TECHNICAL SCHEDULES

Schedule-A

(See Clauses 2.1 and 8.1)

Site of the Project

1 The Site

i. Site of the Two-Lane with Paved Shoulder Highway shall include the land as described in Annex-I of this Schedule-A.

ii. The dates of handing over the Right of Way to the Contractor at the time of award of contract 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: All the Chainage/ location referred to in Annex-I to Schedule-A shall be existing Chainage.]

1. **Site**

The Site of the proposed Two-lane with paved shoulder Project Highway comprises the section of National Highway NH 717-A commencing from Km 25+600 in Nimbong Village to Km 26+100 (Design Length-500m) of Bagrakot-Kafer. The land and carriageway comprising the Site are described below.

2. **Land**

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

S. No.	Chainage (Km)		Right of Way (m)	Remarks
	From	To		
1.	25+600	26+100	24.0	Corresponding Design Chainage of project start and end shall be Km 25+600 and Km 26+100 respectively.

3. **Carriageway**

The present carriageway of the Project Highway is Two Lane Carriageway in its entire length. However, the same has been washed away due to landslide.

4. **Major Bridges**

The Site includes the following Major Bridges:

S. 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 bridge)/RUB (road under bridge):

S.No.	Chainage (Km)	Type of Structure		No. of Spans with span length (m)	Width (m)	ROB/ RUB
		Foundation	Superstructure			

NIL

6. **Grade separators**

The Site includes the following grade separators:

S.No.	Chainage (Km)	Type of Structure		No. of Spans with span length (m)	Width (m)
		Foundation	Superstructure		
NIL					

7. **Minor bridges**

The Site includes the following minor bridges:

S.No.	Chainage (Km)	Type of Structure		No. of Spans with span length (m)	Width (m)
		Foundation	Superstructure		
NIL					

8. **Railway level crossings**

The Site includes the following railway level crossings:

S. No.	Location (Km)	Remarks
NIL		

9. **Underpasses (Vehicular, Non-Vehicular)**

The Site includes the following underpasses:

S. No.	Chainage (Km)	Type of Structure	No. of Spans with span length (m)	Width (m)
NIL				

10. **Culverts**

The Site has the following culverts:

S. No.	Chainage (Km)/Culvert No	Type of Culvert	Span /Opening with span length/Dia (m)	Width (m)

NIL

11. **Bus bays**

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

S. No.	Chainage (Km)	Length (m)	Left Hand Side	Right Hand Side
NIL				

12. **Truck Lay byes**

The details of truck lay byes are as follows:

S. No.	Chainage (Km)	Length (m)	Left Hand Side	Right Hand Side
Nil				

13. **Roadside drains**

The details of the roadside drains are as follows:

S. No.	Location		Type	
	From (Km)	To (Km)	Masonry/CC (Pucca)	Earthen (Kutcha)
NIL				

14. **Major junctions**

The details of major junctions are as follows:

S.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:

S. No.	Location (Km)		Type	
	From	To	Type of junctions (T / Y / +)	Cross road
NIL				

16. **Bypasses**

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

S. No.	Name of bypass (town)	Chainage (Km)	Length (in Km)

		From (Km)	To (Km)	
NIL				

17. **Other Structure**

NIL

18. **Existing Utilities**

The Site includes the existing utilities as described in **Sheet-I (Annex-I to Schedule-A)**

Sheet-I (Annex-I to Schedule-A)

i. **Electrical Utilities**

The site includes the following electrical utilities:-

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

S. No.	Design Chainage(Km)		Length (in Km)				Crossings			
	From	To	400KV	220KV	110KV	66KV	400KV	220KV	110KV	66KV
NIL										

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

S. No.	Design Chainage(Km)		Length (in Km)			Crossings			Transformer	
	From	To	33KV	11KV	LT	33KV	11KV	LT	No	Capacity(KVA)
1.	NIL									

c. **Extra High-Tension Lines (EHT Lines)**

S. No	Chainage (Km)		Circuit (TC/DC/SC)	Crossing		Poles		Conductor		Size of Cable
	From	To		O/H	U/G	Tower Truss/ Unipolar	No	No	Size	
NIL										

d. **High Tension Lines**

i. **HT Lines 33 KV**

S. No	Chainage		Circuit (Tc/Dc/Sc)	Poles/size/(mar)				Conductor		Cable	
	From	To		No.	10	13	9	No.	Size(mm)	No.	Size(mm)
NIL											

ii. **HT Lines 11 KV**

e. **Low Tension Lines (LT Lines)**

S. No	Design Chainage (Km)		Circuit (Tc/Dc/Sc)	Poles/Size(mar)					Conductor		Cable	
	From	To		Type	No.	10	13	8	No.	Size	No.	Size(mm)
NIL												

S. No	Design Chainage (Km)		Circuit (Tc/Dc/Sc)	Poles					Conductor		Cable	
	From	To		Type	No.	10	13	9	No.	Size	No.	Size(mm)
NIL												

ii. **Public Health Utilities (Water / Sewage Pipe Lines)**

The site includes the following Public Health Utilities as given in table below

S. No	Chainage (Km)		Length (Km)				Crossings			
	From	To	Water Supply Line		Sewage Line		Water Supply Line		Sewage Line	
			With Pumping	With Gravity Flow	With Pumping	With Gravity Flow	With Pumping	With Gravity Flow	With Pumping	With Gravity Flow
NIL										

S. No	Chainage (Km)		Pipe		Crossing

	From	To	Type of Pipe line (Pressure/under Gravity)	Type	Nos	Size	Sluice Value/NRV	Nos	Length in Rm
NIL									

iii. Any Other Line

(This is illustrative and may change as per features of existing Utilities.)

Annex - II

(As per Clause 8.3 (i))

(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:

S.No	Design Chainage (Km)		Design Length (Km)	Proposed ROW(m)	Date of Providing ROW
	From	To			
1.	25+600	25+650	50.00	24 m	On Appointed Date as per the provisions of CA.
2.	25+650	25+700	50.00		
3.	25+700	25+750	50.00		
4.	25+750	25+800	50.00		
5.	25+800	25+850	50.00		
6.	25+850	25+900	50.00		
7.	25+900	25+950	50.00		
8.	25+950	26+000	50.00		
9.	26+000	26+050	50.00		
10.	26+050	26+100	50.00		

Annex - III

(Schedule-A)

Alignment Plans

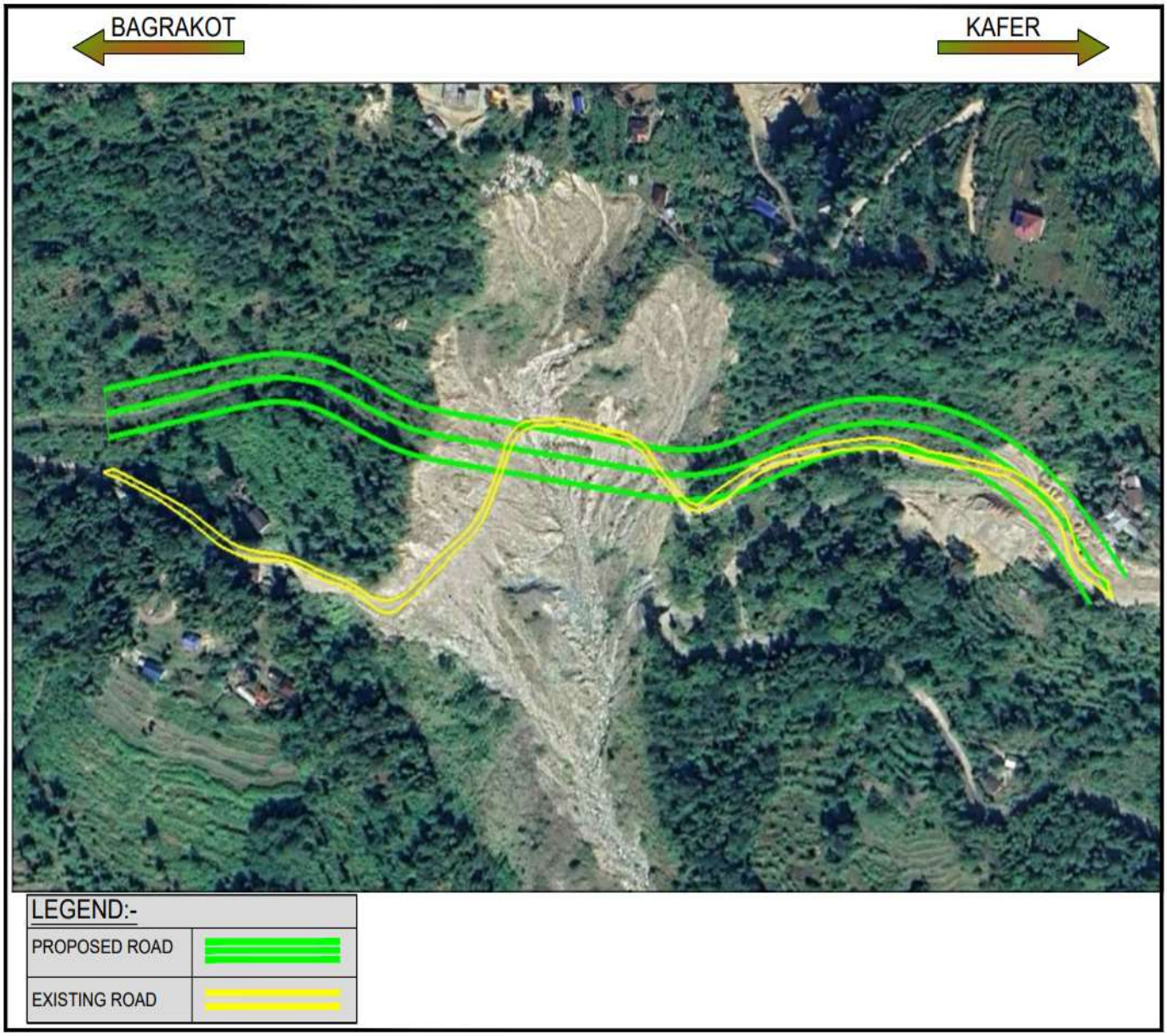
The existing alignment of the Project Highway shall be modified as per the alignment plan enclosed as **Annex-III** in the following sections as per the alignment plan indicated below:

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

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

Alignment Plan

NH-717-A



Annex – IV

(Schedule-A)

Environment Clearances

The following environment clearances have been obtained: **Not Applicable***

The following environment clearances are awaited: **Not Applicable**

***Note:** Environment Clearance (EC) is not required as per notification of MoEF&CC S.O 2259 (E) dated on 22/08/2013 which states that "expansion of National Highway project up to 100.0Km involving additional right of way (ROW) or land acquisition up to 40.0m on existing alignment and 60.0m on realignment or by-pass" may be exempted from the purview of the notification.

Forest Clearance: Not Required.

Schedule - B

(See Clause 2.1)

Development of the Project Highway

1. Development of the Project Highway

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

2. Rehabilitation and augmentation

   Rehabilitation and augmentation shall include Two Laning with paved shoulder of the Project Highway as described in Annex-I of this Schedule-B and in Schedule-C.

3. Specifications and Standards

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

Annex - I

(Schedule-B)

Description of Two Laning with Paved Shoulder

1. **Widening of the existing highway**

i. The project highway (**"["M&R work for making the road trafficable from km 25.600 to km 26.100 of NH-717A in the State of West Bengal on EPC Mode"]"**) shall follow the existing alignment unless otherwise specified by the Authority and shown in the alignment plans specified in **Annex-III** of Schedule-A. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for Mountainous /Steep terrain to the extent land is available.

ii. Width of Carriageway

a. Two-Laning with paved shoulders shall be undertaken. The main carriageway should be 1x7.0m wide for the entire project length in accordance with the typical cross section's drawings attached and the paved shoulder should be 2x1.5 m and earthen shoulder should be 1 m.

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

S. No.	Built-up stretch (Township)	Location (Km)		Width (m)	Typical cross section
		From	To		
NIL					

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

2. Geometric Design and General Features

i. **General**

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the Manual (IRC: SP: 73-2018) and other relevant IRC Codes.

ii. Design speed

The design speed shall be as per IRC 73: 2018.

iii. **Improvement of the existing road geometrics**

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

S. No.	Design Chainage (Km)		Radius (m)	Design speed (Km/hr.)	Remarks
	From	To			
NIL					

a. **Detail of Bypasses are specified as under**

S. No	Name of Bypass	Existing Chainage (Km)		Design Chainage (Km)		Design Length (Km)
		From	To	From	To	
NIL						

b. **Details of Re-alignment**

The locations of re-alignment for geometric improvement of the Project Highway to be constructed, two lane with paved shoulder are given as under

S. No	Design Chainage (Km)		Length (Km)	Width (m)
	From	To		
NIL				

iv. **Right of Way**

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

v. **Type of shoulder**

Refer to the provision of IRC: SP: 73-2018.

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

S. No.	Stretch (Km)		Fully paved shoulders/ footpaths	Reference to cross section
	From	To		
NIL				

b. In open country, paved shoulders of 1.5 m width shall be provided. However, Balance 1.0m width in Mountainous & Steep terrain shall be covered with 150mm thick compacted layer of granular material.

c. Design and specifications of paved shoulders and granular material shall conform to the requirements specified in the relevant Manual.

vi. **Lateral and vertical clearance at underpasses**

a) Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per para 2.10 of the IRC: SP: 73-2018.

b. Vertical clearance: The width of opening at the underpasses shall as follows:

S. No.	Location (Chainage) (Km)		Span/ opening (m)	Remarks
	From	To		
NIL				

vii. **Lateral and vertical clearances at overpasses**

a. Lateral and vertical clearances at overpasses shall be as per the provision of relevant Manual.

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

S. 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 indicated below: (Refer to the section 2.12 of IRC: SP: 73-2018 and provide details)

S.No	Location (Km)		Length (m)	Lane(m)	Side
	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 section 2.13 of IRC: SP: 73-2018 and provide details)

S. 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 IRC: SP: 73-2018 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

S. No	Location (Km)	Type of structure Length (m)	Cross road at			Remarks, if any
			Existing Level(m)	Raised Level(m)	Lowered Level(m)	
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]

S. No.	Location	Type of crossing
Nil		

xi. **Typical cross-sections of the Project Highway**

The Applicable typical cross section shall be developed as TCS-1 to TCS-6 as given in table below as well as detailed widening Scheme in **Annexure-B of Schedule-B** confirming to the manual should follow the minimum.

S.No	Type	Description	Design Length(m)
1.	**TCS-1 25+600** (25+600-26+700)	Breast wall on both side	100
2.	**TCS-2** 25+700 to 25+750	Application of Hill side: Gabion wall and other side: Breast wall	50
3.	**TCS-3** 25+750 to 26+100	Application of Hill side: Gabion wall and valley side: Retaining wall	350
		TOTAL	**500**

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.

Referred to the provision of section 3 of the IRC: SP: 73-2018 and specify the requirements as follow, necessary with drawings/sketches/general arrangement are specified in Schedule-I

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

i. **At-grade intersections**

S. No.	Location of intersection	Type of Intersection (+, T, Y)	Other features
	Design Chainage (Km)		Category of Cross Road
NIL			

ii. **Grade separated intersection with/without ramps**

S. 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 IRC: SP: 73-2018 and the specified cross-sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

ii. Raising of the existing road Refer to the provision of Section 4 of IRC: SP: 73-2018 The existing road shall be raised in the following sections:

S. No.	Design Section (Km)		Length (m)	Extent of raising (Top of finished road level)
	From	To		
NIL				

5. Pavement Design

5.1 Pavement design shall be carried out in accordance with the Section 5 of IRC: SP: 73-2018, IRC: 37-2018.

5.2 Type of pavement

Flexible pavement shall be provided for the main carriageway and it shall be designed in accordance with IRC: 37-2018 and IRC: SP: 73-2018.

BC	40 mm
DBM	80 mm
WMM	250 mm
GSB	200 mm
Subgrade	500 mm

5.3 Design requirements

Design requirements as per Section-5 of IRC: SP: 73-2018 manual.

a. Design Period and strategy

Flexible pavement for new pavement or for strengthening and widening of the existing pavement shall be designed for a minimum design period of 20 years.

b. Design Traffic

Not with standing anything to contrary contained in this agreement or the manual, the contractor shall design traffic of not less than 25 million standard axles (MSA) and effective CBR of 12 %.

iv. Reconstruction of stretches

Referred to the provision of section 5 of IRC: SP: 73-2018 and specify the stretches

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

S. No.	Design Section (Km)		Length (m)	Remarks
	From	To		
NIL				

6. Roadside Drainage

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per Section 6 of IRC: SP: 73-2018 and corresponding to the typical cross section referred to in paragraph 2(xi) of Schedule-B1

a) Road Side drains

S. No	Design Chainage (Km)		Horizontal Drain		Type
	From	To	Nos	Total Length (m)	

1	25+600	26+100	1	496	Trapezoidal Drain 0.5 x 1m (Road Side Drain. (Balance 4m drain length deducted by considering culverts)

7. **Design of Structures**

i. General

a. All bridges, culverts and structures shall be designed and constructed in accordance with section 7 of IRC: SP: 73-2018 and shall conform to the cross- sectional features and other details specified therein.

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

Refer to the provision of section 7 of IRC: SP: 73-2018 and specify the width of carriageway of new bridges and structures of more than 60 (sixty) metre length, if the carriageway width is different from 7.5 (seven point five) metres in the table below.

S. No.	Bridge/structure at (Km)	Width of carriageway and cross-sectional features*
NIL		

c. The following structures shall be provided with footpaths:

Refer to the provision of Section 7 of IRC: SP: 73-2018 and provide details of new structure with footpath

S. No.	Location at Km	Remarks
NIL		

d. All bridges shall be high-level bridges: -No exception

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

Refer to the provision of Section 7 of IRC: SP: 73-2018 and provided as follow

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

f. Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections given in the provision of section 7 of IRC: SP: 73-2018.

ii. Culverts

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

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

S. No.	Design Chainage (Km)	Type of culvert	No. of Span with span length (m)	Remarks, if any
1	25+800	RCC Slab	1x2	New Construction
2	25+850	RCC Slab	1x2	New Construction

b. Widening of existing culverts:

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

c. Repairs/**replacements** of railing/parapets, flooring and protection works of the existing culverts shall be undertaken as follows:

Refer to the provision of Section 7 of IRC: SP: 73-2018 and provide details

S. No.	Location at Km	Type of repair required
NIL		

d. Floor protection works shall be as specified in the relevant IRC Codes and Specifications.

iii. Bridges

a. Existing bridges to be re- constructed/widened

[(I) The existing bridges at the following locations shall be re-constructed as new Structures]

Refer to the provision of Section 7 of IRC: SP: 73-2018 and provide details

S. No	Bridge location (Km)	Salient details of existing bridge		Adequacy or otherwise of the existing waterway, vertical clearance, etc*	Remarks
		Length (m)	Width (m)		
NIL					

(ii) The following narrow bridges shall be widened:

S.No.	Location (Km)	Existing width (m)	Extent of widening (m)	Cross-section at deck level for widening
Nil				

b. **Additional new bridges**

[Specify additional new bridges if required, and attach GAD]

- Minor Bridges on Main Carriageway

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

S. No.	Location (Km)	Total length (m)	Remarks, if any
NIL			

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

Refer to the provision of Section 7 of IRC: SP: 73-2018 and provide details

S. No.	Location at Km	Remarks
NIL		

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

Refer to the provision of Section 7 of IRC: SP: 73-2018 and provide details

S. No.	Location at Km	Remarks
NIL		

e. **Drainage system for bridge decks**

Not Applicable

f. **Structures in marine environment**

Not Applicable

iv. Rail-road bridges

a. Design, construction and detailing of ROB/RUB shall be as specified in the provision of relevant Manual. Refer to the

provision of Section 7 of IRC: SP: 73-2018 relevant Manual and specify modification, if any

b. Road over-bridges

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

S. No.	Location of Level crossing (Chainage Km)	Length of bridge (m)
NIL		

c. Road under-bridges

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

S. No.	Location of Level crossing (Chainage Km)	Number and length of Span (m)
NIL		

v. **Grade separated structures**

Refer to the provision of Section 7 of IRC: SP: 73-2018

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

vi. **Repairs and strengthening of bridges and structures.**

Refer to the provision of Section 7 of IRC: SP: 73-2018

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

a. **Bridges**

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

b. **ROB/RUB**

S. No.	Location of ROB/RUB (Km)	Nature and extent of repairs /strengthening to be carried out
NIL		

(c) **Overpasses/Underpasses and other structures**

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

(vii) **List of Major Bridges and Structures**

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

Sl. No.	Location	Span Arrangement(m)
List of Structures		
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 Section 9 of the IRC: SP: 73-2018 as specified in Schedule C.

a. Traffic Signs: - Traffic signs include roadside signs, overhead signs and curb mounted signs along the entire Project Highway shall be provided conforming to IRC 67 and section 800 of MoRTH specification.

b. Traffic Markings: Pavement markings shall cover road marking for the entire Project Highway as per section 2,3 & 4 of IRC 35-2015 referred in schedule-C.

c. Safety Barrier: Provide modified thrie-beam crash barrier along the project highway as per typical cross sections provided in Schedule B as well as per site requirements.

d. During execution of the work, traffic management shall be done in accordance with the guidelines contained in Ministry's Letter No.RW/NH-11060/1 /1998-D.O.1 dated 7.10.87 and IRC: SP:55-2014 "Guidelines on Traffic Management in Work Zones".

e. Traffic Management System: ATMS shall be provided in accordance with the list given below. Advance Traffic Management System shall be provided per Schedule-D.

S. No	Type of ATMS	Location
NIL		

Note: - In addition to above locations, additional locations shall be identified and provided in accordance to Schedule-D.

9. Roadside Furniture

i. Roadside furniture shall be provided in accordance with the provision of IRC: IRC: SP: 73-2018 as specified in Schedule -C.

ii. Overhead traffic signs: locations and size

Refer to the provision of IRC: 67-2012 and detail are provided as follow

Overhead traffic signs are provided as per site requirement according to Section 9 of the IRC: SP: 73-2018 and as given in Schedule-C.

10. Compulsory Afforestation

Compensatory of afforestation shall be done as per the manual and number of tresses required to be planted by the contractor as compensatory afforestation as per approval of the government.

11. Hazardous Locations

The safety barriers (parapet wall) shall also be provided at the following hazardous locations:

Sl. No.	Location stretches from (Km) to (Km)		
	from (Km)	To (Km)	Length (m)
1	25+750	26+100	350

12. Special Requirement for Hill Roads

Refer to the provision of Section 13 of IRC: SP: 73-2018 and provide details where relevant and required.

a. Retaining wall in Valley Side

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

On Right Hand Side (RHS):

Retaining wall shall be constructed for the length and TCS as given in the table below:

S. No	Design Chainage (Km)		Proposed Length (m)	TCS TYPE	Avg. Ht. (m)
	From	To			
1.	25+750	26+100	350	TCS 3	6.00
		TOTAL=	350		

The specifications of RS Wall shall be as per IRC SP: 102-2014. The height of RS wall varies from 3.0m to 30.0m. The RS wall shall be constructed as per actual site condition and manual of specifications and standards as mentioned in Schedule-D in consultation with Authority Engineers, Safety Employer at the time of Execution. Any Increase in

length and height as per site requirements may not be considered as positive change of scope.

b. **Gabion Wall at toe on Hill Side**

Nailed Gabion wall of 5 m to 7 m height with soil nailing by SDA of length 3.0m and spacing of 1m c/c in both directions shall be constructed for the length as given in the table below:

On Left Hand Side:

S. No	Design Chainage (Km)		Proposed Length (m)	TCS TYPE
	From	To		
	25+700	26+100	400	TCS2
Total			**400**	

Nailed Gabion wall shall be as per IRC SP: 116. Height of Gabion wall shall be 5m to 7 m with nailing. However, Gabion wall shall be constructed as per actual site condition and manual of specifications and standards as mentioned in Schedule-D in consultation with Authority Engineers, Safety Employer at the time of Execution. Any Increase in length and height as per site requirements may not be considered as positive change of scope.

c. Breast wall of 5 m height shall be constructed for the length as given in the table below:

On Left Hand Side:

S. No	Design Chainage (Km)		Proposed Length (m)	TCS TYPE
	From	To		
	25+600	25+700	400	TCS 1

On Right Hand Side:

S. No	Design Chainage (Km)		Proposed Length (m)	TCS TYPE
	From	To		
	25+600	25+750	400	TCS 2

Height of Breast wall shall be 5m. However, Breast wall shall be constructed as per actual site condition and manual of specifications and standards as mentioned in Schedule-D in consultation with Authority Engineers, Safety Employer at the time of Execution. Any Increase in length and height as per site requirements may not be considered as positive change of scope.

13. **Change of Scope**

The length of Structures and bridges specified hereinabove shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule B

shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

14. Utility Shifting

Nil

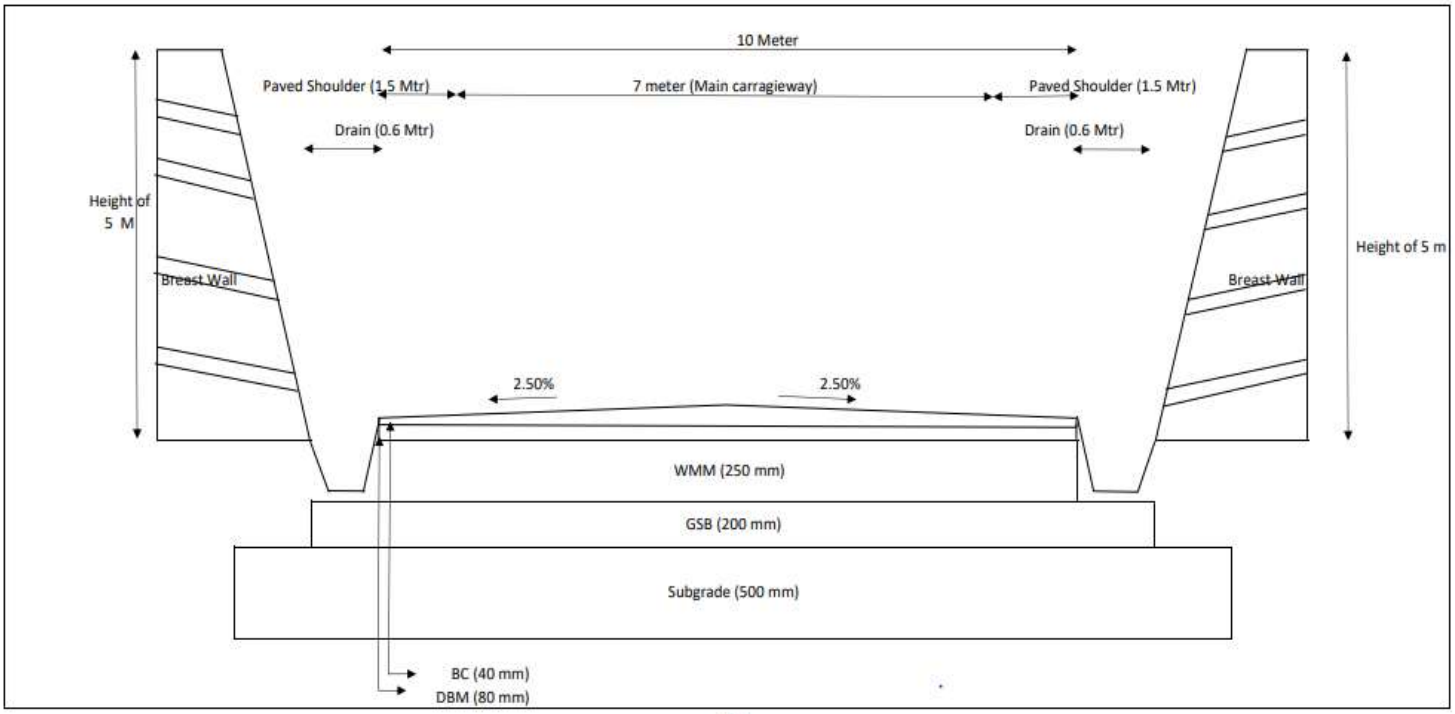
Annexure-B-II

Schedule-B

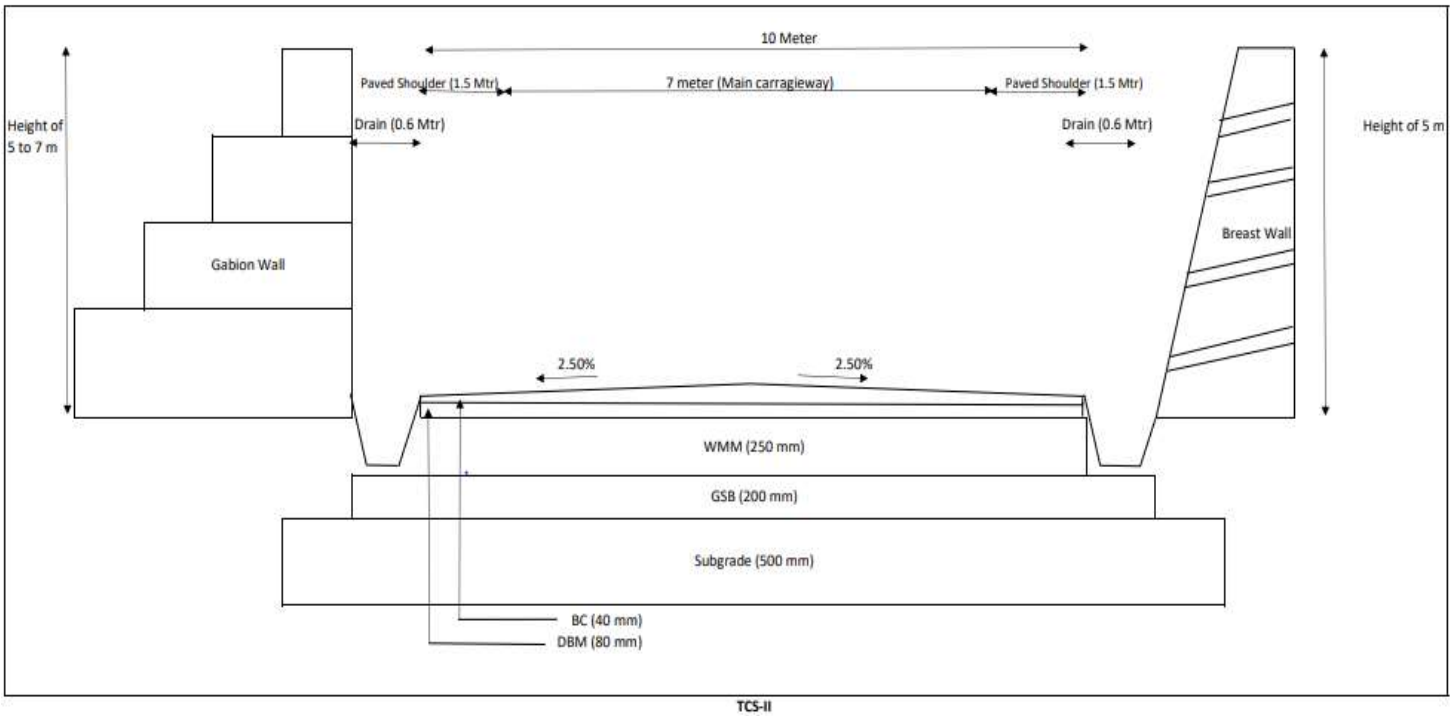
Widening Scheme

S. No	Chainage (Km)		Length (m)
	From	To	
1.	25+600	25+650	50.0
2.	25+650	25+700	50.0
3.	25+700	25+750	50.0
4.	25+750	25+800	50.0
5.	25+800	25+850	50.0
6.	25+850	25+900	50.0
7.	25+900	25+950	50.0
8.	25+950	26+000	50.0
9.	26+000	26+050	50.0
10.	26+050	26+100	50.0

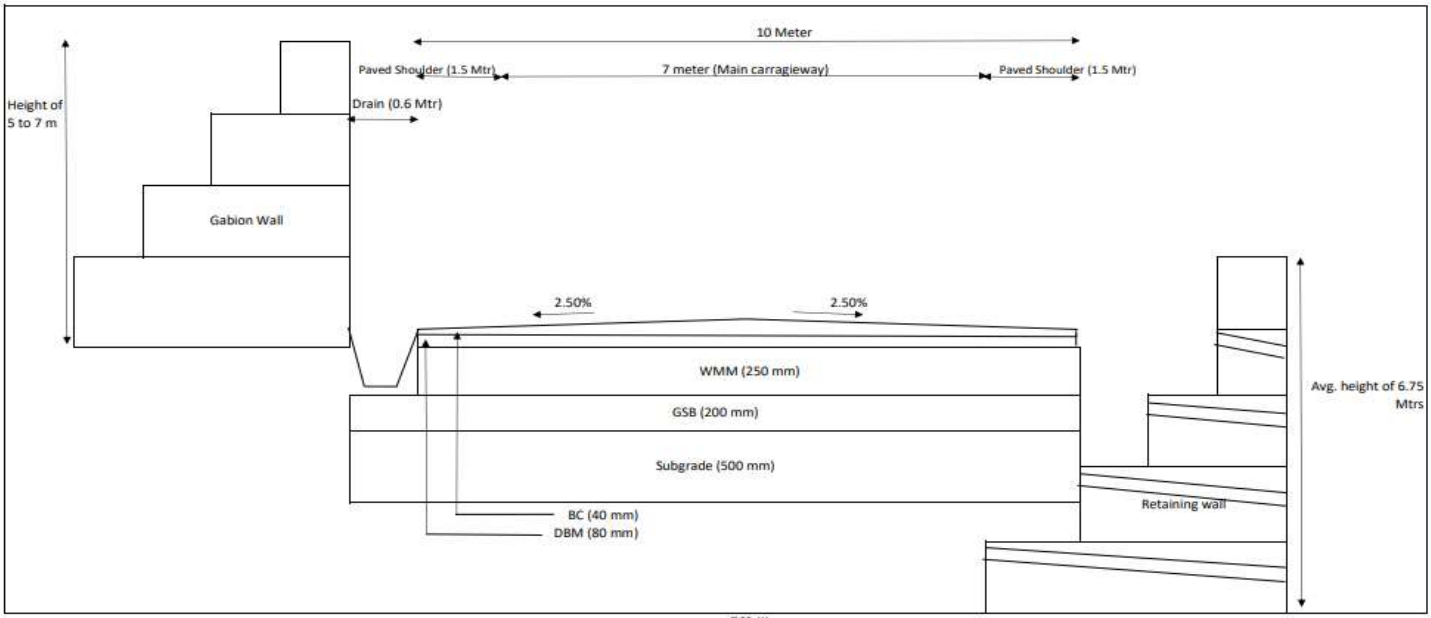
Applicable Typical Cross Section



TCS-I



TCS-II


10 Meter
Paved Shoulder (1.5 Mtr)
7 meter (Main carragieway)
Paved Shoulder (1.5 Mtr)
Height of 5 to 7 m
Drain (0.6 Mtr)
Gabion Wall
2.50%
2.50%
WMM (250 mm)
GSB (200 mm)
Subgrade (500 mm)
BC (40 mm)
DBM (80 mm)
Retaining wall
Avg. height of 6.75 Mtrs

TCS-III

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. Landscaping and Tree Plantation
e. Truck lay-byes
f. Bus-bays and passenger shelters
g. Rest Areas (Way Side Amenities)
h. Advanced Traffic Management System (ATMS)
i. Street Lighting
j. Work Zone Traffic Management Plan
k. Traffic Signs & Marking
l. Others to be specified

2. **Description of Project Facilities**

Each of the Project Facilities is described below:

a. **Toll Plaza**

Toll Plaza shall be provided as per the schedule D at location given Table below:

S. No.	Design Chainage (Km)		Length (m)	PROW (m)	Lane Configuration(m)
	From	To			
NIL					

b. **Roadside Furniture**

Road side furniture shall be provided with the manual of specification & standards.

c. **Pedestrian facilities/Foot over bridge**

Pedestrian facilities i.e., Foot over bridge shall be provided with the manual of specification & standard as referred in Schedule D as given below:

S. No.	Design Chainage (KM)	Type
NIL		

d. **Landscaping & Tree Plantation**

Landscaping and Tree Plantation shall be provided as per applicable TCS in accordance with the manual of specifications & standards as referred in Schedule D.

S. No	TCS	Rows	Number of trees per Km	Side	Remarks
Nil					

e. **Truck lay-byes;**

Truck lay byes shall be provided in accordance with the manual of specifications & standards as referred in Schedule D.

S. No.	Project Facility	Location	Design Requirements	Other essential details
NIL				

f. **Bus-bays and bus shelters;**

Bus Lay bays/Bus Shelters shall be provided in accordance with the manual of specifications & standards as referred in Schedule D. The details of Bus Lay bays/Bus are provided below:

S.No.	Project Facility	Location (Km)	Other essential details
NIL			

g. **Rest Areas;**

S. No.	Design Chainage		Length (m)	PROW (m)	Side
	From	To			
NIL					

h. **ATMS: Nil**
i. **Street Lighting: Nil**

j. **Work Zone Traffic Management Plan: NIL**

k. **Traffic Signs & Marking**

1. Traffic signs include road signs (Mandatory, Cautionary, Informatory), overhead signs and gantry mounted signs along the entire Project Signs as per design and site conditions considering the clause 14,15 & 16 of IRC 67-2012. Chevron Signs to be placed at the location of horizontal radius as specified in clause 15.63 of IRC 67-2012. Also, Specifications of the reflective sheeting. Type-XI type of reflective sheeting to be provided as referred to the provision of Section 6.7.1 of IRC: 67-2012 of the Manual.

2. Pavement Marking: Pavement markings shall cover road marking for the entire Project Highway as per section 2,3,4 of IRC 35-2015 referred in schedule-C.

3. Safety Barrier: Provide modified thrie-beam crash barrier along the project highway as per typical cross sections provided in Schedule B as well as per site requirements.

4. Delineators: Delineators shall be provided as per IRC: SP: 73-2018 as per site requirements.

5. Road Boundary Stone: for the entire Project Highway

l. **Others To Be Specified: - Nil**

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 Specification and Standards for Two Laning of Highways with paved shoulder (IRC: SP: 73-2018), referred to herein as the Manual for 2-lane project road.

Annex – I

(Schedule-D)

Specifications and Standards for Construction

1. **Specifications and Standards**

All materials, works and construction operations shall confirm to the Manual of Specifications and Standards for Two Laning of Highways (IRC: SP: 73 – 2018), referred as the Manual, MORTH Specifications for Road and Bridge Works, and IRC: SP: 48-1998. 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 Engineers" 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 set forth below:

S. No.	Clause	Provision as per Manual (IRC: SP:73-2018)	Modified Provision
1	2.2	**Design Speed:** Ruling or minimum Design speed shall be followed	Design speed shall be as per IRC SP 73 2018 for project highway excepting hair pin bend locations wherein design speed shall be as per IRC SP 73 2018.
2	2.7.2	**Roadway Width:** On horizontal curves with radius up to 300 m width of pavement and roadway shall be increased as per Table 2.4	On horizontal Curves with radius up to 300 m width of pavement and roadway shall be increased
3	2.9.4	**Radius of Horizontal Curves:**	Radius of Horizontal curves shall be as per the alignment plan

Schedule - E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

i.

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-fulfilment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be 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, culverts and 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, approaches of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	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/ltpp/reports/03031/)	24-48 hours	MORT&H Specification 3004.2
	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 Scale, Tape, odometer etc.		2-7 days	IRC:82-2015
	Bleeding	Nil	< 1 % of area	Daily			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, restricted to 30 cm from the edge	Daily			7- 15 days	IRC:82-2015
	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	60 SN	50SN	Bi-Annually			180 days	BS: 7941-1: 2006
	Pavement Condition Index	3	2.1	Bi-Annually			180 days	IRC:82-2015
	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

<table>
<tr><td rowspan="2">Rigid Pavement

(Pavement of MCW, Service Road, Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)</td><td>Roughness
BI</td><td>2200 mm/km</td><td>2400mm/km</td><td>Bi-Annually</td><td>Class I Profilometer</td><td>ASTM E950 (98) :2004 and ASTM E1656 -94: 2000</td><td>180 days</td><td>IRC:SP:83-2008</td></tr>
<tr><td>Skid</td><td colspan="2">Skid Resistance no. at different speed of vehicles
<table><tr><th>Minimum SN</th><th>Traffic Speed (Km/h)</th></tr><tr><td>36</td><td>50</td></tr><tr><td>33</td><td>65</td></tr><tr><td>32</td><td>80</td></tr><tr><td>31</td><td>95</td></tr><tr><td>31</td><td>110</td></tr></table></td><td>Bi-Annually</td><td>SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent)</td><td>IRC:SP:83-2008</td><td>180 days</td><td>IRC:SP:83-2008</td></tr>
<tr><td rowspan="4">Embankment/ Slope</td><td>Edge drop at shoulders</td><td>Nil</td><td>40mm</td><td>Daily</td><td rowspan="4">Length Measurement Unit like Scale, Tape, odometer etc.</td><td rowspan="4">IRC</td><td>7-15 days</td><td>MORT&H Specification 408.4</td></tr>
<tr><td>Slope of camber/cross fall</td><td>Nil</td><td><2% variation in prescribed slope of camber /cross fall</td><td>Daily</td><td>7-15 days</td><td>MORT&H Specification 408.4</td></tr>
<tr><td>Embankment Slopes</td><td>Nil</td><td><15 % variation in prescribe side slope</td><td>Daily</td><td>7-15 days</td><td>MORT&H Specification 408.4</td></tr>
<tr><td>Embankment Protection</td><td>Nil</td><td>Nil</td><td>Daily</td><td>NA</td><td>7-15 days</td><td>MORT&H Specification</td></tr>
</table>

	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 following table

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 if L > lm. Within 7days
			3	w = 0.5 - 1.5 mm, discernible from fast-moving car		
			4	w = 1.5 - 3.0 mm	Seal, and stitch if L > l 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**	w = width of crack L = length of crack	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Route and seal with epoxy.	

	with one or more joints	d = depth of crack D = depth of slab	2	w = 0.2 - 0.5 mm, discernible from slow vehicle	Within 7 days	Staple or Dowel Bar Retrofit. Within 15days
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route, seal and stitch, if L > 1 m. Within 7 days	
			4	w = 3.0 - 6.0 mm	Dowel Bar Retrofit. Within 15 days	Full Depth Repair 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 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 < 0.5 mm, discernable from slow moving vehicle	Seal with epoxy, if L > 1 m. Within 7 days	Staple or dowel bar retrofit. Within 15days
			2	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route seal and stitch, if L > l m. Within 15 days	-
			3	w = 3.0 - 6.0 mm	Staple, if L > 1 m.	

					Within 15 days	Partial Depth Repair with s tapling. Within 15 da ys
			4	w = 6.0 - 12.0 mm, usua lly associated with spal ling	Not Applicable, as it may be full depth	
			5	w > 12 mm, usually ass ociated with spalling, a nd/or slab rocking und er traffic		Full Depth Re pair Dismant le and recons truct affected portion as pe r norms and specification s - See Para 5 .6.4 Within 15 da ys
4	**Multiple Crac ks intersecti ng with one o r more joints**	**w = width o f crack**	0	Nil, not discernible	No Action	-
			1	w < 0.2 mm, hair crack s	Seal, and stitch i f L > l m. Within 15 days	
			2	w = 0.2 - 0.5 mm. disce rnible from slow vehicl e		
			3	w = 0.5 - 3.0 mm, disce rnible from fast vehicle	Full depth repai r within 15 day s	Dismantle, R einstate subb ase, Reconstr uct whole sla b as per speci fications wit hin 30 days
			4	w = 3.0 - 6.0 mm pane l broken into 2 or 3 pie ces		
			5	w > 6 mm and/or pan el broken into more tha n 4 pieces		
5	**Corner Break**	w = width o f crack L = length of crack	0	Nil, not discernible	No Action	-
			1	w < 0.5 mm; only 1 cor ner broken	Seal with low vi scosity epoxy to secure broken parts	Seal with epo xy seal with e poxy Within 7days
			2	w < 1.5 mm; L < 0.6 m, only one corner broken		

					Within 7 days	
			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	three or four corners broken		Reinstate sub-base, and reconstruct the slab as per norms and specifications within 30days
6	**Punch-out (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)**	w = width of crack L = length (m/m2)	0	Nil, not discernible	Not Applicable, as it may be full depth	No Action
			1	w < 0.5 mm; L < 3 m/m^2		Seal with low viscosity epoxy to secure broken 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 replaced damaged area taking care not to damage reinforcement. Within 30days
			5	w > 3 mm, L > 3 m/m^2 and deformation		
Surface Defects						
7	Ravelling or Honeycomb type surface	r = area damaged surface /total surface of slab (%) h = maximu	0	Nil, not discernible	**Short Term**	**Long Term**
					No action.	

		m depth of d amage	1	r < 2 %	Local repair of a reas damaged	
			2	r = 2 - 10 %	and liable to be damaged. Within 15 days	
			3	r = 10-25%	Bonded Inlay, 2 or 3 slabs if	Not Applicab le
			4	r = 25 - 50 %	affecting. Within 30 days	
			5	r > 50% and h > 25 mm	Reconstruct sla bs, 4 or more sla bs if affecting. Within 30 days	
8	**Scalin g**	r = damaged surface/tota l surface of s lab (%) h = maximu m depth of d amage	0	Nil, not discernible	**Short Term**	**Long Term**
					No action.	Not Applicab le
			1	r < **2 %**	Local repair of a reas damaged	
			2	r = 2 - 10 %	and liable to be damaged. Within 7days	
			3	r = 10 - 20%	Bonded Inlay wi thin 15 days	
			4	r = 20 - 30 %		
			5	r > 30 % and h > 25 mm	Reconstruct sla b within 30 days	
9	**Polished Surf ace/Glazing**	t = texture d epth, sand p atch test	0		No action.	Not Applicab le
			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		
			5	t < 0.1 mm	Diamond Grinding if affecting 50% or more slabs in a continuous stretch of minimum 5 km. Within 30 days	
10	**Pop out (Small Hole), Pothole Refer Para 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		
			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 a	0	Difficult to discern.	**Short Term**	**Long Term**
					No action.	Not Applicable

		s % total joint length	1	Discernible, L < 25% but of little immediate consequence with regard to ingress of water or trapping incompressible material.	Clean joint, inspect later.	
			3	Notable. L > 25% insufficient protection against ingress of water and trapping incompressible material.	Clean and reapply sealant in Selected locations. Within 7 days	
			5	Severe; w > 3 mm negligible protection against ingress of water and trapping incompressible material.	Clean, widen and reseal the joint. Within 7 days	
12	**Spalling of Joints**	w = width on either side 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% of w. Within 30 days	
13	**Faulting (or Stepping) in Cracks or Joints**	f = difference of level	0	not discernible, < 1 mm	No action.	No action.
			1	f < 3 mm		
			2	f = 3 - 6 mm	Determine cause and observe, take action for diamond grinding	Replace the slab as appropriate. Within 30days
			3	f = 6 - 12 mm	Diamond Grinding	
			4	f= 12 - 18 mm	Raise sunken slab.	Replace the slab as appropriate. Within 30days
			5	f> 18 mm	Strengthen subgrade and sub-base by grouting and raising sunken slab	
14	**Blowup or Buckling**	h = vertical displacement from normal profile	0	Nil, not discernible	**Short Term**	**Long Term**
					No Action	
			1	h < 6 mm		
			2	h = 6 - 12 mm	Install Signs to Warn Traffic within 7 days	
			3	h = 12 - 25 mm		
			4	h > 25 mm	Full Depth Repair. Within 30 days	
			5	shattered slabs, ie 4 or more pieces	Replace broken slabs. Within 30 days	

15	**Depression**	h = negative vertical 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 if L < 20 m. Within 30 days	
			5	h > 100 mm		
16	**Heave**	h = positive vertical displacement from normal profile. L = length	0	Not discernible. h < 5 mm	**Short Term** No action.	**Long Term** 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 displacement from	0	h < 4 mm	No action	
			1	h = 4 - 7 mm	Grind, in case of new construction	Construction Limit for

		normal pr ofile			within 7 days	New Constr uction.
			3	h = 7 - 15 mm	Grind, in case of ong oing Maintenance within 15 days	Replace in c ase of new c onstruction. Within 30d ays
			5	h > 15 mm	Full Depth Repair. Within 30 days	Full Depth R epair. Within 30d ays
18	**Lane to Should er Drop -off**	f = differe nce of lev el	0	Nil, not dis cernible < 3mm	**Short Term** No action.	**Long T erm**
			1	f = 3 - 10 mm	Spot repair of shoul der within 7 days	
			2	f = 10 - 25 m m		
			3	f = 25 - 50 m m	Fill up shoulder within 7 dayss	
			4	f = 50 - 75 m m		For any 10 0 m stretc h Reconstr uct should er, if affect ing 25% or more of str etch. Within 30 days
			5	f > 75 mm		
Drainage						
19	**Pumpi ng**	quantity of fines a	0	not discern ible	No Action	

		nd water expelled through open joi nts and c racks No s	1 to 2	slight/ occa sional Nos < 10%	Repair cracks and joints Without d elay.	Inspect an d repair su b-drainage at distress ed sections and upstre am.
			3 to 4	appreciable / Frequent 1 0 - 25%	Lift or jack slab w ithin 30 days.	
		Nos/100 m stretc h	5	abundant, cr ack develop ment > 25%	Repair distressed pavement section s. Strengthen sub grade and subbas e. Replace slab. Within 30 days	
20	**Pondin g**	Ponding on slabs due to bl ockage o f drains	0-2	No discer nible prob lem	No action.	
			3 to 4	Blockages observed i n drains, b ut water fl owing	Clean drains etc within 7 days, Fol low up	Action requir ed to stop wa ter damaging foundation w ithin 30 days.
			5	Ponding, a ccumulati on of wate r observe d	-do-	

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

As se t Ty pe	**Perfo rman ce Pa rame ter**	**Level of Service (LOS)**	**Freq uenc y of Meas urem ent**	**Testing Method**	**Recom mended Remedi al meas ures**	**Time li mit for Rectific ation**	**Specification s and Standa rds**

<table>
<tr>
<td>Highway</td>
<td>Availability of Safe Sight Distance</td>
<td>As per IRC SP: 84-2019, a minimum of safe stopping sight distance shall be available throughout.
<table>
<tr><th>Design Speed, kmph</th><th>Desirable Minimum Sight Distance (m)</th><th>Safe Stopping Sight Distance (m)</th></tr>
<tr><td>100</td><td>360</td><td>180</td></tr>
<tr><td>80</td><td>260</td><td>130</td></tr>
</table>
</td>
<td>Monthly</td>
<td>Manual Measurements with Odometer along with video / image backup</td>
<td>Removal of obstruction with in 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments.

In case of permanent structure or design deficiency:
a. Removal of obstruction/improvement of deficiency at the earliest
b. 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></td>
<td>IRC:SP 84-2019</td>
</tr>
<tr>
<td>Pavement Marking</td>
<td>Wear</td>
<td><70% of marking remaining</td>
<td>Bi-Annually</td>
<td>Visual Assessment as per Annexure-F of IRC:35-2015</td>
<td>Re - painting</td>
<td>Cat-1 Defect – within 24 hours
Cat-2 Defect - within 2 months</td>
<td>IRC:35-2015</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td>Day time Visibility</td>
<td>During expected life Service Time
c. Cement Road - 130mcd/m^2/lux
d. Bituminous Road - 100mcd/m^2/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 – within 2 months</td>
<td>IRC:35-2015</td>
</tr>
<tr>
<td></td>
<td>Night Time Visibility</td>
<td><u>Initial and Minimum Performance for Dry Retro reflectivity during night time:</u>
<table>
<tr><td>Design Speed</td><td colspan="2">(RL) Retro Reflectivity (mcd/m^2/lux)</td></tr>
<tr><td></td><td>Initial (7 days)</td><td>Minimum Threshold level (TL) & warranty period required up to 2 years</td></tr>
<tr><td>Up to 65</td><td>200</td><td>80</td></tr>
<tr><td>65 - 100</td><td>250</td><td>120</td></tr>
<tr><td>Above 100</td><td>350</td><td>150</td></tr>
</table>
<u>Initial and Minimum Performance for Night Visibility under wet condition (Retro reflectivity):</u>
e. Initial 7 days Retro reflectivity : 100 mcd/m^2/lux
f. Minimum Threshold Level: 50 mcd/m^2/lux</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 – within 2 months</td>
<td>IRC:35-2015</td>
</tr>
<tr>
<td></td>
<td>Skid Resistance</td>
<td>Initial and Minimum performance for Skid Resistance:
g. Initial (7days): 55BPN
h. Min. Threshold: 44BPN
*Note: shall be considered under urban/city traffic condition encompassing</td>
<td>Bi-Annually</td>
<td>As per Annexure-G of IRC:35-2015</td>
<td></td>
<td>Within 24 hours</td>
<td>IRC:35-2015</td>
</tr>
</table>

		the locations like pedestrian crossings , bus bay, bus stop, cycle track intersection delineation, transverse bar markings etc					
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 case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 15 Days in case of Gantry/Cantilever Signboards	IRC:67-2012
	Retro reflectivity	As per specifications in IRC:67-2012	Bi-Annually	Testing of each signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.	Change of signboard	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 1 Month in case of Gantry/Cantilever Sig	IRC:67-2012

						n 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	IRC 86:1983
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video/image backup	Kerb Repainting	Within 7-days	IRC 35:2015
Other Road Furniture	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2019 and IRC: 35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC:SP:73-2018, IRC:35-2015
	Pedestrian Guardrail	Functionality: Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:SP:73-2018,
	Traffic Safety Barriers	Functionality: Functioning of Safety Barriers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:73-2018, IRC:119-2015
	End Treatment of Traffic Safety Barriers	Functionality: Functioning of End Treatment as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:73-2018, 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 shall be 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:73-2018,
Highway Lighting System	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:84-2019
		No major failure in the lighting system	Daily	-	Rectification of failure	24 hours	IRC:SP:73-2018,
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:73-2018,
	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:73-2018,
		No major/minor failure in the lighting system	Daily	-	Rectification of failure	8 hours	IRC:SP:73-2018,
Trees and Plantation including median plan	Obstruction in a minimum head-room of 5.5 m above carriageway or obstruction i	No obstruction due to trees	Monthly	Visual with video/image backup	Removal of trees	Immediate	IRC:SP:73-2018,

tation	n visibility of road signs						
	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 and Bushes.	Within 90 days	IRC:SP:73-2018,
	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:73-2018,
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	
Other Projec	Damage or deterioration in 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:73-2018,

t Facilities and Approach roads							

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 flow section	85% of culvert normal flow area to 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, removal of bushes and vegetation, U/s of barrel, under barrel and D/s of barrel before rainy season.	15 days before 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 and IRC SP:69-2011
	Structurally sound	Spalling of concrete not more than 0.25 sqm	Bi-Annually	Detailed inspection of 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 of concrete not more t					

		han 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 apron or bank revetment not more than 3 sqm, damage to solid apron (concrete apron) not more than 1 sqm	2 times in a yeaar (before and after rainy seasoon)	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 Flyover etc. 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 gua	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: 84-2019 and IRC SP: 40-1993.

	rd rai l)						
	Ruste d reinf orcem ent	Not more t han 0.25 s q.m	Bi-An nuall y	Detailed con dition surve y as per IRC SP: 35-1990 using Mobil e Bridge Ins pection Unit	All the corroded reinforcement s hall need to be th oroughly cleane d from rusting a nd applied with anti-corrosive co ating before carr ying out the repa irs to affected co ncrete portion w ith epoxy mortar / concrete.	15 da ys	IRC SP : 40-1 993 a nd M ORTH Specif icatio n 160 0.
	Spalli ng of c oncret e	Not more t han 0.50 s q.m					
	Delamin ation	Not more th an 0.50 sq.m					
	Crack s wide r than 0.30 mm	Not more t han 1m tot al length	Bi-Ann ually	Detailed con dition surve y as per IRC SP: 35-1990 using Mobil e Bridge Ins pection Unit	Grouting with e poxy mortar, inv estigating causes for cracks develo pment and carry out necessary re habilitation.	48 Hou rs	IRC SP: 40-199 3 and M ORTH S pecifica tion 28 00.
	Rainw ater se epage throug h deck slab	Leakage – nil	Quarte rly	Detailed con dition surve y as per IRC SP: 35-1990 using Mobile Bridge Inspe ction Unit	Grouting of deck slab at leakage ar eas, waterproofi ng, repairs to dra inage spouts	1 mont hs	MORTH specific ations 2 600 & 2 700.
	Deflec tion d ue to p erman ent loa ds and live lo ads	Within de sign limits.	Once in every 1 0 years for spa ns mor e than 4 0 m	Load test me thod	Carry out major r ehabilitation wo rks on bridge to r etain original de sign loads capaci ty	6 mont hs	IRC SP: 51-199 9.

	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 expansion joint	No dust or debris in expansion joint gap.	Monthly	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Cleaning of expansion joint gaps thoroughly	3 days	MORTH specifications 2600 and 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 coll	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 500 mm below soffit of slab. Providing sealant around the drainage spo	3 days	MORTH specification 2700.

		ection cha mber.			ut if any leakage s observed.		
Bridge-substructure	Cracks/spalling of concrete/rusted steel	No cracks, spalling of concrete and rusted steel	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out repairs to 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 than 5%, cracking or tearing of rubber not more than 2 locations per side, no rupture of reinforcement or rubber	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge 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 on to bearings.	3 months	MORTH specification 2810 and IRC SP: 40-199.
Bridge Foundations	Scouring around foundations	Scouring shall not be lower than maximum scour level for the bridge	Bi-Annually	Condition survey and visual inspection as per IRC SP:35-1990 using Mobile Bridge Inspection Unit. In case of doubt, use Underwater camera for inspection	Suitable protection works around pier/abutment	1 month	IRC SP: 40-1993, IRC 83-2014, MORTH specification 2500

				of deep wells in major Rivers.			
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sq.m, damage to solid apron (concrete apron) not more than 1 sq.m	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.
Note: Any Structure during the entire contract period which is found that does not complies with all requirements of this Table will be prepared, 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

Note: 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 prescribed slope 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 prescribed side (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 or loss 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/missing signs road requiring 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		
(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], Rain water harvesting/Artificial Recharge Unit 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		
(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 shifting of 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 posing danger 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 structure or 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
(iii)	Snow requiring clearance	24 (twenty four) hours

[Note: Where necessary, the Authority may modify the time limit for repair/rectification, or add 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.

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 setting up batching plant;
   f. Clearance of Pollution Control Board for setting up batching plant;
   g. Clearance of Village Panchayats and Pollution Control Board for setting up asphalt 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 Clauses 7.1 and 19.2)

Annex-I

(See Clause 7.1)

Form of Bank Guarantee

[Performance Security/Additional Performance Security]

The Executive Director (Projects), RO-Gangtok,
National Highways & Infrastructure Development Corporation Limited (NHIDCL)

WHEREAS:

A. [name and address of contractor] (hereinafter called the "**Contractor**") and National Highways & Infrastructure Development Corporation, 3rd Floor, PTI, Building 4 Parliament Street, New Delhi- 110001, (hereinafter called the **"Authority")** have entered into an agreement (hereinafter called the **"Agreement")** for M&R work for making the road trafficable from km 25.600 to km 26.100 of NH-717A in the State of West Bengal on Engineering, Procurement and Construction (the "EPC") basis, subject to and in accordance with the provisions of the Agreement

B. The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Construction Period/ Defects Liability Period and Maintenance Period} (as defined in the Agreement) in a sum of 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**") 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 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 the sum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the NHIDCL 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 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 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 Agreement 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 Agreement 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 Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
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 authorised 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 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 Agreement.
12. 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.
13. 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 NHIDCL, detail of which is as under:

Sr.No.	Particulars	Details
1.	Name of Beneficiary	ED (P)-NHIDCL
2.	Beneficiary Bank Account No.	94113210000015
3.	Beneficiary Bank Branch Name and Address	Canara Bank, MG Marg, Gangtok
4.	Beneficiary Bank Branch IFSC	CNRB0019411

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)

NOTES:

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 issuing branch.

Annex – II

(Schedule - G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

The Executive Director (Projects), RO-Gangtok,
National Highways & Infrastructure Development Corporation Limited (NHIDCL)
New Delhi
WHEREAS:

A. …….[name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the National Highways & Infrastructure Development Corporation, 3rd Floor, PTI, Building 4 Parliament Street, New Delhi- 110001, (hereinafter called the **"Authority")** have entered (hereinafter called the **"Authority")** for M&R work for making the road trafficable from km 25.600 to km 26.100 of NH-717A in the State of West Bengal on EPC Mode basis, 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 be made 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 the sum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the NHIDCL, that the Contractor has committed default in the due and faithful performance of all or 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 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 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 Authority in 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 on ****.[$] Unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, 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 authorised 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 shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. 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.
13. 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 NHIDCL, details of which is as under:

Sr.No.	Particulars	Details
1.	Name of Beneficiary	ED (P)-NHIDCL
2.	Beneficiary Bank Account No.	94113210000015
3.	Beneficiary Bank Branch Name and Address	Canara Bank, MG Marg, Gangtok
4.	Beneficiary Bank Branch IFSC	CNRB0019411

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)

NOTES:

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 issuing branch.

Schedule – H

2.1 Schedule - H

(See Clauses10.1 (iv) and 19.3)

Contract Price Weightages

1.1. The Contract Price for this Agreement is Rs. 7.23/- Cr

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

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
Road works including culvert, widening and repair of culverts.	48.94%	**A- Widening and Strengthening of Existing Road**	
		(1) Earthwork up to top of the sub-grade	62.90%
		(2) Sub-base Course/GSB	6.06%
		(3) Wet Mix macadam	6.57%
		(4) Dense Bituminous Macadam	10.39%
		(5) Wearing Coat	4.86%
		(6) Culvert, Widening and repair of culverts	0.00%
		B-1 Reconstruction/New 2-lane realignment/bypass (Flexible Pavement)	
		(1) Earthwork up to top of the sub-grade	-
		(2) Sub-base Course	-
		(3) Non Bituminous Base Course	-
		(4) Bituminous base course	-
		(5) Wearing Coat	-
		B-2 Reconstruction/New 2-lane realignment/bypass (Rigid Pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub-base Course	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%
		(4) Pavement Quality Control(PQC) Course	0.00%
		C-1 Reconstruction/New Service road (Flexible pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub-base Course	0.00%
		(3) Non Bituminous Base Course	0.00%
		(4) Bituminous base course	0.00%
		(5) Wearing Coat	0.00%
		C-2 Reconstruction/New Service road (Rigid pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub-base Course	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%

		(4) Pavement Quality Control(PQC) Course	0.00%
		D- Re-Construction and New culverts on existing road, realignments, bypasses	
		Culvert (length< 6m)	9.22%
Minor Bridges / Over passes/ Underpasses /		**A.1- Widening and Repair of Minor bridges (length >6 m and < 60 m)**	
		Minor bridges	0.00%
		A.2- New Minor bridges (length >6 m and < 60 m)	
		(1) Foundation + Substructure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment /pier cap.	
		(2) Super-structure: On completion of the super-structure in all respects including wearing coat, bearing, expansion joints, hand rails, crash barrier, road sign & marking, tests on completion etc. complete in all respect.	
		(3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect, tests on completion in all respect and fit for use	0.00%
		(4) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	0.00%
		B.1- Widening and repairs of Underpasses /overpasses	
		Underpasses/ Overpasses	0.00%
		B2-New Underpasses/Overpasses	
		(1) Foundation + Substructure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment /pier cap.	
		(2) Super-structure: On completion of the super-structure in all respects including wearing coat, bearing, expansion joints, hand rails, crash barrier, road sign & marking, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass-rigid pavement including drainage facility complete in all respects as specified	
		(3) Approaches: On completion of Retaining /Reinforced earth walls, Stone pitching, protection work in all respect and fit to use complete in All respect and fit for use	0.00%
Major Bridges (Length > 60 m) works/elevated sections / flyovers including		**A.1- Widening and Repair of Major bridges**	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure(including bearing)	0.00%
		(4) Wearing Coat including expansion joints	0.00%
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	0.00%

viaducts, if any		(6) Wing walls/ return walls upto top	0.00%
		(7) Guide Bunds, River Training works etc.	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%
		A.2 -New Major bridges	
		(1) Foundation	
		(2) Sub-structure	
		(3) Super-structure (including bearings)	
		(4) Wearing Coat including expansion joints	
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	
		(6) Wing walls/ return walls	0.00%
		(7) Guide Bunds, River Training works etc.	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%
		B.1-Widening and repair of	
		(a) ROB	
		(b) RUB	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat	0.00%
		(a) in case of ROB wearing coat including expansion joints complete in all respects as specified and	0.00%
		(b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
		(6) Wing walls/return walls	0.00%
		(7) Approaches (including Retaining / Reinforced earth walls, stone pitching, protection works)	0.00%
		B.2-New ROB/RUB	
		(a) ROB	
		(b) RUB	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat	0.00%
		(a) in case of ROB wearing coat including expansion joints complete in all respects as specified and	0.00%
		(b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
		(6) Wing walls/return walls	0.00%

		(7) Approaches (including Retaining / Reinforced earth walls, stone pitching, protection works)	0.00%
		C.1- Widening and repair of Elevated section/flyovers/Grade Separators	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat including expansion Joints	0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
		(6) Wing walls/ return walls	0.00%
		(7) Approaches (including Retaining / Reinforced earth walls, stone pitching, protection works)	0.00%
		C.2- New Elevated Section/Flyovers/Grade Separators	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat including expansion Joints	0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
		(6) Wing walls/ return walls	0.00%
		(7) Approaches (including Retaining / Reinforced earth walls, stone pitching, protection works)	0.00%
Other works, Bus bays, Truck lay byes, Rest area, Protection works and other	51.06%	(i) Toll plaza	0.00%
		(ii) Road side drains	1.707 %
		(iii) Gabion wall	28.946%
		iv) Breast wall	23.095%
		v) Retaining wall including parapet	45.710%
		(vi) Road signs, markings, km stones, safety devices,	0.000%
		(vii) Project Facilities	
		(a) Bus Bays	0.00%
		(b) Truck lay byes	0.00%
		(c) Rest Area	0.00%
		(d) Other (Footpath)	
		(viii) Road side Plantation	0.00%
		(ix) Repair protection works other than approaches to the bridges, elevated sections/flyovers/grade separators and ROBs/RUBs.	
		(x) Safety and traffic management during construction	0.542%
Electrical utilities and public Health Utilities (Water pipe lines and sewage lines)	0.00%	i. El-IT line ii. EHT crossings iii. HT/ LT line iv. HT/LT	

		Crossings/ Street lighting/ Signal (v) Water pipeline (vi) Water pipeline crossings (vii) Sewage lines (viii) Sewage line crossings	

1.3 Procedure of estimating the value of work done

1.31. Road Works

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

Stage of payment	Percentage - weightage	Payment Procedure
A- Widening and Strengthening of Road		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on complete of a stage in a length of not less than 10 (ten) percent of the total length.
(1) Earthwork up to top of the sub-grade	62.90%	
(2) Sub-base Course	6.06%	
(3) Non Bituminous Base Course	6.57%	
(4) Dense Bituminous Macadam	10.39%	
(5) Wearing Coat	4.86%	
(6) Culvert, Widening and repair of culverts	0.00%	Cost of completed culverts shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least five culverts.
B-1 Reconstruction/New 2-lane realignment/bypass (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km length, whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-base Course	0.00%	
(3) Non Bituminous Base Course	0.00%	
(4) Bituminous base course	0.00%	
(5) Wearing Coat	0.00%	
B-2 Reconstruction/New 2-lane realignment/bypass (Rigid Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km length, whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-base Course	0.00%	
(3) Dry Lean Concrete (DLC) Course	0.00%	
(4) Pavement Quality Control(PQC) Course	0.00%	
C-1 Reconstruction/New Service road (Flexible pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on

(1) Earthwork up to top of the sub-grade	0.00%	completion of a stage in full length or 5(five) km length, whichever is less.
(2) Sub-base Course	0.00%	
(3) Non Bituminous Base Course	0.00%	
(4) Bituminous Base Course	0.00%	
(5) Wearing Coat	0.00%	
C-2 Reconstruction/New Service road (Rigid pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km length, whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-base Course	0.00%	
(3)Dry Lean Concrete (DLC) Course	0.00%	
(4)Pavement Quality Control (PQC) Course	0.00%	
D- Re-Construction and New culverts on existing road, realignments, bypasses		Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least One (01) culverts.
Culvert (length< 6m)	9.22%	

Table 1.3.1

@. 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 litigation during execution including the length not handed over to the Contractor under clause 8.3 of this Contract Agreement 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:

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

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
(1)	(2)	(3)
A.1- Widening and repairs of Minor Bridges (length>6m &<60)	0.00%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total number of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge
A.2- New Minor Bridges (i) **Foundation + Substructure:** On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment /pier cap.		a. **Foundation + Sub Structure:** Cost of each minor bridge shall be determined on pro- rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation+ Substructure shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of foundation + Sub structure of each bridge subject to completion of atleast two foundation along with substructure upto abutment / pier cap level of each bridge . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearing, expansion joints, hand rails, crash barrier, road sign & marking, tests on completion etc. complete in all respect.		**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 respects as specified in the column of "Stage of Payment" in this sub-clause.
(iii) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use	0.00%	**Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.
(iv) **Guide Bunds and River Training Works:** On completion of Guide Bunds and river training works complete in all respects	0.00%	**Guide Bunds and River Training Works:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bunds and River training Works in all respects as specified.

B.1- Widening and repairs of underpasses/overpasses	0.00%	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/ overpasses. Payment shall be made on the completion of widening & repair works of a underpass/overpass.
B.2- New Underpasses/Overpasses (i) **Foundation + Substructure:** On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment /pier cap.		(i) **Foundation + Sub-Structure:** Cost of each Underpass/ Overpass shall be determined on pro- rata basis with respect to the total linear length (m) of the Underpasses/Overpasses. Payment against foundation + sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation + sub structure of each Underpasses/ Overpasses subject to completion of atleast two foundation along with substructure upto abutment / pier cap level of each underpass/overpass . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearing, expansion joints, hand rails, crash barrier, road sign & marking, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass-rigid pavement including drainage facility complete in all respects as specified		(ii) **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.
(iii) **Approaches:** On completion of Retaining /Reinforced earth walls, Stone pitching, protection work in all respect and fit to use complete in All respect and fit for use	0.00%	(iii) **Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion in all respects as specified

1.3.3 Major Bridges works, ROB/RUB and Structures

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

Table 1.3.3

Stage of Payment	Weightage	Payment Procedure
(1)	(2)	(3)
A.1- Widening and repairs of Major Bridges (i) Foundation:	0.00%	**(i) Foundation:** Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major 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 atleast two foundation of the major bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	0.00%	(ii) **Sub-structure:** Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of sub- structure of major bridge subject to atleast two substructure of abutment /pier upto abutment / pier cap level of the major bridge.
(iii) Super-structure (including Bearing)	0.00%	**(iii) Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	0.00%	**(iv) Wearing Coat**: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	**(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.
(vi) Wing walls/return walls	0.00%	**(vi) Wing walls/return walls**: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Guide bunds, River Training works etc.	0.00%	**(vii) Guide Bunds, River Training works:** Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.

(viii) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	**(viii) Approaches**: Payments shall be made on pro rata basis on completion of 10% of the scope of each stage.
A.2- New Major Bridges (i) Foundation.		**(i) Foundation**: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major 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 atleast two foundation of the major bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure		**(ii) Sub-structure:** Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of major bridge subject to at least two substructure of abutment /pier up to abutment / pier cap level of the major bridge
(iii) Super-structure (including bearings)		**(iii) Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified.
(iv) 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.
(v) 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.
(vi) Wing walls/return walls	0.00%	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Guide bunds, River Training works etc.	0.00%	**(vii) Guide Bunds, River Training works:** Payments shall be made on completion of all guide bunds/river training works etc. complete in all respect as specified.

(viii) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	**(viii) Approaches:** Payments shall be made on pro rata basis on completion of both approaches including stone pitching, protection works etc. complete in all respects as specified.
B.1- Widening and repairs of (a) ROB (b) RUB **(a) ROB** **(b)RUB**		**(i) Foundation:** Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to atleast two foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(i) Foundation	0.00%	
(ii) Sub-structure	0.00%	**(ii) Sub-structure:** Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB subject to atleast two substructure of abutment /pier upto abutment / pier cap level of the ROB/RUB.
(iii) Super-structure (including bearing)	0.00%	**(iii) Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%	**(iv) Wearing Coat**: Payment shall be made on completion (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.
(v) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	**(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.
(vi) Wing walls/return walls	0.00%	**(vi) Wing walls/return walls**: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.

(vii) Approaches (including Retaining / Reinforced earth walls, stone pitching, protection works)	0.00%	(vii) **Approaches:** Payment shall be made o n pro-rata basis on completion of both approaches including stone pitching, protection work, etc. complete in all respect as specified.
B.2- New **(a) ROB** **(b) RUB** (i) Foundation	0.00%	**(i) Foundation:** Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to atleast two foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	0.00%	**(ii) Sub-structure:** Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of sub- structure of ROB/RUB subject to atleast two substructure of abutment /pier upto abutment / pier cap level of the ROB/RUB.
(iii) Super-structure (including bearing)	0.00%	**(iii) Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	0.00%	**(iv) Wearing Coat:** Payment shall be made on completion (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.
(v) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	**(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.
(vi) Wing walls/return walls	0.00%	**(vi) Wing walls/return walls**: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.

(vii) Approaches (including Retaining / Reinforced earth walls, stone pitching, protection works)	0.00%	**(vii) Approaches:** Payment shall be made on pro-rata basis on completion of both approaches including stone pitching, protection work, etc. complete in all respect as specified.
C.1- Widening and repairs of Elevated Section/ Flyovers/ Grade Separators (i)Foundation	0.00%	**(i) Foundation:** Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. 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 structure subject to atleast two foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	0.00%	**(ii) Sub-structure:** Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of sub- structure of structure subject to completion of atleast two sub-structure of abutment /pier upto abutment / pier cap level of the structure.
(iii) Super-structure (including bearing)	0.00%	**(iii) Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	0.00%	**(iv) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	**(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.
(vi) Wing walls/return walls	0.00%	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining / Reinforced earth walls, stone pitching, protection works)	0.00%	**(vii) Approaches:** Payment shall be made on pro-rata basis on completion of both approaches including stone pitching, protection work, etc. complete in all respect as specified.

C.2- New Elevated Section/ Flyovers/ Grade Separators (i) Foundation	0.00%	**(i) Foundation:** Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. 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 structure subject to atleast two foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	0.00%	**(ii) Sub-structure:** Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure subject to completion of atleast two sub-structure of abutment /pier upto abutment / pier cap level of the structure.
(iii) Super-structure (including bearing)	0.00%	**(iii) Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	0.00%	**(iv) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	**(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.
(vi) Wing walls/return walls	0.00%	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining / Reinforced earth walls, stone pitching, protection works)	0.00%	**(vii) Approaches:** Payment shall be made on pro-rata basis on completion of both approaches including stone pitching, protection work, etc. complete in all respect 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 of Payment	Weightage	Payment Procedure
(1)	**(2)**	**(3)**
(i) Toll Plaza	0.00%	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plaza.
(ii) Road side drains	1.707%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
iii) Gabion wall	28.946%	
iv) Breast wall	23.095%	
v) Retaining wall with parapet	45.710%	
(vi) Road signs, safety Devices,	0.00%	
(vii) Footpath	0.00%	
(viii) Project Facilities	0.00%	Payment shall be made on pro rata basis for completed facilities.
a) Bus Bays	0.00%	
b) Truck Lay-Byes	0.00%	
c) Rest Area	0.00%	
d) Others	0.00%	
(ix) Road side Plantation	0.00%	Unit of measurement is linear Length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(x) Repair of Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs	0.00%	
(xi) Safety and traffic management during construction	0.542%	Payment shall be made on prorate basis every six months.

Sheet-IV (In EPC, to be added in clause 1.3 of Schedule 'H')

Stage of Payment	Weightage	Payment procedure
(i) EHT line	0. 00%	Unit of measurement is as per completed activities. Cost per activity shall be determined

		on pro-rate 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 cable30%, (iii) DTR erection (if involved)-15% and (iv) Charging of line including dismantling and site clearance-35% (with DTR) and without DTR
(ii) EHT crossings		Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment 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 LT/ HT 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 cable30%, (iii) DTR erection (if involved)-10% and (iv) Charging of line including dismantling and site clearance-40% (with DTR) and without DTR
(iv) HT/ LT crossings/ Street light/ Signal		Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 10 crossings.
(v) Water pipeline	0.00%	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 ro-rata
		Basis with reference to total no. of crossings. Payment 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%
(viii) Sewage line crossings		Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for completed activity. (The average weightage of major activities in shifting work is laying pipe-50%, Charging of line including all miscellaneous works and dismantling and site clearance-50%

2. Provisions for payment for Maintenance

2.1 The cost for maintenance shall be as stated in clause 14.1 (e)

2.2 Payment for Maintenance shall be made in quarterly instalments in accordance with the provisions of Article 14 and Article 19.

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

A minimum list of the drawings of the various components / elements of the Project Highway and project facilities required to be submitted by the Concessionaire is given below:

a) Detailed Drawings of Plan & Profile with Horizontal intersection Point, Vertical Intersection Points, elements of curves, and sight distances.

b) Detailed Drawings of Cross-section at 10.0m interval along the alignment.

c) Typical Cross-section with details of pavement thickness.

d) Detailed Drawings of all Junctions/intersections.

e) Detailed drawings of all Bridges.

f) Detailed drawings of Flyover cum ROB along with its approaches.

g) Detailed drawings of LVUP.

h) Detailed drawings for individual culverts.

i) Detailed Drawings of road drainage measures and drainage Plan.

j) Detailed Drawings of slope protection measures like Secured Drapery in Hill Side and RS wall in Valley Side.

k) Detailed Drawings of PCC Breast Wall, PCC Retaining Wall & RCC Retaining Wall.

l) Drawings of street lighting.

m) Detailed Drawing of Toll Plaza.

n) Drawings for Road sign, Bus bays with Bus Shelters, Truck lay byes with furniture and drainage system etc.

o) Drawings of road furniture items including traffic signage, markings, safety barriers (modified Thrie beam, new jersey type crash barrier) etc.

p) Detailed layout drawings for traffic circulation for service roads/ slip roads and detailed drawings for underpasses including cross-section drawings through underpasses at the project road level and the structures bed level.

q) Drawings for Landscaping, Horticulture & Tree Plantation.

r) Detailed Utility Shifting Drawings (Electrical, HT/EHT Line and Water Supply line etc.)

s) Drawings for traffic diversion plans and traffic control measures in construction zones.

Any other drawing relevant to the Project Highway as desired by Authority/Client.

Schedule - J

(See Clause 10.3 (ii))

Project Completion Schedule

1. Project Completion Schedule

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

2. Project Milestone-I

i. Project Milestone-I shall occur on the date falling on the **120th (One Hundred and Twenty days)** 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 **180th (One Hundred and Eighty)** 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 **270th (Two Hundred and Seventy)** 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) of the Contract Price and **should have started construction of all project facilities.**

5. Scheduled Completion Date

i. The Scheduled Completion Date shall occur on the **365th (Three Hundred and Sixty Five)** 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 to be decided with Authority's Engineer at the time of physical tests as per standard.

(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 equipment's 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 Non-destructive Testing Techniques, at two spots in every span, to be chosen at random by the 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 cause to 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 Upgradation to four lane configuration & strengthening of M&R work for making the road trafficable from km 25.600 to km 26.100 of NH-717A in the State of West Bengal 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 Rain water harvesting and artificial recharging arrangements have been provided by the contractor as per Schedule "C" of the contract agreement and are functional. Details (with location chainage) are as given in Annex.
3. 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 AND DELIVERED
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%
(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%

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

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 National Highways & Infrastructure Development Corporation, Regional Office Gangtok, Sokeythang, Lingding Road, Below ICAR, Sikkim-737102 **(the "Authority")** and ..... **(the "Contractor")** # M&R work for making the road trafficable from km 25.600 to km 26.100 of NH-717A in the State of West Bengal on EPC Mode, 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 or otherwise 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, required thereto.

(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 the Contractor 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 shall apply.

(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. For carrying 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 Engineer in 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);
   i. For Change of Scope Orders, and
   ii. 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 Damages

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:

(ii) 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

(iii) 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.

(iv) 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 liable and 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 the value of the contract price.

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:

f. 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

g. 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 M&R work for making the road trafficable from km 25.600 to km 26.100 of NH-717A in the State of West Bengal on EPC Mode 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 AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)
(Address)

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