.	Design Chainage		Length (m)	Side	Remarks
	From	To			
1	25+250	29+470	4220	BHS	
2	29+597	29+700	103	BHS	
3	29+850	29+870	20	BHS	
4	29+910	30+040	130	BHS	
5	30+230	30+250	20	BHS	
6	30+360	30+540	180	BHS	
7	30+610	30+630	20	BHS	
8	30+870	30+895	25	BHS	
9	30+940	31+000	30	RHS	
10	31+000	31+080	40	RHS	
11	31+335	31+360	25	BHS	
12	31+415	31+465	25	RHS	
13	31+465	31+480	15	BHS	
14	31+480	31+630	75	RHS	
15	31+630	31+670	40	BHS	
16	31+670	31+860	95	RHS	
17	31+860	31+870	10	BHS	

18	31+900	36+460	4560	BHS	
	Total		**9633**		

(e) Minimum balance DBM work:

S.l No.	Design Chainage		Length (m)	Side	Remarks
	From	To			
1	25+250	30+380	5130	BHS	
2	30+940	31+080	70	RHS	
3	31+240	31+300	60	BHS	
4	31+335	31+360	25	BHS	
5	31+415	31+465	25	RHS	
6	31+465	31+480	15	BHS	
7	31+480	31+630	75	RHS	
8	31+630	31+660	30	BHS	
9	31+660	31+850	95	RHS	
10	31+850	31+870	20	BHS	
11	31+900	36+460	4560	BHS	
	Total		**10105**		

(f) Minimum balance BC work:

S.l No.	Design Chainage		Length (m)	Side	Remarks
	From	To			
1	25+250	36+460	11210	BHS	
		Total	11210		

(iv) Design requirements

(a) Design Period and strategy

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

(b) Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for entire Project Highway for design traffic of not less than 20 million standards axles (MSA).

(v) Re-construction of stretches

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

Sl. No.	Stretch (km)		Remarks
	From	To	
1	31.000	31.900	Refer TCS-3
2	36.350	36.460	Refer TCS-2

6 Road Side Drainage

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

Sl. No.	Design Chainage (km)		Length (km)	Length Executed in (km.)	Balance Work in (Km)	Side	Remarks
	From	To					
RCC Drain							
1	31.000	31.900	0.900 x 2	0.878	0.922	BHS	Refer TCS-3
	Total		**1.800**				

Details of balance work

Sl.No.	Chainage		Length (m)	Type	Side
	From	To			
1	31+089	31+098	9	RCC Cover Drain	RHS
2	31+240	31+251	11	RCC Cover Drain	RHS
3	31+297	31+870	573	RCC Cover Drain	RHS
4	31+070	31+080	10	RCC Cover Drain	LHS
5	31+240	31+248	8	RCC Cover Drain	LHS
6	31+300	31+386	86	RCC Cover Drain	LHS
7	31+473	31+479	6	RCC Cover Drain	LHS

8	31+568	31+762	194	RCC Cover Drain	LHS
9	31+770	31+778	8	RCC Cover Drain	LHS
10	31+813	31+819	6	RCC Cover Drain	LHS
11	31+867	31+878	11	RCC Cover Drain	LHS
		Total	**922**		

- Unlined surface drain shall be provided in **19870m** (both side) minimum length, [refer typical cross section 1 & 2]

Note: Length of drain given above are minimum and may vary as per site condition. Any variation in length shall not constitute change of scope.

7 Design of structures

(i) General

(a) All bridges, culverts and structures shall be designed and constructedin accordance with the provision of relevant Manual and shall conform to thecross-sectional features and other details specified therein.

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

[Refer to the provision of relevant Manual and specify the width of carriagewayof new bridges and structures of more than 60 (sixty) meter length, if the carriageway width is different from 7.5 (seven point five) meters in the table below.]

Sl. No.	Bridge (km)	Width of carriage way and Cross – Sectional feature
Nil		

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

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

Sl. No.	Location (km)	Remarks
1.	26.450	New Bridge (18m wide)
2.	27.500	New Bridge (18m wide)
3.	28.200	New Bridge (18m wide)
4.	28.640	New Bridge (18m wide)
5.	32.370	New Bridge (18m wide)

(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 intable below:

Sl. No.	Location (km)	Utility services to be carried	Remarks
1	26.450	As per manual	
2	27.500	-do-	
3	28.200	-do-	
4	28.640	-do-	
5	32.370	-do-	

(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 manual.

(ii) Culverts:

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

(b) Reconstruction of Existing Culverts:

The existing culverts at the following locations shall be re-constructed asnew Box culverts:

Sl. No.	Culvert location (km)	Span/Opening (m)	Remarks, if any*
Nil			

(c) Widening of existing culverts

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

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

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

Sl. No.	Culvert location [Design Chainage (km)]	Span / Opening (m)	Remarks-1	Remarks -02
1	25+300	1x2x2	Box Culvert	Substantially Completed except finishing work
2	25+813	1x2x3	Box Culvert	Substantially Completed except finishing work
3	26+240	1x2x2	Box Culvert	Substantially Completed except finishing work
4	26+800	1x2x3	Box Culvert	Partially Completed (upto deck slab)
5	27+300	1x2x2	Box Culvert	-
6	27+808	1x5x4	Box Culvert	Partially Completed (upto deck slab)
7	28+840	1x2x2	Box Culvert	Partially Completed (upto deck slab)
8	29+160	1x2x2	Box Culvert	-
9	29+460	1x2x2	Box Culvert	-

Sl. No.	Culvert location [Design Chainage (km)]	Span / Opening (m)	Remarks-1	Remarks-02
10	29+860	1x2x2	Box Culvert	Substantially Completed except finishing work
11	30+240	1x2x2	Box Culvert	Substantially Completed except finishing work
12	30+620	1x2x2	Box Culvert	Substantially Completed except finishing work
13	30+883	1x2x2	Box Culvert	Substantially Completed except finishing work
14	31+343	1x2x2	Box Culvert	Partially Completed (upto deck slab)
15	31+650	1x2x2	Box Culvert	Partially Completed (upto deck slab)
16	31+900	1x5x4	Box Culvert	-
17	32+740	1x2x2	Box Culvert	-
18	33+140	1x2x2	Box Culvert	-
19	33+460	1x2x3	Box Culvert	-
20	33+820	1x5x4	Box Culvert	-
21	34+200	1x2x3	Box Culvert	-
22	34+520	1x2x2	Box Culvert	-
23	34+860	1x3x4	Box Culvert	-
24	35+150	1x3x4	Box Culvert	-
25	35+400	1x3x4	Box Culvert	-
26	35+650	1x2x3	Box Culvert	-
27	36+260	1x3x4	Box Culvert	-

(e) Repairs / Replacement 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 major bridges at the following locations shall be reconstructed asnew structures:

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

Sl. No.	Bridge location (km)	Salient details of existing bridge	Adequacy or otherwise ofthe existing waterway, vertical clearance, etc*	Remarks

Nil

Attach GAD*

(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				

Attach GAD*

- Earth filling in approaches of bridge (both side of both abutments) shall be protected by PCC M-15 grade minimum thickness 150mm.

(b) Additional New Bridges

(i) Major Bridges: - New major bridge at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder:

Sl. No.	Location (km)	Span Arrangement (m)	Total length(m)	Remarks
Nil				

(ii) Minor Bridges: - New minor bridges at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder:

Sl. No.	Location (km)	Span Arrangement (m)	Total Length (m)	Remarks-01	Remarks-02
1.	26.470	1 x 10.0	10.0	New Bridge 18m wide	Partially Completed (upto deck slab, wing wall and return wall, hand rail, crash barriers)
2.	27.500	2 x 25.0	50.0	New Bridge 18m wide	-
3.	28.217	1 x 15.0	15.0	New Bridge 18m wide	Partially Completed (upto deck slab, wing wall and return wall, hand rail, crash barriers)
4.	28.634	1 x 10.0	10.0	New Bridge 18m wide	Partially Completed (up to Foundation + substructure)

5.	32.370	1 x 15.0	15.0	New Bridge 18m wide	-

- Earth filling in approaches of bridge (both side of both abutments) shall be protected by PCC M-15 of minimum thickness of 150 mm.

(c) The railings of existing bridges shall be Reconstruction 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 under taken as follows:

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

Sl. No.	Location (km)	Remarks
Nil		

(e) Drainage system for bridge decks

An effective drainage system for bridge decks shall be provided as specified inparagraph 7.21 of the 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

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

(a) 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 (km)	Length of bridge (m)	Type of structure	Remarks
Nil				

(b) Road under-Bridges

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

Sl. No.	Location of Level crossings (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

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

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. Overpass / Underpass 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 (Design Chainage 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.

(ii) Specification of the reflective sheeting [Refer to the provision of relevant manual]

9. ROADSIDE FURNITURE

(i) Roadside furniture shall be provided in accordance with the provisions of Two-lane manual IRC, SP-73: 2018

(ii) Overhead Traffic Signs: **02 nos**. [Location to be finalized in consultation with theAuthority's Engineer]

10. Compulsory Afforestation

[Refer to the provision of relevant Manual and specify the number of trees which are required to be planted by the Contractor as compensatory afforestation.]

11. Hazardous Locations

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

Sl. No.	Location stretches from (km) to (km)	LHS/RHS
This shall be Provided at High Embankment (more than 3.0m) and at sharpcurve locations.		

a) Breast Walls - Breast wall shall be used at following locations:-

Sl. No.	Description	LHS (Total scope)	RHS (Total Scope)	Balance Quantity
1	Breast Wall 1m height	240	280	0 m
	Total	**240m**	**280m**	0 m
Total		**520m**		

Note: **The above length & height of breast wall is minimum & any increase in the length/Qty of Breast wall as per site requirements may not be considered as positive change of scope.**

b) **Retaining wall minimum 1.5 m height –** Retaining wall (for embankment

protection/ in pond areas /water logged areas shall be of minimum **length 625m out of which balance quantity for execution is 159 m**

c) Providing RE wall supporting embankment shall be of minimum length **700m**

Note: The above length & height of retaining wall and is minimum & any increase in the length/Qty of retaining wall as per site requirements may not be considered as positive change of scope.

d) **W- Beam Crash Barrier :** The minimum location of W beam crash barriers shallbe as follows:

Sl. No.	Chainage (km)		Side	Length (m)	Remarks
	From	To			
1	25+400	25+420	LHS	20	
2	25+460	25+480	BHS	40	
3	25+480	25+540	LHS	60	
4	25+540	25+560	BHS	40	
5	25+560	25+580	LHS	20	
6	26+120	26+140	RHS	20	
7	26+140	26+280	BHS	280	
8	26+280	26+300	RHS	20	
9	26+300	26+640	BHS	680	
10	26+680	26+880	BHS	400	
11	26+880	26+900	LHS	20	
12	26+900	26+920	RHS	20	
13	27+300	27+340	BHS	80	
14	27+380	27+900	BHS	1040	
15	27+900	27+940	LHS	40	
16	27+940	27+960	BHS	40	
17	28+520	28+540	RHS	20	
18	29+560	29+580	LHS	20	
19	29+580	29+600	BHS	40	
20	29+940	29+980	BHS	80	
21	29+980	30+000	RHS	20	
22	30+700	30+720	RHS	20	
23	31+280	31+300	LHS	20	
24	31+300	31+900	BHS	1200	
25	31+960	31+980	LHS	20	
26	31+980	32+100	BHS	240	
27	32+100	32+120	LHS	20	
28	32+120	32+140	RHS	20	
29	32+180	32+200	LHS	20	
30	32+200	32+580	BHS	760	
31	32+580	32+600	LHS	20	

32	32+600	32+880	BHS	560	
33	32+880	32+900	LHS	20	
34	32+740	32+760	RHS	20	
				5940	

Note : The above length of W- Beam crash barrier is minimum & any increase in the length/Qty of W- Beam crash barrier as per site requirements may not be considered as positive change of scope.

e) The traffic signs installed will be minimum but not limited to as specified inunder table: -

Item	**Description**	**Unit**	**Quantity**
Item	**Description**	**Unit**	**Quantity**
8.01	**Road Marking: - Lane, Centre Line, Pedestrian crossing**		
	Centre line on straight portion	Sqm	295.94
	Centre line on curve portion	Sqm	112.10
	Edge Line at C'way edge / Paved Shoulder	Sqm	2242.00
	Add 15% for Misc. including PedestrianX-ings etc		397.51
	Total		**3048.00**
8.02	Directional Arrows, letter marking etc.	Sqm	210.00
8.03	Advance Direction signs size 1800X1200mm	Sqm	10.80
8.04	Village name boards size 600X900 mm	Sqm	5.40
8.05	Place Identification signs size 600X800 mm	Sqm	4.80
8.06	90 cm Triangle	Nos.	20.00
8.07	90 cm Octagon	Nos.	21.00
8.08	Hazard plate 300X900 mm	Sqm	4.05
8.09	60 Cm circular	Nos.	9.00
8.10	Providing and erecting overhead signs with a corrosion resistance 2mm thick aluminium alloy sheet reflectorized with high intensity rectroreflective sheeting of encapsulated lense type with vertical and lateral clearnace given in clause 802.2 an 802.3 and installed as per clause 802.7 over a designed support system of aluminum alloy or galvanized steeltrestles and trusses of section and typeas per structural design requirements and approve plans and MorT&H technical specification clause 802		
a	Truss and Vertical support	MT	3.00
b	Aluminum alloy plate for over head sign	Sqm	23.54
8.11	Boundary Stone	Nos.	110.00

8.12	Reinforced Cement concrete M15 grade kilometer stone of standard design as per IRC 8, fixing in position including printing and painting, etc. as per drawing and MoRTH&H Technical specification clause 804.		
a	5th Km Stone (Precast)	Nos.	3.00
b	Ordinary Km Stone (Precast)	Nos.	8.00
c	Hectometer Stone (Precast)	Nos.	45.00
8.13	**Road Delineators -** Supplying and installation of delineators (road way indicators, hazard markers, object marker), 80-100cm high above ground	Nos.	245.00
Item	**Description**	**Unit**	**Quantity**
	level, painted black and white in 15cmwhite strips, fitted with 80x100mm rectangular or 75mm dia circular reflectorised panel at the top, buried or pressed into the ground and confirming to IRC 79 and the drawings and MoRTH&H Technical specification clause 805.		
8.14	Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces asper MoRT&H technical specification clause 803.	Sqm	17.10

12. Special Requirement for Hill Roads:

[Refer to the provision of relevant e Manual and provide details where relevant andrequired.]

13. Change of Scope

The length of Structures and bridges specified here in above shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article13.

14. Presence of Compressible Organic Soil:

Kindly note that there may be change in soil strata at various locations along the project Highway. The bidders are requested to visit entire stretch of highway before submission of bid.

15. Utility Shifting

Shifting of obstructing utilities indicated in Schedule B-1 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.

Notes:

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.

(Schedule B-1)

(Schedule B-1)

The shifting of utilities and felling of trees shall be carried out by the Contractor. The cost of the same shall be borne by the Authority. The details are as follows:

Sl. No	Type of Utility	Unit	Quantity	Location/stretch (LHS/RHS)
A	Electrical Utilities			
A1	Electrical Poles	Nos.	396	As per site condition
A2	Electrical Cables	m	11210 (33KV/11kKV/LT composite line with crossings, XLPE UG cables, etc)	
A3	Transformers	Nos.	5	
B	Water/Sewagepipeline			
B1	Sewage	m	As per Site condition	As per site condition
B2	Water supply	m	2000 m (90mm/ 110mm/ 140mm UPVC pipelines with necessary accessories)	
C	Felling of Tress	Nos.	As per Site condition	

** Electric cables, water pipe line and all other utilities (underground / onground) falling within proposed RoW have to be assessed at site for its accuracy and to be shifted by contractor. The actual quantities shall be verified by utility owning agency (TSECL/DWS Tripura Govt) as per estimate.

** The trees falling within proposed RoW have to be shifted by the contractor.

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 plaza;

(b) Roadside furniture;

(c) Pedestrian facilities;

(d) Tree plantation;

(e) Truck lay-byes;

(f) Bus stop and shelters;

(h) Rest areas; and

(i) Others to be specified

2 Description of Project Facilities

Each of the Project Facilities is described below showing:

(a) Toll Plaza

Toll plaza shall be designed as per the guidelines of manual and it is provided at following locations:

Sl. No.	Toll Plaza Location (Design Chainage in km)
Nil	

(b) Landscaping and Tree Plantation

The landscaping and tree plantation shall be provided. The locations for these provisions shall be finalized in consultation with Authority Engineer.

(c) Truck Lay-byes

Truck lay byes shall be provided at the following locations.

Sl. No.	Proposed Chainage (km)
1	32.150 (RHS)

(d) Bus Bays

The Contractor shall provide Bus Bays along the project highway and the locations are given below. The design of Bus Bays should be aesthetically pleased with surrounding.

The locations of these bus bays shall be finalized by the Contractor in consultationwith the Authority's Engineer.

Sl. No.	Design Chainage (km)	RHS	Remarks
1	30.600	LHS	
2	30.900	RHS	
3	35.700	LHS	
4	36.000	RHS	

(e) Rest Areas,

Nil.

(f) Others

1. Highway Lighting

Lighting shall be provided at the following locations (Minimum 40 Lux to be maintained):

(i) Lighting shall be provided at approach to bridges, Built up areas, Bus stops and as per manual recommended in Schedule D.

2. Highway Patrol

Not applicable

3. Ambulances

Not applicable

4. Cranes

Not applicable

5. Traffic Aid Post

Traffic aid post shall be provided in consultation with Authority Engineer

6. Rainwater Harvesting

As per Ministry of Environment and Forests Notification, New Delhi dated 14/01/1997 (as amended on 13/01/1998, 05/01/1999 & 6/11/2000), the construction of Rain water, harvesting structure is mandatory in and aroundWater Crisis area, notified by the Central Ground Water Board.

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 Specifications and Standards for Two Lanning of Highways (IRC: SP:73-2018), referred to herein as the Manual.]

[Note: Specify the relevant manual, specification and standards]

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-Lanning of Highways (IRC: SP:73-2018), referredto as the Manual, 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

(i) 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.

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

(iii) [Note 1: Deviations from the aforesaid specification and standards shall be listed out here. Such deviations shall be specified only if they are considered essential in view of project – specify requirements.]

Clause Referred in Manual	Item	Provision as per Manual	Modified Provision	Remarks
2.2.1	Minimum design speed in Plain & Rolling Terrain	100kmph /80kmph (Plain or rolling) and 60kmph/40 kmph (hilly terrain	At 0 locations listed below, where the horizontal curve radius is not meeting the criteria as per clause 2.9.4 and table 2.5 of IRC: SP:73-2018.	

3 DEFICIENT CURVE DETAILS:

Total 7 Horizontal curves proposed along this section in which no any curves comesunder deviation

4 Deviations in Vertical improvement of Project Road are

Total 15 vertical curves proposed along this section in which there are no curves having gradient above 7%.

Schedule - E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

(i) The Contractor shall, at all times maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.

(ii) The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shallbe entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.

(iii) All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

2. Repair/rectification of Defects and deficiencies

The obligations of the Contractor in respect of Maintenance Requirements shall include repair and rectification of the Defects and deficiencies specified in Annex - I of this Schedule-E within the time limit set forth therein.

3. Other Defects and deficiencies

In respect of any Defect or deficiency not specified in Annex - I of this Schedule-E, the Authority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and

Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.

4. Extension of time limit

Notwithstanding anything to the contrary specified in this Schedule-E, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof.

5. Emergency repairs/restoration

Notwithstanding anything to the contrary contained in this Schedule-E, if any Defect, deficiency or deterioration in the Project Highway poses a hazard to safety or risk of damage to property, the Contractor shall promptly take all reasonable measures for eliminating or minimizing such danger.

6. Daily inspection by the Contractor

The Contractor shall, through its engineer, undertake a daily visual inspection of the Project Highway and maintain a record thereof in a register to be kept in such form and manner as the Authority's Engineer may specify. Such record shall be kept in safe custody of the Contractor and shall be open to inspection by the Authority and the Authority's Engineer at any time during office hours.

7. Pre-monsoon inspection / Post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culvertsand drainage system before [1st June] every year in accordance with the guidelines contained in IRC: SP35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [30th September] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities

All damages occurring to the Project Highway on account of a Force Majeure Event or wilful default or neglect of the Authority shall be undertaken by the Authority at its own cost. The Authority may instruct the Contractor to undertake the repairs at the rates agreed between the Parties.

Annex – I

(Schedule-E) **Repair/rectification of Defects and deficiencies**

The Contractor shall repair and rectify the Defects and deficiencies specified in this Annex-I of Schedule-E within the time limit set forth in the table below.

Table -1: Maintenance Criteria for Pavements:

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
Flexible Pavement (Pavement of MCW, Service Road, approache	Potholes	Nil	< 0.1 % of area and subject to limit of 10 mm in depth	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC 82: 2015 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003 (http://www.tfhrc.com/pavement/lttp/reports/03031/)	24-48 hours	MORT&H Specification 3004.2

Asset Types of Grade structure, approaches of connecting roads, slip roads,laybyes etc. as applicable)	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equip ment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
	Cracking	Nil	< 5 % subject to limit of 0.5 sqm for any 50 m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15 -30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1 % of area	Daily	Length Measurement Unit like		2-7 days	IRC:82-2015

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
	Bleeding	Nil	< 1 % of area	Daily	Scale, Tape, odometer etc.		3-7 days	MORT&H Specification 3004.4
	Ravelling / Stripping	Nil	< 1 % of area	Daily			7-15 days	IRC:82-2015 read with IRC SP 81
	Edge Deformation/ Breaking	Nil	< 1 m for any 100 m section and width < 0.1 m at any location,	Daily			7- 15 days	IRC:82-2015

			restricte					

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equip ment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	**Acceptable**					
			d to 30 cm from the edge					
	Roughness BI	2000 mm/km	2400 mm/km	Bi-Annually	Class I Profilometer SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent)	Class I Profilometer : ASTM E950 (98) :2004 –Standard Test Method for measuring Longitudinal Profile of Travelled Surfaces with Accelerometer Established Inertial Profiling Reference ASTM E1656 - 94: 2000- Standard Guide for Classification of Automatic Pavement Condition Survey Equipment	180 days	IRC:82-2015
	Skid Number	60SN	50SN	Bi-Annually			180 days	BS: 7941-1: 2006
	Pavement Condition Index	3	2.1	Bi-Annually			180 days	IRC:82-2015

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
	Other Pavement Distresses			Bi-Annually			2-7 days	IRC:82-2015
	Deflection / Remaining Life			Annually	Falling Weight Deflectometer	IRC 115: 2014	180 days	IRC:115-2014
Rigid Pavement	Roughness BI	2200mm/km	2400mm/km	Bi-Annually	Class I Profilometer	ASTM E950 (98) :2004 and ASTM E1656 - 94: 2000	180 days	IRC:SP:83-2008
(Pavement of MCW, Service Road, Grade structure,	Skid	Skid Resistance no.at different speed of vehicles		Bi-Annually	SCRIM (Sideway-force	IRC:SP:83-2008	180 days	IRC:SP:83-2008

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equip ment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
approaches of connecting roads, slip roads, lay byes etc. as applicable)		Minimum SN	Traffic Speed (Km/h)		Coefficient Routine Investigation Machine or equivalent)			
		36	50					
		33	65					
		32	80					
		31	95					
		31	110					

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equip ment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
Embankment/ Slope	Edge drop at shoulders	Nil	40 mm	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC	7-15 days	MORT&H Specification 408.4
	Slope of camber/cross fall	Nil	<2% variation in prescribed slope of camber/cross fall	Daily			7-15 days	MORT&H Specification 408.4
	Embankment Slopes	Nil	<15 % variation in prescribe	Daily			7-15 days	MORT&H Specification 408.4

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equip ment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	**Acceptable**					
			side slope					
	Embankment Protection	Nil	Nil	Daily	NA		7-15 days	MORT&H Specification
	Rain Cuts/ Gullies in slope	Nil	Nil	Daily Specially During Rainy Season	NA		7-15 days	MORT&H Specification

In addition to the above performance criterion, the contractor shall strictly maintain the rigid pavements as per requirements in the followingtable Table -

2: **Maintenance Criteria for Rigid Pavements:**

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
CRACKING						
1	**Single Discrete Cracks Not intersecting with any joint**	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	Not applicable
			1	w < 0.2 mm. hair cracks		
			2	w = 0.2 - 0.5 mm, discernible from slow-moving car	Seal without delay	Seal, and stitch ifL > lm.
			3	w = 0.5 - 1.5 mm, discernible from fast-moving car		Within 7days

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			4	w = 1.5 - 3.0 mm	Seal, and stitch if L > 1 m. Within 7 days	Staple or Dowel Bar Retrofit, FDR for affected portion. Within 15days
			5	w > 3 mm.		
2	**Single Transverse (or Diagonal) Crack intersecting with one or more joints**	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Route and seal with epoxy. Within 7 days	Staple or Dowel Bar Retrofit. Within 15days
			2	w = 0.2 - 0.5 mm, discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route, seal and stitch, ifL > 1 m. Within 7 days	

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
			4	w = 3.0 - 6.0 mm	Dowel Bar Retrofit. Within 15 days	Full Depth Repa Dismantle and reconstruct affected. Portion with norms and specifications See Para 5.5 & 9.2 Within 15days
			5	w > 6 mm, usually associated with spalling, and/or slab rocking under traffic	Not Applicable, as it may be full depth	
3	**Single Longitudinal Crack intersecting with one or morejoints**	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.5 mm, discernable from slow moving vehicle	Seal with epoxy, if L > 1 m. Within 7 days	Staple or dowel bar retrofit. Within 15days

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			2	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route seal and stitch, ifL > 1 m. Within 15 days	-
			3	w = 3.0 - 6.0 mm	Staple, if L > 1 m. Within 15 days	Partial Depth Repair with stapling. Within 15 days
			4	w = 6.0 - 12.0 mm, usually associated with spalling	Not Applicable, as it may be full depth	
			5	w > 12 mm, usually associated with spalling, and/or slab rocking under traffic		Full Depth Repa Dismantle and reconstruct affected portion as per norms and specifications -

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
						See Para 5.6.4 Within 15 days
4	**Multiple Cracks intersecting with one or more joints**	**w = width of crack**	0	Nil, not discernible	No Action	-
			1	w < 0.2 mm, hair cracks	Seal, and stitch if L > 1 m. Within 15 days	
			2	w = 0.2 - 0.5 mm. discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Full depth repair within 15 days	Dismantle, Reinstate subbase, Reconstruct whole slab as per specifications within 30 days
			4	w = 3.0 - 6.0 mm panel broken into 2 or 3 pieces		
			5	w > 6 mm and/or panel broken		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
				into more than 4 pieces		
5	**Corner Break**	w = width of crack L = length of crack	0	Nil, not discernible	No Action	-
			1	w < 0.5 mm; only 1 corner broken	Seal with low viscosity epoxy to secure broken parts Within 7 days	Seal with epoxy seal with epoxy Within 7days
			2	w < 1.5 mm; L < 0.6 m, only one corner broken		
			3	w < 1.5 mm; L < 0.6 m, two corners broken	Partial Depth (Refer Figure 8.3 of IRC:SP: 83-2008) Within 15 days	Full depth repair
			4	w > 1.5 mm; L > 0.6 m or three corners broken		
			5	ree or four corners broken		Reinstate sub-base, and reconstruct the

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
						slab as per norms and specifications within 30days
6	**Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)**	w = width of crack L = length (m/m2)	0	Nil, not discernible		No Action
			1	w < 0.5 mm; L < 3 m/m^2	Not Applicable, as it may be full depth	Seal with low viscosity epoxy tosecurebroken parts. Within 15days
			2	either w > 0.5 mm or L < 3 m/m^2		
			3	w > 1.5 mm and L < 3 m/m^2		
			4	w > 3 mm, L < 3 m/m^2 and deformation		Full depth repair Cut out and replace damaged area taking care not to damage reinforcement. Within 30days
			5	w > 3 mm, L > 3 m/m^2 and deformation		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
Surface Defects						
7	Ravelling or Honeycomb type surface	r = area damaged surface/total surface of slab (%)h = maximum depth of damage	0	Nil, not discernible	**Short Term**	**Long Term**
					No action.	Not Applicable
			1	r < 2 %	Local repair of areas damaged and liable to be damaged. Within 15 days	
			2	r = 2 - 10 %		
			3	r = 10-25%	Bonded Inlay, 2 or 3 slabs if affecting.	
			4	r = 25 - 50 %		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
					Within 30 days	
			5	r > 50% and h > 25 mm	Reconstruct slabs, 4or more slabs if affecting. Within 30 days	
8	**Scaling**	r = damaged surface/total surface of slab (%)h = maximum depth of damage	0	Nil, not discernible	**Short Term**	**Long Term**
					No action.	Not Applicable
			1	r < **2 %**	Local repair of areas damaged and liable to be damaged. Within 7days	
			2	r = 2 - 10 %		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			3	r = 10 - 20%	Bonded Inlay within 15 days	
			4	r = 20 - 30 %		
			5	r > 30 % and h > 25 mm	Reconstruct slab within 30 days	
9	**Polished Surface/Glazing**	t = texture depth, sand patch test	0		No action.	Not Applicable
			1	t > 1 mm		
			2 '	t = 1 - 0.6 mm	Monitor rate of deterioration	
			3	t = 0.6 - 0.3 mm		
			4	t = 0.3 - 0.1 mm		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			5	t < 0.1 mm	Diamond Grinding ifaffecting 50% or more slabs in a continuous stretch of minimum 5 km. Within 30 days	
10	**Popout (Small Hole), Pothole ReferPara 8.4**	n = number/m^2 d = diameter h = maximum depth	0	d < 50 mm; h < 25 mm; n < 1 per 5 m^2	No action.	Not Applicable
			1	d = 50 - 100 mm; h < 50 mm; n <1 per 5 m^2	Partial depth repair 65 mm deep. Within 15 days	
			2	d = 50 - 100 mm; h > 50 mm; n <1 per 5 m^2		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			3	d = 100 - 300 mm; h < 100 mm n < 1 per 5 m^2	Partial depth repair 110mm i.e.10 mm more than the depth of the hole. Within 30 days	
			4	d = 100 - 300 mm; h > 100 mm; n < 1 per 5 m^2		
			5	d > 300 mm; h > 100 mm: n > 1 per 5 m^2	Full depth repair. Within 30 days	

Joint Defects						
11	**Joint Seal Defects**	loss or damage L = Length as % total joint length	0	Difficult to discern.	**Short Term**	**Long Term**
					No action.	Not Applicable
			1	Discernible, L< 25% but of littl e immediat e consequence with regard to ingress of water or trapping incompressible material.	Clean joint, inspect later.	
			3	Notable. L > 25% insufficient protectio n against ingress of water and trapping incompressible material.	Clean and reapply sealant in selected locations. Within 7 days	

			5	Severe; w > 3 mm negligible protectionagainst ingress of water	Clean, widen and reseal the joint. Within 7 days	
				and trapping incompressible material.		
12	**Spalling of Joints**	w = width on eitherside of the joint L = length of spalled portion (as % joint length)	0	Nil, not discernible	No action.	Not Applicable
			1	w < 10 mm	Apply low viscosity epoxy resin/ mortar in cracked portion. Within 7 days	
			2	w = 10 - 20 mm, L < 25%		
			3	w = 20 - 40 mm, L > 25%	Partial Depth Repair. Within 15 days	
			4	w = 40 - 80 mm, L > 25%	30 - 50 mm deep, h = w + 20% of w, within 30 days	
			5	w > 80 mm, and L > 25%	50 - 100 mm deep repair. H = w + 20% ofw. Within 30 days	

13	**Faulting (or Stepping)**	f = difference of level	0	not discernible, < 1 mm	No action.	No action.

	in Cracks or Joints		1	f < 3 mm		
			2	f = 3 - 6 mm	Determine cause and observe, take action for diamond grinding	Replace the slabas appropriate. Within 30days
			3	f = 6 - 12 mm	Diamond Grinding	
			4	f= 12 - 18 mm	Raise sunken slab.	Replace the slabas appropriate. Within 30days
			5	f> 18 mm	Strengthen subgrade and sub-base by grouting and raising sunken slab	
14	**Blowup or Buckling**	h = vertica displacement from normal profile	0	Nil, not discernible	**Short Term**	**Long Term**
			1	h < 6 mm	No Action	
			2	h = 6 - 12 mm	Install Signs to Warn Traffic	

			3	h = 12 - 25 mm	within 7 days	
			4	h > 25 mm	Full Depth Repair. Within 30 days	
			5	shattered slabs, ie 4or more pieces	Replace broken slabs. Within 30 days	
15	**Depression**	h = negative vertica displacement from normal profile L =length	0	Not discernible, h < 5 mm	No action.	Not Applicable
			1	h = 5 - 15 mm		
			2	h = 15-30 mm, Nos <20% joints	Install Signs to Warn Traffic within 7 days	
			3	h = 30 - 50 mm		
			4	h > 50 mm or > 20% joints	Strengthen subgrade. Reinstate pavement at normal level	

			5	h > 100 mm	if L < 20 m. Within 30 days	
16	**Heave**	h = positive vertica displacement from normal profile. L = length	0	Not discernible. h < 5 mm	**Short Term**	**Long Term**
					No action.	scrabble
			1	h = 5 - 15 mm	Follow up.	
			2	h = 15 - 30 mm, Nos <20% joints	Install Signs to Warn Traffic within 7 days	
			3	h = 30 - 50 mm		
			4	h > 50 mm or > 20% joints	Stabilise subgrade. Reinstate pavement at normal level if length < 20 m. Within 30 days	
			5	h > 100 mm		
17	**Bump**	h = vertical	0	h < 4 mm	No action	

		displacement from normal profile	1	h = 4 - 7 mm	Grind, in case of new construction within 7 days	Construction Limit for New Construction.
			3	h = 7 - 15 mm	Grind, in case of ongoing Maintenance within 15 days	Replace in caseof new construction. Within 30days
			5	h > 15 mm	Full Depth Repair. Within 30 days	Full Depth Repair. Within 30days
18	**Lane to Shoulder Dropoff**	f = difference of level	0	Nil, not discernible < 3mm	**Short Term**	**Long Term**
					No action.	
			1	f = 3 - 10 mm	Spot repair of shoulder within 7 days	
			2	f = 10 - 25 mm		
			3	f = 25 - 50 mm	Fill up shoulder	

			4	f = 50 - 75 mm	within 7 dayss	For any 100 m stretch Reconstruct shoulder, i faffecting 25% or more of stretch. Within 30days
			5	f > 75 mm		
Drainage						
19	**Pumping**	quantity of finesand water expelled through open joints and cracksNos	0	not discernible	No Action	Inspect and repair sub-drainage at distressed sections and upstream.
			1 to 2	slight/ occasional Nos < 10%	Repair cracks and joints Without delay.	
			3 to 4	appreciable/ Frequent 10 - 25%	Lift or jack slab within 30 days.	
		Nos/100 m stretch	5	abundant, crac k development > 25%	Repair distressed pavement sections. Strengthen subgrade and subbase. Replace slab. Within 30 days	

20	**Ponding**	Ponding on slabs due to blockage of drains	0-2	No discernible problem	No action.	
			3 to 4	Blockages observed in drains, but water flowing	Clean drains etc within 7 days, Follow up	Action required to stop water damaging foundation within 30days.
			5	Ponding, accumulation of water observed	-do-	

Table -3: Maintenance Criteria for Safety Related Items and Other Furniture Items:

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th colspan="3">Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td rowspan="5">Highway</td><td rowspan="5">Availability of Safe Sight Distance</td><td colspan="3">As per IRC SP :84-2014, a minimum of safe stopping sight distance shall be available throughout.</td><td rowspan="5">Monthly</td><td rowspan="5">Manual Measurements with Odometer along with video/ image backup</td><td rowspan="5">Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments.

In case of permanent structure or design deficiency:
Removal of obstruction/improvement of deficiency at the earliest
Speed Restriction boards and suitable traffic calming measures such as transverse bar marking,
blinkers, etc. shall be applied during
the period of rectification.</td><td rowspan="5"></td><td rowspan="5">IRC:SP 84-2014</td></tr>
<tr><td>Design Speed, kmph</td><td>Desirable Minimum Sight Distance (m)</td><td>Safe Stopping Sight Distance (m)</td></tr>
<tr><td>100</td><td>360</td><td>180</td></tr>
<tr><td>80</td><td>260</td><td>130</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>Visual</td><td>Re - painting</td><td>Cat-1 Defect –</td><td>IRC:35-</td></tr>
</table>

<table>
<tr><td>Pavement Marking</td><td>Wear</td><td colspan="3"><70% of marking remaining</td><td>Bi-Annually</td><td>Assessment as per Annexure-F of IRC:35-2015</td><td></td><td>within 24 hours Cat-2 - Defect within 2 months</td><td>2015</td></tr>
<tr><td></td><td>Day time Visibility</td><td colspan="3">During expected life Service Time Cement Road - 130mcd/m2/lux
Bituminous Road - 100mcd/m2/lux</td><td>Monthly</td><td>As per Annexure-D of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect – within2 months</td><td>IRC:35-2015</td></tr>
<tr><td></td><td>Night Time Visibility</td><td colspan="3"><u>Initial and Minimum Performance for Dry Retro reflectivity during night time:</u>
Design Speed | (RL) Retro Reflectivity (mcd/m2/lux)
Initial (7 days) | Minimum Threshold level (TL) & warranty period required up to 2 years
Up to 65 | 200 | 80
65 - 100 | 250 | 120
Above 100 | 350 | 150
<u>Initial and Minimum Performance for Night Visibility under wet condition (Retro reflectivity):</u></td><td>Bi-Annually</td><td>As per Annexure-E of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect – within2 months</td><td>IRC:35-2015</td></tr>
</table>

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
		Initial 7 days Retro reflectivity: 100 mcd/m^2/lux Minimum Threshold Level: 50 mcd/m^2/lux					
	Skid Resistance	Initial and Minimum performance for Skid Resistance: Initial (7days): 55BPN Min. Threshold: 44BPN *Note: shall be considered under urban/city traffic condition encompassing the locations like pedestrian crossings, bus bay, busstop, cycle track intersection delineation, transverse bar markings etc	Bi-Annually	As per Annexure-G of IRC:35-2015		Within 24 hours	IRC:35-2015
Road Signs	Shape and Position	Shape and Position as per IRC:67-2012. Signboard should be clearly visible for the design speed of the section.	Daily	Visual with video/image backup	Improvement of shape, in case if shape is damaged. Relocation as per requirement	48 hours in caseof Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 15 Days in case of Gantry/Cantilever Sign boards	IRC:67-2012
	Retro reflectivity	As per specifications in IRC:67-2012	Bi-Annually	Testing of each	change of signboard	48 hours in case of Mandatory	RC:67-2012

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
				signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.		Signs, Cautionary and Informatory Signs (Single and Dual post signs) 1 Month in case of Gantry/Cantilever Sign boards	
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance measuring tape	Raising Kerb Height	Within 1 Month	RC 86:1983
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video/image backup	Kerb Repainting	Within 7-days	RC 35:2015
Other Road Furnitu	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2014 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC:SP:84-2014, IRC:35-2015
	Pedestrian Guardrail	Functionality: Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:SP:84- 2014

r e	Traffic Safety Barriers	Functionality: Functioning of Safety Barriers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84- 2014, IRC:119- 2015
	End Treatment of	Functionality: Functioning of End Treatment as intended	Daily	Visual with video/image	Rectification	Within 7 days	IRC:SP:84- 2014,

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Traffic Safety Barriers			backup			IRC:119- 2015
	Attenuators	Functionality: Functioning of Attenuators as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP-2014, IRC:119- 2015
	Guard Posts and Delineators	Functionality: Functioning of Guard Posts and Delineators as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: 79 - 1981
	Overhead Sign Structure	Overhead sign structure shallbe structurally adequate	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:67-2012
	Traffic Blinkers	Functionality: Functioning of Traffic Blinkers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84- 2014
Highway Lightin	Highway Lights	Illumination: Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84- 2014
		No major failure in the lighting system	Daily	-	Rectification of failure	24 hours	IRC:SP:84- 2014
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:84- 2014

g System	Toll Plaza Canopy Lights	Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84- 2014
		No major/minor failure in the lighting system	Daily	-	Rectification of failure	8 hours	IRC:SP:84- 2014

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Trees and Plantation including median plantation	Obstruction in a minimum head-room of 5.5 m above carriageway or obstructionin visibility of road signs	No obstruction due to trees	Monthly	Visual with video/image backup	Removal of trees	Immediate	IRC:SP:84- 2014
	Deterioration in health of trees and bushes	Health of plantation shall be as per requirement of specifications & instructions issued by Authority from time to time	Daily	Visual with video/image backup	Timely watering and treatment. Or Replacement of Trees andBushes.	Within 90 days	IRC:SP:84- 2014
	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction by vegetation	Daily	Visual with video/image backup	Removal of Trees	Immediate	IRC:SP 84 - 2014
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Other Project Facilities and Approach roads	Damage or deteriorationin Approach Roads, pedestrian facilities, truck lay-bys, bus-bays, bus-shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works		Daily	-	Rectification	15 days	IRC:SP 84 - 2014

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Pipe/box/slab culverts	Free waterway/ unobstructed flowsection	85% of culvert normal flow areato available.	2 times in a year (before and after rainy season)	Inspection by Bridge Engineer as per IRC SP: 35-1990 and recording of depth of silting and area of vegetation.	Cleaning silt up soils and debris in culvert barrel after rainy season, removalof bushes and vegetation,U/s of barrel, under barreland D/s of barrel before rainy season.	15 daysbefore onset of monsoon and within 30 days after end of rainy season.	IRC 5-2015, IRC SP:40-1993 and IRC SP:13- 2004
	Leak-proof expansion joints if any	No leakage through expansion joints	Bi-Annually	Physical inspection of expansion joints as per IRC SP: 35- 1990 if any, for leakage strains on walls at joints.	Fixing with sealant suitably	30 days or before onset of rains whichever comes earlier	IRC SP:40-1993 andIRC SP:69- 2011
	Structurally sound	Spalling of concrete not more than 0.25 sqm	Bi-Annually	Detailed inspectionof all components of culvert as per IRC SP:35-1990 and recording the defects	Repairs to spalling,cracking, delamination, rusting shall be followed as per IRC:SP:40-1993.	15 days	IRC SP 40-1993 and MORTH Specifications clause 2800
		Delamination o concrete not more than 0.25 sq.m.					
		Cracks wider than 0.3 mm not more than 1m aggregate length					

	Protection works in good condition	Damaged of rough stone apronor bank revetment not more than 3 sqm,damage to solid apron (concrete apron) not more than 1 sqm	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Bridges including ROBs Flyoveretc. as applicable	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC or wearing coat	15 days	MORT&H Specification 2811
Bridge - Super Structure	Bumps	No bump at expansion joint	Daily	Visual inspection as per IRC SP:35- 1990	Repairs to BC on either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORT&H Specification 3004.2 & 2811.
	User safety (condition of crash barrier and guard rail)	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspection and detailed condition survey as per IRC SP: 35-1990.	Repairs and replacement of safety barriers as the case may be	3days	IRC: 5-1998, IRC SP: 84-2014 and IRC SP: 40-1993.

	Rusted reinforcem ent	Not more than 0.25 sq.m	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 usingMobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out the repairs to affected concrete portion with epoxy mortar / concrete.	15 days	IRC SP: 40-1993 and MORTH Specification 1600.
	Spalling of concrete	Not more than 0.50 sq.m					
	Delamination	Not more than 0.50 sq.m					
	Cracks wider than 0.30 mm	Not more than 1m total length	Bi-Annually	Detailed condition survey as per IRCSP: 35-1990 using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, investigating causes for cracks development and carry out necessary rehabilitation.	48 Hours	IRC SP: 40-1993 and MORTH Specification 2800.
	Rainwater seepage through deck slab	Leakage - nil	Quarterly	Detailed condition survey as per IRCSP: 35-1990 usingMobile Bridge Inspection Unit	Grouting of deck slab at leakage areas, waterproofing, repairsto drainage spouts	1 months	MORTH specifications 2600 & 2700.
	Deflection due to permanent loads an	Within design limits.	Once in every 10 years for spans more	Load test method	Carry out major rehabilitation works on bridge to retain original design loads capacity	6 months	IRC SP: 51-1999.

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	live loads		than 40 m				
	Vibrations in bridge deck due to moving trucks	Frequency of vibrations shall not be more than 5 Hz	Once in every 5 years for spans more than 30m and every 10 years for spans between 15 to 30 m	Laser displacement sensors or laser vibro-meters	Strengthening of super structure	4 months	AASHTO LRFD specifications
	Leakage in Expansion joints	No damage to elastomeric sealant compound in strip seal expansion joint, no leakage of rain water through expansion joint in case of buried and asphalt plug and copper strip joint.	Bi-Annually	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Replace of seal in expansion joint	15 days	MORTH specifications 2600 and IRC SP: 40-1993.
	Debris and dust in strip seal	No dust or debris in expansion joint	Monthly	Detailed condition survey as per IRC SP:35-1990 using	Cleaning of expansion joint gaps thoroughly	3 days	MORTH specifications 2600 and

	expansion joint	gap.		Mobile Bridge Inspection Unit			IRC SP: 40-1993.
	Drainage spouts	No down take pipe missing/broken below soffit of the deck slab. No silt, debris, clogging of drainage spout collection chamber.	Monthly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Cleaning of drainage spouts thoroughly. Replacement of missing/broken down take pipes with a minimum pipe extension of 500mm below soffit of slab. Providing sealant around the drainage spout if any leakages observed.	3 days	MORTH specification 2700.
Bridge-substructure	Cracks/spalling of concrete/ rusted steel	No cracks, spalling of concrete and rusted steel	Bi-Annually	Detailed condition survey as per IRCSP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall needto be thoroughly cleanedfrom rusting and applied with anti-corrosive coating before carrying out repairsto substructure by grouting/guniting and micro concreting depending on type of defect noticed	30 days	IRC SP: 40-1993 and MORTH specification 2800.

	Bearings	Delamination of bearing reinforcement not more tha n 5%, cracking or tearing of rubber not morethan 2 locations per side, no rupture of reinforcement or rubber	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 usin g Mobile Bridg e Inspection Unit	In case of failure of even one bearing on any pier/abutment, all the bearings on that pier/abutment shall be replaced, in order to get uniform load transfer onto bearings.	3 months	MORTH specificatio n 2810 and IRC SP: 40-199.
Bridge Foundatio ns	Scouring around foundati o ns	Scouring shallnot be lower than maximum scour level for the bridge	Bi-Annually	Condition survey and visual inspection as perIRC SP:35-1990 using Mobile Bridge Inspection Unit. In case of doubt,use Underwater camera for inspection of deep wells in major Rivers.	Suitable protection works around pier/abutment	1 month	IRC SP: 40-1993, IRC 83-2014, MORTH specificati o n 2500
	Protectio n work s in goo d	Damaged of rough stone apron or bank revetment not more than 3	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35- 1990	Repairs to damaged aprons and pitching.	30 days after defect observatio n or2	IRC: SP 40-1993 an d IRC:SP:13-2004.

	condition						

		sq.m, damageto solid apro n (concrete apron) not more than 1 sq.m				weeks before onset of rainy season whichever is earlier.	
Note: Any Structure during the entire contract period which is found that does not complies with all requirements of this Table will beprepared, rehabilitated or even reconstructed under the scope of the contractor.							

Table 4: Maintenance Criteria for Structures and Culverts:

Table 5: Maintenance Criteria for Hill Roads

In addition to above, for hill roads the following provisions for maintenance is also to done.

Hill Roads		
(i)	Damage to Retaining wall/ Breast wall	7 (Seven) days
(ii)	Landslides requiring clearance	12 (Twelve) hours
(iii)	Snow requiring clearance	24 (Twenty Four) hours

<u>Note:</u> For all tables 1 to 5 above, latest BIS & IRC standards (even those not indicated herewith) along with MoRTH specifications shall be binding for all maintenance activities.

A. Flexible Pavement

Nature of Defect or deficiency		Time limit for repair/ rectification
(b)	**Granular earth shoulders, side slopes, drains and culverts**	
(i)	Variation by more than 1 % in the prescribedslope of camber/cross fall (shall not be less than the camber on the main carriageway)	7 (seven) days
(ii)	Edge drop at shoulders exceeding 40 mm	7 (seven) days
(iii)	Variation by more than 15% in the prescribedside (embankment) slopes	30 (thirty) days
(iv)	Rain cuts/gullies in slope	7 (seven) days
(v)	Damage to or silting of culverts and side drains	7 (seven) days
(vi)	Desilting of drains in urban/semi- urban areas	24 (twenty four) hours
(vii)	Railing, parapets, crash barriers	7 (seven) days (Restore immediately if causing safety hazard)
(c)	**Road side furniture including road sign and pavement marking**	
(i)	Damage to shape or position, poor visibility orloss of retro- reflectivity	48 (forty eight) hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required/ Once every year
(iii)	Damaged/missi signs road requiring ng replacement	7 (seven) days
(iv)	Damage to road mark ups	7 (seven) days
(d)	**Road lighting**	
(i)	Any major failure of the system	24 (twenty four) hours
(ii)	Faults and minor failures	8 (eight) hours
(e)	**Trees and plantation**	

Nature of Defect or deficiency		Time limit for repair/ rectification
(i)	Obstruction in a minimum head- room of 5 m above carriageway or obstruction in visibility of road signs	24 (twenty four)hours
(ii)	Removal of fallen trees from carriageway	4 (four) hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
(iv)	Trees and bushes requiring replacement	30 (thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(f)	**Rest area**	
(i)	Cleaning of toilets	Every 4 (four) hours
(ii)	Defects in electrical, water and sanitary installations	24 (twenty four) hours
(g)	**[Toll Plaza]**	
(h)	**Other Project Facilities and Approach roads**	
(i)	Damage in approach roads, pedestrian facilities, truck lay- byes, bus-bays, bus-shelters, cattle crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads	15 (fifteen) days
(ii)	Damaged vehicles or debris on the road	4 (four) hours
(iii)	Malfunctioning of the mobile crane	4 (four) hours
Bridges		
(a)	**Superstructure**	
(i)	Any damage, cracks, spalling/ scaling Temporary measures Permanent measures	within 48 (forty eight) hours within 15 (fifteen) days or as specified by the Authority's Engineer
(b)	**Foundations**	

Nature of Defect or deficiency		Time limit for repair/ rectification
(i)	Scouring and/or cavitation	15 (fifteen) days
(c)	**Piers, abutments, return walls and wing walls**	
(i)	Cracks and damages including settlement and tilting, spalling, scaling	30 (thirty) days
(d)	**Bearings (metallic) of bridges**	
(i)	Deformation, damages, tilting or of shifting bearings	15 (fifteen) days Greasing of metallic bearings once in a year
(e)	**Joints**	
(i)	Malfunctioning of joints	15 (fifteen) days
(f)	**Other items**	
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days
(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days (immediately within 24 hours if posingdanger to safety)
(iv)	Rain-cuts or erosion of banks of the side slopes of approaches	7 (seven) days
(v)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds	30 (thirty) days
(vii)	Growth of vegetation affecting the structureor obstructing the waterway	15 (fifteen) days
(g)	**Hill Roads**	
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours

Nature of Defect or deficiency		Time limit for repair/ rectification
(iii)	Snow requiring clearance	24 (twenty four) hours

[Note: Where necessary, the Authority may modify the time limit for repair/rectification, oradd to the nature of Defect or deficiency before issuing the bidding document, with the approval of the competent authority.]

Schedule - F

(See Clause 4.1 (vii)(a)) **Applicable Permits**

1. Applicable Permits

(i) The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:

(a) Permission of the State Government for extraction of boulders from quarry;

(b) Permission of Village Panchayats and Pollution Control Board for installation of crushers;

(c) Licence for use of explosives;

(d) Permission of the State Government for drawing water from river/reservoir;

(e) Licence from inspector of factories or other competent Authority for settingup batching plant;

(f) Clearance of Pollution Control Board for setting up batching plant;

(g) Clearance of Village Panchayats and Pollution Control Board for setting upasphalt plant;

(h) Permission of Village Panchayats and State Government for borrow earth; and

(i) Any other permits or clearances required under Applicable Laws.

(ii) Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority in accordance with the provisions of this Agreement.

Schedule-G

(See Clause 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE

Annex-I

(See Clause 7.1.1)

PERFORMANCE SECURITY

To
The Managing Director,
National Highway & Highway Development Corporation Ltd.
PTI Building, 3rd Floor,
4, Parliament Street
New Delhi- 110001

WHEREAS_____[name and address of Contractor] (hereafter called the "Contractor") has undertaken, in pursuance of Letter of Acceptance (LOA) No. Dated_ for construction of [name of the Project] (hereinafter called the "Contract")

AND WHEREAS the Contract requires the Contractor to furnish an {Performance Security/ Additional Performance Security} for due and faithful performance of its obligations, under and in accordance with the Contract, during the {Construction Period/ Defects Liability Period and Maintenance Period} in a sum of Rs….. cr. (Rupees ……..….. crore) (the "**Guarantee Amount**"[1]).

AND WHEREAS we, …….. through our branch at ..... (the "**Bank**") have agreed to furnish this Bank Guarantee (hereinafter called the **"Guarantee**") by way of Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Contract, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager of National Highways & Infrastructure Development Corporation Limited], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Contract shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the

[1] Guarantee Amount for Performance Security and Additional Performance Security shall be calculated as per Contract.

Contract and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Contract or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Contract or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Contract and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Contract or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Contract.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect on ****$. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent

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by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Contract.

12. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

13. This guarantee shall also be operatable at our…….Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

14. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of [MoRT&H/NHAI/NHIDCL/State PWD/BRO], details of which is as under:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	CNRB0019062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank) transport Bhawan, 1st Parliament Street, New Delhi-110001

Signed and sealed this ……. day of ……., 20…… at ……..

SIGNED, SEALED AND DELIVERED
For and on behalf of the Bank by:
(Signature)
(Name)
(Designation)
(Code Number)
(Address)

(i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.

(ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuingbranch.

Annex-II (Schedule-G) (See Clause 19.2)

Form for Guarantee for Advance Payment

The
Managing
Director,
NHIDCL,
3rd Floor, PTI Building,
Sansad Marg, New Delhi

WHEREAS:

(A) [name and address of contractor] (hereinafter called "**the Contractor**") has executed an agreement (hereinafter called the "Agreement") with the[**NHIDCL**], (hereinafter called "**the Authority**") for the "……", subject to and in accordance with the provisions of the Agreement.

(B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest bearing @Bank Rate + 3% advance payment (herein after called "Advance Payment") equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall bemade in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second} installment of the Advance Payment is Rs. cr. (Rupees crore) and the amount of this Guarantee is Rs. cr. (Rupees crore) (the "Guarantee Amount")

(C) We, …….. through our branch at ……. (the "Bank") have agreed to furnish this bank guarantee (hereinafter called the "Guarantee") for the

Guarantee Amount.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for thesum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rankof [General Manager in the National Highways Authority of India], that the Contractor has committed default in the due and faithful performance of allor any of its obligations for the repayment of the instalment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement andits decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever
3. In order to give effect to this Guarantee, the Authority shall be entitled to actas if the Bank were the principal debtor and any change in the constitutionof the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank itsdemand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or

any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authorityin respect of or relating to the Advance Payment.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The guarantee shall cease to be in force and effect 90 (ninety) days after the end of the one year from the date of payment of the installment of the Advance Payment, as set forth in Clause 19.2 of the Agreement.

9. The Bank undertakes not to revoke this Guarantee during its currency,except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shallbe conclusive.

11. This Guarantee shall come into force with immediate effect and shall remainin force and effect for up to the date specified in para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded

13. This guarantee shall also be operatable at our ..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation

14. Intimation regarding issuance of this Bank Guarantee shall be sent to Authority's Bank through SFMS gateway as per the details below:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Syndicate Bank Transport Bhawan, 1st Parliament Street, New Delhi-110001

Signed and sealed this …….. day of ……. 20…….. at ……

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

Schedule - H

(See Clauses10.1 (iv) and 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	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	PERCENTAGE WEIGHTAGE
1	2	3	4	4
Road works including culverts, widening and repair of culverts.	**64.42%**	**A-Widening and Strengthening of existing road**		
		(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc	0.00%	0.00%
		(2) Sub Base courses	0.00%	0.00%
		(3) Non-Bituminous Base Course	0.00%	0.00%
		(4) Bituminous Base Course	0.00%	0.00%
		(5) Wearing coat	0.00%	0.00%
		(6) Widening and repair of culverts		
		B 1- Reconstruction / New two-lane alignment / bypass (Flexible pavement)		
		(1) Earthwork up to top of the sub-grade	3.34%	5.18%
		(2) Sub Base Course	23.93%	37.15%
		(3) Non-Bituminous Base Course	13.25%	20.57%
		(4) Bituminous Base Course	11.16%	17.33%
		(5) Wearing coat	7.87%	12.21%
		B 2- Reconstruction / New two lane		
		alignment / bypass (Rigid pavement)		
		(1) Earthwork up to top of the sub-grade	0.00%	0.00%
		(2) Sub Base Course	0.00%	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%	0.00%
		C 1- Reconstruction / New Service Road/ Slip Road (Flexible pavement)		
		(1) Earthwork up to top of the sub-grade	0.00%	0.00%
		(2) Sub Base Course	0.00%	0.00%
		(3) Non-Bituminous Base Course	0.00%	0.00%

		(4) Bituminous Base Course	0.00%	0.00%
		(5) Wearing coat	0.00%	0.00%
		C 2- Reconstruction / New Service Road (Rigid pavement)		
		(1) Earthwork up to top of the sub-grade	0.00%	0.00%
		(2) Sub Base Course	0.00%	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%	0.00%
		(4) Pavement Quality Control (PQC) course	0.00%	0.00%
		D - Reconstruction and New culverts on existing road, Realignments, bypasses:		
		Culverts (Length <6m)		0.00%
		a - Pipe Culverts	0.00%	0.00%
		b - Box Culverts	4.87%	7.56%
Minor Bridges / underpasses / over passes	**16.85%**	**A 1- Widening and repairs of Minor Bridges (length >6m and <60m)**		
		Minor Bridges	0.00%	0.00%
		A 2- New Minor Bridges (length >6m and <60m)		
		(1) Foundation + Sub-structure: on completion of foundation work including foundation for wing and return wall, abutments, piers upto the abutment/pier cap.	5.06%	30.0%
		(2) Superstructure: on completion of super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road sign & markings, tests on completion etc. complete in all respect.	5.06%	30.0%
		(3) Approaches: on completion of approaches including Retaining walls, stone pitching, protection works complete in all respect, test on completion in all respects and fit for use.	5.06%	30.0%
		(4) Guide bunds and river training works: on completion of guide bunds and repair training works complete in all respects.	1.69%	10.0%
		B 1 - Widening and repair of underpasses / overpasses		
		Underpasses / Overpasses	0.00%	0.00%
		B 2 - New Underpasses / Overpasses		
		(1) Foundation + Sub-structure: on completion of foundation work including foundation for wing and return wall, abutments, piers upto the abutment/pier cap.	0.00%	0.00%

		(2) Superstructure: on completion of super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road sign & markings, tests on completion etc. complete in all respect.	0.00%	0.00%
		Wearing coat (a) in case of overpass- wearing coat including expansion joints complete in all respects as specified and	0.00%	0.00%
		(b) in case of underpass - rigid pavement including drainage facility complete in all respects as specified.		
		(3) Approaches: On completion of approaches including Retaining walls/ Reinforced earth walls, stone pitching, protection works complete in all respect and fit for use.	0.00%	0.00%
Major bridge (length > 60m) works and RoB / RUB / Elevated sections / Flyovers including viaducts, if any	**0.00%**	**A 1 - Widenng and repair of major bridges**		
		(1) Foundation	0.00%	0.00%
		(2) Sub-structure	0.00%	0.00%
		(3) Super-structure (including bearings)	0.00%	0.00%
		(4) Wearing Coat including expansion	0.00%	0.00%
		joints		0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	0.00%
		(6) Wing walls/return walls	0.00%	0.00%
		(7) Guide bunds, River Training works etc.	0.00%	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	0.00%
		A 2 - New Major bridges		
		(1) Foundation	0.00%	0.00%
		(2) Sub-structure	0.00%	0.00%
		(3) Super-structure (including bearings)	0.00%	0.00%
		(4) Wearing Coat including expansion joints	0.00%	0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	0.00%
		(6) Wing walls/return walls upto top	0.00%	0.00%
		(7) Guide bunds, River Training works etc.	0.00%	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	0.00%
		B 1 - Widening and repair of		
		a) RoB		
		b) RuB		
		1) Foundation	0.00%	0.00%
		2) Sub Structure	0.00%	0.00%
		3) Super Structure (Including bearings)	0.00%	0.00%

		4) Wearing coat (a) in case of **RoB** - wearing coat including expansion joints complete in all respect as specified and		0.00%
		(b) in case of **RuB** - rigid pavement under RuB including drainage facility complete in all respect as specified	0.00%	0.00%
		5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%	0.00%
		6) wing walls / return walls	0.00%	0.00%
		7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	0.00%
		B 2 - New RoB / RuB		
		a) RoB		
		b) RuB		
		1) Foundation	0.00%	0.00%
		2) Sub Structure	0.00%	0.00%
		3) Super Structure (Including bearings)	0.00%	0.00%
		4) Wearing coat (a) in case of **RoB** - wearing coat including expansion joints complete in all respect as specified and		0.00%
		(b) in case of **RuB** - rigid pavement under RuB including drainage facility complete in all respect as specified	0.00%	0.00%
		5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%	0.00%
		6) wing walls / return walls	0.00%	0.00%
		7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	0.00%
		C 1 - Widening and repair of Elevated sections / Fly overs / Grade Separators		0.00%
		1) Foundation	0.00%	0.00%
		2) Sub Structure	0.00%	0.00%
		3) Super Structure (Including bearings)	0.00%	0.00%
		4) Wearing coat including expansion joints	0.00%	0.00%
		5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%	0.00%
		6) wing walls / return walls	0.00%	0.00%
		7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	0.00%
		C 2 - New Elevated sections / Fly overs / Grade Separators		
		1) Foundation	0.00%	0.00%
		2) Sub Structure	0.00%	0.00%
		3) Super Structure (Including bearings)	0.00%	0.00%
		4) Wearing coat including expansion joints	0.00%	0.00%
		5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%	0.00%

		6) wing walls / return walls	0.00%	0.00%
		7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	0.00%
Other Works	18.73%	(i) Toll Plaza	0.00%	0.00%
		(ii) Road side drains		0.00%
		Lined Drain	0.65%	3.45%
		Unlined Drain	0.14%	0.76%
		(iii) Road Signs, markings, km stones, safety devices,Road furnitures etc	0.36%	1.94%
		(iv) Project facilities		0.00%
		(a) Bus Bays	0.91%	4.87%
		(b) Truck lay byes	0.44%	2.37%
		© Rest Areas	0.00%	0.00%
		(d) Others		0.00%
		a) Clearing n Grubbing & Dismantling works	0.08%	0.43%
		b) improvement of Junctions	5.23%	27.94%
		c) Sand Filling in embankment in Pond Locations	0.09%	0.49%
		d) Turfing and hydroseeding/landscaping & plantation	0.64%	3.42%
		e) Traffic Aid Post	0.00%	0.00%
		f) Lighting in Built-up areas	0.09%	0.46%
		(v) Road side Plantation	0.00%	0.00%
		(vi) Repair of Protection works other than approaches to the bridges, elevated sections / flyovers / grade separators and RoBs/RuBs		0.00%
		(a) Crash Barrier (W Beam)	2.40%	12.86%
		(b) Parapet wall	0.00%	0.00%
		(c) Retaining wall & RE Wall	1.94%	10.40%
		(d) Breast Wall	0.00%	0.00%
		(e) Gabion	0.00%	0.00%
		f) River Training works /Pitching on Slopes	0.00%	
		(vii) Safety and traffic management during construction		
		Utility Shifting		
		a) Electrical	5.35%	28.55%
		b) Water	0.39%	2.06%

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 FOR PAYMENT	PAYMENT PROCEDURE
A-Widening and Strengthening ofexisting road	
(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc	Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in a single lane carriageway length of not less than 500m.
(2) Sub Base courses	
(3) Non-Bituminous Base Course	
(4) Bituminous Base Course	
(5) Wearing coat	
(6) Widening and repair of culverts	Cost of completed culverts shall be determined on pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of atleast one culvert.
B 1- Reconstruction / New two-lane alignment / bypass (Flexible pavement)	
(1) Earthwork up to top of the sub-grade	Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in a single lane carriageway length of not less than 500m.
(2) Sub Base Course	

STAGE FOR PAYMENT	PAYMENT PROCEDURE
(3) Non-Bituminous Base Course	Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in a single lane carriageway length of not less than 500m.
(4) Bituminous Base Course	
(5) Wearing coat	
B 2- Reconstruction / New two-lane alignment / bypass (Rigid pavement)	
(1) Earthwork up to top of the sub-grade	Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in a single lane carriageway length of not less than 500m.
(2) Earthwork in shoulders	
(3) Sub Base Course	
(4) Dry Lean Concrete (DLC) Course	
(5) Pavement Quality Control (PQC) course	
C 1- Reconstruction / New Service Road/ Slip Road (Flexible pavement)	
(1) Earthwork up to top of the sub-grade including shoulder	Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in a single lane carriageway length of not less than 500m.
(2) Sub Base Course	
(3) Non-Bituminous Base Course	
(4) Bituminous Base Course	
(5) Wearing coat	
C 2- Reconstruction / New Service Road (Rigid pavement)	
(1) Earthwork up to top of the sub-grade	Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in a single lane carriageway length of not less than 500m.
(2) Sub Base Course	
(3) Dry Lean Concrete (DLC) Course	
(4) Pavement Quality Control (PQC) course	
D - Reconstruction and New culverts on existing road, Realignments, bypasses:	
Culverts (Length <6m)	Cost of completed culverts shall be determined on pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of at least one culvert.
a - Pipe Culverts	
b - Box Culverts	

@ 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.

Note: The length affected due to law-and-order problems or litigiond u r i n g execution due to which the Contractor is unable to execute the work, may be deducted from the total project length for payment purposes. The total length calculated here is only for payment purposes and will not affect and referred in other clauses of the Contract Agreement.

1.3.2 Minor Bridges and Underpasses/Overpasses.

Procedure for estimating the value of Minor bridge and Underpasses/Overpasses shall be as stated in table 1.3.2:

Table 1.3.2

STAGE of PAYMENT	Payment Procedure
A 1- Widening and repairs of Minor Bridges (length >6m and <60m)	
Minor Bridges	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 completion of widening and repair works of a minor bridge.
A 2- New Minor Bridges (length >6m and <60m)	
(1) Foundation + Sub-structure: on completion of foundation work including foundation for wing and return wall, abutments, piers upto theabutment/pier cap.	(i) **Foundation**: Payment against Foundation shall be made on pro rata basis on completion of atleast two foundations. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. (ii) **Substructure**: Payment sub structure shall be made on pro-rata basis on completion of at least two substructure upto abutment / pier cap level of each bridge.
(2) Superstructure: on completion of super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	(iii) 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.
(3) Approaches: on completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	(3) 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.

STAGE of PAYMENT	Payment Procedure
(4) Guide bunds and river training works: on completion of guide bunds and repair training works complete in all respects.	**(4) Guide bunds and river trainingworks:** Payment shall be made on pro rata basis on completion of a stage ie.completion of guide bunds and river training works in all respect as specified.
B 1 - Widening and repair of underpasses / overpasses	
Underpasses / Overpasses	Cost of each underpass / overpass shall be determined on pro rata basis with respect to the total linear length of the underpass / overpass. Payment shall be made on completion of widening and repair works of a underpass / overpass.
B 2 - New Underpasses / Overpasses	
(1) Foundation + Sub-structure: on completion of foundation work including foundation for wing and return wall, abutments, piers upto the abutment/pier cap.	(i) Foundation: Payment against Foundation shall be made on pro rata basis on completion of atleast two foundations. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. (ii) Substructure: Payment sub structure shall be made on pro-rata basis on completion of at least two substructure upto abutment / pier cap level of each bridge.
(2) Superstructure: on completion of super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	**(2) Super structure:** Payment shall be made on pro-rata basis on completion of a stage i.e., completion of super-structure of at least one span in all respects as specified in the column of "Stage of Payment" In this sub-clause excluding any payment made in pursuance to here in under : - If precast girders / segments are used, on casting of all such girders and segments for atleast one span and on submission of Indemnity Bond by the Contractor, 40%of the actual cost of such precast girders / segments determined based on SoR prevalent on the Base date within 30 days of submission of the bill therefor. In case the Contract Price is lower / higher than the Estimated Project Cost as per RFP, then the SOR rates shall be reduced / increased in the same proportion accordingly. Balance payment shall be after erection of /launching of these elements as per stage payment stipulations.
(3) Approaches: on completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	**(3) Approaches:** Payment shall be made on pro rata basis on completion of a stage ie. completion of approaches in all respect as specified excluding any payment made in persuance to here in under: If Reinforced earthwall is used with facia panels/blocks, on casting of all the facia Panels/Blocks of all

	approaches and on submission of Indemnity Bond by the Contractor, 40% of the actual cost of such precast girders/segments determined based on SoR prevalent on the base date within 30 days of submission of the bill therefor. In case the Contract Price is lower/higher than the Estimated Project Cost as per RFP, then the SoR rates shall be reduced / increased in the same proportion accordingly. Balance payment shall be after erection of / launching of these elements as per stage payment stipulations.

1.3.3 Major Bridge works, ROB/RUB and Structures.

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

Table 1.3.3

STAGE of PAYMENT	Payment Procedure
A 1 - Widening and repair of major bridges	
(1) Foundation	**(i)Foundation:** Cost of each Major Bridge shall be determined on prorata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of atleast two foundations of the major bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also were specified.
(2) Sub-structure	**(ii) Sub-Structure:** Payment sub structure shall be made on pro-rata basis on completion of at least two substructure upto abutment / pier cap level of each bridge.
(3) Super-structure (including bearings)	**(2) 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 respects as specified
(4) Wearing Coat including expansion joints	**(iv)Wearing Coat:**Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	**(v) Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls upto top	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/returnwalls completein all respects as specified.
(7) Guide bunds, River Training works etc.	**(vii) Guide Bonds, River Training works:** Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.

STAGE of PAYMENT	Payment Procedure
(8) Approaches (including Retaining walls, stone pitching and protection works)	(viii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
A 2 - New Major bridges	Cost of each structure shall be determined on pro rata basis in respect to the total liner length (m) of all the structures. Payments shall be made on completion of each stage of structures as per weightage given in this table.
(1) Foundation	**(i)Foundation:** Cost of each Major Bridge shall be determined on prorata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of atleast two foundations of the major bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also were specified.
(2) Sub-structure	**(ii) Sub-Structure:** Payment sub structure shall be made on pro-rata basis on completion of at least two substructure upto abutment / pier cap level of each bridge.
(3) Super-structure (including bearings)	(2) (a) Super structure (casting of girder): Unit of measurement is numbers. Payment against casting of girders shall be made on pro rata basis with respect to total numbers of girders required in the structure on completion of a stage i.e. not less than completion of casting of at least five girders of the structure. (b) Super structure (Casting of segments): Unit measurement is numbers. Payment against casting of segments shall be made on pro rata basis with respect of total numbers of segments required in the structure on completion of a stage i.e. not less than completion of casting at least 10 (ten) segments of the structure. Super structure (Erection of girders, deck slab and bearing): Payment shall be made on pro rata basis on completion of a stage i.e. completion of supers structure including bearings of at least one span in all respects as specified. (iv) Other Ancillary works : wearing coat, expansion joints hand rails, crash barriers, tests on completion etc. completion in all respect.- Payment shall be made on pro-rata basis on completion of the stage in all respect as specified, for each structure.
(4) Wearing Coat including expansion joints	**(iv)Wearing Coat:**Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	**(v) Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.

(6) Wing walls/return walls upto top	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/returnwalls completein all respects as specified.
(7) Guide bunds, River Training works etc.	**(vii) Guide Bonds, River Training works:** Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	(viii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B 1 - Widening and repair of	

STAGE of PAYMENT	Payment Procedure
a) RoB	
b) RuB	
1) Foundation	**(i)Foundation**:Cost of each foundation shall be determined from cost of all foundations divided by nos. of all foundations in a Bridge.Payment against foundations shall be made on pro-rata basis on completion of a stage i.e. completion of at least two foundations of the bridge.In case where load testing is required for foundation, the trigger of first payment shall include load testing also were specified..
2) Sub Structure	(ii) Sub-Structure: Payment sub structure shall be made on pro-rata basis on completion of at least two substructure upto abutment / pier cap level of each bridge.
3) Super Structure (Including bearings)	**(2) 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 respects as specified.
4) Wearing coat (a) in case of **RoB** - wearing coat including expansion joints complete in all respect as specified and (b) in case of **RuB** - rigid pavement under RuB including drainage facility complete in all respect as specified	(iv) **Wearing Coat**: Payment shall be made on completion of (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
5) miscellaneous items like hand rails, crash barrier, road markings etc	(v) **Miscellaneous**: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
6) wing walls / return walls	(vi) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
7) Approaches (including Retaining walls, stone pitching and protection works)	(vii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B 2 - New RoB / RuB	

STAGE of PAYMENT	Payment Procedure
1) Foundation	**(i)Foundation**:Cost of each foundation shall be determined from cost of all foundations divided by nos. of all foundations in a Bridge.Payment against foundations shall be made on pro-rata basis on completion of a stage i.e. completion of at least two foundations of the bridge.In case where load testing is required for foundation, the trigger of first payment shall include load testing also were specified..
2) Sub Structure	(ii) Sub-Structure: Payment sub structure shall be made on pro-rata basis on completion of at least two substructure upto abutment / pier cap level of each bridge.
3) Super Structure (Including bearings)	**(2) 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 respects as specified.
4) Wearing coat (a) in case of **RoB** - wearing coat including expansion joints complete in all respect as specified and (b) in case of **RuB** - rigid pavement under RuB including drainage facility complete in all respect as specified	(iv) **Wearing Coat**: Payment shall be made on completion of (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
5) miscellaneous items like hand rails, crash barrier, road markings etc	(v) **Miscellaneous**: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
6) wing walls / return walls	(vi) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
7) Approaches (including Retaining walls, stone pitching and protection works)	(vii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C 1 - Widening and repair of Elevated sections / Flyovers / Grade Separators	

STAGE of PAYMENT	Payment Procedure
1) Foundation	(i)Foundation: Cost of each foundation shall be determined from cost of all foundations divided by nos. of all foundations in a Bridge. Payment against foundations shall be made on pro-rata basis on completion of a stage i.e. completion of at least two foundations of the Structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also were specified.
2) Sub Structure	(ii) Sub-Structure: Payment sub structure shall be made on pro-rata basis on completion of at least two substructure upto abutment / pier cap level of each bridge.
3) Super Structure (Including bearings)	(2) 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 respects as specified.
4) Wearing coat including expansion joints	(iv) Wearing Coat: Payment shall be made on completion of (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
5) miscellaneous items like hand rails, crash barrier, road markings etc	(v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
6) wing walls / return walls	(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
7) Approaches (including Retaining walls, stone pitching and protection works)	(vii) Approaches: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C 2 - New Elevated sections / Fly overs / Grade Separators	
1) Foundation	**(i)Foundation**: Cost of each foundation shall be determined from cost of all foundations divided by nos. of all foundations in a Bridge. Payment against foundations shall be made on pro-rata basis on completion of a stage i.e. completion of at least two foundations of the Structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also were specified.

STAGE of PAYMENT	Payment Procedure
2) Sub Structure	(ii) Sub-Structure: Payment sub structure shall be made on pro-rata basis on completion of at least two substructure upto abutment / pier cap level of each bridge.
3) Super Structure (Including bearings)	(2) 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 respects as specified.
4) Wearing coat including expansion joints	(iv) Wearing Coat:Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
5) miscellaneous items like hand rails, crash barrier, road markings etc	(v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
6) wing walls / return walls	(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
7) Approaches (including Retaining walls, stone pitching and protection works)	(vii) Approaches: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.

Note: (1) In case of innovate Major Bridge projects like cable suspension/cable stayed/ Extra Dozed and exceptionally long span bridges, the schedule may be modified as per site requirements before bidding with due approval of Competent Authority.

(2) The Schedule for exclusive tunnel projects may be prepared as per site requirements before bidding with due approval of Competent Authority.

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 FOR PAYMENT	PAYMENT PROCEDURE
Other Works	
(i) Toll Plaza	Payment of Toll Plaza shall be made on Pro rata basis as per following completed stages: (i) Rigid pavement upto DLC (LHS) -12.5 % (ii) Rigid pavement upto DLC (RHS)- 12.5 % (iii) PQC (LHS)-25 % (iv) PQC (RHS)-25 % (v) Admin Building, Maintenance Building & Misc. Works-10% (vi) Canopy, Toll Booth, Safety Items & Miscellaneous Works-12.5 % (vii) Toll Plaza Tunnel-2.5 %
(ii) Road side drains	
Lined Drain	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 percent) of the total length.
Unlined Drain	
(iii) Road Signs, markings, km stones, safety devices, Road furnitures etc.	
(iv) Project facilities	
(a) Bus Bays	Payment shall be made on pro rata basis for completed facilities.
(b) Truck lay byes	
© Rest Areas	
(d) Others	
a) Clearing n Grubbing & Dismantling works	
b) improvement of Junctions	
c) Sand Filling in embankment in Pond Locations	
d) Turfing and hydroseeding & Plantation	
e) Traffic Aid Post	
f) Lighting in Built-up areas	
(v) Repair of Protection works other than approaches to the bridges, elevated sections / flyovers / grade separators and RoBs/RuBs	
(a) Crash Barrier	
(b) Parapet wall	
(c) Retaining wall & RE Wall	
(d) Breast Wall	
(e) Gabion	

STAGE FOR PAYMENT	PAYMENT PROCEDURE
f) River Training works /Pitching on Slopes	
(vii) Safety and traffic management during construction	Payment shall be made on pro rata basis every six months.

Electrical Utilities and Public Health Utilities (Water pipe lines and sewage lines) Procedure for estimating the value of Electrical Utilities and Public Health Utilities (Water pipe lines and sewage lines) shall be as stated in table:

Stage of Payment	Payment Procedure
(i) EHT Line	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of EHT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is (i) Erection of poles-20%, (ii) Conductor stringing including laying of cable-30%, (iii) DTR erection (if involved)- 15% and (iv) Charging of line including dismantling and site clearance-35% (with DTR) and 50% without DTR)
(ii) EHT crossings	Cost of each crossing shall be determined on pro-rata basis with reference to the total no. of crossings. Payments shall be made for not less than 25% of the crossings subject to a minimum of 4 crossings.
(iii) HT/LT line (including Transformers if any)	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of HT/LT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is (i) Erection of poles-20%, (ii) Conductor stringing including laying of cable-30%, (iii) DTR erection (if involved)- 10% and (iv) Charging of line including dismantling and site clearance-40% (with DTR) and 50% without DTR)
(iv) HT/LT line crossings	Cost of each crossing shall be determined on pro-rata basis with reference to the total no. of crossings. Payments shall be made for not less than 25% of the crossings subject to a minimum of 10 crossings.
(v) Water pipeline.	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is laying of pipe-50%, Charging of line including all miscellaneous works and dismantling and site clearance-50%)
(vi) Water pipeline crossings.	Cost of each crossing shall be determined on pro-rata basis with reference to the total no. of crossings. Payments shall be made for not less than 25% of the crossings subject to a minimum of 8 crossings.
(vii) Sewage lines.	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is laying of pipe-50%, Charging of line including all miscellaneous works and dismantling and site clearance-50%)
(vii) Sewage line crossings.	Cost of each crossing shall be determined on pro-rata basis with reference to the total no. of crossings. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting

	work is laying of pipe50%, Charging of line including all miscellaneous works and dismantling and site clearance-50%)

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 - I

(See Clause 10.2 (iv))

Drawings

1. Drawings

In compliance of the obligations set forth in Clause 10.2 of this Agreement, the Contractor shall furnish to the Authority's Engineer, free of cost, all Drawings listed in Annex-I of this Schedule-I.

2. Additional Drawings

If the Authority's Engineer determines that for discharging its duties and functions under this Agreement, it requires any drawings other than those listed in Annex-I, it may by notice require the Contractor to prepare and furnish such drawings forthwith. Upon receiving a requisition to this effect, the Contractor shall promptly prepare and furnish such drawings to the Authority's Engineer, as if such drawings formed part of Annex- I of this Schedule-I.

Annex – I

(Schedule - I)

List of Drawings

[**Note**: The Authority shall describe in this Annex-I, all the Drawings that the Contractor is required to furnish under Clause 10.2.]

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 theAuthority of such compliance along with necessary particulars thereof.

2. Project Milestone-I

(i) Project Milestone-I shall occur on the date falling on the **189th** 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 **324th** 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 five 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 **459th** 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% (seventy per cent) ofthe 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** 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.

Schedule - K

(See Clause 12.1 (ii))

Tests on Completion

1. Schedule for Tests

(i) The Contractor shall, no later than 30 (thirty) days prior to the likely completion of construction, notify the Authority's Engineer and the Authority of its intent to subject the Project Highway to Tests, and no later than 10(ten) days prior to the actual date of Tests, furnish to the Authority's Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Works.

(ii) The Contractor shall notify the Authority's Engineer of its readiness to subject the Project Highway to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule-K.

2. Tests

(i) Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include [***].

(ii) Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a Network Survey Vehicle (NSV) fitted with latest equipments and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometre.

(iii) Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Nondestructive Testing Techniques, at two spots in every span, to be chosen at random bythe Authority's Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to load testing.

(iv) Other tests: The Authority's Engineer may require the Contractor to carry out or causeto be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards, except tests as specified in clause 5, but shall include measuring the reflectivity of road markings and road signs; and measuring the illumination level (lux) of lighting using requisite testing equipment.

(v) Environmental audit: The Authority's Engineer shall carry out a check to determine conformity of the Project Highway with the environmental requirements set forth in Applicable Laws and Applicable Permits.

(vi) Safety Audit: The Authority's Engineer shall carry out, or cause to be carried out, a safety audit to determine conformity of the Project Highway with the safety requirements and Good Industry Practice.

3. Agency for conducting Tests

All Tests set forth in this Schedule-K shall be conducted by the Authority□s Engineer or such other agency or person as it may specify in consultation with the Authority.

4. Completion Certificate

Upon successful completion of Tests, the Authority's Engineer shall issue the Completion Certificate in accordance with the provisions of Article 12.

5. The Authority Engineer will carry out tests with following equipment at his own cost in the presence of contractor's representative.

Sr. No.	Key metrics of Asset	Equipment to be used	Frequency of condition survey
1	Surface defects of pavement	Network Survey Vehicle (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
2	Roughness of pavement	Network Survey Vehicle (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
3	Strength of pavement	Falling Weight Deflectometer (FWD)	At least once a year
4	Bridges	Mobile Bridge Inspection Unit (MBU)	At least twice a year (As per survey months defined for the state basis rainy season)
5	Road signs	Retro-reflectometer	At least twice a year (As per survey months defined for the state basis rainy season)

The first testing with the help of NSV shall be conducted at the time of issue of Completion Certificate.

Schedule - L

(See Clause 12.2)

Completion Certificate

1 I, ... (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated.....(the "**Agreement**"), for Rehabilitation and up-gradation of road from design km 25.250 to km 36.460 (Total length: 11.210 km) of Kailashahar – Kurti Bridge section on NH 208 A to two lane with paved shoulder in the state of Tripura on EPC Mode-Package-III (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through ..... (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

2 It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the ..... day of .....20... , Scheduled Completed Date for which was the ..... day of .....20.....

SIGNED, SEALED ANDDELIVERED

For and on behalf of the Authority's Engineer by:

(Signature)

(Name)

(Designation) (Address)

Schedule - M

(See Clauses 14.6, 15.2 and 19.7)

Payment Reduction for Non-Compliance

1. Payment reduction for non-compliance with the Maintenance Requirements

(i) Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.

(ii) Any deduction made on account of non-compliance with the Maintenance Requirements shall not be paid even after compliance subsequently. The deductions shall continue to be made every month until compliance is done.

(iii) The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph 2.

2. Percentage reductions in lump sum payments on monthly basis

(i) The following percentages shall govern the payment reduction:

S. No.	Item/Defect/Deficiency	Percentage
(a)	**Carriageway/Pavement**	
(i)	Potholes, cracks, other surface defects	15%
(ii)	Repairs of Edges, Rutting	5%
(b)	**Road, Embankment, Cuttings, Shoulders**	
(i)	Edge drop, inadequate cross fall, undulations, settlement, potholes, ponding, obstructions	10%
(ii)	Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees	5%
(c)	**Bridges and Culverts**	
(i)	Desilting, cleaning. vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
(ii)	Any Defects in superstructures, bearings and sub-structures	10%

S. No.	Item/Defect/Deficiency	Percentage
(iii)	Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers	5%
(d)	**Roadside Drains**	
(i)	Cleaning and repair of drains	5%
(e)	**Road Furniture**	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5th km stones	5%
(f)	**Miscellaneous Items**	
(i)	Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	**Defects in Other Project Facilities**	5%

(ii) The amount to be deducted from monthly lump-sum payment for non- compliance of particular item shall be calculated as under:

$$R = {}^{P}/_{100} \times (M1 \text{ or } M2) \times {}^{L1}/_{L}$$

Where,

P= Percentage of particular item/Defect/deficiency for deduction

M1= Monthly lump-sum payment in accordance para 1.2 above of this Schedule M2=

Monthly lump-sum payment in accordance para 1.2 above of this Schedule L1= Non-

complying length L = Total length of the road,

R= Reduction (the amount to be deducted for non-compliance for a particular item/Defect/deficiency

The total amount of reduction shall be arrived at by summation of reductions for such items/Defects/deficiency or non-compliance.

For any Defect in a part of one kilometer, the non-conforming length shall be taken as one kilometer.

Schedule - N

(See Clause 18.1 (i))

Selection of Authority's Engineer

1. Selection of Authority's Engineer

(i) The provisions of the Model Request for Proposal for Selection of Technical Consultants, issued by the Ministry of Finance in May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Authority's Engineer.

(ii) In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule-N.

2. Terms of Reference

The Terms of Reference for the Authority's Engineer (the "**TOR**") shall substantially conform with Annex 1 to this Schedule N.

3. Appointment of Government entity as Authority's Engineer

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity as the Authority's Engineer; provided that such entity shall be a body corporate having as one of its primary functions the provision of consulting, advisory and supervisory services for engineering projects; provided further that a government-owned entity which is owned or controlled by the Authority shall not be eligible for appointment as Authority's Engineer.

Annex – I

(Schedule - N)

Terms of Reference for Authority's Engineer

1. Scope

(i) These Terms of Reference (the "**TOR**") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated ..... (the "**Agreement**), which has been entered into between the [name and address of the Authority] (the "**Authority**") and ..... (the "**Contractor**")# for Rehabilitation and up-gradation of road from design km 25.250 to km 36.460 (Total length: 11.210 km) of Kailashahar – Kurti Bridge section on NH 208 A to two lane with paved shoulder in the state of Tripura on EPC Mode- Package- III, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

- In case the bid of Authority's Engineer is invited simultaneously with the bid of EPC project, then the status of bidding of EPC project only to be indicated

(ii) The TOR shall apply to construction and maintenance of the Project Highway.

2. Definitions and interpretation

(i) The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.

(ii) References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.

(iii) The rules of interpretation stated in Article 1 of the Agreement shall apply, mutatis mutandis, to this TOR.

3. General

(i) The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

(ii) The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:

(a) any Time Extension;

(b) any additional cost to be paid by the Authority to the Contractor;

(c) the Termination Payment; or

(d) issuance of Completion Certificate or

(e) any other matter which is not specified in (a), (b), (c) or (d) above and which creates a financial liability on either Party.

(iii) The Authority□s Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority□s Engineer within 10 (ten) days of the beginning of every month.

(iv) The Authority□s Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority□s prior approval in accordance with the provisions of Clause 18.2.

(v) The Authority□s Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.

(vi) In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority□s Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

4. Construction Period

(i) During the Construction Period, the Authority□s Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1 (vi). The Authority□s Engineer shall complete such review and approval and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity orotherwise of such Drawings with the Scope of the Project and Specifications and Standards.

(ii) The Authority□s Engineer shall review and approve any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.

(iii) The Authority□s Engineer shall review and approve the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty one) days stating the modifications, if any, requiredthereto.

(iv) The Authority's Engineer shall complete the review and approve of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.

(v) The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.

(vi) The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.

(vii) The Authority's Engineer shall inspect the Construction Works and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.

(viii) The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.

(ix) For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4 (ix), the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.

(x) The Authority's Engineer shall test check at least 50 (fifty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

(xi) The timing of tests referred to in Paragraph 4 (ix), and the criteria for acceptance/ rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by theContractor for its own quality assurance in accordance with Good Industry Practice.

(xii) In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.

(xiii) The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shallapply.

(xiv) In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

(xv) The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.2.

(xvi) Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.

(xvii) In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.

(xviii) The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate, as the case may be. Forcarrying out its functions under this Paragraph 4 (xviii) and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5. Maintenance Period

(i) The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.

(ii) The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.

(iii) The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.

(iv) In respect of any defect or deficiency referred to in Paragraph 3 of Schedule- E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.

(v) The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project Highway for undertaking maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6. Determination of costs and time

(i) The Authority's Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.

(ii) The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.

(iii) The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5.

7. Payments

(i) The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineerin accordance with the provisions of Clause 10.2 (iv) (d).

(ii) Authority's Engineer shall -

(a) within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and

(b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the

Contractor, after adjustments in accordance with the provisions of Clause 19.10.

(iii) The Authority's Engineer shall, within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, verify the Contractor's monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.

(iv) The Authority's Engineer shall certify final payment within 30 (thirty) days of the receipt of the final payment statement of Maintenance in accordance with the provisions of Clause 19.16.

8. Other duties and functions

The Authority's Engineer shall perform all other duties and functions as specified in the Agreement.

9. Miscellaneous

(i) A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

(ii) The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including „as-built' Drawings, and keep them in its safe custody.

(iii) Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as- built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.

(iv) The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.

(v) The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

Schedule - O

(See Clauses 19.4 (i), 19.6 (i), and 19.8 (i))

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

(a) the estimated amount for the Works executed in accordance with Clause 19.3 (i) subsequent to the last claim;

(b) amounts reflecting adjustments in price for the aforesaid claim;

(c) the estimated amount of each Change of Scope Order executed subsequent to the last claim;

(d) amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2 (iii) (a);

(e) total of (a), (b), (c) and (d) above;

(f) Deductions:

i. Any amount to be deducted in accordance with the provisions of the Agreement except taxes;

ii. Any amount towards deduction of taxes; and

iii. Total of (i) and (ii) above.

(g) Net claim: (e) – (f) (iii);

(h) The amounts received by the Contractor upto the last claim:

i. For the Works executed (excluding Change of Scope orders);

ii. For Change of Scope Orders, and

iii. Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

(a) the monthly payment admissible in accordance with the provisions of the Agreement;

(b) the deductions for maintenance work not done;

(c) net payment for maintenance due, (a) minus (b);

(d) amounts reflecting adjustments in price under Clause 19.12; and

(e) amount towards deduction of taxes

3. Contractor's claim for Damage: Note: The Contractor shall submit its claims in a form acceptable to the Authority.

Schedule - P

(See Clause 20.1)

Insurance

1. Insurance during Construction Period

(i) The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the Completion Certificate, the following insurances for any loss or damage occurring on account of Non Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:

(a) insurance of Works, Plant and Materials and an additional sum of [15 (fifteen)] per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and

(b) insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

(ii) The insurance under sub para (a) and (b) of paragraph 1(i) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

The Contractor shall effect and maintain insurance cover of not less than 15% of the Contract Price for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liableand which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3. Insurance against injury to persons and damage to property

(i) The Contractor shall insure against its liability for any loss, damage, death or bodily injury, or damage to any property (except things insured under Paragraphs 1 and 2 of this Schedule or to any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this Agreement. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.

The insurance cover shall be not less than: Rs. [*****]

(ii) The insurance shall be extended to cover liability for all loss and damage to the Authority's property arising out of the Contractor's performance of this Agreement excluding:

(a) the Authority's right to have the construction works executed on, over, under, in or through any land, and to occupy this land for the Works; and

(b) damage which is an unavoidable result of the Contractor's obligations to execute the Works.

4. Insurance to be in joint names

The insurance under paragraphs 1 to 3 above shall be in the joint names of the Contractor and the Authority.

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:

Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be [2,200 (two thousand and two hundred only)] mm for each kilometre.

2. Visual and physical test:

The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include measurement of cracking, rutting, stripping and potholes and shall be as per the requirement of maintenance mentioned in Schedule-E.

Schedule-R

(See Clause 14.10)

Taking Over Certificate

I, ...(Name and designation of the Authority□s Representative) under and in accordance with the Agreement dated.....(the "**Agreement**"), for Rehabilitation and up-gradation of road from design km 25.250 to km 36.460 (Total length: 11.210 km) of Kailashahar – Kurti Bridge section on NH 208 A to two lane with paved shoulder in the state of Tripura on EPC Mode-Package-III through (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED ANDDELIVERED

(Signature)

(Name and designation of Authority□s Representative)

(Address)