

Schedules

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1 The Site

- 1.1 2-lane/2-lane with Paved Shoulder shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.
- 1.2 The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.
- 1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.
- 1.4 The alignment plans of the Project Highway are specified in Annex-III. In the case of sections where no modification in the existing alignment of the Project Highway is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be upgraded. The proposed profile of the Project Highways shall be followed by the contractor with minimum FRL as indicated in the alignment plan. The contractor, however, improve/upgrade the Road Profile as indicated in Annexure-III based on site/design requirement.
- 1.5 The status of the environment clearances obtained or awaited is given in Annex IV.

Annex - I

(Schedule-A)

Site

Note: Through suitable drawings and description in words, the land, buildings, structures and road works comprising the Site shall be specified briefly but precisely in this Annex-I. All the chainages/location referred to in Annex-I to Schedule A shall be existing chainages; The risk pertaining to the adequacy of the executed works in accordance with the Manual & Contract Agreement shall be assumed solely by the Contractor. Prior to submitting the bid, the Contractor is permitted to conduct Non-Destructive Testing (NDT) on the structural elements. Any expenses to be incurred for rectification measures in the executed works, if deemed necessary, shall be assumed to be integrated into the bid by the Contractor.

1. Site

The Site of the 2-lane Major Bridge at Middle Strait Creek comprises the section of National Highway-04 (Old NH-223) commencing from existing chainage, Km. 106.590 (*on Middle Strait Jetty Side, South Andaman Island*) and meets at existing chainage, Km. 108.553 (*on Nilambur Jetty side, Baratang Island*). The proposed Bridge lies in Andaman & Nicobar Islands. The land, carriageway and structures comprising the Site are described below.

2. Land

The site of the Project Highway comprises the land (sum total of land already in possession and land to be possessed) as described below:

Sr. No.	Chainage (Km)		ROW (m)	Remarks
	From	To		
1	0+000	1+963	18	Along the bridge alignment

3. Carriageway

The present carriageway of the existing Road NH- 04 on either side of Middle Strait Creek i.e., upto Middle Strait Jetty on south Andaman Island side and from Nilambur Jetty on Baratang Island side varies from single lane to intermediate lane. The type of the existing pavement is flexible.

4. Major Bridges

The present Major Bridge is partly constructed and the details of various components of the proposed Major Bridge which have been constructed and exists as on date are as described below. **The Plan and Profile & GAD of the Bridge is annexed.**

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

4.1 Details of existing Piles:

Completed Piles			
Sl. No.	Bridge Component	Design chainage	No of piles
1	Abutment-1	000+543	6/6
2	Pier-P1	000+603	9/9
3	Pier-PC 5	000+963	2 Nos Completed + 1 Nos Partially Completed
4	Pier-P6	001+023	9/9
5	Pier-P7	001+083	6/6
6	Pier-P8	001+143	6/6
7	Pier-P9	001+203	6/6
8	Pier-P10	001+263	6/6
9	Pier-P11	001+323	6/6
10	Pier-P12	001+383	6/6
11	Pier-P13	001+443	6/6
12	Abutment-A2	001+503	6/6

4.2 Details of existing Pile Cap:

Completed Pile Caps		
Sl. No.	Bridge component	Design chainage
1	Abutment-A1	000+543
2	Pier-P1	000+603
3	Pier-P6	001+023
4	Pier-P7	001+083
5	Pier-P8	001+143
6	Pier-P9	001+203
7	Pier-P10	001+263
8	Pier-P11	001+323
9	Pier-P12	001+383
10	Pier-P13	001+443
11	Abutment-A2	001+503
Total (Nos)		11

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

4.3 Details of existing Pier Shaft:

Existing Pier shaft location				
Sl. No.	Pier No.	Design chainage	Pier shaft Done (Qty)	Status
1	P6	001+023	Partially completed	Approx. 9.3 m has been completed.
2	P7	001+083	completed	
3	P8	001+143	completed	
4	P9	001+203	completed	
5	P10	001+263	completed	
6	P11	001+323	completed	
7	P12	001+383	completed	
8	P13	001+443	completed	
9	A2	001+503	completed	
Total (Nos)			8 Nos	

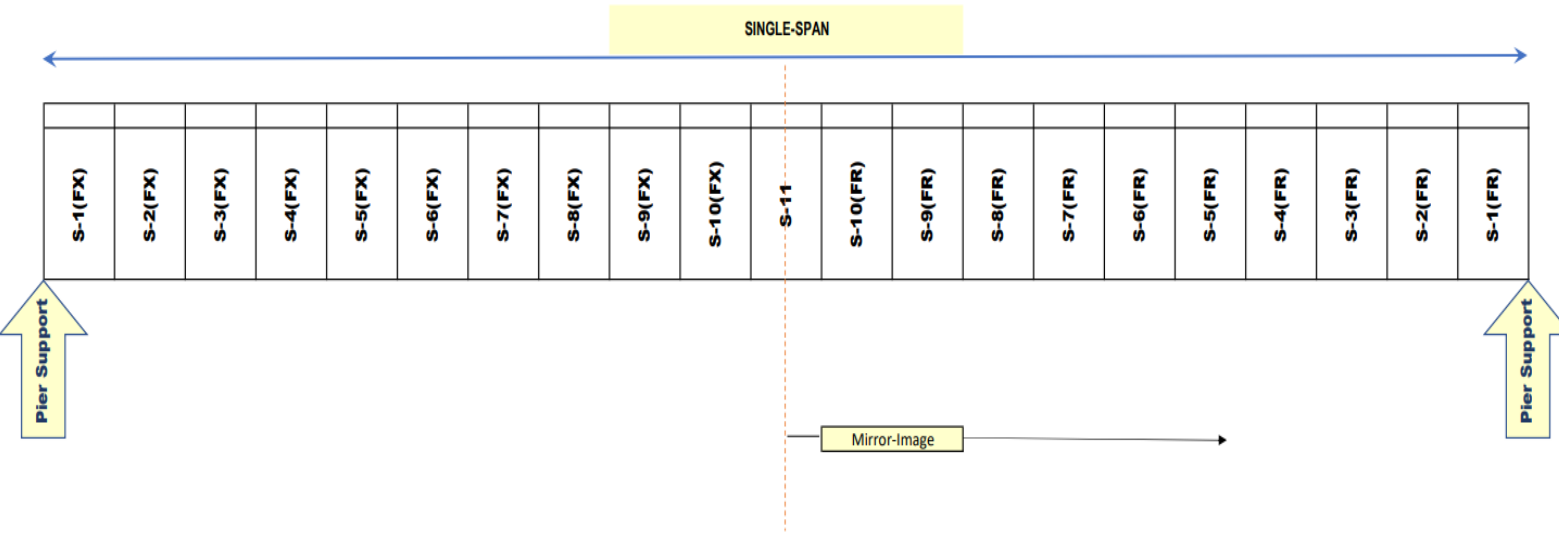
4.4 Details of existing Precast Box Girder Segments:

Segment Casting Quantity			
Sl. No.	Span No.	Segment Casting Arrangement.	Casting Completed
1	Span-14	S-1FX, S-2FX, S-3FX, S-4FX* , S-11** , S-3FR,	6 Nos
2	Span-15	S-1FX, S-2FX, S-3FX, S-4FX, S-5FX, S-6FX, S-7FX## , S-8FX, S-9FX, S-10FX, S-11, S-1FR, S-2FR, S-3FR, S-4FR, S-5FR, S-6FR, S-7FR## , S-8FR, S-9FR, S-10FR.	21 Nos
3	Span-16	S-1FX, S-2FX, S-3FX, S-4FX, S-5FX, S-6FX, S-7FX, S-8FX, S-9FX, S-10FX, S-1FR, S-2FR, S-3FR, S-4FR, S-5FR, S-6FR, S-7FR, S-8FR, S-9FR, S-10FR	20 Nos
Total (Nos)			47 Nos
NOTE:	<p>* & ** These segments upon De-shuttering, have shown major/ serious honey-combing. In case the existing EPC Contractor failed to evidently prove that the structural health of these segments are sound, the revised scopes would be reflected vide corrigendum / addendum.</p>		
	<p>## Strength of cube testing for these box segments, have been tested failed. In case the existing EPC Contractor failed to evidently prove that the structural health of these segments are sound, the revised scopes would be reflected vide corrigendum / addendum.</p>		

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Segments nomenclature as under.

Figure 1: Reference figure for Table-04, details of typical segments arrangement, for every single span of Bridge



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

NIL

6. Grade separators

NIL

7. Minor Bridges

NIL

8. Railway level crossings

NIL

9. Underpasses (vehicular, non-vehicular)

NIL

10. Culverts

NIL

11. Bus Bays

NIL

12. Truck Lay byes

NIL

13. Road side drains

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

NIL

14. Major junctions

NIL

15. Minor junctions

NIL

16. Bypasses

NIL

17. Inspection Bungalow: An inspection Bungalow (G+1 Floor) with total built up area of 238.62 Sqm (111.10 Sqm at ground floor +127.52 at first floor) as per plan attached at **Drawing-2** (Chainage 109+500) has been partially completed. Following items of work are to be completed:

- (i) Plaster work
- (ii) Tile work
- (iii) Furnishing & Utensils
- (iv) Painting work
- (v) Plumbing work
- (vi) Electrical work
- (vii) False ceiling work

18. Design Chainages corresponding to Existing Chainage

The relationship between the “Existing Chainage” and the “Design Chainage” as per field surveys is given below.

Sr. No.	Existing Chainage (Km)	Design Chainage (Km)	Remark
1	106.590	0+000	Start of Bridge approach
2	108.553	1+963	End of Bridge approach

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

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

(i) Electrical utilities

The site includes the following electrical utilities: -

Nil

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

The site includes the following Public Health utilities: -

Nil

(iii) Any Other Line

NIL

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

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Annex - II

(Schedule-A)

Dates for providing Right of Way

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

Sr. No	From km to km (Design Chainage)	Length (km)	Width (m)	Date of providing from Appointed Date*
1	2	3	4	5
(i) Full Right of Way (Full width)	0.000 to 1.963	1.963	18	On Appointed Date

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Annex - III

(Schedule-A)

Alignment Plans

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

- (i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. In any case, 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) Further, there is no established connectivity between project starting point and project end point, except through water-way.



Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Annex - IV

(Schedule-A)

**Environment
Clearances**

1. The environment clearance is not required in light of circular S.O. 2559(E) dated 22.08.2013 of MOEF.
2. **Wild Life clearances:** Not Applicable.
3. **Forest Clearances:** Stage-II Forest Clearance has been received from MoEF&CC on 30.11.2018 for diversion of 2.77 Ha. forest land for the project.

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

SCHEDULE - B

(See Clause 2.1)

Development of the Project Highway

i. Development of the Project Highway

Development of the Project Highway shall include design and construction of the Middle Strait Creek Bridge including approaches on Project Highway as described in this Schedule-B and in Schedule-C.

ii. Rehabilitation and augmentation

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

iii. Specifications and Standards

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

iv. Aggregates:

It is hereby clarified that the public auction of quarries in the Andaman & Nicobar Islands is subject to the prescribed procedures of the Government of UT of A&N and the guidelines of the NGT. As per the contractual arrangement, the EPC Contractor is solely responsible for sourcing raw materials, including aggregates, from all available sources, including transportation from the Mainland or neighboring countries, at their own cost and risk. The bid price submitted by the Contractor is presumed to include all associated risks and costs related to the procurement.

Annex - I

(Schedule-B)

Description of Two-Laning

1 WIDENING OF THE EXISTING HIGHWAY

1.1 The Project Highway shall follow the new alignment along the proposed bridge 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 plain/rolling terrain to the extent land is available.

1.2 WIDTH OF CARRIAGEWAY

1.2.1 The overall width of proposed bridge shall be undertaken as 14.8 m. The carriageway of the bridge shall be 10.5 m wide in accordance with the cross sections drawings given in **enclosed GAD**. The carriageway width of the approaches on either side of the bridge portion shall be 10.5 m with 0.75m paved shoulders on either side.

1.2.2 Except as otherwise provided in this Agreement, the width of the paved carriageway and cross- sectional features shall conform to paragraph 1.2.1 above.

2 GEOMETRIC DESIGN AND GENERAL FEATURES

2.1 General

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

2.2 Design speed

The proposed bridge location of the Project road is passing through hilly terrain. For geometric design of the Bridge and approaches, design speed is used as primary index that links road function, traffic flow and terrain to the design patterns of sight distance and curvature to ensure that a driver is presented with a reasonable and consistent operating environment. The design speed should correspond to general topography and adjacent land use. The speed selected for design should also cater to travel needs and habits of nearly all the road users. The present project stretch has been designed for speed of 80 km/hr. However keeping in view, the adjacent Jarwa Reserve forest where speed restrictions have already been imposed, use of speed advisory signs is proposed at locations such as sharp curves where design speed cannot be maintained and a lower design speed up to 80 km/hr

is adopted. These values are considered logical from safety point of view for driving heavy commercial vehicles over short distances.

2.3 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.

2.4 Right of Way

Proposed right of way is taken as 18m. Other details of the Right of Way are given in Annex II of Schedule-A.

2.5 Type of shoulders

- (a) In approaches, a paved shoulder of 1 m width and earthen shoulder of 0.75m width on both side of the pavement is proposed. Metal beam crash barrier is to be provided wherever the height of embankment is more than 3.0m.
- (b) In bridge portion, footpaths of width 1.5 mtr on both sides of the carriageway shall be provided.

2.6 Lateral and vertical clearances at bridge location

2.6.1. Lateral clearances at bridge portion shall be 60 mtr between centre to centre of the piers and vertical clearances shall be 22.5 mtr above HTL and provision of guard rails/ crash barriers shall be as shown in the GAD enclosed.

2.7 Lateral and vertical clearances at overpassed and underpasses

NIL

2.8 Service roads

NIL

2.9 Grade separated structures

NIL

2.10 Cattle and pedestrian underpass/ overpass

NIL

2.11 Typical cross-sections of the Project Highway:

Typical Cross-Sections of the Project Highway					
Sl. No.	Location (Design chainage)		Length (m)	Typical Cross section	Remarks
1	0+000	0+063	63.00	Road portion (TCS – 1A)	-
2	0+063	0+123	60.00	RE Wall (TCS – 1B)	-
3	0+123	0+303	180.00	Viaduct portion (TCS – II)	-
4	0+303	0+483	180.00	Road portion with Toe/RE wall (TCS – 1B)	-
5	0+483	0+543	60.00	Viaduct portion (TCS – II)	-
6	0+543	1+503	960.00	Bridge proper (spans of 60 m X 16 Nos) (TCS – II)	Partial work done
7	1+503	1+683	180.00	Viaduct portion (TCS – II)	-
8	1+683	1+778	95.00	RE Wall Section (TCS – 1B)	-
9	1+778	1+963	185.00	Road portion (TCS – 1A)	-
Total (m)			1963.00		

3 INTERSECTIONS AND GRADE SEPARATORS

All intersections shall be as per drawings of the Manual. Existing intersections which are deficient shall be improved to the prescribed standards.

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

(a) Major At-grade intersections

Sr. No.	Location of intersection	Type of intersection	Other features	Remarks
1	0.000	NH	Y	Junction of existing NH with project alignment on Middle Strait Jetty Side (within Jarwa Reserve Forest Area)
2	1.963	NH	Y	Junction of existing NH with project alignment on Nilambur Jetty Side (Baratang Island)

4. ROAD EMBANKMENT AND CUT SECTION

4.1 Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/ cuttings shall conform to the Specifications and Standards given in section 4 of the Manual and the specified cross sectional details. **The existing ground levels mentioned in the plan and profile & GAD drawing are indicative of nature.** The bidders may ascertain these existing ground levels at their end before bidding and variations, if any, may be taken into account in their bid.

4.2 RAISING OF THE EXISTING ROAD

NIL

5. PAVEMENT DESIGN

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

5.2 **Type of pavement:** Pavement in approaches shall be flexible with following configuration:

Sr. No.	Type of Pavement
1.	BC
2.	DBM
3.	WMM (with PP-biaxial Geogrid)
4.	GSB with Geocell of 150mm
5.	Two layered Sub-grade (with Borrowed area soil at bottom and Stone Soling top layer to achieve an effective CBR of 10% or more for further laying of crust; geotextile use for separation layer.)

5.3 Design requirements

The following parameters are required for designing of new pavement

Parameters	Values considered for Design of New Pavement
Design Life (Years)	20 years
Traffic Loading in Million Standard Axles (MSA) in 2030	20.0 MSA
CBR (%) of Subgrade Soil	10.0%

5.3.1 Design Period and strategy

Flexible Pavement for new pavement or for widening and strengthening of the existing pavement shall be designed for a minimum design period of 20 years. Stage construction shall not be permitted.

5.3.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic of 20.0 million standard subject to minimum crust thickness of each layer as provided vide para 5.2 above.

5.4 Reconstruction of stretches

As the project stretch with Middle Strait Creek Bridge and its approaches is a new alignment, proposal being given for this project stretch has no existing road portion except at the two major junctions mentioned in para-3 (a) above, hence reconstruction

of any existing stretch is not applicable. However, improvement of junctions shall require necessary improvement/reconstruction.

6. ROADSIDE DRAINAGE

In approaches on either side of the bridge, longitudinal lined Trapezoidal drain with 0.5 -0.75 m width is proposed to be constructed all along the roadway on the hill side with a toe wall.

7. DESIGN OF STRUCTURES

7.1 General

7.1.1 All bridges, culverts and structures shall be designed and constructed in accordance with section 7 of the Manual and shall conform to the cross-sectional features and other details specified in the GAD enclosed.

7.1.2 Width of the carriageway of new bridge and structures shall be as follows:

Width of the Carriageway of the Project Highway shall be as per given TCS				
Sl. No.	Location (Design chainage)		Length (m)	Typical Cross section
1	0+123	0+303	180.00	Viaduct portion (TCS – II)
2	0+483	0+543	60.00	Viaduct portion (TCS – II)
3	0+543	1+503	960.00	Bridge proper (spans of 60m X 16 Nos) (TCS – II)
4	1+503	1+683	180.00	Viaduct portion (TCS – II)
Total (m)			1380.00	

7.1.3 The structures which shall be provided with footpaths:

Width of Railing & Crash Barrier: 200 mm wide railing & 450 mm wide crash barrier on both side of carriageway of Bridge portion

Footpath: 1500 mm (Both Sides) of carriageway of Bridge portion

7.1.4 Bridge shall be high-level bridge.

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

Sr. No.	Name of Bridge	Utility service to be carried
1	Middle Strait Creek Bridge	Electric line, OFC Line, Water Pipe Line

7.1.6 Cross-section of the new culverts at deck level for the Project Highway shall conform to the typical cross-sections given in section 7 of the Manual.

7.2 Culverts

7.2.1 Overall width of all culverts shall be equal to the roadway width (18 m) of the approaches.

7.2.2 Reconstruction of existing culverts - Nil

7.2.3 Widening of existing culverts - Nil

7.3 Bridges

7.3.1 Existing bridges to be re- constructed/widened

NIL

7.3.2 Additional new bridge

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

New Bridges at the following locations on the Project Highway; <i>Foundation: Pile Foundation,</i> <i>Super Structure: Pre-Cast Prestressed Post Tensioned Box Segments</i>						
Sl. No.	Location (Design chainage)		Width (m)	Length (m)	Typical Cross section	Remarks
1	0+123	0+303	14.80	180.00	Viaduct portion (TCS – II)	-
2	0+483	0+543	14.80	60.00	Viaduct portion (TCS – II)	-
3	0+543	1+503	14.80	960.00	Bridge proper (spans of 60 m X 16 Nos) (TCS – II)	Details of work as mentioned in 7.8
4	1+503	1+683	14.80	180.00	Viaduct portion (TCS – II)	-
Total (m)				1380.00		

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

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

7.3.5 Drainage system for bridge decks

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

7.3.6 Structures in marine environment

The present project stretches which includes Middle Strait Creek Bridge and its approaches is in marine environment.

7.4 Rail-road bridges

NIL

7.5 Grade separated structures

NIL

7.6 Repairs and strengthening of bridges and structures

NIL

7.7 List of Major Bridges and Structures

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

List of Major Bridge and Structures on the Project Highway; Foundation: Pile Foundation, Super Structure: Pre-Cast Prestressed Post Tensioned Box Segments,					
Sl. No.	Location (Design chainage)		Width (m)	Length (m)	Typical Cross section
1	0+123	0+303	14.80	180.00	Viaduct portion (TCS – II)
2	0+483	0+543	14.80	60.00	Viaduct portion (TCS – II)
3	0+543	1+503	14.80	960.00	Bridge proper (spans of 60 m X 16 Nos) (TCS – II)
4	1+503	1+683	14.80	180.00	Viaduct portion (TCS – II)
Total (m)				1380.00	

7.8 Details of Balance work (for Bridge Proper Chainage 0+543 to 1+503):

7.8.1 Pile work:

PILE WORK: Balance Pile Work			
Sl.no.	Description	Design chainage	Balance (Qty)
1	Piles under Pier-P2	0+663	All balance
2	Piles under Pier-PC1	0+723	All balance
3	Piles under Pier-PC2	0+783	All balance
4	Piles under Pier-PC3	0+843	All balance
5	Piles under Pier-PC4	0+903	All balance
6	Piles under Pier-PC5	0+963	6 Nos full balance+ 1Nos Partially Balance

7.8.2 Pile caps:

Balance Pile cap Work		
Sr.no.	Description	Design chainage
1	Pile cap under Pier-P2	000+663
2	Pile cap under Pier-PC1	000+723
3	Pile cap under Pier-PC2	000+783
4	Pile cap under Pier-PC3	000+843
5	Pile cap under Pier-PC4	000+903
6	Pile cap under Pier-PC5	000+963

7.8.3 Pier & Abutments Shaft:

PIERS & ABUTMENT SHAFT: Balance Pier Shaft Work			
Sl.no.	Description	Design chainage	Remarks
1	Pier-A1	0+540	-
2	Pier-P1	0+603	-
3	Pier-P2	0+663	-
4	Pier-PC1	0+723	-
5	Pier-PC2	0+783	-
6	Pier-PC3	0+843	-
7	Pier-PC4	0+903	-
8	Pier-PC5	0+963	Partially Balance
9	Pier-P6	1+023	Partially Balance

7.8.4 Pier Cap:

Balance Pier cap Work		
Sr.no.	No.	Design chainage
1	Pier -A1	000+543
2	Pier-P1	000+603
3	Pier-P2	000+663
4	Pier-PC1	000+723
5	Pier-PC2	000+783
6	Pier-PC3	000+843
7	Pier-PC4	000+.903
8	Pier-PC5	000+963
9	Pier-P6	1+023
10	Pier-P7	1+083
11	Pier-P8	1+143
12	Pier-P9	1+203
13	Pier-P10	1+263
14	Pier-P11	1+323
15	Pier-P12	1+383
16	Pier-P13	1+443
17	Pier-A2	1+503

7.8.5 Box Girder Segment Casting

Balance Box Segment Casting		
Sr.no.	Span no.	Casting Balance (Qty)
1	Span-1 to Span-13	All segments

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

2	Span-14	15 Nos
3	Span-15	zero
4	Span-16	1 Nos

7.8.6 Box Girder Segment and Stressing and Fixing in all respect:

Balance Segment Launching		
Sr.no.	Span no.	Balance (Nos)
1	All Spans	All segments

7.8.7 Other Balance Works:

Other balance works shall also include all ancillary works associated with the completion of balance bridge and approaches including wearing coat, crash barrier, hand rails, painting, bearings, MCB, expansion joints, road marking & furniture, road side drains, road side plantation etc. as furnished below

(i) BEARINGS AND EXPANSION JOINTS

POT/PTFE bearings and Strip Seal expansion joints shall be used confirming to the standard specifications.

(ii) CRASH BARRIER AND HAND RAILS

RCC crash barriers 900 mm above the FRL and handrails as per standard specifications shall be provided.

(iii) WEARING COAT

Mastic Asphalt shall be provided in the bridge portion along with Bituminous concrete layer as per MoRT&H specification

(iv) ROAD MARKING, PAINTING AND FINISHING

Thermoplastic/Retroreflective paints shall be used as applicable as per direction of Engineer in charge.

(v) ROADSIDE FURNITURE

Road side furniture shall be provided in accordance with the provisions of drawings and IRC/MoRT&H Specifications. Traffic sign, Kerb, Kerb channel, road marking, metal beam barrier, crash barrier, illumination, footpath etc. shall be provided as per IRC/MoRT&H Specifications.

(vi) STREET LIGHTING

Street lighting shall be provided along Middle Strait Bridge & approaches with two high masts at the at-grade junction. The provisions for lighting shall be as per relevant IRC/IS

codes.

(vii) INSPECTION BUNGALOW

Balance works of inspection bungalow shall be completed in all aspects including balance plaster works, painting and all the furnishings of office & IB including 1.5ton AC in the four rooms and lobby, Geyser, 2 sets of 36" TV, Refrigerator, Electrical power connection, all necessary plumbing & sanitary fittings and water supply tank/ tube well as per approved plan drawings.

8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

- a. Traffic control devices and road safety works shall be provided in accordance with Section 9 of the Manual.
- b. Specifications of the reflective sheeting shall as per latest MORT&H Specifications.

9. ROADSIDE FURNITURE

- a. Road side furniture shall be provided in accordance with the provisions of drawings and IRC/MoRT&H Specifications. Traffic sign, Kerb, Kerb channel, road marking, metal beam barrier, crash barrier, illumination, footpath etc. shall be provided as per IRC/MoRT&H Specifications.

10. COMPULSORY AFFORESTATION

The number of trees which are required to be planted by the Contractor as compensatory Afforestation shall be five times that of the trees to be cut.

11. HAZARDOUS LOCATIONS

NIL

12. SPECIAL REQUIREMENTS

12.1 Protection work (Retaining wall/ Reinforced Earth wall/Reinforced soil wall etc):

Sl. No.	Location (Design chainage)		Length (m)
1	0+063	0+123	60.00
2	0+303	0+483	180.00
3	1+683	1+778	95.00
Total (m)			335.00

The minimum requirement is suggested above, which may vary as per final drawings and design approved by Competent Authority. The contractor is required to conduct the

detailed investigations to assess the work as per site survey, investigations and assessments before the commencement of work.

13. CHANGE OF SCOPE

The length of Structures and bridges specified herein above shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

(Schedule B-1)

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

NIL

Sheet-II (Annexure-I to Schedule-B)

Utility Shifting.

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

Notes:

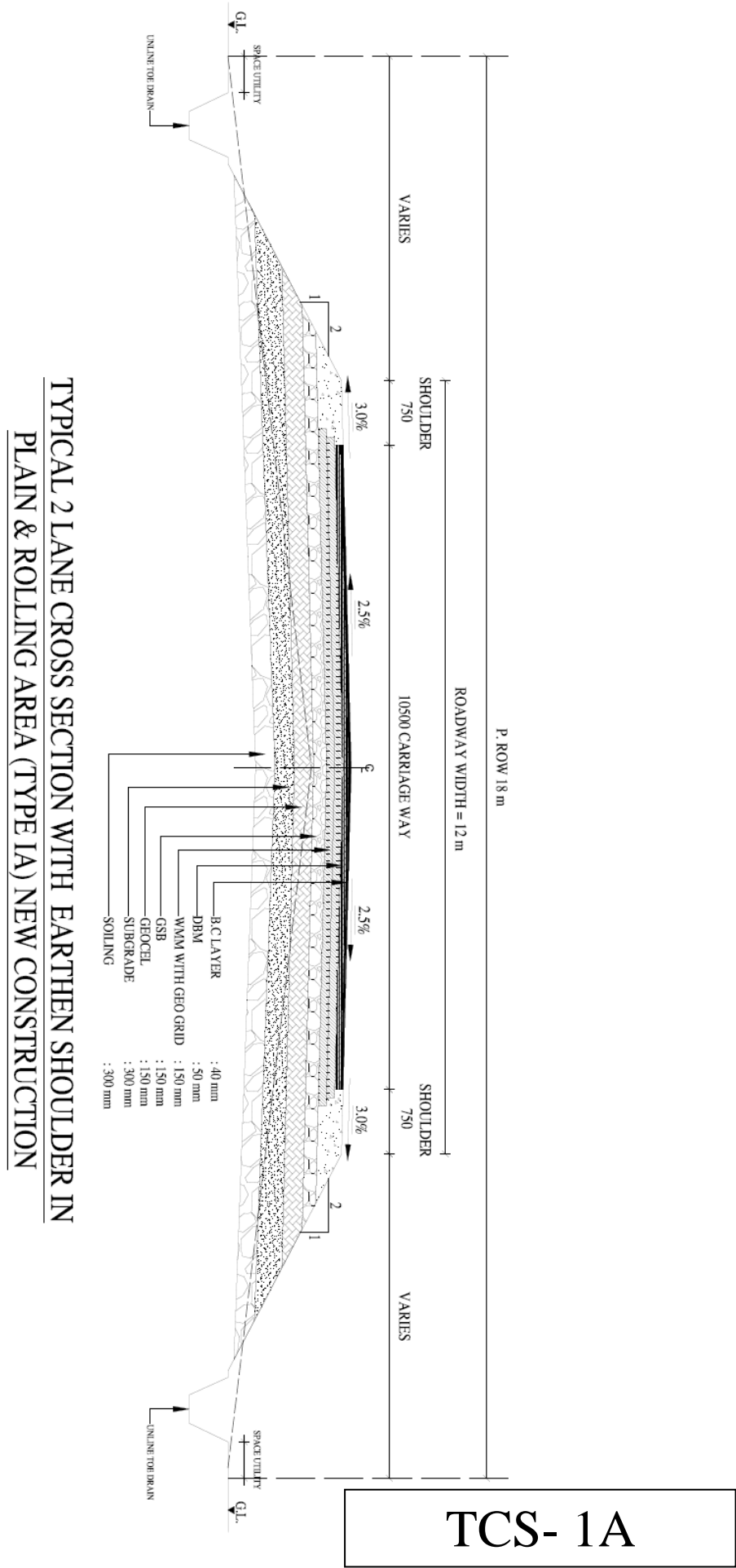
(a) The type/ spacing/ size/ specifications of poles/ towers/ lines/ cables to be used in shifting work shall be as per the guidelines of utility owning department and it is to be agreed solely between the Contractor / Concessionaire* and the utility owning department. No change of scope shall be admissible and no cost shall be paid for using different type/ spacing/ size/ specifications in shifted work in comparison to those in the existing work or for making any overhead crossings to underground as per requirement of utility owning department and/or construction of project highway. The Contractor/Concessionaire* shall carry out joint inspection with utility owning department and get the estimates from the utility owning department. The assistance of the Authority is limited to giving forwarding letter on the proposal of Contractor/Concessionaire* to utility owning department whenever asked by the Contractor/Concessionaire*. The decision/ approval of utility owning department shall be binding on the Contractor/Concessionaire*.

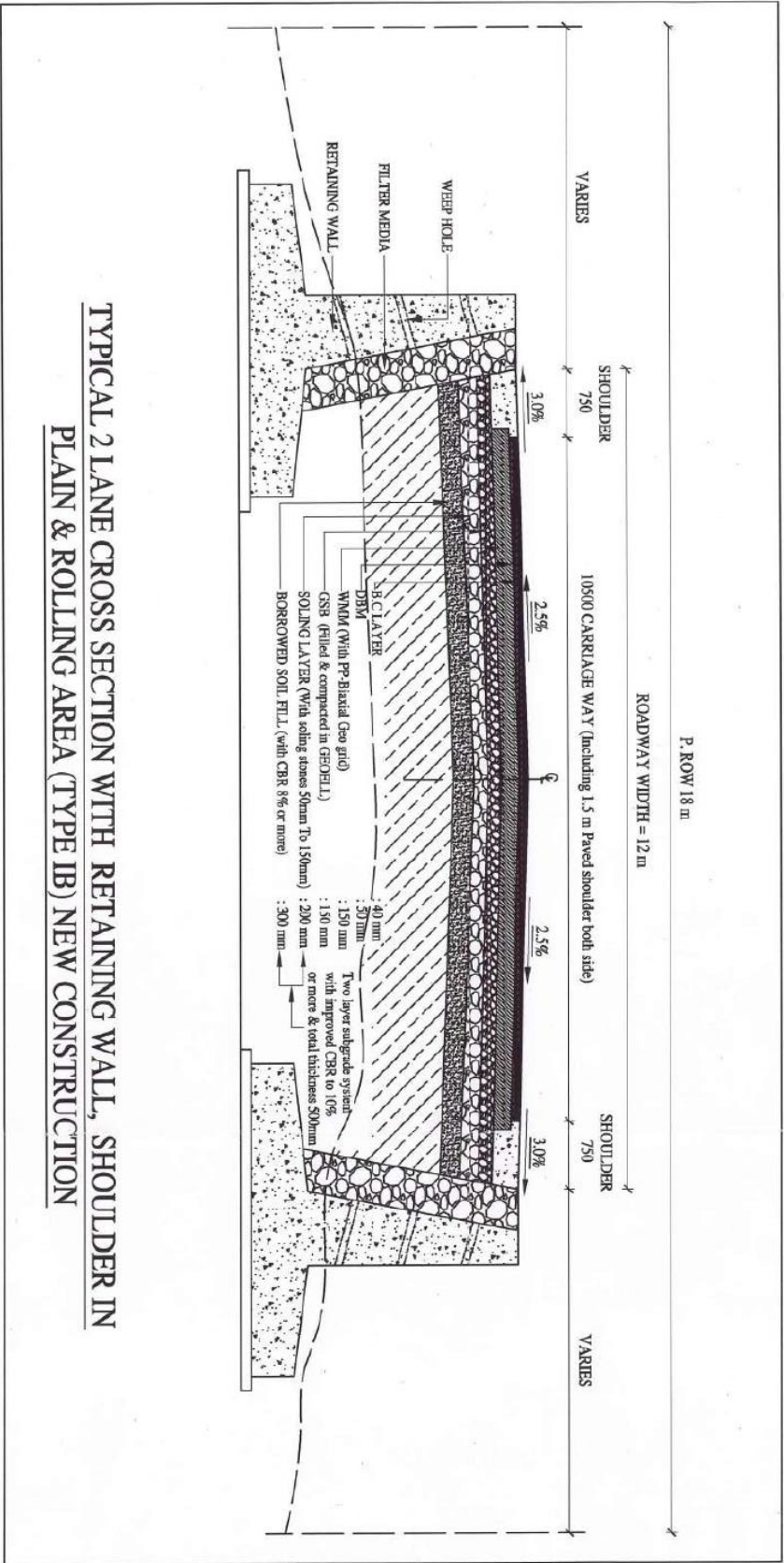
(b) The supervision charges at the rates/ charges applicable of the utility owning department shall be paid directly by the Authority to the Utility Owning department as and when Contractor/Concessionaire* furnishes demand of Utility Owning Department along with a copy of estimated cost given by the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

(c) The dismantled material/scrap of existing Utility to be shifted/ dismantled shall belong to the Contractor/ Concessionaire* who would be free to dispose-off the dismantled material as deemed fit by them unless the Contractor /Concessionaire* is required to deposit the dismantled material to utility owning department as per the norm and practice and in that case the amount of credit for dismantled material may be availed by the Contractor/Concessionaire* as per estimate agreed between them.

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

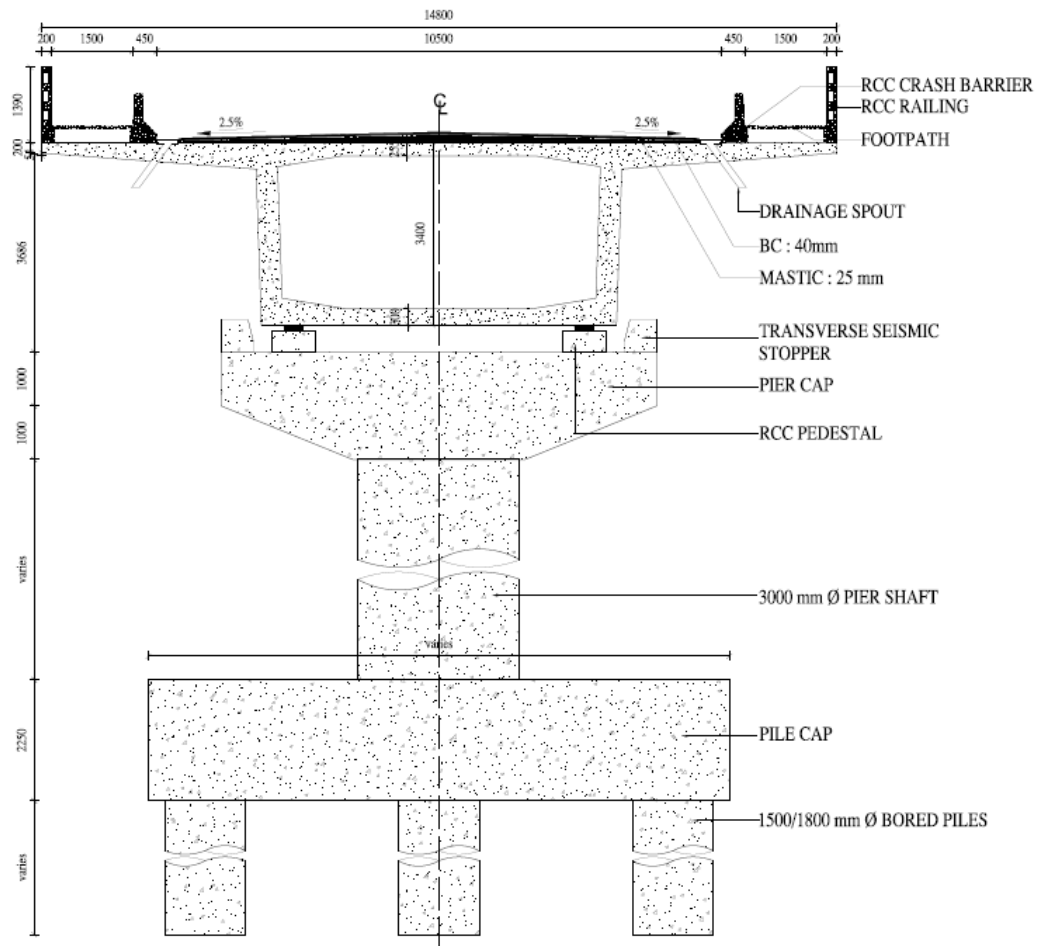
Note -II ~~Copy of utility shifting plans enclosed as Annexure-II to Schedule B1.~~



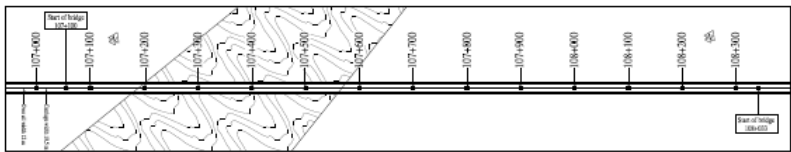


TCS- 1B

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.



TYPICAL 2 LANE CROSS SECTION WITH SEGMENT & STRUCTURE WORK (TYPE II) NEW CONSTRUCTION



KEY PLAN

TCS-2

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:

Scope of balance project facilities as defined under Clause 7.8.7, and a brief description is incorporated in the schedule		
Sr.no.	Description	Remarks
1	Roadside furniture;	
2	Pedestrian facilities	
3	Tree plantation;	
4	Lighting Facilities;	
5	Office cum Inspection Bungalow	Partially completed

2 Description of Project Facilities:

- (a) **Roadside furniture** shall include Ordinary Km. Stone, 5th Km. stone, hectometer stone, boundary pillars, sign boards, pavement markings etc. and shall be as per relevant IRC codes and conforming to MORT&H Specifications.
- (b) **Pedestrian facilities:** At all the major intersections and in built up- areas, footpaths of 1.5m width, Guard railings, Zebra-crossings, Pedestrian cross signs and flashing signals should be provided considering pedestrian safety.
- (c) Tree plantation shall be done as per directions of Engineer-in-Charge
- (d) **Lighting:** Along Middle Strait Bridge & approaches with two high mast at the at-grade junction.
- (e) Office cum Inspection bungalow (G+1) of 250 sqm with all the furnishings of office & IB including 1.5ton AC in the four rooms and lobby, Geyser, 2 sets of 36” TV, Refrigerator, Electrical power connection, all necessary plumbing & sanitary fittings and water supply tank/ tube well. (as per tender plan drawings, final working drawings shall be finalized with the approval of AE))
- (f) **Other Facilities:** As per directions of Engineer-in-Charge

SCHEDULE - D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

v. 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.

vi. Design Standards

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

Manual of Specifications and Standards for Two-Laning of Highways (IRC: SP: 73- 2018), referred to herein as the Manual & and MORTH Specifications for Road and Bridge Works. However, the overall width of proposed bridge of 14.8m shall be undertaken. The carriageway of the bridge shall be 10.5 m wide in accordance with the cross sections drawings give in GAD enclosed herewith.

Formation width of approaches shall be increased to overall width of bridge in at least for 90 m on either side of bridge followed by a transition of 1:20.

Specifications and Standards for Construction

1. Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Two-Laning of Highways (IRC:SP:73-2018), referred to as the Manual, and MoRTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2. Deviations from the Specifications and Standards

- 2.1 The terms "Concessionaire", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively.
- 2.2 The Lateral clearance between the piers of the bridge shall be minimum 60m and the vertical clearance within the waterway shall be minimum **22.5 m** above HTL for the Middle Strait Creek Bridge.
- 2.3 The Cross Section of the bridge portion and approach road of Middle Strait Creek Bridge shall be as per.
- 2.4 Anti-Corrosive/ Sulphate resistant cement shall be used for construction as per environmental conditions.
- 2.5 The Bridge structure need to be designed for "extreme" exposure conditions defined under section 14 of IRC:112 after following the laid down procedure in IRC:112. Besides, adequate protective measures for corrosion protection to concrete, reinforcing steel and prestressing steel should also be provided as per IRC :112 & IRC:SP:80-2008 in order to ensure adequate performance during designed service life of bridge structure.

Schedule - E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

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

(ii) The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-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.

[Specify all the relevant documents]

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.

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

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.

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

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.tfhr.com/pavement/ltp/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

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

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					
	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 SCRM (Sideway-force Coefficient Routine Investigation Machine or equivalent)	Class I Profilometer : ASTM E950 (98) :2004 – Standard Test Method for measuring Longitudinal Profile of Travelled Surfaces with Accelerometer Established Inertial Profiling Reference ASTM E1656 -94: 2000- Standard Guide for Classification of Automatic Pavement Condition Survey Equipment	180 days	IRC:82-2015
	Skid Number	60SN	50SN	Bi-Annually			180 days	BS: 7941-1: 2006
	Pavement Condition Index	3	2.1	Bi-Annually			180 days	IRC:82-2015
	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

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

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

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

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					
	Embankment Protection	Nil	Nil	Daily	NA		7-15 days	MORT&H Specification
	Rain Cuts/ Gullies in slope	Nil	Nil	Daily Specially During Rainy Season	NA		7-15 days	MORT&H Specification

In addition to the above performance criterion, the contractor shall strictly maintain the rigid pavements as per requirements in the 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 > 1m. 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 > 1 m. Within 7 days	Staple or Dowel Bar Retrofit, FDR for affected portion. Within 15days
			5	w > 3 mm.		
2	Single Transverse (or Diagonal) Crack intersecting with one or more joints	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Route and seal with epoxy. Within 7 days	Staple or Dowel Bar Retrofit. Within 15days
			2	w = 0.2 - 0.5 mm, discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route, seal and stitch, 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

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
			5	$w > 6$ mm, usually associated with spalling, and/or slab rocking under traffic	Not Applicable, as it may be full depth	reconstruct affected. Portion with norms and specifications - See Para 5.5 & 9.2 Within 15days
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, discernible 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 $L > 1$ m. Within 15 days	-
			3	$w = 3.0 - 6.0$ mm	Staple, if $L > 1$ m. Within 15 days	Partial Depth Repair with stapling. Within 15 days
			4	$w = 6.0 - 12.0$ mm, usually associated with spalling	Not Applicable, as it may be full depth	Full Depth Repair Dismantle and reconstruct affected portion as per norms and specifications - See Para 5.6.4 Within 15 days
			5	$w > 12$ mm, usually associated with spalling, and/or slab rocking under traffic		
4	Multiple Cracks intersecting with one or	w = width of crack	0	Nil, not discernible	No Action	-
			1	$w < 0.2$ mm, hair cracks	Seal, and stitch if $L > 1$ m.	

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
	more joints		2	w = 0.2 - 0.5 mm. discernible from slow vehicle	Within 15 days	
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Full depth repair within 15 days	Dismantle, Reinstatement subbase, Reconstruct whole slab as per specifications within 30 days
			4	w = 3.0 - 6.0 mm panel broken into 2 or 3 pieces		
			5	w > 6 mm and/or panel broken into more than 4 pieces		
5	Corner Break	w = width of crack L = length of crack	0	Nil, not discernible	No Action	-
			1	w < 0.5 mm; only 1 corner broken	Seal with low viscosity epoxy to secure broken parts Within 7 days	Seal with epoxy seal with epoxy Within 7days
			2	w < 1.5 mm; L < 0.6 m, only one corner broken		
			3	w < 1.5 mm; L < 0.6 m, two corners broken	Partial Depth (Refer Figure 8.3 of IRC:SP: 83-2008) Within 15 days	Full depth repair
			4	w > 1.5 mm; L > 0.6 m or three corners broken		
			5	three or four corners broken		Reinstate sub-base, and reconstruct the slab as per norms and specifications within 30days
6	Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP))	w = width of crack L = length (m/m ²)	0	Nil, not discernible		No Action
			1	w < 0.5 mm; L < 3 m/m ²	Not Applicable, as it may be full depth	Seal with low viscosity epoxy to secure broken parts.
			2	either w > 0.5 mm or L < 3 m/m ²		
			3	w > 1.5 mm and L < 3 m/m ²		

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

S.No.	Type of Distress only)	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
						Within 15days
			4	$w > 3 \text{ mm}$, $L < 3 \text{ m/m}^2$ and deformation		Full depth repair - Cut out and replace damaged area taking care not to damage reinforcement.
			5	$w > 3 \text{ mm}$, $L > 3 \text{ m/m}^2$ and deformation		Within 30days
Surface Defects						
7	Ravelling or Honeycomb type surface	r = area damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	Short Term No action.	Not Applicable
			1	$r < 2 \%$	Local repair of areas damaged	
			2	$r = 2 - 10 \%$	and liable to be damaged. Within 15 days	
			3	$r = 10-25\%$	Bonded Inlay, 2 or 3 slabs if affecting.	
			4	$r = 25 - 50 \%$	Within 30 days	
			5	$r > 50\%$ and $h > 25 \text{ mm}$	Reconstruct slabs, 4 or more slabs if affecting. Within 30 days	
8	Scaling	r = damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	Short Term No action.	Not Applicable
			1	$r < 2 \%$	Local repair of areas damaged	
			2	$r = 2 - 10 \%$	and liable to be damaged.	

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
					Within 7days	
			3	$r = 10 - 20\%$	Bonded Inlay within 15 days	
			4	$r = 20 - 30 \%$		
			5	$r > 30 \%$ and $h > 25 \text{ mm}$	Reconstruct slab within 30 days	
9	Polished Surface/Glazing	t = texture depth, sand patch test	0		No action.	Not Applicable
			1	$t > 1 \text{ mm}$		
			2 '	$t = 1 - 0.6 \text{ mm}$	Monitor rate of deterioration	
			3	$t = 0.6 - 0.3 \text{ mm}$		
			4	$t = 0.3 - 0.1 \text{ mm}$	Diamond Grinding if affecting 50% or more slabs in a continuous stretch of minimum 5 km. Within 30 days	
			5	$t < 0.1 \text{ mm}$		
10	Popout (Small Hole), Pothole Refer Para 8.4	n = number/ m^2 d = diameter h = maximum depth	0	$d < 50 \text{ mm}$; $h < 25 \text{ mm}$; $n < 1 \text{ per } 5 \text{ m}^2$	No action.	Not Applicable
			1	$d = 50 - 100 \text{ mm}$; $h < 50 \text{ mm}$; $n < 1 \text{ per } 5 \text{ m}^2$	Partial depth repair 65 mm deep. Within 15 days	
			2	$d = 50 - 100 \text{ mm}$; $h > 50 \text{ mm}$; $n < 1 \text{ per } 5 \text{ m}^2$		
			3	$d = 100 - 300 \text{ mm}$; $h < 100 \text{ mm}$ $n < 1 \text{ per } 5 \text{ m}^2$	Partial depth repair 110mm i.e.10 mm more than the depth of the hole.	
			4	$d = 100 - 300 \text{ mm}$; $h > 100 \text{ mm}$; $n < 1 \text{ per } 5 \text{ m}^2$		

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
					Within 30 days	
			5	$d > 300 \text{ mm}; h > 100 \text{ mm}; n > 1 \text{ per } 5 \text{ m}^2$	Full depth repair. Within 30 days	

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Joint Defects						
11	Joint Seal Defects	loss or damage L = Length as % total joint length	0	Difficult to discern.	Short Term No action.	Long Term Not Applicable
			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.

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			3	f = 6 - 12 mm	Diamond Grinding	Within 30days
			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	Full Depth Repair. Within 30 days	
			4	h > 25 mm	Replace broken slabs. Within 30 days	
			5	shattered slabs, ie 4 or more pieces		
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	Long Term
					No action.	
			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					

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			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 normal profile	0	h < 4 mm	No action	
			1	h = 4 - 7 mm	Grind, in case of new construction within 7 days	Construction Limit for New Construction.
			3	h = 7 - 15 mm	Grind, in case of ongoing Maintenance within 15 days	Replace in case of new construction. Within 30days
			5	h > 15 mm	Full Depth Repair. Within 30 days	Full Depth Repair. Within 30days
18	Lane to Shoulder Dropoff	f = difference of level	0	Nil, not discernible < 3mm	Short Term No action.	Long Term
			1	f = 3 - 10 mm	Spot repair of shoulder within 7 days	
			2	f = 10 - 25 mm		
			3	f = 25 - 50 mm		
			4	f = 50 - 75 mm		
			5	f > 75 mm	Fill up shoulder within 7 dayss	For any 100 m stretch Reconstruct shoulder, if affecting 25% or more of stretch. Within 30days
Drainage						
19	Pumping	quantity of fines and water expelled through open joints and cracks Nos	0	not discernible	No Action	
			1 to 2	slight/ occasional Nos < 10%	Repair cracks and joints Without delay.	Inspect and repair sub-drainage at distressed sections and upstream.
			3 to 4	appreciable/ Frequent 10 - 25%	Lift or jack slab within 30 days.	
		Nos/100 m stretch	5	abundant, crack development > 25%	Repair distressed pavement sections. Strengthen subgrade and subbase. Replace slab. Within 30 days	
20	Ponding	Ponding on slabs due to blockage of drains	0-2	No discernible problem	No action.	
			3 to 4	Blockages observed in	Clean drains etc within 7 days, Follow	Action required to stop

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				drains, but water flowing up		water damaging foundation within 30 days.
		5		Ponding, accumulation of water observed	-do-	

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

Asset Type	Performance Parameter	Level of Service (LOS)			Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Highway	Availability of Safe Sight Distance	As per IRC SP :84-2014, a minimum of safe stopping sight distance shall be available throughout.			Monthly	Manual Measurements with Odometer along with video/ image backup	Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments. In case of permanent structure or design deficiency: Removal of obstruction/improvement of deficiency at the earliest Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification.		IRC:SP 84-2014
		Design Speed, kmph	Desirable Minimum Sight Distance (m)	Safe Stopping Sight Distance (m)					
		100	360	180					
		80	260	130					

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Annual and Recurring Standards on LFC Basis:							
Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Pavement Marking	Wear	<70% of marking remaining	Bi-Annually	Visual Assessment as per Annexure-F of IRC:35-2015	Re - painting	Cat-1 Defect – within 24 hours Cat-2 Defect - within 2 months	IRC:35-2015
	Day time Visibility	During expected life Service Time Cement Road - 130mcd/m²/lux Bituminous Road - 100mcd/m²/lux	Monthly	As per Annexure-D of IRC:35-2015	Re - painting	Cat-1 Defect – within 24 hours Cat-2 Defect – within 2 months	IRC:35-2015
	Night Time Visibility	<div><div><div><div><div><u>Initial and Minimum Performance for Dry Retro reflectivity during night time:</u></div><div>Design Speed</div></div><div>(RL) Retro Reflectivity (mcd/m²/lux)</div></div><div><div>Initial (7 days)</div><div>Minimum Threshold level (TL) & warranty period required up to 2 years</div></div><div><div>Up to 65</div><div>200</div><div>80</div></div><div><div>65 - 100</div><div>250</div><div>120</div></div><div><div>Above 100</div><div>350</div><div>150</div></div></div><div><div><u>Initial and Minimum Performance for Night Visibility under wet condition (Retro reflectivity):</u></div><div>Initial 7 days Retro reflectivity: 100 mcd/m²/lux</div></div></div> <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>	Bi-Annually	As per Annexure-E of IRC:35-2015	Re - painting	Cat-1 Defect – within 24 hours Cat-2 Defect – within 2 months	IRC:35-2015

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

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Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
						Gantry/Cantilever Sign boards	
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance measuring tape	Raising Kerb Height	Within 1 Month	RC 86:1983
	Kerb Painting	<u>Functionality</u> : Functioning of Kerb painting as intended	Daily	Visual with video/image backup	Kerb Repainting	Within 7-days	RC 35:2015
Other Road Furniture	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2014 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC:SP:84-2014, IRC:35-2015
	Pedestrian Guardrail	<u>Functionality</u> : Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:SP:84-2014
	Traffic Safety Barriers	<u>Functionality</u> : Functioning of Safety Barriers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014, IRC:119-2015
	End Treatment of Traffic Safety Barriers	<u>Functionality</u> : Functioning of End Treatment as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014, IRC:119-2015
	Attenuators	<u>Functionality</u> : 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	<u>Functionality</u> : 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

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Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Traffic Blinkers	Functionality: Functioning of Traffic Blinkers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014
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:84-2014
		No major failure in the lighting system	Daily	-	Rectification of failure	24 hours	IRC:SP:84-2014
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:84-2014
	Toll Plaza Canopy Lights	Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major/minor failure in the lighting system	Daily	-	Rectification of failure	8 hours	IRC:SP:84-2014
Trees and Plantation including median plantation	Obstruction in a minimum head-room of 5.5 m above carriageway or obstruction in visibility of road signs	No obstruction due to trees	Monthly	Visual with video/image backup	Removal of trees	Immediate	IRC:SP:84-2014

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Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	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:84-2014
	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction by vegetation	Daily	Visual with video/image backup	Removal of Trees	Immediate	IRC:SP 84-2014
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	
Other Project Facilities and Approach roads	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 84-2014

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Table 4: Maintenance Criteria for Structures and Culverts:

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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 than 0.25 sq.m.					
		Cracks wider than 0.3 mm not more than 1m aggregate length					

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	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 year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Bridges including ROBs 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 guard rail)	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspection and detailed condition survey as per IRC SP: 35-1990.	Repairs and replacement of safety barriers as the case may be	3days	IRC: 5-1998, IRC SP: 84-2014 and IRC SP: 40-1993.
	Rusted reinforcement	Not more than 0.25 sq.m	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 the	15 days	IRC SP: 40-1993 and MORTH Specification 1600.
	Spalling of concrete	Not more than 0.50 sq.m					

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	Delamination	Not more than 0.50 sq.m			repairs to affected concrete portion with epoxy mortar / concrete.		
	Cracks wider than 0.30 mm	Not more than 1m total length	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, investigating causes for cracks development and carry out necessary rehabilitation.	48 Hours	IRC SP: 40-1993 and MORTH Specification 2800.
	Rainwater seepage through deck slab	Leakage - nil	Quarterly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting of deck slab at leakage areas, waterproofing, repairs to drainage spouts	1 months	MORTH specifications 2600 & 2700.
	Deflection due to permanent loads and live loads	Within design limits.	Once in every 10 years for spans more than 40 m	Load test method	Carry out major rehabilitation works on bridge to retain original design loads capacity	6 months	IRC SP: 51-1999.
	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 vibrometers	Strengthening of super structure	4 months	AASHTO LRFD specifications

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	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 collection chamber.	Monthly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Cleaning of drainage spouts thoroughly. Replacement of missing/broken down take pipes with a minimum pipe extension of 500mm below soffit of slab. Providing sealant around the drainage spout if any leakages observed.	3 days	MORTH specification 2700.

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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.

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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 of deep wells in major Rivers.	Suitable protection works around pier/abutment	1 month	IRC SP: 40-1993, IRC 83-2014, MORTH specification 2500
	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.

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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.

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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

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

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Nature of Defect or deficiency		Time limit for repair/rectification
(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 4.1.7(a))

APPLICABLE PERMITS

1 Applicable Permits

- 1.1 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.
- 1.2 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 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE

Annex-I

(See Clause 7.1.1)

[Performance Security/Additional Performance Security]

[Managing Director

National Highways and Infrastructure Development Corporation Ltd.

New Delhi]

WHEREAS:

- (A) _____ [name and address of contractor]
(hereinafter
_____ [name and address of contractor] (hereinafter
called the “**Contractor**”) and National Highways and Infrastructure
Development Corporation Ltd, 3rd Floor, PTI Building, 4, Parliament Street,
New Delhi – 110001 (hereinafter called the “**Authority**”) have entered into an
agreement (hereinafter called the “**Agreement**”) for the **Construction of Balance
works of Major Bridge over Middle Strait Creek between Km. 106.590 to
km 108.553 of NH-04 connecting South Andaman & Baratang Island in the
Union Territory of Andaman & Nicobar Islands on EPC Basis.** 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.
(Rupeescrore) (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 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 demandor 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 bypost 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 operable at our... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

\$ Insert date being 2 (two) years from the date of issuance of this Guarantee (in accordance with Clause 7.2 of the Agreement).

(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.
- (iii) Bank Guarantee has been sent to authority's bank for confirmation of BG through SFMS gateway as per the details below:-

Sr. No.	Particulars	Details
1	Name of Beneficiary	MD-NHIDCL
2	Beneficiary Bank Account No	90621010002610
3	Beneficiary Bank Branch Name and Address	Canara Bank, Transport Bhawan, 1st Parliament Street, New Delhi-110001
4	Beneficiary Bank Branch IFSC	CNRB0019062
5	Email address	cb19062@canarabank.com

Format of Insurance Surety Bond
[Performance Security/Additional Performance Security]

To

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

WHEREAS _____ [name and address of Contractor]

(hereafter called the "Contractor") has undertaken, in pursuance of Letter of Acceptance (LOA) No. _____ Dated _____ for construction of "**Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC mode**" (hereinafter called the "Contract").

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

AND WHEREAS we, through our branch at (the "Surety Insurer") have agreed to furnish this Surety Bond by way of Performance security.

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

1. The Surety Insurer hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the (Construction Period/ Defects Liability Period and Maintenance Period' under and in accordance with the Contract, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Surety Bond 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 [Superintending Engineer of Ministry of Road Transport Et Highways], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Contract shall be conclusive, final and binding on the Surety Insurer. The Surety Insurer 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 Contract and its decision that the Contractor is in default shall be final

and binding on the Surety Insurer, 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 Surety Bond, the Authority shall be entitled to act as if the Surety Insurer were the principal debtor and any/Change in the constitution of the Contractor and/or the Surety Insurer, 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 Surety insurer under this Surety Bond
4. It shall not be necessary, and the Surety Insurer hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Surety Insurer its demand under this Surety Bond.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Surety Insurer under this Surety Bond, to vary at any time, the terms and conditions of the Contract or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Contract or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Contract and/or the securities available to the Authority, and the Surety Insurer 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 Surety Insurer from its liability and obligation under this Surety Bond and the Surety Insurer hereby waives all of its rights under any such law
6. This Surety Bond is in addition to and not in substitution of any other Surety Bond or security now or which may hereafter be held by the Authority in respect of or relating to the Contract or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Contract.
7. Notwithstanding anything contained hereinbefore, the liability of the Surety Insurer under this Surety Bond is restricted to the Surety Bond Amount and this Surety Bond 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 Surety Insurer under this Surety Bond all rights of the Authority under this Surety Bond shall be forfeited and the Surety Insurer shall be relieved from its liabilities hereunder
8. The Surety Bond shall cease to be in force and effect on ****\$. Unless³ a demand or claim under this Surety Bond is made in writing before expiry of the Surety Bond, the Surety Insurer shall be discharged from its liabilities hereunder.
9. The Surety Insurer undertakes not to revoke this Surety Bond 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 Surety Bond and the undersigned has full powers to do so

³Insert date atleast 2 (two) years from the date of issuance of this Surety Bond (in accordance with Clause 2.21 of the RFP). The Contractors can submit the BG for periods of two years at one time and keep on renewing the same till the DLP is over if they have problems in getting the BG in one go for the entire DLP.

on behalf of the Surety Insurer.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Surety Insurer at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post 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 Surety Bond shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Contract.
12. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

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)

Annex – II (Schedule - G) (See Clause 7.5.3)

Form for Guarantee for Withdrawal of Retention Money

National Highways and Infrastructure Development
Corporation Ltd. 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 and Infrastructure Development Corporation Ltd, 3rd Floor, PTI Building, 4, Parliament Street, New Delhi – 110001, (hereinafter called the “**Authority**”) for the **Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.**, subject to and in accordance with the provisions of the Agreement.
- (B) In accordance with Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called the “**Retention Money**”) after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.
- (C) We, through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (hereinafter called the “**Guarantee**”) for the amount of Rs. ----- cr. (Rs.-----crore) (the “**Guarantee Amount**”).

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

1. The Bank hereby unconditionally and irrevocably 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 NHIDCL, that the Contractor has committed default in the

due and faithful performance of all or any of its obligations for 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 Retention Money and 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 Retention Money.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this

Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of the Completion Certificate specified in Clause 12.4 of the Agreement.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent bypost addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted 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 operable at our... ..Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

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

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

- (iii) Bank Guarantee has been sent to authority's bank for confirmation of BG through SFMS gateway as per the details below:-

Sr. No.	Particulars	Details
1	Name of Beneficiary	MD-NHIDCL
2	Beneficiary Bank Account No	90621010002610
3	Beneficiary Bank Branch Name and Address	Canara Bank, Transport Bhawan, 1st Parliament Street, New Delhi-110001
4	Beneficiary Bank Branch IFSC	CNRB0019062
5	Email address	cb19062@canarabank.com

Annex – III (Schedule - G) (See Clause 19.2)

Form for Guarantee for Advance Payment

NHIDCL

WHEREAS:

- (A) [name and address of contractor] (hereinafter called the “**Contractor**”) has executed an agreement (hereinafter called the “**Agreement**”) with the [name and address of the authority], (hereinafter called the “**Authority**”) for the **Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.** on Engineering, Procurement and Construction (the “**EPC**”) 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) 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**”)\$.^{\$}

^{\$} The Guarantee Amount should be equivalent to 110% of the value of the applicable instalment. 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 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 demandor 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 bypost addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted 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. Notwithstanding anything contained herein before, our liability under this Bank Guarantee is restricted to Rs. _____ (Rs. _____ in words) and the

\$ Insert a date being 90 (ninety) days after the end of one year from the date of payment of the Advancepayment to the Contractor (in accordance with Clause 19.2 of the Agreement).

bank guarantee shall remain valid till_____. Unless a claim or
ademand in writing is served upon us on or before_____
_____all our liability
under this Bank Guarantee shall cease.

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

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.
- (iii) Bank Guarantee has been sent to authority's bank for confirmation of BG throughSFMS gateway as per the details below:-

Sr. No.	Particulars	Details
1	Name of Beneficiary	MD-NHIDCL
2	Beneficiary Bank Account No	90621010002610
3	Beneficiary Bank Branch Name and Address	Canara Bank, Transport Bhawan, 1st Parliament Street, New Delhi-110001
4	Beneficiary Bank Branch IFSC	CNRB0019062
5	Email address	cb19062@canarabank.com

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

SCHEDULE - H

See Clauses 10.1 (iv) and 19.3

Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs. *****

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

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
Road works including culverts, widening and repair of culverts.	[2.82%]	A- Widening and strengthening of existing road (1) Earthwork up to top of the sub-grade (2) <u>Sub-Base Course</u> (3) <u>Non Bituminous Base Course</u> (4) <u>Bituminous Base Course</u> (5) <u>Wearing Coat</u> (6) Widening and repair of culverts	[**] [**] [**] [**] [**]

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		B.1- Reconstruction/ New 2-lane realignment/ bypass (Flexible pavement)	
		(1) Earthwork up totop of the sub-grade	[62.41%]
		(2) Sub-Base Course	[8.16%]
		(3) Non-Bituminous Base Course	[16.31%]
		(4) Bituminous Base Course	[7.80%]
		(5) Wearing Coat	[5.32%]
		B.2- Reconstruction/ New 2-lane realignment/ bypass(Rigid Pavement)	
			**]

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(1) Earthwork up to top of the sub-grade	[**]
		(2) <u>Sub Base Course</u>	[**]
		(3) Dry Lean Concrete(DLC) Course	[**]
		(4) Pavement Quality Control (PQC) Course	
		C.1- Reconstruction/ New service road (Flexible pavement)	[**]
			[**]
		(1) Earthwork up to top of the sub-grade	[**]
		(2) <u>Sub Base Course</u>	
		(3) Non-Bituminous Base Course	[**]
		(4) Bituminous Base Course	[**]
		(5) Wearing Coat	

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		C.2- Reconstruction/ New Service road (Rigid Pavement)	[**]
		(1) Earthwork up totop of the sub- grade	[**] [**]
		(2) <u>Sub</u> <u>BaseCourse</u>	
		(3) Dry Lean Concrete(DLC) Course	[**]
		(4) Pavement Quality Control (PQC) Course	
		D- Re- Construction and New culverts on existing road, realignments, bypasses:	[**]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		Culverts (length <6 m)	
Minor Bridges/ Under passes/ Over passes	[0.0%]	<p>A.1- Widening and Repair of Minor bridges (length > 6m and < 60 m)</p> <p>Minor bridges</p> <p>A.2- New Minor bridges (length >6 and <60 m.)</p> <p>(1) Foundation +Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.</p> <p>(2) Super-structure: On completion of the super-structure in all respects including Wearing coat, bearings, expansion joints, hand rails, crash barriers, road</p>	<p>[**]</p> <p>[**]</p> <p>[**]</p>

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		<p>signs & markings, tests on completion etc. complete in all respect.</p> <p>(3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.</p> <p>(4) Guide Bunds and River Training Works:</p> <p>On completion of Guide Bunds and river Training Works complete in all respects</p> <p>B.1- Widening and Repair of underpasses /overpasses</p> <p>Underpasses /Overpasses</p>	<p>[**]</p> <p>[**]</p>

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		B.2- New underpasses /overpasses (1) Foundation +Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	[**] [**]
		(2) Super-structure: On completion of the super-structure in all respects including Wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. 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	[**]

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		<p>drainage facility complete in all respects as specified as specified.</p> <p>(3) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.</p>	<p>[**]</p>
Major Bridge (length> 60 m.) worksand ROB/ RUB/ elevated section s/flyovers	[90.50%]	<p>A.1- Widening and repairs of Major Bridges</p> <p>(1) Foundation</p> <p>(2) Sub-structure</p> <p>(3) Super-structure (including bearings)</p> <p>(4) Wearing Coat including expansion joints</p>	<p>[**]</p> <p>[**]</p> <p>[**]</p> <p>[**]</p>

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
including viaducts, if any		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	[**]
		(6) Wing walls/return walls	[**]
		(7) Guide Bunds, River Training works etc.	[**]
		(8) Approaches (including Retaining walls, stone pitching and protection works)	[**]
		A.2- New Major Bridges	
		(1) Foundation	[31.70%]
		(2) Sub-structure	[6.78%]
		(3) Super-structure	
		(a) Casting of girder/fabrication of girder	[**]
		(b) casting of segments	[24.00%]
		(c) erection of deck slab and	[36.01%]

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

		bearings	
		(4) Other ancillary works: Wearing Coat, hand rails, crash barriers, painting etc	[1.51%]
		(5) Miscellaneous works: stone pitching, protection works excluding retaining walls/ reinforced earth walls/reinforced soil wall etc.	[**]
		(6) Wing/ return wall up to full height	[**]
		(7) Guide bunds, river training works etc	[**]
		(8) Retaining walls/ reinforced earth walls etc	
		(a) Panel casting	[**]
		(b) Erection of panel/ construction of retaining wall	[**]

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Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		B.1- Widening and repair of (a) ROB (b) RUB (1) Foundation (2) Sub-structure (3) Super-structure (including bearings) (4) Wearing Coat: (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 specified. 	 [**] [**] [**] [**]

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	
		(6)Wing walls/return walls	
		(7) Approaches (including Retaining walls, stone pitching and protection works)	[**]
		B.2- New ROB/RUB	[**]
		(a)ROB	
		(b) RUB	
		(1) Foundation	[**]

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Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		<p>(2) Sub-structure</p> <p>(3) Super structure (including bearings)</p> <p>(4) Wearing Coat:</p> <p>(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 as specified.</p> <p>(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)</p> <p>(6)Wing walls/return walls</p> <p>(7) Approaches (including Retaining walls/Reinforced Earth wall, stonepitching and protection works)</p>	<p>[**]</p> <p>[**]</p> <p>[**]</p> <p>[**]</p>

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

[illegible]

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		Grade Separators (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 (7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[**] [**] [**] [**] [**] [**]

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Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
			<p>[**]</p> <p>[**]</p> <p>[**]</p>
Other works	[6.68%]	<p>(i) Toll Plaza</p> <p>(ii) Road side drains</p> <p>(iii) Road signs, markings, km stones, safety devices,</p> <p>(iv) Project facilities</p> <p>(a) Bus Bays</p> <p>(b) Truck lay-byes</p> <p>(c) Rest areas</p> <p>(d) Office cum inspection bungalow</p> <p>(e) Street lighting facilities</p> <p>(v) Road side plantation</p> <p>(vi) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROB/RUBs.</p>	<p>[**]</p> <p>[2.99%]</p> <p>[5.39%]</p> <p>[9.43%]</p> <p>[4.19%]</p> <p>[1.05%]</p> <p>[**]</p> <p>[**]</p> <p>[**]</p> <p>[**]</p>

		(vii) Safety and traffic management during construction	[4.94%]
		(viii) Retaining wall/ reinforced earth wall/ reinforced soil wall etc	[53.44%]
		(ix) Metal Beam Crash Barrier	[11.08%]
		(x) Junctions	[3.75%]
		(xi) Environmental measures	[3.74%]
Electrical utilities and public health utilities (water pipeline and sewage lines)	[Nil]	[Nil]	[Nil]

1.3 Procedure of estimating the value of work done

1.3.1 Road works.

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

Table 1.3.1

Stage of Payment	Percentage - weightage	Payment Procedure
A-Widening and strengthening of existing road (1) Earthwork up to top of the sub-grade	[**]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.
(2) <u>Sub-Base Course</u>	[**]	
(3) <u>Non Bituminous Base Course</u>	[**]	
(4) <u>Bituminous Base Course</u>	[**]	
(5) <u>Wearing Coat</u>	[**]	
(6) Widening and repair of culverts	[**]	Cost of completed culverts shall be determined pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of atleast five culverts.
B.1- Reconstruction/New 2-lane realignment/bypass (Flexible pavement) (1) Earthwork up to top of the sub-grade	[62.41%]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 mtr.
(2) <u>Sub Base Course</u>	[8.16%]	

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Stage of Payment	Percentage - weightage	Payment Procedure
(3) Non-Bituminous Course	[16.31%]	
(4) Bituminous Base Course	[7.80%]	
(5) Wearing Coat	[5.32%]	
B.2- Reconstruction/New 2-lane realignment/bypass (Rigid pavement) (1) Earthwork up to top of the sub-grade	[**]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km. length, whichever is less..
(2) <u>Sub Base Course</u>	[**]	
(3) Dry Lean Concrete (DLC) Course	[**]	
(4) Pavement Quality Control (PQC) Course	[**]	
C.1- Reconstruction/ New service road (Flexible pavement) (1) Earthwork up to	[**]	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..

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Stage of Payment	Percentage - weightage	Payment Procedure
top of the sub-grade		
(2) <u>Sub Base Course</u>	[**]	
(3) Non-Bituminous Course	[**]	
(4) Bituminous Base Course	[**]	
(5) Wearing Coat	[**]	
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	[**]	
(2) <u>Sub Base Course</u>	[**]	
(3) Dry Lean Concrete (DLC) Course	[**]	
(4) Pavement Quality Control (PQC)	[**]	

Stage of Payment	Percentage - weightage	Payment Procedure
Course		
D- Re-Construction and New culverts on existing road, realignments, bypasses: (1) Culverts (length < 6m)	[**]	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 atleast fiveculverts.

@. 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 = $P \times \text{weightage for road work} \times \text{weightage for bituminous work} \times (1/L)$

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 due to which the Contractor is unable to execute the work, maybe 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 andUnderpasses/Overpasses shall be as stated in table 1.3.2:

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1-Widening and repair of minor bridges (length > 6m and < 60m)	[**]	<p>Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge.</p>
A.2- New minor bridges (i) Foundation +Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	[**]	<p>(i) Foundation +Sub-Structure: Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation + sub-structure shall be made on pro-rata basis on 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 foundations along with sub-structure upto abutment/pier cap level of each bridge.</p>
(ii) Super-structure: On	[**]	<p>In case where load testing is required for foundation, the trigger of first payment shall</p>

<p>completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.</p> <p>(iii) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.</p> <p>(iv) Guide Bunds and River Training Works:</p> <p>On completion of Guide Bunds and river Training Works complete in all respects</p>	<p>[**]</p> <p>[**]</p>	<p>include load testing also where specified.</p> <p>(ii) Super-structure:</p> <p>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.</p> <p>(iii) Approaches:</p> <p>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.</p> <p>(iv) Guide Bunds and River Training Works:</p> <p>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.</p>
<p>B.1-Widening and repair of underpasses/overpasses</p>	<p>[**]</p>	<p>Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/overpasses</p>

		. Payment shall be made on the completion of widening & repair works of a underpass/overpass.
<p>B.2- New Underpasses/ Overpasses:</p> <p>(i) Foundation +Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.</p> <p>(ii) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc.</p>	<p>[**]</p> <p>[**]</p>	<p>(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 at least two foundations along with sub-structure upto abutment/pier cap level each underpass/overpass.</p> <p>In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.</p> <p>(ii) Super-structure:</p> <p>Payment shall be made on pro-rata basis on</p>

<p>complete in all respect.</p> <p>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 as specified.</p> <p>(iii) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all aspect and fit for use.</p>	<p>[**]</p>	<p>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.</p> <p>(iii) Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified.</p>
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1.3.3 Major Bridge works, ROB/RUB and Structures.

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

Table 1.3.3

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1- Widening and repairs of Major Bridges (i) Foundation	[**]	<p>(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 foundations shall be made on pro- rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of atleast two foundations of the major Bridge .</p>
(ii) Sub-structure	[**]	<p>In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.</p> <p>(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 the major bridge subject to completion of atleast two sub-structures of</p>
(iii) Super-structure	[**]	<p>abutments/piers upto</p>

(including bearings)		abutment/pier cap level of the major bridge.
(iv) Wearing Coat including expansion joints	[**]	<p>(iii) Super-structure:</p> <p>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.</p>
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[**]	<p>(iv) Wearing Coat:</p> <p>Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.</p>
(vi) Wing walls/return walls	[**]	<p>(v) Miscellaneous:</p> <p>Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.</p>
(vii) Guide Bunds, River Training works etc.	[**]	<p>(vi) Wing walls/return walls:</p> <p>Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.</p>
(viii) Approaches (including Retaining walls, stone pitching and protection works)	[**]	<p>(vii) Guide Bunds, River Training works:</p> <p>Payments shall</p>

		<p>be made on completion of all guide bunds/river training works etc. complete in all respects as specified.</p> <p>(viii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.</p>
A.2- New Major Bridges		
(i) Foundation: Foundation for abutment, piers (for pile foundation)	[31.70%]	<p>(i) Cost of each foundation shall be determined from cost of all foundations as under:</p> <p>Cost of one foundation of depth 'd' = $(d/D) \times \text{Cost of all foundations}$</p> <p>D = sum of depth of all foundations; Depth of foundations shall be as per approved designs & drawings by AE.</p> <p>Payment against foundations shall be made on pro-rata basis on completion of a stage as under:</p>
a. Piling		<p>Weightage shall be 70 % of total cost of one foundation. Unit of measurement is no. of piles completed till bottom of Pile cap. Payment shall be made on pro rata basis on completion of a stage in nos. of not less than 50 % of total piles.</p>
b. Pile cap		<p>Weightage shall be 30 % of total cost of one foundation. Payment shall be on completion of a stage i.e. completion of Pile cap.</p>

<p>(ii) Sub-Structure for abutment, piers up to abutment/pier cap level</p>	<p>[6.78%]</p>	<p>Cost of each substructure shall be determined from cost of all substructures as under:</p> <p>Cost of one substructure of height 'h' = $(h/H) \times \text{cost of all substructures}$; where</p> <p>H = sum of height of all substructure (height of substructures shall be as per approved design and drawings by AE)</p> <p>Payment against sub-structure shall be made on pro-rata basis on completion of a stage as under:</p>
<p>(i) Upto Bottom of Pier cap level:</p>		<p>Weightage for pier upto bottom of pier cap level shall be 50% of total cost of one substructure. The payment for pier (s) shall be made on pro rata basis on completion of a stage as under:</p> <p>(a) In case of pier height up to 10 m:</p> <p>Payment against piers shall be made on pro-rata basis on completion of atleast two piers upto abutment/ pier cap level of each bridge.</p> <p>(b) In case of pier height is more 10 m :</p> <p>(a) on achieving atleast 20 m aggregate height in two nos. of piers, as per following combinations as under:</p> <p>(i) one full pier having total designed height of less than 10 m upto bottom of pier cap and one part pier having total designed height of more than 10 m</p> <p>(ii) Two part piers, each having total designed height of more than 10 m</p> <p>(b) Subsequent payments shall be on completion of each lift, on not less than 2 m in height, beyond the pier height of 10 m, upto the bottom of the pier cap level on pro rata basis.</p>

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		iii) In case, the last lift on any pier below the pier cap is less than 2 m, the payment of the last lift shall be made on pro rata basis.
(ii) Pier cap:		Weightage shall be 50% of total cost of one substructure. Payment shall be on completion of a stage i.e. completion of pier cap
(iii) Super-structure		
a) Casting of girder/ fabrication of girders (steel)	[**]	Unit of measurement is numbers. Payment against casting of girders shall be made on pro rata basis w.r.t. total number of girders required in the structure on completion of a stage i.e. not less than completion of casting of atleast five girders of the structures.
b) Casting of Segments	24.00%	Unit measurement is numbers. Payment against casting of segments shall be made on pro rata basis with respect of total numbers of segments required in the structure on completion of a stage i.e. not less than completion of casting at least 10 (ten) segments of the structure.
c)_Erection of deck slab and bearings	36.01%	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) Other ancillary works: wearing coat, hand rails, crash barriers etc.	1.51%	Payment shall be made on pro-rata basis on completion of the stage in all respect as specified, for each structure.

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(iv) Miscellaneous works:	[**]	Payment shall be made on pro-rata basis on completion of the stage in all respect as specified, for each structure.
(iv) Wing wall/ return wall upto full height:	[**]	Payment shall be made on completion of all wing wall/ return wall for bridges as per weightage given in this table, completion in all respect as specified
(iv) Guide bunds, river training works, etc	[**]	Payment shall be made on pro-rata basis on completion of the stage in all respect as specified, for each structure.
(iv) Retaining walls/ reinforced earth walls, etc	[**]	
a) Panel casting		Unit of measurement is area in Sqm. Payment against casting of panels shall be made on pro rata basis with respect total area of panels required for the structure on completion of a stage i.e. not less than completion of casting of 25% of scope of RE wall panel of each bridge
b) Erection of panels/ construction of retaining wall		Unit of measurement is area in Sqm. Payment shall be made on pro rata basis on completion of stage i.e. completion of erection of panels/ Construction of retaining wall complete in all respect for atleast 25% scope of work for each structure
(vii) Guide Bunds, River Training works 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.

<p>B.1 -Widening and repairs of</p> <p>(a) ROB</p> <p>(b) RUB</p> <p>(i) Foundation</p>	<p>[**]</p>	<p>(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/RUBs. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25%</p>
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(ii) Sub-structure	[**]	<p>of the scope of foundation of the ROB/RUB subject to completion of atleast two foundations of the ROB/RUB.</p> <p>In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.</p>
(iii) Super-structure (including bearings)	[**]	<p>(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 the ROB/RUB subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the ROB/RUB.</p>
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	[**]	<p>(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.</p>
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[**]	<p>(iv) Wearing Coat: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in</p>

<p>(vi) Wing walls/return walls</p> <p>(vii) Approaches (including Retaining walls, stone pitching and protection works)</p>	<p>[**]</p> <p>[**]</p>	<p>case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified.</p> <p>(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.</p> <p>(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.</p> <p>(vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.</p>
<p>B.2- New</p> <p>(a) ROB</p> <p>(b) RUB</p> <p>(i) Foundation</p>	<p>[**]</p>	<p>(i) Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROBs/RUBs. Payment</p>

		<p>against foundations 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 completion of at least two foundations of the ROB/RUB .</p>
(ii) Sub-structure	[**]	<p>In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.</p> <p>(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 the ROB/RUB subject to completion of at least two sub-structures of abutments/piers upto abutment/pier cap level of the ROB/RUB.</p> <p>(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.</p>
(iii) Super-structure (including bearings)	[**]	
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	[**]	

<p>(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.</p> <p>(vi) Wing walls/return walls</p> <p>(vii) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)</p>	<p>[**]</p> <p>[**]</p> <p>[**]</p>	<p>(iv) Wearing Coat: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified.</p> <p>(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.</p> <p>(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.</p> <p>(vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in</p>
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		all respects as specified.
<p>C.1- Widening and repairs of Elevated Section/Flyovers/ Grade Separators</p> <p>(i) Foundation</p>	<p>[**]</p>	<p>(i) Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure subject to completion of atleast two foundations of the structure .</p>
<p>(ii) Sub-structure</p>	<p>[**]</p>	<p>In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.</p>
<p>(iii) Super-structure</p>	<p>[**]</p>	<p>(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 the structure subject to</p>

(including bearings)		completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the structure.
(iv) Wearing Coat including expansion joints	[**]	(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.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[**]	
(vi) Wing walls/return walls	[**]	(iv) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(vii) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[**]	(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: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. (vii) Approaches: Payments shall be

		made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
<p>C.2 -New Elevated Section/Flyovers/ Grade Separators</p> <p>(i) Foundation</p>	[**]	<p>(i) Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure subject to completion of atleast two foundations of the structure .</p>
<p>(ii) Sub-structure</p>	[**]	<p>In case where load testing is required for foundation, the trigger of first payment shall include load testingalso where specified.</p> <p>(ii) Sub-Structure: Payment against Sub-structure shall be made on pro-rata basis on</p>

(iii) Super-structure (including bearings)	[**]	completion of a stage i.e. not less than 25% of the scope of sub- structure of the structure subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the structure.
(iv) Wearing Coat including expansion joints	[**]	(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.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[**]	(iv) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(vi) Wing walls/return walls	[**]	(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.
(vii) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and	[**]	

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

protection works)		<p>(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.</p> <p>(vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.</p>
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Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

- 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 intable 1.3.4.

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
(i) Toll plaza	[**]	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
(ii) Road side drains	[2.99%]	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 5% (five percent) of the total length.
(iii) Road signs, markings, km stones, safety devices, ...	[5.39%]	
(iv) Project Facilities		Payment shall be made on pro rata basis for completed facilities.
a) Bus bays	[**]	
b) Truck lay-byes	[**]	
c) Rest areas	[**]	
d) Office cum inspection bungalow	[9.43%]	
e) Street lighting facilities	[4.19%]	

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

Stage of Payment	Weightage	Payment Procedure
(v) Roadside plantation	[1.05%]	Payment shall be made on pro rata basis for completed facilities.
(vi) Repair of protection works other than approaches to the bridges, — elevated sections/ flyovers/grade separators — and ROBs/RUBs.	[**]	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.
(vii) Safety and traffic management during construction	[4.94%]	Payment shall be made on prorata basis every six months.
(viii) Retaining wall/reinforced earth wall/ reinforced soil wall etc	[53.44%]	Unit of Measurement is linear length in meters. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 5% (five percent) of the total length.
(ix) Metal Beam crash barrier	[11.08%]	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 5% (five percent) of the total length.
(x) Junctions	[3.75%]	Payment shall be made on pro-rata basis for completion of each junction
(xi) Environmental measures	[3.74%]	Payment shall be made on prorata basis every six months.

2. Procedure for payment for Maintenance

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

2.2 Payment for Maintenance shall be made in quarterly instalments in accordance with the provisions of Clause 19.7.(a)

SCHEDULE - I

(See Clause 10.2.4)

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-L.

2 Additional Drawings

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

Annex - I

(Schedule - I)

List of Drawings

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

1. Following drawings for unexecuted works shall be responsibility of the Contractor. A minimum list of the drawings of the various components/elements of the project highway and project facility required to be submitted by the Contractor is given below:
 - (a) Drawings of unexecuted Pile, Pile Cap
 - (b) Drawings of unexecuted Piers and abutments, Pier cap and abutment cap
 - (c) Drawings of Retaining wall and Toe wall
 - (d) Drawings of Superstructure items including PSC segments
 - (e) Launching Girder drawings
 - (f) Other incidental drawings of bridge structure
 - (g) Drawings of inspection bungalow
 - (h) Drawing of horizontal alignment, vertical profile and detailed cross sections of approach road
 - (i) Drawings of cross drainage works i.e., Bridges/Culverts/Flyovers and Other Structures.
 - (j) Drawings for River Training works, if any
 - (k) Drawings of interchanges, major intersections
 - (l) Drawing of control center
 - (m) Drawings of road furniture items including traffic signage, marking, safety barriers, etc.
 - (n) Drawings of traffic diversions plans and traffic control measures
 - (o) Drawings of road drainage measures
 - (p) Drawings of typical details slope protection measures
 - (q) Drawings of landscaping and horticulture
 - (r) Drawings of pedestrian crossing
 - (k) Drawings of street lighting
 - (l) Any other drawings as per instruction of Authority Engineer

SCHEDULE - J

(See Clause 10.3.2)

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

2.1 Project Milestone-I shall occur on the date falling on the 231st (Two Hundred Thirty First) day from the Appointed Date (the “**Project Milestone-I**”).

2.2 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

3.1 Project Milestone-II shall occur on the date falling on the 396th (Three Hundred and Ninety Sixth) day from the Appointment Date (the “**Project Milestone-II**”).

3.2 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

4.1 Project Milestone-III shall occur on the date falling on the 561st (Five Hundred and Sixty First) day from the Appointed Date (the “**Project Milestone-III**”).

4.2 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

5.1 The Scheduled Completion Date shall occur on the 660th (Six Hundred and Sixty

only) day from the Appointed Date.

- 5.2 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 12.1.2)

Tests on Completion

1 Schedule for Tests

- 1.1 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..
- 1.2 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

- 2.1 **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 in consultation with Authority's Engineer as per relevant IRC codes/manual).
- 2.2 **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 and the maximum permissible roughness for purposes of this Test shall be 2,000 (two thousand) mm for each kilometer.
- 2.3 **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) meters or more shall also be subjected to load testing.
- 2.4 **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.

2.5 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.

2.6 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 [**Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands**] (the "Project Highway") on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.
- 2 It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the day of 20..... , Scheduled Completed Date for which was the day of 20.....

SIGNED, SEALED 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

- 1.1 Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.
- 1.2 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.
- 1.3 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:

- 2.1 The following percentages shall govern the payment reduction:

S. No.	Item/Defect/Deficiency	Percentage
(a)	Carriageway/Pavement	
(i)	Potholes, cracks, other surfacedefects	15%
(ii)	Repairs of Edges, Rutting	5%
(b)	Road, Embankment, Cuttings,Shoulders	
(i)	Edge drop, inadequate crossfall, undulations, settlement, potholes,ponding, obstructions	10%
(ii)	Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees	5%
(c)	Bridges and Culverts	

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

(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/5 th km stones	5%
(f)	Miscellaneous Items	
(i)	Removal of dead animals, broken down/accident vehicles, fallentrees, 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%

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

$$R = P / 100 \times (M1 \text{ or } M2) \times L_1 / L$$

Where,

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

M1 = Monthly lump-sum payment in accordance para 1.2 above of this schedule.

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

L1 = Non complying length

Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to Km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands on EPC Basis.

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 18.1.1)

SELECTION OF AUTHORITY'S ENGINEER

1 Selection of Authority's Engineer

- 1.1 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.
- 1.2 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..

1 Terms of Reference

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

2 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.

TERMS OF REFERENCE FOR AUTHORITY’S ENGINEER

1 Scope

- 1.1 These Terms of Reference (the “TOR”) for the Authority’s Engineer are being specified pursuant to the EPC Agreement dated (the “Agreement), which has been entered into between the [name and address of the Authority] (the “Authority”) and (the “Contractor”) for [**Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands**] on EPC Basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.
- 1.2 The TOR shall apply to construction and maintenance of the Project Highway.

2 Definitions and interpretation

- 2.1 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.
- 2.2 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.
- 2.3 The rules of interpretation stated in Article 1 of the Agreement shall apply, *mutatis mutandis*, to this TOR.

3. General

- 3.1 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.
- 3.2 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.
- 3.3 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.
- 3.4 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.
- 3.5 The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.
- 3.6 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

- 4.1 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.

- 4.2 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.
- 4.3 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.
- 4.4 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.
- 4.5 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.
- 4.6 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.
- 4.7 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.
- 4.8 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.
- 4.9 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 4.9, 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.

- 4.10 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.
- 4.11 The timing of tests referred to in Paragraph 4.9, 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.
- 4.12 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.
- 4.13 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.
- 4.14 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.
- 4.15 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.
- 4.16 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.
- 4.17 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.

- 4.18 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 4.18 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

- 5.1 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.
- 5.2 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.
- 5.3 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.
- 5.4 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.
- 5.5 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

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

- 6.2 The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.
- 6.3 The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5.

7. Payments

- 7.1 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 10.2.4 (d).
- 7.2 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.
- 7.3 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.
- 7.4 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

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

9 Miscellaneous

- 9.1 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.
- 9.2 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.

- 9.3 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.
- 9.4 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.
- 9.5 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 19.4.1, 19.6.1, and 19.8.1)

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 19.3.1 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 13.2.3 (a);
- (e) total of (a), (b), (c) and (d) above;
- (f) Deductions:
 - (i) Any amount to be deducted in accordance with the provisions of the Agreement except taxes;
 - (ii) Any amount towards deduction of taxes; and
 - (iii) Total of (i) and (ii) above.
- (g) Net claim: (e) – (f) (iii);
- (h) The amounts received by the Contractor upto the last claim:
 - (i) For the Works executed (excluding Change of Scope orders);
 - (ii) For Change of Scope Orders, and
 - (iii) Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

- (a) the monthly payment admissible in accordance with the provisions of the Agreement;
- (b) the deductions for maintenance work not done;
- (c) net payment for maintenance due, (a) minus (b);

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(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

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

- (a) insurance of Works, Plant and Materials and an additional sum of 15 (fifteen) per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and
- (b) insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

1.2 The insurance under paragraph 1.1 (a) and (b) 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

3.1 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.

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

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

- (a) the Authority's right to have the construction works executed on, over, under, in or through any land, and to occupy this land for the Works; and
- (b) damage which is an unavoidable result of the Contractor's obligations to execute the Works.

4. Insurance to be in joint names

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

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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.

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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 [**Construction of Balance works of Major Bridge over Middle Strait Creek between Km. 106.590 to km 108.553 of NH-04 connecting South Andaman & Baratang Island in the Union Territory of Andaman & Nicobar Islands**] (the "**Project Highway**") on EPC Basis 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)