

SCHEDULE – A

(See Clauses 2.1 and 8.1)

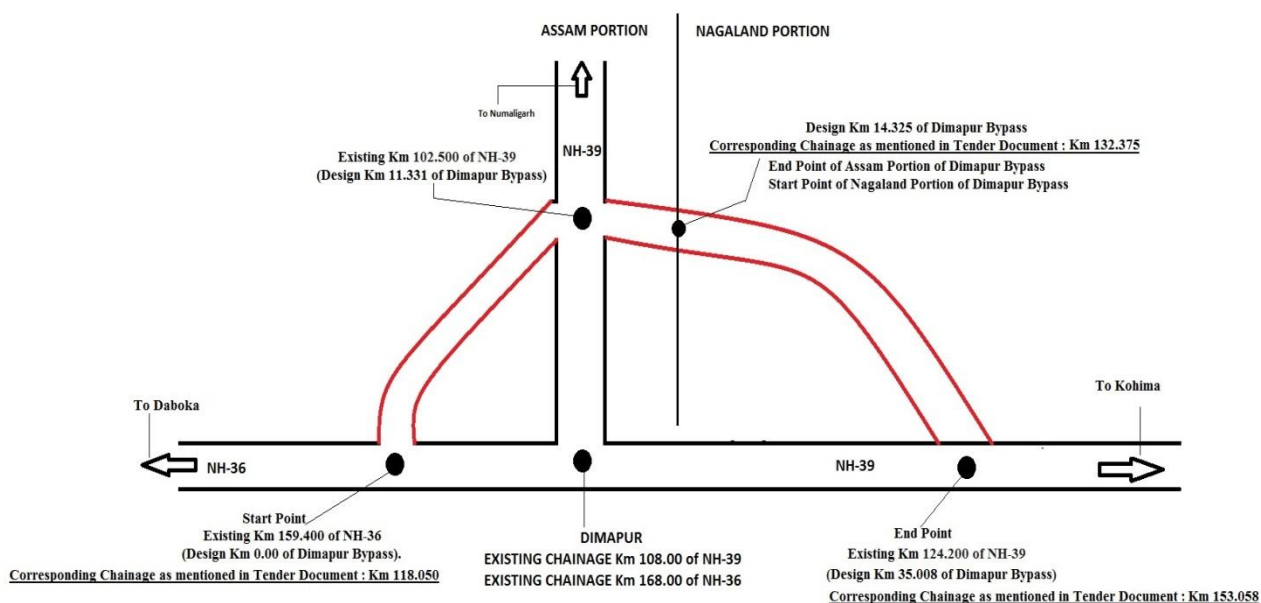
SITE OF THE PROJECT

1 The Site

- 1.1 Site of the “Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (length 20.683 Km) on Daboka Dimapur section (Dimapur Bypass) on NH 36 & 39 on EPC basis under Phase-A of SARDP-NE in the State of Nagaland on Engineering, Procurement and Construction basis”. Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

The complete stretch of Dimapur Bypass (total length=35.008 Km) traverses through States of Assam and Nagaland. The length of Bypass in Assam portion is 14.325 Km and in Nagaland portion is 20.683 Km. It starts at existing Km 159.400 of NH-36 (Design Km 0.00 of Dimapur Bypass). It intersects NH-39 at existing Km 102.500 of NH-39. (Design Km 11.331 of Dimapur Bypass). The Assam portion of bypass ends at Design Km 14.325 of Dimapur Bypass. The Nagaland portion of Bypass starts at Design Km 14.325 of Dimapur Bypass and ends at existing Km 124.200 of NH-39 (Design Km 35.008 of Dimapur Bypass).

The instant proposal is construction of 4/6 lane pavement (from Design Km 14.325 to Design Km 35.008 of Dimapur Bypass) (length 20.683Km) in the State of Nagaland on EPC basis.



“Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”

The Project alignment is approachable for all location for execution of works.

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

"Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis"

Annex I (Schedule-A)

1. Site

The Site of the Four/Six Laning of road from Km 132.375 to Km 153.058 (Total New Alignment Design Length= 20.683 Km)of Daboka-Dimapur section (Dimapur Bypass)of NH-36&39 in the state of Nagaland. There is no existing carriageway on the Project highway and it will be a new one.

The Index Map is appended at the end of this Schedule–A.

2. Chainage References (Existing vs Design)

“Existing Chainage” means Km Stones existing on the Project Highway. During topography survey, observations are made to these Km stones and after finalization of alignment by improving the existing geometry the chainage has been referred to “Design Chainage”. The relationship between the “ Existing Chainage” and the” Design Chainage” as per field surveys of the location of existing Km stones for the “Project Highway” is given below:

Sl No.	Existing Chainage (Km)	Proposed Design chainage (Km)	Remarks
1	-	From Km 132.375 to Km 153.058	60.00 M

3. Land

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

Sl. No.	Existing Chainage (km)		Design Chainage (km)		Length in m (Design)	Existing/Available ROW (m)	Remarks
	From	To	From	To			
1	0	0	132.375	153.058	20863	60	Varying LHS & RHS

4. Carriageway

There is no existing carriageway of the project highway and it will be a new one. The type of pavement will be rigid.

“Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”

5. Major Bridges

The Site includes the following Major Bridges:

Sl. No.	Chainage (km)	Type of Structures			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Superstructure		
NIL						

6. Railway over-bridges (ROB) /Road Under Bridge (RUB)

The Site includes the following Railway Over Bridge/Road under Bridge

Sl. No.	Chainage (km)	Type of Structures			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Superstructure		
NIL						

7. Grade Separators

The Site includes the following Grade separators

The site includes the following grade separators						
Sl. No.	Chainage (km)	Type of Structures			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Super structure		
NIL						

8. Minor Bridges

The Site includes the following minor Bridges:

Sl. No.	Road Segment	Existing Chainage (km)	Type of Structures			No. of Spans with Span Length (m)	Total Width (m)
			Foundation	Sub-Structure	Super Structure		
Nil							

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9. Railway level crossings / Railway Track

The Site includes the following railway level crossings:

Sl. No.	Road Segment	Existing Chainage (km)	Remarks
Nil			

10. Underpasses (Vehicular, Non Vehicular)

The Site includes the following underpasses:

Sl. No.	Road Segment	Existing Chainage (km)	Type of Structure	No. of Spans with Span Length (m)	Width (m)
Nil					

11. Culverts

The Site includes the 4 Nos of culverts at the following locations and types:

Sl no.	Existing Chainage	Type of Culvert	Existing Culvert Span (m)	Remarks
1	-	Pipe	9	Bypass Portion
2	-	Pipe	6	
3	-	Pipe	6	
4	-	Slab	1.5	

12. Bus Shelters

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

S. No.	Road Segment	Existing Chainage (km)	Length (m)	Left Hand Side	Right Hand Side
Nil					

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13. Truck Lay Bye

The details of truck lay byes on the Site are as follows:

S. No.	Road Segment	Existing Chainage (km)	Length (m)	Left Hand Side	Right Hand Side
Nil					

14. Road side drains

The details of the road side drains on the Site are as follows:

The details of the roadside drains on the site are as follows:					
Sl. No.	Existing Location		Side	Type	
	From (km)	From (km)		Masonry/CC (Pucca)	Earthen (Kutcha)
Nil					

15. Major Junctions

The details of major junctions are as follows:

Sl. No.	Location		At Grade	Separated	Category of Cross Roads			
	Existing Ch.	Design Ch.			NH	SH	MDR	Others
Nil								

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

16. Minor Junctions

The details of major junctions are as follows:

S. No.	Existing Chainage	Design Chainage	Type	
	(Km)	(Km)	'T' Junction	Cross Road both sides
Nil				

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17. Bypasses

The details of bypasses are as follows:

S. No.	Name of Bypass (Town)	Road Segment	Existing Chainage		Length (km)	Carriageway	
			From (km)	To (km)		Width m)	Type
Nil							

18. Other Structures/Details

The details of other structures are as follows:

S No.	Type	Existing Chainage (km)	Length (m)	Width
Nil				

“Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”

Annex-II
*(Schedule-A)***Details 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:

Sl. No	Design Chainage		Length (in Km)	Proposed ROW Width (m)	Date of Providing proposed ROW
	From	To			
(i) 90% of ROW (full width)	132.375	153.058	20.683	45-60 m (as shown in Schedule B, clause 3.4)	At appointed date
(ii) Balance Right of way (width)	132.375	153.058	20.683	45-60 m (as shown in Schedule B, clause 3.4)	Within 90 days after the appointed Date as per clause 8.2 of DCA

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Annex-III
(Schedule-A)

Alignment Plans

The existing alignment of the Project Highway shall be modified in the following sections as per the enclosed alignment plan.

“Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”

Annex-IV
(Schedule-A)

Environmental Clearances

The project Highway does not require Environment and Forest Clearance.

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Appendix A-I

Index Map of Project Highway



"Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis"

SCHEDULE – B
*(See Clause 2.1)***DEVELOPMENT OF THE PROJECT HIGHWAY****1 Development of the Project Highway**

Development of the Project Highway in accordance with IRC SP: 84-2014 shall primarily include design and construction of the Project Highway as described in this Schedule-B and in Schedule-C.

2 Four laning with paved shoulder

Four laningshall include widening and strengthening ofthe Project Highway as described inAnnex-I of this Schedule-B and in Schedule-C.

3 Specifications and Standards

The Project Highway shall be designed and constructed in conformity with the Specifications and Standards specified in Annex-I of Schedule-D IRC SP: 84-2014.

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Annex I
(Schedule-B)

Description of Four Laning

[Note: Description of the Project Highway shall be given by the Authority in detail together with explanatory drawings (where necessary) to explain the Authority's requirements precisely in order to avoid subsequent changes in the Scope of the Project. The particulars that must be specified in this Schedule-B are listed below as per the requirements of the Manual of Standards and Specifications for Four Laning of Highways (IRC: SP: 84-2014), referred to as the Manual or IRC codal provision as applicable. If any standards, specifications or details are not given in the Manual/IRC codal provisions as applicable, the minimum design/construction requirements shall be specified in this Schedule. In addition to these particulars, all other essential project specific details, as required, should be provided in order to define the Scope of the Project clearly and precisely.

1. SCOPE OF THE PROJECT

1.1 GENERAL

The following sections of this schedule briefly highlight the scope of the work of the 'Project'. The descriptions of the requirements for the various elements of the Project Highway given here in under are the bare minimum requirements for the 'Project'.

In the planning, design and execution of the works and other works in connection with the repair, maintenance or improvement of the Project Highway and functions associated with the construction of the Project Highway and roadside facilities, the Construction Contractor shall take all such actions and do all such things (including, but not limiting to, organizing itself, adopting measures and standards, executing procedures, including inspection procedures and highway patrols, and engaging and managing agents and employees) as will;

- a. enable the NHIDCL to provide an acceptably safe highway in respect of its condition (structural safety) and use (road safety);
- b. enable the NHIDCL to fulfill its statutory and common law obligations;
- c. enable the NHIDCL to provide a congestion free uninterrupted flow of traffic on the Project Highway;
- d. enable the NHIDCL to provide a level of highway service to the public not inferior to that provided on the trunk road during construction or improvement works;
- e. enable the police, local authorities, and others with statutory duties or functions in relation to the Project Highway or adjoining roads to fulfill those duties and functions;

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- f. minimize the occurrence and adverse effects of accidents and ensure that all accidents and emergencies are responded to as quickly as possible;
- g. minimize the risk of damage, destruction or disturbance to third party property;
- h. ensure that members of the public are treated with all due courtesy and consideration;
- i. provide a safe, clear and informative system of road signs;
- j. comply with any specified programme requirements, including for the completion of the new road;
- k. enable standards of reliability, durability, accessibility, maintainability, quality control and assurance, and fitness for purpose appropriate to a highway of the character of the Project Highway to be achieved throughout the Contract Period;
- l. ensure adequate off-street parking facilities for both passenger and goods vehicles;
- m. provide adequate bus bays for stopping of buses and bus shelters for commuters to wait under protection;
- n. achieve a high standard in the appearance and aesthetic quality of the Project Highway and achieve integration of the Project Highway with the character of the surrounding landscape through both sensitive design and sensitive management of all visible elements including those on the existing road;
- o. Undertake proper safety audit through an appropriate consultant (i.e. apart from the Authority Engineer)
- p. Carry out accident recording and reporting (to NHIDCL) by type on regular basis; and
- q. Ensure adequate safety of the Project Workers on the work site.

2. WIDENING OF THE EXISTING HIGHWAY

2.1 There is no existing alignment.

Notwithstanding the basic alignment plans enclosed with this document the Construction Contractor shall himself carryout and be responsible for engineering surveys, investigation and detailed engineering designs and prepare the working drawings for all the components relevant for the improvement and up-gradation of the Project Highway to fulfill the scope of the project as envisaged hereinunder. These shall comply with design specifications and standards given in **Schedule–D**. The designs for different project facilities shall follow the locations and indicative designs given in **Schedule–C** and shall comply with design specifications and standards outlined in **Schedule–D**. All the designs and drawings shall be reviewed by the Authority Engineer prior to execution.

The Project Highway shall follow 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

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the extent land is available.

2.2 Width of Carriageway

2.2.1 The Construction of Four Lane with paved shoulder from Km 132.375 to Km 153.058 of Dimapur Bypass shall be undertaken. The width of carriageway in open country, built up areas and approaches of grade separated structures shall be as per the manual (IRC SP 84:2014) (hereinafter called the 'Manual') unless otherwise specified in this Schedule-B and Schedule-D.

2.2.2 Locations of built up areas as under: The Cross section of the Carriageway to be adopted in the table below:

Sl no	Built up areas	Design Chainage (km)	Typical Cross Section of the Manual
NIL			

2.2.3 Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall conform to paragraph 2.1 above.

3. GEOMETRIC DESIGN AND GENERAL FEATURES

3.1 General

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the Manual. [IRC SP 84:2014]

3.2 Design speed

The design speed shall be Ruling 100 kmph & Minimum 80 Kmph for Plain and Rolling terrain, and Ruling 60 kmph & Minimum 40 Kmph for the mountainous and steep terrain, wherever applicable.

3.3 Improvement of the existing road geometries

There is no existing Road.

In the following sections, where improvement of the existing road geometrics to the 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:

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SNO	Stretch	Type of deficiency	Remark
NIL			

3.4 Proposed Right of Way

[Refer to paragraph 2.3 of the Manual]. Details of the proposed Right of Way are tabulated below.

Sl. No	Design Chainage		Length	Width (m)
	From	To		
1.	132.375	153.058	20.683	45.00 to 60.00

3.4.1 The Scheduled date on which the Authority shall provide ROW to the contractor is given in Annexure-II of Schedule A

3.5 Type of Shoulders

The Shoulders along the project shall be made in accordance with clause 2.6.1 of the Four lane Manual (IRC: SP 84:2014)

3.6 Lateral and vertical clearances at underpasses

3.6.1 Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per paragraph 2.10 of the Four Lane Manual (IRC: SP 84:2014).

3.6.2 *Lateral clearance:* The width of the opening at the underpasses shall be as follows:

Sl No.	Location [Chainage (km)]		Span/Opening (m)	Remarks
	From	To		
Nil				

3.7 Lateral and vertical clearances at overpasses

3.7.1 Lateral and vertical clearances at overpasses shall be as per paragraph 2.10 of the Four Lane Manual (IRC: SP 84:2014).

3.7.2 *Lateral clearance:* The width of the opening at the overpasses shall be as follows:

Sl No.	Location [Chainage (km)]		Span/Opening (m)	Remarks
	From	To		

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Sl No.	Location [Chainage (km)]		Span/Opening (m)	Remarks
	From	To		
Nil				

3.8 Service roads

Service roads shall be constructed at the locations and for the lengths indicated below [Refer to paragraph 2.12.2 of the Four Lane Manual i.e IRC: SP:84:2014 and provide details]

Sl No.	Location of Service Road (km)		Right Hand Side (RHS) / Left Hand Side (LHS) / Both Sides	Length (km) of Service Road
	From	To		
1.	137+807	138+131	LHS	0.324
2.	138+131	138+308	RHS	0.177
3.	145+220	146+150	Both sides	1.860
4.	150+150	150+595	LHS	0.445
5.	150+595	150+919	RHS	0.324
TOTAL				3.130

3.9 Grade Separated Structures

3.9.1 Grade separated structures shall be provided as per section 3 of the Four Lane Manual (IRC: SP 84:2014).

There is one grade separated structure/Flyover:

Sl No.	Location of Structure	Number and Length of Spans (m)	Remarks, if any
1	145+700	1X12	Flyover

3.10 Cattle and pedestrian underpass / Overpass

Pedestrian & Cattle underpasses and overpasses are to be designed as per the four lane manual IRC: SP:84-2014.

(1) Pedestrian underpass

Sl No.	Location	Vertical Clearance (m)
1	150+595	3.00

(2) Cattle underpass

Sl No.	Location	Type of Crossing (m)
1	3+1001	3.00

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2	138+131	3.00
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3.11 Typical cross-sections of the Project Highway

Typical cross-sections to be followed as per IRC: SP-84:2014 and in addition the proposed cross section for various situations are given in TCS 1A, 1B, 1C, 2, 3 & 4. These illustrate the new construction for the project highway.

3.12 Longitudinal Section

As a minimum, the Construction Contractor shall achieve the proposed finished road level as indicated in the plan and profile drawings.

3.13 Built-Up Areas

The alignment passes through Built up areas as tabulated below.

The alignment passes through built up areas as tabulated below.			
Sno	Location/Chainage		Name of Village/town etc
	From (Km)	To (Km)	
Nil			

4. INTERSECTIONS AND GRADE SEPARATORS

All intersections shall be as per Section 3 of the Manual IRC: SP:84-2014. Existing intersections which are deficient shall be improved to the prescribed standards.

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

(a) At-grade Intersections

Major Intersections:

Sno	Location of Intersection, Km of Project Highway	Type of Intersection	Other Features	
	Existing Chainage (Km)	Proposed Chainage (Km)	LHS	RHS
1	-	153+054	T	NH-39

Minor Junctions

Sno	Location of Intersection,	Type of Intersection	Other Features
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	Km of Project Highway	Proposed Chainage (Km)			
	Existing Chainage (Km)			LHS	RHS
1	-	132+630	X	VILLAGE Road	Purana Bazar
2	-	133+305	X	VILLAGE Road	Purana Bazar
3	-	140+569	X	Nihoto	Henivi
4	-	144+272	X	Kobutak	Showba
5	-	150+325	X	Seithekema C	Village road
6	-	152+625	T	Patkai Christian college	-

Grade Separated Structures

Sno	Bridge Location (km)	Span Arrangement (M)	Remarks
1	145+700	1X12	Flyover

5. PAVEMENT DESIGN

5.1 Pavement design shall be carried out in accordance with section 5 of the Manual (IRC: 84-2014) & IRC 58.

5.2 Type of pavement

The contractor is to adopt rigid pavement for the project highway.

5.3 Design requirements

Geometric design should be as per the four lane manual [IRC:SP:84-2014]

5.3.1 Design Period and strategy

The project highway should have design life of 30 years and the type of pavement is rigid.

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 25.97 million standard axles as follows.

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PACKAGE	Design Chainage (km)		Length (km)	30 Year MSA*
	From	To		
Dimapur-bypass	132.375	153.058	20.683	103.92

Year	2W	3W	Car	Jeep/C ar	Mini Bus	Bus	Mini Truck		2 Axle Truck	3 Axle Truck	Total
							Pass	Freight			
Traffic count in 2015	1176	1411	2268	1494	271	244	61	735	1887	544	10090
Conversion factor	0.5	0.8	1	1	2.2	3.5	2.2	2.2	3.5	3.5	
PCU	588	1128.8	2268	1494	596.2	854	134.2	1617	6604.5	1904	17188.7

5.3.3 Design Parameters

The Minimum crust thickness to be adopted for the rigid pavement shall also be provided as below:

Crust Details		Thickness
Drainage Layer/GSB	=	150 mm
DLC	=	150 mm
PQC	=	300 mm
Total Thickness	=	600mm

The above crust thickness is for design life of 30 years and to sustain design traffic of 25.97 MSA, the thickness of typical cross section of the proposed rigid pavement with sub-grade of 500mm thickness with 7% CBR.

6. ROADSIDE DRAINAGE

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per the Four Lane Manual (IRC: SP 84:2014)

The improvements in the drainage and the slope erosion shall be made as per the following norms:

6.1 Drainage Measures

Following measures shall be adopted:

- Triangular Shaped Drain (lined) of Minimum 2708 Rm .
- Open side Trapezoidal drains (Unlined) of Minimum 18051 Rm
- Toe wall of ht. 4.0 m of minimum length 2708 Rm

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6.2 Slope Protection Measures

6.2.1 Breast Wall (minimum provision= 903 Rm)

Following measures shall be adopted:

Slope protection along hill slope side shall be with breast wall with PCC minimum M15 grade concrete. However, at the zones prone to sliding breast walls will be of sausage type (by stone-mesh gabions). Retaining wall has been considered at valley sides. The height of breast walls is of Avg Ht. 3.5 as per site requirement and to be finalized by consultation with Authority Engineers. The breast wall of height 3.5 m has been considered if the height of hill cut is more than 9m and in this circumstances 3m berm with catch water drain is required to be provided. The maximum cut slope at hill side is 55° (0.7H to 1V).

6.2.2 Embankment less than 3m in height shall be turfed as per MoRTH Specifications.

6.2.3 Vetiver Plantation, Hydro Seeding and Hydro Mulching etc or similar works is to be done for slope protection and site mitigation measure upto a height of 12-15 m along the slopes in each cutting locations except hard rock location which needs to be protected with appropriate applicable technologies, if required.

7.0 Culverts

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

7.1.2 Reconstruction of existing culverts

The following existing HP/Box culverts are proposed for reconstruction with Box Culvert.

Sno	Chainage Location	Size	Type
1	Km 141.271	2 X 3	Box Culvert
2	Km 148.136	2X3	Box Culvert
3	Km 148.951	2X3	Box Culvert
4	Km 152.746	2X3	Box Culvert

7.1.3 Additional New Culverts: The following culverts are to be constructed as new culvert.

Sno	Chainage Location	Size	Type
1	Km 132.537	2 X 2	Box Culvert
2	Km 132.695	2 X 2	Box Culvert
3	Km 132.828	2 X 2	Box Culvert
4	Km 133.327	2 X 2	Box Culvert

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5	Km 133.483	2 X 2	Box Culvert
6	Km 133.667	2 X 2	Box Culvert
7	Km 133.804	2 X 2	Box Culvert
8	Km 134.202	2 X 2	Box Culvert
9	Km 134.385	2 X 2	Box Culvert
10	Km 135.253	2 X 2	Box Culvert
11	Km 135.476	2 X 2	Box Culvert
12	Km 136.054	2 X 2	Box Culvert
13	Km 136.248	2 X 2	Box Culvert
14	Km 136.455	2 X 2	Box Culvert
15	Km 136.634	2 X 2	Box Culvert
16	Km 136.847	2 X 2	Box Culvert
17	Km 137.074	2 X 2	Box Culvert
18	Km 137.257	2 X 2	Box Culvert
19	Km 137.473	2 X 2	Box Culvert
20	Km 137.681	2 X 2	Box Culvert
21	Km 137.891	2 X 2	Box Culvert
22	Km 138.812	2 X 2	Box Culvert
23	Km 138.970	2 X 2	Box Culvert
24	Km 139.173	2 X 2	Box Culvert
25	Km 139.367	2 X 2	Box Culvert
26	Km 139.580	2 X 2	Box Culvert
27	Km 140.315	2 X 2	Box Culvert
28	Km 140.425	2 X 2	Box Culvert

“Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”

29	Km 140.696	2 X 2	Box Culvert
30	Km 140.858	2 X 2	Box Culvert
31	Km 141.335	2 X 2	Box Culvert
32	Km 141.578	2 X 2	Box Culvert
33	Km 142.174	2 X 2	Box Culvert
34	Km 142.359	2 X 2	Box Culvert
35	Km 142.591	2 X 2	Box Culvert
36	Km 142.929	2 X 2	Box Culvert
37	Km 143.046	2 X 2	Box Culvert
38	Km 143.321	2 X 2	Box Culvert
39	Km 143.620	2 X 2	Box Culvert
40	Km 144.787	2 X 2	Box Culvert
41	Km 144.929	2 X 2	Box Culvert
42	Km 145.090	2 X 2	Box Culvert
43	Km 145.257	2 X 2	Box Culvert
44	Km 146.112	2 X 2	Box Culvert
45	Km 146.328	2 X 2	Box Culvert
46	Km 146.975	2 X 2	Box Culvert
47	Km 147.150	2 X 2	Box Culvert
48	Km 147.605	2 X 2	Box Culvert
49	Km 147.900	2 X 2	Box Culvert
50	Km 148.410	2 X 2	Box Culvert
51	Km 148.685	2 X 2	Box Culvert
52	Km 149.115	2 X 2	Box Culvert

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53	Km 149.350	2 X 2	Box Culvert
54	Km 149.561	2 X 2	Box Culvert
55	Km 149.825	2 X 2	Box Culvert
56	Km 150.120	2 X 2	Box Culvert
57	Km 151.041	2 X 2	Box Culvert
58	Km 151.182	2 X 2	Box Culvert
59	Km 151.309	2 X 2	Box Culvert
60	Km 151.846	2 X 2	Box Culvert
61	Km 152.428	2 X 2	Box Culvert
62	Km 152.608	2 X 2	Box Culvert
63	Km 133.954	2 X 3	Box Culvert
64	Km 134.592	2 X 3	Box Culvert
65	Km 134.748	2 X 3	Box Culvert
66	Km 135.028	2 X 3	Box Culvert
67	Km 138.498	2 X 3	Box Culvert
68	Km 138.678	2 X 3	Box Culvert
69	Km 139.890	2 X 3	Box Culvert
70	Km 141.015	2 X 3	Box Culvert
71	Km 141.154	2 X 3	Box Culvert
72	Km 141.947	2 X 3	Box Culvert
73	Km 143.848	2 X 3	Box Culvert
74	Km 144.555	2 X 3	Box Culvert
75	Km 146.719	2 X 3	Box Culvert
76	Km 147.350	2 X 3	Box Culvert

“Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”

77	Km 151.635	2 X 3	Box Culvert
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These are guidelines for minimum provisions. However, contractor has to design as per requirement of road in accordance with the four lane Manual (IRC:SP 84-2014) and latest applicable IRC codes.

7.2 Bridges

7.2.1 The existing bridges to be reconstructed/widened

- (i) The existing bridges at the following locations shall be reconstructed as new structures (Minor Bridge)

SI No.	Existing Chainage	Design Chainage	Proposed Span(m)	Proposed Width(m)	Remarks
Nil					

SI No	Bridge Location (km)	Salient Details of Existing Bridge					Adequacy or Otherwise of the Existing Waterway, Vertical Clearance etc.	Remarks
		Span Arrangement (m)	Carriageway Width (m)	Total Width (m)	Type of Superstructure	Type of Foundation		
Nil								

7.2.2 The following structures shall be provided with footpaths:

SI No.	Location (km)	Remarks
Nil		

7.2.3 Additional New Minor Bridges

New minor bridges at the following locations on the project highways shall be constructed

SI No.	Bridge at km	Span Arrangement	Remarks
1	134+781	1X24	Minor
2	152+093	1X16	Minor

7.2.4 Additional new Major bridges

New major bridges at the following locations on the project highways shall be constructed

“Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”

SI No.	Bridge at km	Span Arrangement	Remarks
1	135+781	3X21	Major

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

[Refer to paragraph 7.18 (iv) of the Manual and provide details]

SI No.	Location (km)	Remarks
Nil		

- 7.2.6 Repairs/replacements of railings/parapets of the existing bridges shall be undertaken as follows:

[Refer to paragraph 7.18 (v) of the Manual and provide details]

SI No.	Location (km)	Remarks
Nil		

- 7.2.7 Drainage system for bridge decks

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

- 7.2.8 Structures in marine environment

[Refer to paragraph 7.22 of the Manual and specify the necessary measures / treatments for protecting structures in marine environment, where applicable]

7.3 Rail-road Bridges

- 7.3.1 Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual. [Refer to paragraph 7.19 of the Manual and specify modification, if any]

7.3.2 Road over-bridges

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

SI No.	Location of Level Crossing (km)	Length of Bridge (m)
Nil		

7.3.3 Road under-bridges

Road under-bridges (road under railway line) shall be provided at the following level

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crossings, as per GAD drawings attached:

SI No.	Location of Level Crossing (km)	Number and Length of Span (m)
Nil		

7.4 Underpasses/Overpasses

Vehicular Underpass

Sno	Location of Structure (km)	Junction layout below the structure
NIL		

Pedestrian Underpass

Sno	Vertical Clearance (m)
150+595	3.00

Cattle Underpass

Sno	Vertical Clearance (m)
133+100	3.00
138+131	3.00

7.5 Repairs and strengthening of bridges and structures

[Refer to paragraph 7.23 of the Manual and provide details]

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

A. Bridges

SI No.	Location of Bridge (km)	Nature and Extent of Repairs/Strengthening to be Carried out
Nil		

B. ROB / RUB

SI No.	Location of Bridge (km)	Nature and Extent of Repairs/Strengthening to be Carried out
Nil		

C. Overpasses / Underpasses and Other Structures

SI No.	Location of	Nature and Extent of Repairs/Strengthening to be Carried out
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“Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”

	Bridge (km)	
Nil		

7.6 List of Major Bridges and Structures

The following is the list of Major Bridges

SI No.	Location (km)
Nil	

8.0 TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

8.1 General

Traffic control devices and road safety works shall be provided in accordance with Section 9 of the Manual.

Specifications of the reflective sheeting [Refer to paragraph 9.3 of the Manual and specify]

Traffic signs and pavements markings shall include roadside signs, overhead signs, curve advanced signs and road marking along the Project Highway. The design and marking for the project Highway shall be as per design standards indicated in **Schedule-D** and the location for various treatments shall be finalized in consultation with the Authority Engineer and NHIDCL.

The road markings shall be applied to lane lines, road center lines, edge lines, continuity line, stop lines, give way lines, directional arrows, diagonal/chevron markings, and Zebra crossings at parking areas.

PCC kerbs (duly painted) approximately 460 MM (minimum) shall be provided by EPC Contractor in busbays and Islands.

8.2 Traffic Signs

- (i) A complete range of permanent retro-reflective traffic signs as per the requirements defined in but not limited to the FPR, for the safe and efficient movement of traffic. These signs are to be of regulatory, warning and informatory types and placed on the roadside except at the start and end of the project road and start and end of two bypasses where overhead directional and lane designation signs shall be mounted on the steel portals.

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- (ii) Temporary traffic and construction signs are to be provided during construction and maintenance operations for traffic diversion and pedestrian safety.

8.3 Pavement Marking

- (i) Retro-reflective thermoplastic paint is proposed for use.
The road markings shall be applied to lane lines, road center lines, edge lines, continuity line, stop lines, give way lines, diagonal/chevron markings, Zebra crossings and at parking areas.
- i) Delineators bollards and other safety devices shall be provided on entire project Highway and other locations as directed by NHIDCL.
- ii) All signs shall be the reflectorized type with high intensity retro-reflective sheeting conforming to ASTM D 4956-01, type VIII and /or type IX of micro prismatic type. All sign boards of size more than 1.2 m and less than 0.9 m shall be provided at the locations finalized in consultation with NHIDCL.
- iii) Cautionary sign boards (900mm Equilateral Triangle), stop sign (900mm Octagonal) mandatory sign boards(600mm dia), Village name boards (600X900mm), Hazard Plate (300X900mm), chevron signboard (600X750mm), Facility information sign (600X800mm), Advance direction sign (1800X1200mm), Place identification sign (1200X900mm) shall be provided by the Construction Contractor with suitable interval in consultation with NHIDCL.

The minimum quantity of Traffic signages and pavement marking are tabulated here

9.0 ROADSIDE FURNITURE

- 9.1.1 Roadside furniture shall be provided in accordance with the provisions of Section 11 of the Manual.

Retro- reflectorised Traffic signs	Minimum provision
90 cm equilateral triangle	85.00
60 cm equilateral triangle	75.00
60 cm circular	65.00
80 mm x 60 mm rectangular	65.00
60 cm x 45 cm rectangular	75.00
60 cm x 60 cm square	45.00
90 cm high octagon	65.00

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90 cm Circular	65.00
Identification signs upto 0.9 sqm size	9.60
Identification signs with more than 0.9 sqm size	16.20
Overhead Signs	2.00
5 th Kilometer stones [#]	8.00
Hectometer Stone (precast) [#]	166.00
Ordinary Km Stone (precast) [#]	27
Road Delineators	1000
RCC M15 Boundary pillar	2070
Cable duct	200(single row)+540 (double row)

[#] The marking of all stones will be done considering total length of bypass i.e 35.008 Km on the directions of NHIDCL.

10.0 COMPULSORY AFFORESTATION

[Refer to paragraph 12.1 of the Manual and specify the number of trees which are required to be planted by the Contractor as compensatory afforestation.]

Minimum 850 nos. trees are required to be planted.

11.0 HAZARDOUS LOCATIONS

Metal Beam crash barrier length of minimum 8545.28 Rm (single runner, heavy duty and W-shape) shall be provided at the locations of bridge approaches and high embankments (3.0m and more), at sharp curves on both sides. Heavy duty metal beam crash barriers shall be provided on this project by the Construction Contractor at the locations finalized in consultation with NHIDCL. Typical details of metal crash barrier are given in as per manual.

The safety barriers, protective works shall also be provided at the hazardous location/lengths. The minimum quantity of protection work is presented in the following table:

Type of Protection Work		
Protection Work	Unit	Quantity
Breast wall with PCC avg ht 3.5 m	Rm	903

12.0 ROAD LAND BOUNDARY

As per the Clause 12.2 of Manual (IRC: SP:84:2014).

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Road land (ROW) boundary shall be demarcated by putting RCC boundary pillars of size 60cm x 15cm x 15 cm embedded in concrete (as per IRC:25) along the Project Highway at 200 m interval on both sides. All the components used in delineating road land boundary shall be aesthetically pleasing, sturdy and vandal proof. The road land boundary shall be demarcated in consultation with NHIDCL.

13.0 SPECIAL REQUIREMENT FOR HILL ROADS

[Refer to paragraphs 14.5 and 14.8 of the Manual and provide details where relevant and required.]

14.0 CHANGE OF SCOPE

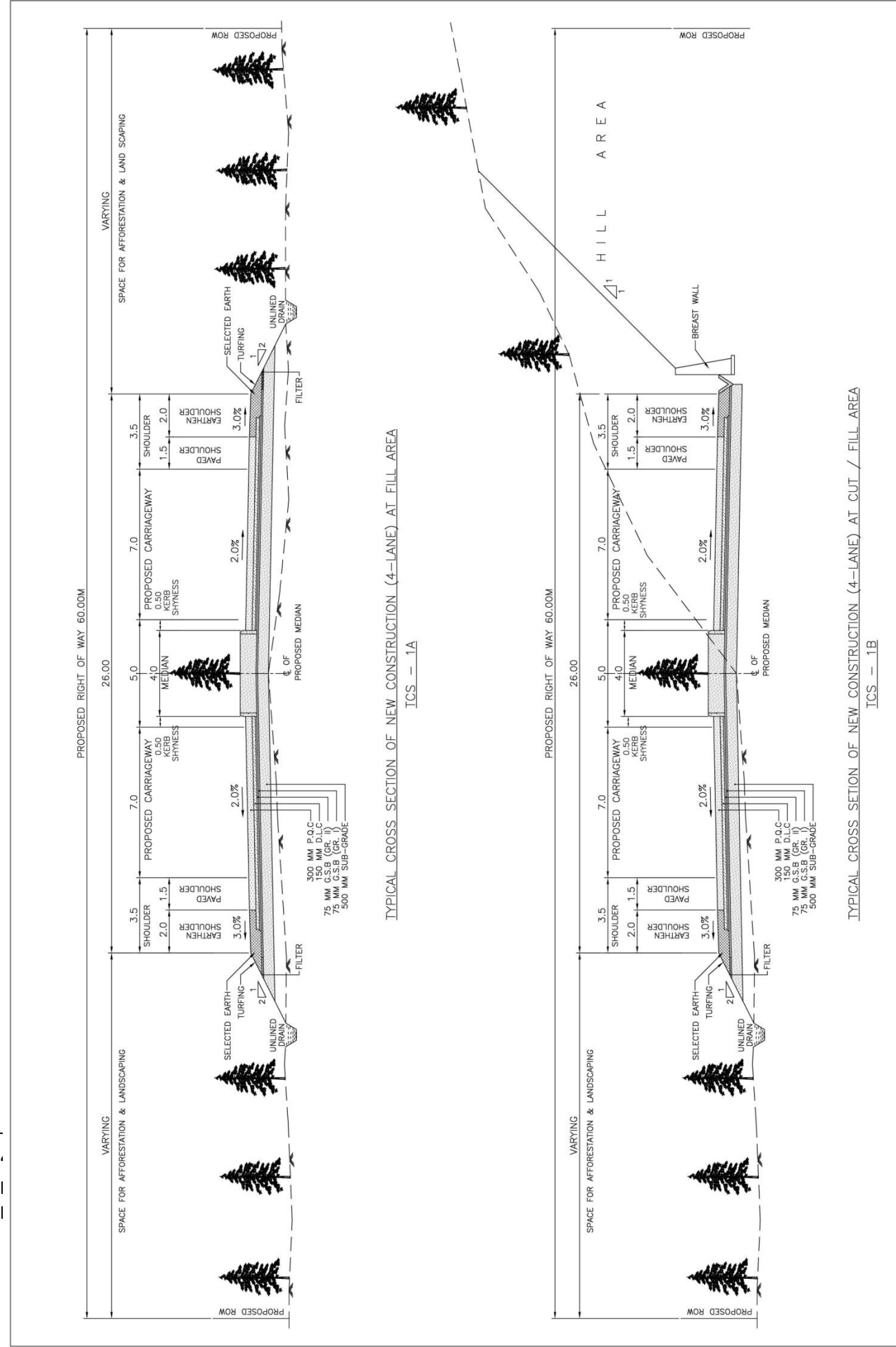
The length of Structures and bridges specified hereinabove shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified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

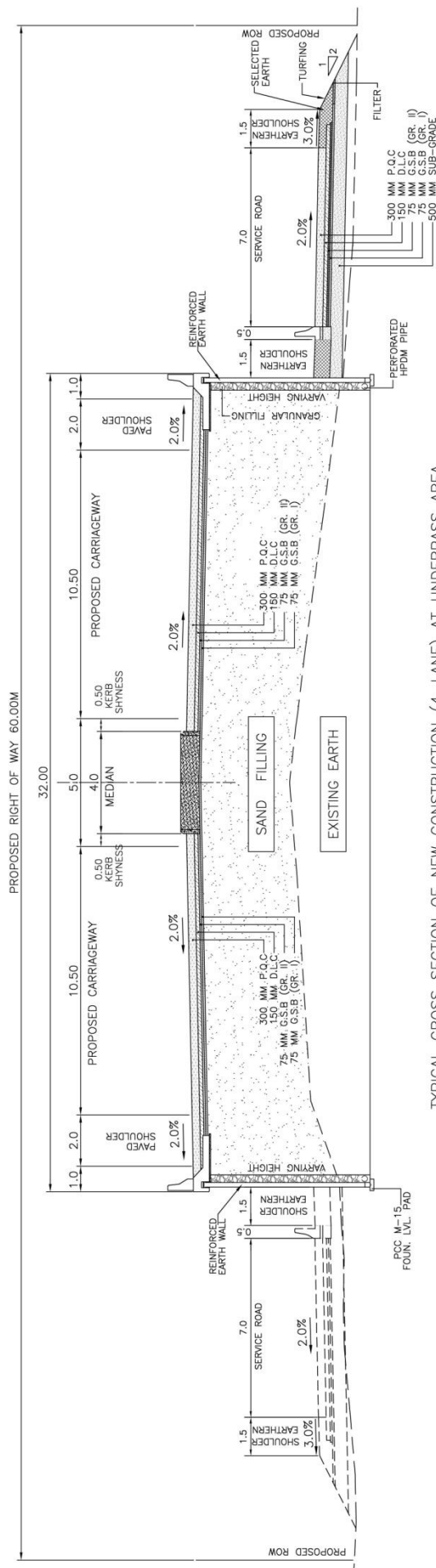
“Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”

Applicable Stretches of Typical Cross-section

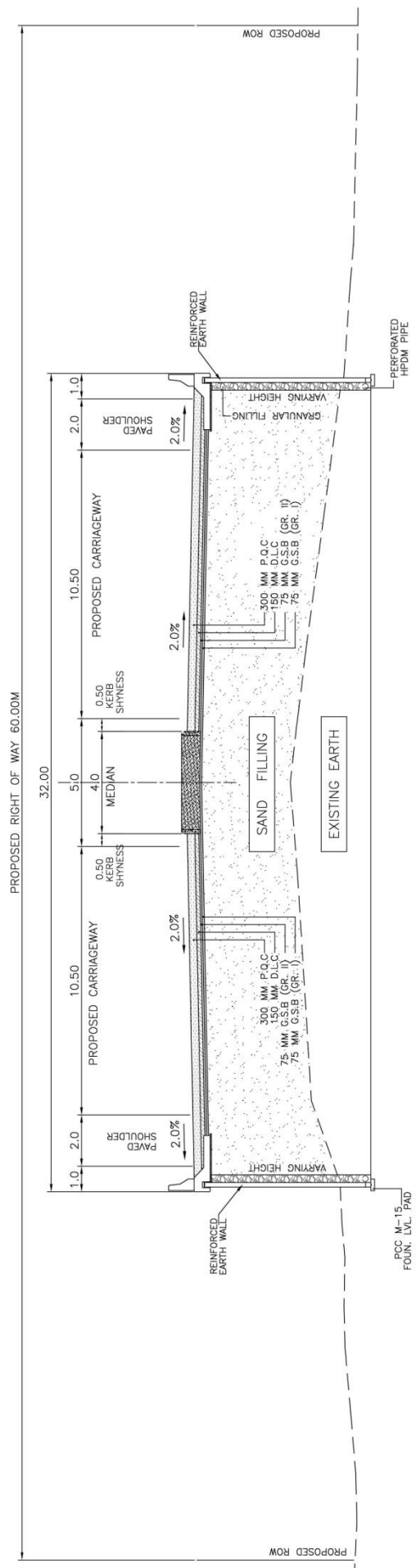
Sl No	Chainage (Km)		Length (M)	TCS Type	Remarks
	From	To			
1	132+375	132+975	600.000	TCS - 1A,1B & 1C	
2	132+975	133+093	118.000	TCS - 4	
3	133+093	133+106	13.440	STRUCTURE PORTION	
4	133+106	133+266	159.560	TCS - 4	
5	133+266	134+829	1563.000	TCS - 1A,1B & 1C	
6	134+829	134+861	31.840	STRUCTURE PORTION	
7	134+861	135+745	884.160	TCS - 1A,1B & 1C	
8	135+745	135+816	71.440	STRUCTURE PORTION	
9	135+816	137+947	2130.560	TCS - 1A,1B & 1C	
10	137+947	138+124	177.000	TCS - 3	
11	138+124	138+137	13.440	STRUCTURE PORTION	
12	138+137	138+308	170.560	TCS - 3	
13	138+308	145+360	7052.000	TCS - 1A,1B & 1C	
14	145+360	145+690	330.000	TCS - 2	
15	145+690	145+709	19.440	STRUCTURE PORTION	
16	145+709	146+012	302.560	TCS - 2	
17	146+012	150+336	4324.000	TCS - 1A,1B & 1C	
18	150+336	150+588	252.000	TCS - 3	
19	150+588	150+601	13.440	STRUCTURE PORTION	
20	150+601	150+778	176.560	TCS - 3	
21	150+778	152+081	1303.000	TCS - 1A,1B & 1C	
22	152+081	152+105	23.840	STRUCTURE PORTION	
23	152+105	153+058	953.160	TCS - 1A,1B & 1C	

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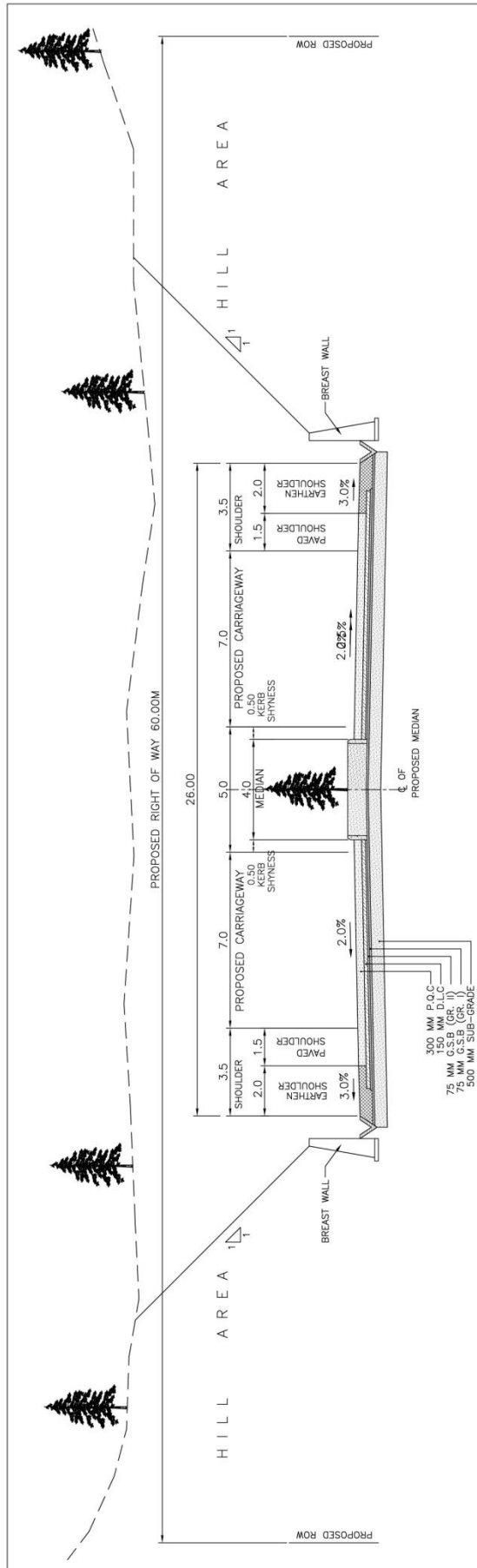




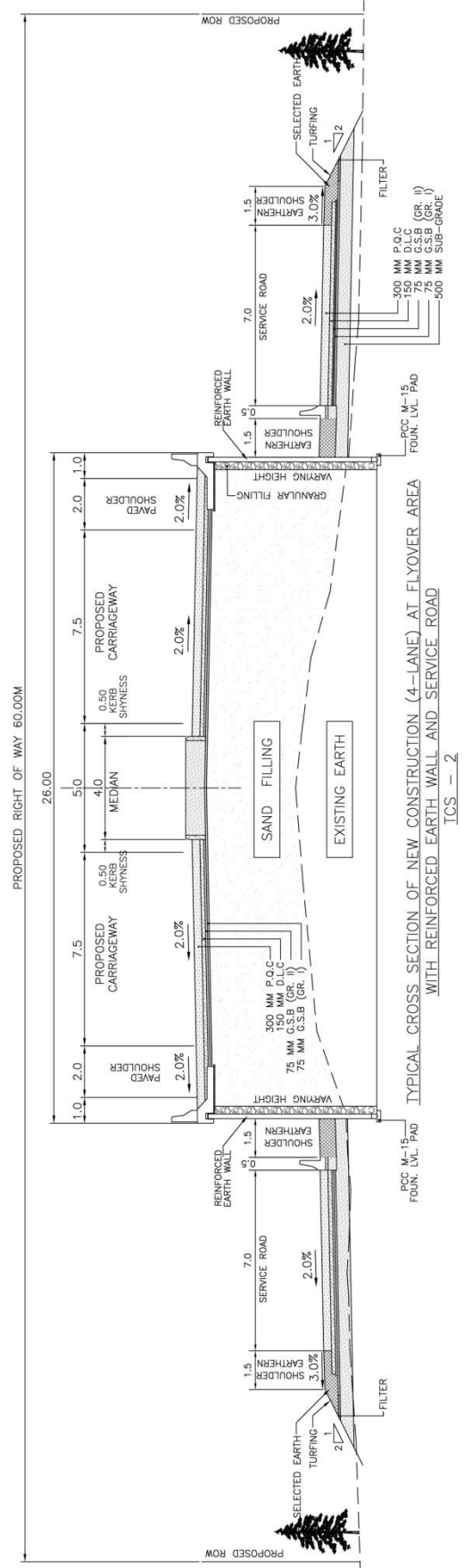
TYPICAL CROSS SECTION OF NEW CONSTRUCTION (4-LANE) AT UNDERPASS AREA
WITH REINFORCED EARTH WALL WITH SERVICE ROAD



TYPICAL CROSS SECTION OF NEW CONSTRUCTION (4-LANE) AT UNDERPASS AREA
WITH REINFORCED EARTH WALL WITHOUT SERVICE ROAD



TYPICAL CROSS SECTION OF NEW CONSTRUCTION (4-LANE) AT CUT AREA



TYPICAL CROSS SECTION OF NEW CONSTRUCTION (4-LANE) AT FLYOVER AREA
WITH REINFORCED EARTH WALL AND SERVICE ROAD

SCHEDULE – C
(See Clause 2.1)**PROJECT FACILITIES****1 Project Facilities**

This schedule indicates the minimum spatial and functional requirements of the facilities to be provided on the Project Highway Package No. **NHIDCL/Civil work/Dimapur Bypass/Nagaland/2016**, starting from km 132+375 to km 153+058 at Deed (total length of 20.683 km) with an aim to cater to the envisaged demand till the end of the concession period.

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

- (a) Roadside furniture;
- (b) Pedestrian facilities;
- (c) Tree plantation;
- (d) Bus bays and bus shelters(4 locations)
- (e) Passing Places
- (f) One truck lay by and
- (g) Others to be specified

2 Description of Project Facilities**Toll Plaza**

NIL

Bus Shelters

To ensure orderly movement of the through traffic, bus shelters have been proposed outside the residential area, away from bridges, and high embankments and not too close to the road intersections. The bus stops have been proposed on one side of the road.

Bus shelters shall be provided on the Project Highway at 3(three) locations as mentioned hereinunder. Bus shelters shall be constructed as per Manual on both sides of the Project Highway. These bus shelters will also have passenger shelter.

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Details of Bus bays and bus shelters

SL No	Chainage(Km)		Location	Side	Number of Buses at Stop	Length (M)	Remarks
	Existing	Proposed					
1	-	152+235	Patkai	LHS	2	70.70	As per 4 Lane Manual IRC SP:84-2014)
2	-	152+365	Patkai	RHS	2	70.70	As per 4 Lane Manual IRC SP:84-2014)
3	-	146+375	-	LHS	2	70.70	As per 4 Lane Manual IRC SP:84-2014)
4	-	146+500	Patkai	RHS	2	70.70	As per 4 Lane Manual IRC SP:84-2014)

Pedestrian Facilities

Pedestrian facilities shall be provided at the locations of urban sections in order to ensure safety of pedestrians while crossing in consultation with NHIDCL. This should include (a) minimum Zebra Crossing with flashing Beacon or (b) Zebra Crossing with separate pedestrian phase or (c) any other provision as approved by NHIDCL.

Administrative, Operation and Maintenance Base Camp

There shall be one base camp preferred as the center of the stretch.

The main administrative base camp shall be provided to cater to the requirement of the project implementation unit having offices of Independent Consultant, Project Company, its Supervision Consultant and representative of NHIDCL associated with the Project.

The Administrative building shall primarily house the Main Offices in addition to other secondary facilities such as computer room, office space, stores, sanitary facilities, canteen etc. The main base camp shall have adequate parking space for staff and visitors.

The camps shall have adequate lighting during dark periods and night.

The base camps shall not have more than one entry and one exit point. Both of these shall be manned by security personnel at all times.

The camps shall be landscaped so as to protect the area from dust and noise from the Project Highway.

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The laboratory facility to be established for testing of various materials related to road construction and maintenance during implementation period shall be located at the main base camp.

Landscaping

Landscape treatment of the Project Highway shall be undertaken through planting of trees and ground cover of appropriate varieties and landscaping on surplus land in the ROW. The Construction Contractor should plant at least 800 nos. of trees of minimum 6 ft. height with tree guard made up of MS sections.

Plantation scheme shall be prepared in consultation with the Forest Department of the Government of Nagaland, and the Authority Engineer/ NHIDCL.

Environment

The Project Highway during design, construction and maintenance during implementation period shall conform to the environmental rules and regulations in force. The Construction Contractor shall be responsible for the same.

SCHEDULE – D
(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1. Construction

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

2. Design Standards

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

Four Lane Manual (IRC: SP 84 – 2014) of Specifications and Standards four laning published by IRC and Hill Road Manual IRC SP 48:1998

“Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683)of DabokaDimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”

Annex – I
(Schedule – D)

Specifications and Standards for Construction

1 Specifications and Standards

All materials, works and construction operations shall confirm to the Four Lane Manual (IRC: SP 84-2014) of Specifications and Standards for Four Laning (IRC: SP: 84 – 2014), referred as the Four Lane Manual (IRC: SP: 84 – 2014), 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 Four Lane Manual (IRC: SP 84- 2014) shall be deemed to be substituted by the terms '**Contractor**', '**Authority's Engineer**' and '**Agreement**' respectively.

2.2 NIL

"Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683)of DabokaDimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis"

SCHEDULE - E
(See Clauses 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1 Maintenance Requirements

- 1.1 The Contractor shall, at all times maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.
- 1.2 The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority 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.
- 1.3 All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

2 Repair/rectification of Defects and deficiencies

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

3 Other Defects and deficiencies

In respect of any Defect or deficiency not specified in Annex - I of this Schedule-E, the Authority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.

4 Extension of time limit

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

5 Emergency repairs/restoration

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

6 Daily inspection by the Contractor

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

7. Pre-monsoon inspection / Post-monsoon inspection

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

Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis

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 default or neglect of the Authority shall be undertaken by the Authority at its own cost. The Authority may instruct the Contractor to undertake the repairs at the rates agreed between the Parties.

Annex - I
(Schedule-E)

Repair/rectification of Defects and deficiencies

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

Nature of Defect or deficiency		Time limit for repair/rectification
ROADS		
(a)	Carriageway and paved shoulders	
(i)	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days
(ii)	Roughness value exceeding 2,200 mm in a stretch of 1 km (as measured by a calibrated bump integrator)	120 (one hundred and twenty) days
(iii)	Pot holes	24 hours
(iv)	Any cracks in road surface	15 (fifteen) days
(v)	Any depressions, rutting exceeding 10 mm in road surface	30 (thirty) days
(vi)	Bleeding/skidding	7 (seven) days
(vii)	Any other defect/distress on the road	15 (fifteen) days
(viii)	Damage to pavement edges	15 (fifteen) days
(ix)	Removal of debris, dead animals	6 hours
(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

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Nature of Defect or deficiency		Time limit for repair/rectification
(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 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 hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required/Once every year
(iii)	Damaged/missing road signs 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 hours
(ii)	Faults and minor failures	8 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 hours
(ii)	Removal of fallen trees from carriageway	4 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 hours
(ii)	Defects in electrical, water and sanitary installations	24 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 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,	30 (thirty) days

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

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

Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis

SCHEDULE - F
(See Clause 3.1.7(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.
2. The agency need to ensure compliance of AIP and FC stated in Schedule 'A' Annexure-IV. The necessary certifications need to be obtained from competent local forest department.
3. Muck dumping locations in forest area to be freezed in consultation with the forest department, the necessary certifications from local competent forest department is to be submitted.

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 & Infrastructure
Development Corporation Limited, New Delhi

WHEREAS:

-
- (A) _____ [name and address of contractor] (hereinafter called the “**Contractor**”) and [name and address of the authority], (hereinafter called the “**Authority**”) have entered into an agreement (hereinafter called the “**Agreement**”) for the “**Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction 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. (Rupees crore) (the “**Guarantee Amount**”).
- (C) We, through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (*hereinafter called the “**Guarantee**”*) by way of Performance Security.

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

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1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways Authority of India], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.
3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect on ****^s. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This guarantee shall also be operatable at our..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

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

13. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below:-

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

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

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.

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

Form for Guarantee for Withdrawal of Retention Money

Managing Director,
National Highways & Infrastructure
Development Corporation Limited, New Delhi

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 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction 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 the National Highways Authority of India], 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

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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 by post addressed to the Bank at its above referred branch, which shall be deemed to have

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

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This guarantee shall also be operatable at our..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.
13. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below:-

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

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis

(Code Number)

(Address)

NOTES:

- (i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- (ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

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

Form for Guarantee for Advance Payment

Managing Director,
National Highways & Infrastructure
Development Corporation Limited, New Delhi

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 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction 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**”)\$.
- (C) We, through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (*hereinafter called the “**Guarantee**”*) for the Guarantee Amount.

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to

^{\$} The Guarantee Amount should be equivalent to 110% of the value of the applicable instalment.

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an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways Authority of India], 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

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force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect on ****.^{\$} Unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, the Bank shall be discharged from its liabilities hereunder.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This guarantee shall also be operatable at our..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.
13. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below:-

S.no.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC SYNB0009062

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

4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Syndicate Bank transport Bhawan, 1st Parliament Street, New Delhi-110001

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

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 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis

SCHEDULE - H

(See Clauses 10.1.4 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 OF PAYMENT	PERCENTAGE WEIGHTAGE	PERCENTAGE WEIGHTAGE vis a vis OVERALL PROJECT
1	2	3	4	5
Road works including culverts, minor bridges, underpasses, overpasses, approaches to ROB/RUB/ Major Bridges/ Structures (including service roads)	72.82	A- Widening and strengthening of existing road		
		(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.	0.00	0.00
		(ii) Sub base and Base Course	0.00	0.00
		(iii) Dry Lean Concrete	0.00	0.00
		(iv) Cement Concrete Pavement	0.00	0.00
		B - New 4-Lane alignment		
		(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.	16.64	12.12
		(ii) Sub base and Base Course	7.76	5.65
		(iii) Dry Lean Concrete	11.16	8.13
		(iv) Cement Concrete Pavement	36.34	26.46
		C- New culverts, minor bridges, underpasses, overpasses on existing road, realignments,		

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE OF PAYMENT	PERCENTAGE WEIGHTAGE	PERCENTAGE WEIGHTAGE vis a vis OVERALL PROJECT
1	2	3	4	5
		bypasses:		
		(1)Box / Slab Culverts	24.50	17.84
		(2) HP Culvert	0.00	0.00
		(3) Embankment Protection(New Lane)	0.00	0.00
		(4) Grade separated structures	0.00	0.00
		(5) Overpass	0.00	0.00
		(6) Elephant Underpass	0.00	0.00
		(7) Approaches to ROB and Viaduct	0.00	0.00
		(8) Minor Bridges	3.60	2.62
		(9) Cattles/Pedestrian Underpasses	0.00	0.00
		(10) Vehicular Underpass	0.00	0.00
Major Bridge works and ROB/RUB	4.11%	A- Widening and repairs of Major Bridges		
		(1) Foundation	63.75	2.62
		(2) Sub-structure	15.57	0.64
		(3)Super- structure(including wearing coat, crash barrier etc. complete in all respect)	19.22	0.79
		B- Widening and repair of		
		(a) ROB	0.00	0.00
		(b) RUB	0.00	0.00
		C- New Major Bridges		
		(1) other Miscellaneous Items	1.46	0.06
		(2) Guide Bundh	0.00	0.00
		(3) Foundation	0.00	0.00
		(4) Sub structure	0.00	0.00
		(5) Super-structure (including wearing coats, crash barriers etc. complete)	0.00	0.00
		(6) Protection works	0.00	0.00
		D- New rail-road bridges including viaduct		

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE OF PAYMENT	PERCENTAGE WEIGHTAGE	PERCENTAGE WEIGHTAGE vis a vis OVERALL PROJECT
1	2	3	4	5
Structures(Elevated sections, reinforced earth)	14.82%	(a) ROB	0.00	0.00%
		(b) RUB	0.00	0.00%
		(1) Foundation	0.88	0.13%
		(2) Sub-structure	85.43	12.66%
		(3) Super-structure (including crash barriers etc. complete)	5.40	0.80
Other Works	8.25%	(4) Reinforced Earth Wall (includes Approaches of ROB, Underpasses, Overpasses, Flyover etc.)	8.30	1.23
		Other Engineering Works		
		Junction	8.00	0.66
		Road Marking	5.09	0.42
		Road Appurtenances	6.79	0.56
		Road side plantation	0.00	0.00
		Protection Work (Provision of Rip-Rap or similar work in valley side of the curves as special safety features)	0.00	0.00
		Service roads/Slip roads	0.00	0.00
		Toll Plaza	0.00	0.00
		Road side drain & toe wall	37.58	3.10
		Project facilities	0.00	0.00
		Safety and traffic management during const.	0.00	0.00
		Traffic Sign	0.85	0.07
		Pavement Marking	4.85	0.40
		Crash barrier/W metal crash barrier	9.45	0.78
		Road side Boundary stone, km Stone, 5th km stone and hectometer stone	0.85	0.07
		Traffic blinker LED delineator, stud, reflective payment marker, tree reflector	1.70	0.14
		Traffic Island	0.00	0.00
		Median Kerb	0.00	0.00

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE OF PAYMENT	PERCENTAGE WEIGHTAGE	PERCENTAGE WEIGHTAGE vis a vis OVERALL PROJECT
1	2	3	4	5
		Bus bays and Bus Shelter	8.00	0.66
		Road side plantation and median plantation	0.00	0.00
		Protective work of guide bund including construction of flexible aprons, boulder pitching and filter media on slope	0.00	0.00
		Minor Junction	0.00	0.00
		Median filling shrub plantation and maintenance for 1 year	0.00	0.00
		Overhead signboard	0.97	0.08
		Painting on kerb	0.00	0.00
		Footpath and separator	0.00	0.00
		Interlocking concrete block pavement	0.00	0.00
		Junctions	0.00	0.00
		CC Kerb	0.00	0.00
		Painting	0.00	0.00
		cable duct	2.91	0.24
		Solar stud and solar blinking LED	0.00	0.00
		Rest area with development of site including one no bus bay and bus shelter, landscaping and tree plantation	0.00	0.00
		Plantation (Vetiver, Hydro seeding and Mulching or similar techniques etc.) for slope protection on exposed hill slopes as slide mitigation measure.	1.33	0.11
		Traffic control devices and road safety works	0.00	0.00
		Road furniture	0.00	0.00
		Road side drain I/C chute drain	0.00	0.00
		Repair for protection work	0.00	0.00
		Traffic diversion, Safety and traffic management	0.00	0.00

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE OF PAYMENT	PERCENTAGE WEIGHTAGE	PERCENTAGE WEIGHTAGE vis a vis OVERALL PROJECT
1	2	3	4	5
		during construction		
		Miscellaneous item	0.00	0.00
		Breast Wall and RCC retaining wall	0.00	0.00
		Junction improvement	0.00	0.00
		Site Clearance	0.00	0.00
		M-20 Kerb with channel	0.00	0.00
		Prefabricated railing over kerb in median	0.00	0.00
		safety barrier	0.00	0.00
		(v)Project facilities		
		(a)Truck lay-byes	0.00	0.00
		(b) Others	0.00	0.00
		(vi)Repairs to bridges/structures		
		Other items(Junctions)	0.00	0.00
		Providing wearing coat	0.00	0.00
		Replacement of bearing joints	0.00	0.00
		Providing crash barrier	0.00	0.00
		(vii)Protection Works		
		Breast Wall	11.64	0.96
		Retaining Wall	0.00	0.00
		Gabion Wall	0.00	0.00
		Parapet	0.00	0.00
		Total %		100.00%

1.3 Procedure of estimating the value of work done

1.3.1 Road works including approaches to minor bridges, Major Bridges and Structures (excluding service roads).

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

TABLE 1.3.1

STAGE OF PAYMENT	PERCENTAGE WEIGHTAGE vis a vis overall Project	PAYMENT PROCEDURE
A-Widening and Strengthening		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.
(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.	0.00%	
(2) Granular work (sub- base, base, shoulders)	0.00%	
(3) Dry Lean Concrete	0.00%	
(4) Concrete Pavement	0.00%	
(6) Widening and repair of culverts	0.00%	Cost of five completed culverts shall be determined pro rata with respect to the total number of culverts. Payment shall be made on the completion of five culverts.
(7) Protection of existing works	0.00%	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.
(8) Widening and repair of minor bridges	0.00%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of a minor bridge.
B- New 4-lane alignment		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.
(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.	12.12%	
(2) Granular work (sub- base, base, shoulders)	5.65%	
(3) Dry Lean Concrete	8.13%	
(4) Cement Concrete Pavement	26.46%	
(5) Protection Works	0.00%	
(6) RCC / Reinf. Earth ret wall in approaches of RoB	0.00%	
(7) Drainage Works	0.00%	

STAGE OF PAYMENT	PERCENTAGE WEIGHTAGE vis a vis overall Project	PAYMENT PROCEDURE
(8) Protection works	0.00%	
C- New culverts, minor bridges, underpasses, overpasses on existing road, realignments, bypasses:		
(1) Box / Slab Culverts	17.84%	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 five culverts.
(2) HP Culverts	0.00%	
(3) Embankment Protection (New Lane)	0.00%	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.
(4) Grade Separated structures	0.00%	Cost of each structure shall be determined on pro rata basis with respect to the total number of structures. Payment shall be made on the completion of each number of structures specified.
(5) Overpasses	0.00%	
(6) Elephant underpass	0.00%	
(7) Approaches to ROB and Viaduct	0.00%	
(8) Minor bridges	2.62%	Cost of each minor bridge/Culvert shall be determined on pro rata basis with respect to the total linear length of the minor bridges/culvert. Payment shall be made on the completion of a minor bridge/culvert.
(9) Cattles/Pedestrian Underpasses	0.00%	Cost of each structure shall be determined on pro rata basis with respect to the total number of structures. Payment shall be made on the completion of each number of structures specified.
(10) Vehicular Underpasses	0.00%	

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

Where P= Contract Price

L = Total length in km

Similarly, the rates per km for stages (1), (2) and (4) above shall be worked out.

1.3 Procedure of estimating the value of work done

1.3.2 Major Bridge works and ROB/RUB.

Procedure for estimating the value of Major Bridge works and of ROB/RUB shall be as stated in table **1.3.2**:

TABLE 1.3.2

STAGE OF PAYMENT	WEIGHTAGE	PAYMENT PROCEDURE
A- Widening and repairs of Major Bridges		Cost of each Major Bridge (widening and repairs) shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridges (widening and repairs). Payment shall be made on completion of each stage of a Major Bridge as per the weightage given in this table.
(1) Foundation	2.62%	
(2) Sub-structure	0.64%	
(3) Super-structure (including wearing coat, crash barriers etc. complete in all respect)	0.79%	
B- Widening and repair of		Cost of each ROB/RUB (widening and repairs) shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB (widening and repairs). Payment shall be made on completion of an ROB/RUB
(a) ROB	0.00%	
(b) RUB	0.00%	
C- New Major Bridges		Payment shall be made on pro rata basis on completion of 25 (twenty five) percent of each stage of a Major Bridge as per the weightage given in this table.
(1) Other Miscellaneous Items	0.06%	
(2) Guide Bund	0.00%	
(3) Foundation	0.00%	
(4) Sub-structure	0.00%	
(5) Super-structure (including wearing coat, crash barriers etc. complete in all respect)	0.00%	
(6) Protection Works	0.00%	Payment shall be made on pro rata basis on completion of 25 (twenty five) percent of each stage of a Major Bridge as per the weightage given in this table.
D-Structures(Elevated sections, reinforced earth)		
(1) Foundation	0.13%	
(2) Sub-structure	12.66%	
(3) Super-structure (including wearing coat, crash barriers etc. complete in all respect)	0.80%	
(4) Reinforced Earth Wall (includes Approaches of ROB, Underpasses, Overpasses, Flyover etc.)	1.23%	
D- New rail-road bridge		Payment shall be made on pro rata basis on completion of 25 (twenty five) percent of each stage of a ROB/RUB as per the weightage given in this table.
(a) ROB	0.00%	
(b) RUB	0.00%	

TABLE: 1.3.3

STAGE OF PAYMENT	WEIGHTAGE	PAYMENT PROCEDURE
(1) Foundation: On completion of the foundation works including foundations for wing and return walls	0.00%	Cost of each structure shall be determined on pro rata basis in respect to the total linear length (m) of all the structures. Payment shall be made on completion of each stage of a structure as per the weightage given in this table.
(2) Sub-structure: On completion of abutments, piers up to the abutment/pier cap	0.00%	
(3) Super-structure: On completion of the Structure along with super structure, including hand rails/crash barriers, wing walls, return walls, tests on completion etc., elevated structure complete in all respects and fit for use.	0.00%	
(4) Reinforced earth work	0.00%	Payment shall be made on pro rata basis on completion of 20 (twenty) percent of total area.

1.3.4 Other works.

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

TABLE 1.3.4

STAGE OF PAYMENT	PERCENTAGE WEIGHTAGE vis a vis overall Project	PAYMENT PROCEDURE
Other Engineering Works		
Junction	0.66%	Payment shall be made on pro rata basis for completed facilities.
Road Marking	0.42%	
Road Appurtenances	0.56%	
Road Side plantation	0.00%	Unit of measurement is linear length in km. Cost per km shall be determined on pro rata basis with respect to the total length of the service roads/slip roads. Payment shall be made for completed service roads/slip roads in a length of not less than 20 (twenty) percent of the total length of service roads/slip roads.
Protection works(Riprap)	0.00%	
Service roads/slip road	0.00%	
Toll Plaza	0.00%	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
Road side drains & toe wall	3.1%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.
Project facilities	0.00%	Payment shall be made for completed items.
Safety & traffic mgmt. During construction	0.00%	
Traffic Sign	0.07%	
Pavement marking	0.40%	
Crash barrier/ W metal crash barrier	0.78%	
Road side Boundary stone, km stone, 5th km stone, & hectometre stones	0.07%	
Traffic blinker LED Delineator, stud, reflective payment marker, tree reflector	0.14%	
Traffic Island	0.00%	

STAGE OF PAYMENT	PERCENTAGE WEIGHTAGE vis a vis overall Project	PAYMENT PROCEDURE
Median Kerbs	0.00%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.
Bus Bays & Bus shelter	0.66%	Payment shall be made for completed items.
Road side plantation & medium Plantation.	0.00%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.
Protection works of guide bund including construction of flexible aprons , boulder pitching and filter media on slopes	0.00%	
Minor junction	0.66%	Payment shall be made for completed items.
Median filling shrub plantation & maintenance for 1 year	0.00%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.
Overhead signboard	0.08%	
painting on kerb	0.00%	
Footpath & Separator	0.00%	
Plantation (Vetiver, Hydro seeding and Mulching etc.) for slope protection on exposed hill slopes as slide mitigation measure.	0.11%	
Interlocking concrete block payment	0.00%	
junctions	0.00%	
CC kerb	0.00%	
Painting	0.00%	
Cable duct	0.24%	
Solar stud & solar blinking LED	0.00%	
Rest area with development of site including One no Bus bay and Bus shelter, landscaping and tree plantation	0.00%	
Plantation	0.00%	
Traffic control devices and road safety works	0.00%	
Road furniture	0.00%	
Roads side drains I/C Chute drain& toe wall	0.00%	

STAGE OF PAYMENT	PERCENTAGE WEIGHTAGE vis a vis overall Project	PAYMENT PROCEDURE
Repair of protections works	0.00%	
Traffic diversion, Safety and traffic management during construction	0.00%	
Miscellaneous items	0.00%	
Breast wall and RCC retaining wall	0.00%	
Junction improvement	0.00%	
Site Clearance	0.00%	
M-20 kerb with channel	0.00%	
Prefabricated railing over kerb in median	0.00%	
Safety Barrier	0.00%	
(v) Project facilities		
(a) Truck lay-byes	0.00%	Payment shall be made for completed items.
(b) others	0.08%	
(vi) Repairs to bridges/structures		
Other items (Junctions)	0.00%	Payment shall be made for completed items.
Providing wearing coat	0.00%	
Replacement of bearing joints	0.00%	
Providing crash barriers	0.00%	
(vii) Protection works		
Breast wall	0.90%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.
Retaining wall	0.00%	
Sausage type Breast Wall	0.00%	
Parapet	0.00%	

2 Procedure for payment for Maintenance

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

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

SCHEDULE - I
(See Clause 10.2.4)

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-I.

2 Additional Drawings

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

Annex - I
(Schedule - I)

List of Drawings

[Note: *The contractor is required to furnish all the Drawings as per the Manual and Clause 10.2*]

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 180th (one hundred and eightieth) 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 *550th (Five hundred and fiftieth)* day from the Appointed 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 40% (forty per cent) of the Contract Price.

4 Project Milestone-III

- 4.1 Project Milestone-III shall occur on the date falling on the *915th (Nine hundred and fifteenth)* 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 80% (eighty per cent) of the Contract Price.

5 Scheduled Completion Date

- 5.1 The Scheduled Completion Date shall occur on the [1095th (*one thousand ninety fifth*)] day from the Appointed Date.

Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis

- 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 [***].
- 2.2 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 [2,000 (two thousand)] mm for each kilometre.
- 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 Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to load testing.
- 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.
- 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

Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis

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.

SCHEDULE - L
(See Clause 12.2 and 12.4)

PROVISIONAL 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 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis"** (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 undertaken to determine compliance of the Project Highway with the provisions of the Agreement.
- 2 Works that are incomplete on account of Time Extension have been specified in the Punch List appended hereto, and the Contractor has agreed and accepted that it shall complete all such works in the time and manner set forth in the Agreement. In addition, certain minor works are incomplete and these are not likely to cause material inconvenience to the Users of the Project Highway or affect their safety. The Contractor has agreed and accepted that as a condition of this Provisional Certificate, it shall complete such minor works within 30 (thirty) days hereof. These minor works have also been specified in the aforesaid Punch List.
- 3 In view of the foregoing, I am satisfied that the Project Highway from km ** to km ** can be safely and reliably placed in service of the Users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into operation on this the day of 20.....

ACCEPTED, SIGNED, SEALED

SIGNED, SEALED AND

AND DELIVERED

DELIVERED

For and on behalf of

For and on behalf of

CONTRACTOR by:

AUTHORITY's ENGINEER by:

(Signature)

(Signature)

Construction of 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis

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 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction basis”*** (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.....

SIGNED, SEALED AND DELIVERED

For and on behalf of

the Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

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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

- 2.1 The following percentages shall govern the payment reduction:

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

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(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, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	Defects in Other Project Facilities	5%

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

$$R = P/100 \times M \times L1/L$$

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

M = Monthly lump-sum payment in accordance with the Bid

L1 = Non-complying length

L = Total length of the road,

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

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

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

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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.

2 Terms of Reference

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

3 Appointment of Government entity as Authority's Engineer

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

Annex – I
(Schedule - N)

TERMS OF REFERENCE FOR AUTHORITY’S ENGINEER

1 Scope

- 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 4/6 lane pavement from Km 132.375 to Km 153.058 (Total New Alignment design Length= 20.683) of Daboka Dimapur section (Dimapur Bypass) of NH-36 & 39 in the state of Nagaland on Engineering, Procurement and Construction 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 Clauses 1.2, 1.3 and 1.4 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;

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- (c) the Termination Payment; or
 - (d) any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs. 5,000,000 (Rs. fifty lakh).
- 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 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 10.1.6. The Authority's Engineer shall complete such review 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 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 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 of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the

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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 20 (twenty) 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.

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- 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 12.4.
- 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 or Provisional 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

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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

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
 - (i) Total of (i) and (ii) above.
- (g) Net claim: (e) – (f) (iii);
- (h) The amounts received by the Contractor upto the last claim:
 - (i) For the Works executed (excluding Change of Scope orders);
 - (ii) For Change of Scope Orders, and
 - (iii) Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

- (a) the monthly payment admissible in accordance with the provisions of the Agreement;
- (b) the deductions for maintenance work not done;
- (c) net payment for maintenance due, (a) minus (b);
- (d) amounts reflecting adjustments in price under Clause 19.12; and
- (e) amount towards deduction of taxes

3. Contractor's claim for 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 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.

The insurance cover shall be not less than the project cost.

- 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

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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.