National Highways & Infrastructure Development Corporation Limited

NHIDCL

BUILDING INFRASTRUCTURE - BUILDING THE NATION

EPC Schedules

FOR

"Package-I - Improvement to 2 lane with paved shoulder/ 4 lane of NH-40 section from Km 81+740 to Km 93+490 (design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to Km 0+930, total length 11.600 Km in the state of Meghalaya on EPC mode under JICA Loan Assistance." (Balance Works)

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD
(MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF INDIA)

June, 2022

NHIDCL, 3RD FLOOR, PRESS TRUST OF INDIA BUILDING, 4, PARLIAMENT STREET, NEW DELHI – 110001

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1. The Site

(i) Site of the Project Highway shall include the land, buildings, structures and road works as described in **Annex-I** of this **Schedule-A**.

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

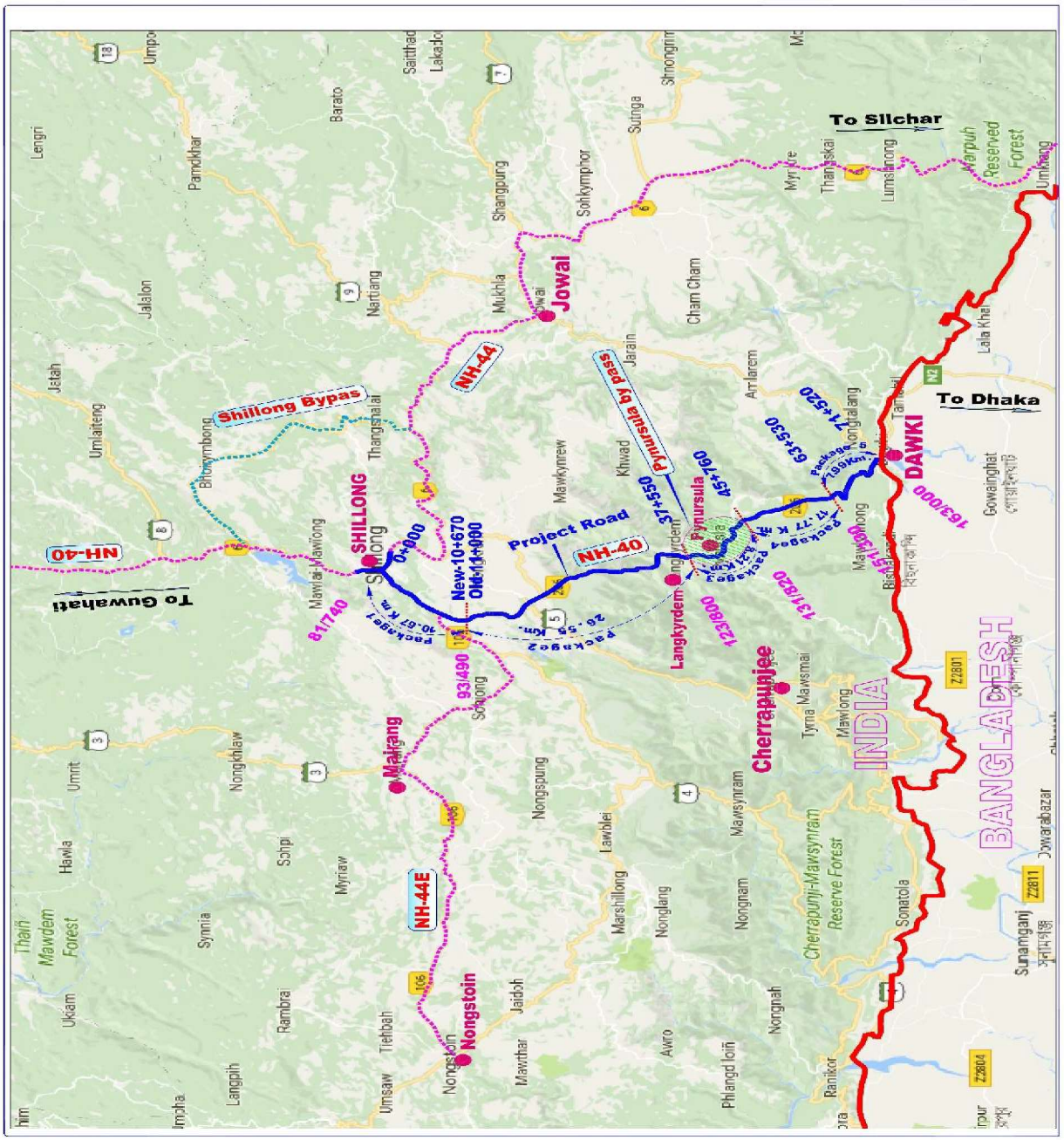
(iii) An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2 (i) of this Agreement.

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

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

1692709/2022/SRINAGAR-6

EPC **2022**



Annex I

(Schedule A)

1. Site

The project road from Shillong to Dawki is a section of NH-40 and starts from existing Km. 81/740 (Design ch. 0+000), at Rilbong intersection with NH-44 at Shillong and ends at existing km.93/490 (Design ch. 10+670) at junction with Marbaniun village road and the section of NH-44/NH-40 (Design ch. 0+000 to 0+930) Guwahati – Shillong – Jowai road in the State of Meghalaya. The land, carriageway and structures comprising the site are described below.

2. Land

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

Sl. No.	Chainage (km)		ROW
	From	To	
1	81/740	93/490	12 m

3. Carriageway

The present carriageway of the Project Highway is two Lane. The type of existing pavement is flexible. The details are given below.

S. no	Existing Ch. From	Existing Ch. To	C/W width (m)
1	81/740	93/490	6.5 – 7.0

Work executed by previous Contractor partially and considered in existing road are-

A) Widening and Strengthening / Geometric Improvement of existing road:

- A total effective length of 0.385 km of Earthwork upto subgrade top has been partially executed.

B) Reconstruction Realignment / Bypass (Flexible Pavement) :

- A total effective length of 1.820 km of Earthwork upto Subgrade top has been partially executed.
- A total effective length of 0.440 km of GSB has been laid.

4. Major Bridges

The Site includes the following Major Bridges:

S. No.	Existing Chainage (Km)	Type of Structure			Span Arrangement (m)	Width (m)
		Found -ation	Sub structure	Super structure		
	Nil					

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

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

\

S. No.	Existing Chainage (Km)	Type of Structure			Span Arrangement (m)	Width (m)
		Found -ation	Sub structure	Super structure		
		Nil				

6. Grade separators

The Site includes the following grade separators:

S. No.	Existing Chainage (Km)	Type of Structure			Span Arrangement (m)	Width (m)
		Found -ation	Sub structure	Super structure		
		Nil				

7. Minor bridges

The Site includes the following minor bridges:

Sl. No.	Existing Chainage (km)	Type of Structure			Span arrangement	Width (m)
		Found -ation	Sub structure	Super Structure		
1	82/015	Open	RCC Wall/ Circular Pier	Box Girder	2 x 24.0	12.5
2	90/258	Open	RCC Wall	RCC Slab	1x8.0	15.3

8. Railway level crossings

S. No.	**Location (km)**	**Remark**
	NIL	

The Site includes the following railway level crossings:

9. Underpasses (vehicular, non-vehicular)

The Site includes the following underpasses:

S. No	Existing Chainage (Km)	Type of structure	No. of span with Span Arrangement (m)	width (m)
			Nil	

10. Culverts

The Site has the following culverts

(a) Existing Culverts

SL. NO	Ex. Chainage	Type of Culvert	No. x span length	Width (m)
1	81/780	Pipe	1 x 0.60	15.00
2	82/140	Slab	1 x 0.70	10.50
3	82/280	Slab	1 x 0.45	12.50
4	82/560	Pipe	1 x 0.60	10.30
5	83/680	Pipe	1 x 0.90	10.30
6	84/050	Slab	1 x 0.70	12.00
7	84/090	Slab	1 x 0.80	10.00
8	84/420	Slab	1 x 0.80	10.70
9	85/670	Pipe	1 x 0.90	10.80
10	86/390	Pipe	1 x 0.90	9.20
11	86/400	Pipe	1 x 0.90	9.2
12	86/530	Box	1 x 0.50	13.8
13	87/340	Pipe	1 x 0.90	9.8
14	88/230	Pipe	1 x 1.00	11.2
15	88/830	Pipe	1 x 0.90	9.8
16	89/030	Pipe	1 x 0.90	10
17	89/240	Pipe	1 x 0.90	9.8
18	89/460	Pipe	1 x 0.60	8.1
19	89/750	Pipe	1 x 0.90	9.7
20	89/840	Box skew	1 x 3.00	9.7
21	89/940	Pipe	1 x 0.90	9.85
22	90/400	Pipe	1 x 0.90	9.45
23	91/105 (D.Ch.08+055)	Pipe	1 x 0.90	9.45
24	91/380 (D. Ch.08+330)	Pipe	1 x 0.90	9.45
25	91/490	Pipe	1 x 0.90	9.45
26	91/540	Pipe	1 x 0.60	9.1
27	91/760	Pipe	2 x 1.20	9.45
28	91/960	Slab	1 x 1.00	10.4
29	92/600	Pipe	2 x 0.90	9
30	92/630	Pipe	1 x 0.90	8.8
31	93/000	Pipe	1 x 0.90	13
32	93/100 (D.Ch.10+390)	Pipe	1 x 0.90	10
33	93/416 (D.Ch.10+593)	Pipe	1 x 0.90	11.5

(b) Out of above Culverts, following Culverts executed partially:

Sl. No.	Chainage	Clear span (m)/ (nos xLxH)	Type/ (Prop. Improvement)	Width of Culvert (m) (Scope)	Work Executed
1	8+055	1 x 2.0 x 1.5	Box (New)	19.610	6.0 m(RHS) Raft
2	8+330	1 x 2.0 x 1.5	Box (New)	20.022	14.0 m(RHS) PCC
3	10+390	1 x 2.0 x 1.5	Box (New)	12.0	12.0 m(2-lane) Raft
4	10+593	1 x 2.0 x 1.5	Box (New)	12.0	12.0 m(2-lane) PCC

11. Bus bays

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

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

12. Truck Lay byes

The details of truck lay byes are as follows:

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

13. Road side drains

The details of the road side drains are as follows:

S. No.	Location		Type & Side	
	From	To	Masonry/cc (Pucca)	Earthen
1	81/800	82/000	RHS	-
2	82/400	82/700	RHS	-
3	83/000	83/300	LHS	-
4	83/900	84/300	LHS	-
5	84/900	86/100	RHS	-
6	86/900	87/300	RHS	-
7	87/600	87/800	RHS	-
8	88/300	88/900	RHS	-
9	88/900	89/100	LHS	-
10	90/400	90/500	RHS	-
11	90/500	90/700	LHS	-
12	91/000	91/100	RHS	-
13	92/700	92/800	RHS	-

14	92/900	93/000	RHS	-

14. Major junctions

The details of major junctions are as follows:

S.No.	Existing Chainage	Lane Configuration	Type	Sides	Remarks
1	81/740	2-Lane	+ Junction	BHS	Between NH 40 & NH
2	83/850	2-Lane	T Junction	RHS	With Existing NH40
3	91/458	2-Lane	T Junction	RHS	With NH44E

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

15. Minor junctions

The details of the minor junctions (all at grade) are as follows:

S.NO.	Location of Intersection	Type of intersection	Other features (Road Leading to)	
			LHS	RHS
1	81/820	T Junction		Upper Shillong
2	82/260	T Junction		
3	82/525	T Junction		Lummawbah
4	82/480	T Junction	Post Office	
5	82/650	T Junction	Signal Center	
6	83/870	T Junction	Finest Forever	
7	83/880	T Junction		Rhino Shopping
8	84/000	T Junction		Upper Shillong
9	86/000	T Junction		3rd Mile, Upper
10	86/755	T Junction		Shillong Sanmer
11	87/820	+ Junction		Shilong Peak
12	88/710	Y Junction		Mattl

13	89/220	T Junction		HQ eastern air command
14	89/960	T Junction		HQ eastern air command
15	89/630	+ Junction		7th Mile
16	91/680	T Junction		Sadew
17	92/220	+ Junction		Sadew
18	92/840	T Junction		Ritmawniew

16. Bypasses

The details of the bypasses are as follows:

S. No.	Name of bypass (town)	Chainage (km)	Design Length (Km)	Carriageway	
				Width (m)	Type
		Nil			

17. Other structures

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

18. Design Chainages corresponding to Existing references

Sl. no.	Existing Chainage	Proposed Chainage
1	81/740	0+000
2	82/000	0+260
3	83/000	0+990
4	84/000	1+640
5	84/280	1+960
6	86/000	3+052
7	86/540	3+550
8	87/000	4+020
9	87/570	4+550
10	88/000	4+990
11	88/580	5+550

12	89/000	5+980
13	89/590	6+551
14	90/000	6+960
15	90/300	7+250
16	92/880	10+170
17	93/000	10+290
18	93/490	10+670

Annex – II

(See Clauses 8.3 (i))

(Schedule-A)

Dates for providing Right of Way of Construction Zone

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

Sl. No	From	To	Length (km)	Width ROW(m)	Date of providing RoW
1	0+000 (NH-40)	10+670 (NH-40)	10.67	24 to 60	Minimum 90% of length on Appointed Date and remaining within 150 days from Appointed Date
2	0+000 (NH-44)	0+930 (NH-44)	0.930	20 to 45	

Note: Total Length : 11.600 km

Annex - III

(Schedule-A)

Alignment Plans

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

(i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. The contractor shall, however, improve/upgrade the Road profile as indicated in **Annex-III** based on site/design requirement within the RoW.

(ii) Signage plan of the project highway is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in **Annex-III** based on site/design requirement as per the relevant specifications/IRC codes/Manual.

(iii) Alignment of the project Highway from Ch. 5+600 to Ch. 5+800 (Design chainage), has been shifted by 2 m RHS as per order of Honorable High Court to safeguard the existing trees. Therefore the EPC Contractor has to develop the project highway as per the modified alignment plan for the stretch mentioned above (affected stretch attached in P&P separately).

Annex - IV

(Schedule-A)

Environment Clearances

The project highway does not require environment clearance as per MoEF circular F. No. 21-270/2008-1A.III (dated 22nd August 2013).

Diversion of forest land of 16.107 Ha is required. Forest Proposal (16.107 Ha) has been submitted on 26.06.2019 and got approval from Forest Department.

The muck dumping sites should be identified by the EPC contractor in consultation with the Authority Engineer and forest department for dumping of muck as stated in Schedule F.

Schedule B

SCHEDULE - B

(See Clause 2.1)

DEVELOPMENT OF THE PROJECT HIGHWAY

1. **Development of the Project Highway**

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

2. **Rehabilitation and Augmentation**

   Widening and upgradation shall include Two-Laning with Paved shoulder/4-Laning of the Project Highway as described in **Annex-I** of this **Schedule-B** and in **Schedule-C**.

3. **Specifications and Standards**

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

Annex - I

(Schedule-B)

DESCRIPTION OF PROJECT

Pkg. I - Improvement to 2 lane with paved shoulder/ 4 lane of NH-40 section from Km 81+740 to Km 93+490 (design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to 0+930, total length 11.600 in the state of Meghalaya on EPC mode under JICA Loan Assistance

1. Widening of existing Highway

(i) The Project Highway shall follow the existing alignment unless otherwise specified by the Authority and shown in the alignment plans specified in **Annex-III of Schedule-A**. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for hilly terrain to the extent land is available.

(ii) Width of Carriageway

(a) Two-Laning with paved shoulders/4-Laning shall be undertaken. The paved carriageway shall be in accordance with the typical cross sections given in **Appendix B-I of Schedule –B**. Additional widths for widening at horizontal curve shall be as per the Schedule D.

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

S. No.	Built-up Section Township	Design Chainage		Width of Paved carriageway (m)
		From	To	
1	Upper Shillong	0+000	2+680	2 x 8
2	5th Mile	2+680	7+350	2 x 8
3	Ritmawniew	7+350	8+270	2 x 8
4	Ritmawniew	8+270	8+900	1 x 11

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

(c) All the cross-sectional elements are to be accommodated within the proposed ROW. If required, suitable retaining structures along with drainage system shall be provided as per site condition and this will not attract any change of scope

2. Geometric Design and General Features

(i) General: Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the Manual.

(ii) Design speed: The design speed shall be ruling speed of 60 km per hour and minimum speed of 40 km per hour.

(iii) Improvement of the existing road geometrics

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

(iv) Total Scope of Project Highway works: As follows

A) Scope of Widening and Strengthening / Geometric Improvement of existing road:

Sl. No.	Design Ch. From	Design Ch. To	Existing NH	Side	Effective Length(m)
1	00+000	01+960	NH 40	B/S	1960
2	03+050	07+250	NH 40	B/S	4200
3	10+170	10+670	NH 40	B/S	500
4	00+000	00+930	NH 44	B/S	930
				Total, A:	**7590 m**

B) Reconstruction Realignment / Bypass (Flexible Pavement):

Sl. No.	From	To	Side	Effective Length(m)
1	01+960	03+050	B/S	1090
2	07+250	10+170	B/S	2920
			Total, B:	**4010 m**

Total, A+B:	**11600 m**

Note:

1) ***The above length of 11.6 km includes the partially executed works in Earthwork upto subgrade top and GSB as mentioned in Schedule-A, which shall be rectified as per extant Ministry's Specifications and IRC Codal Provisions in case any deficiencies are found during execution without attracting any Change of Scope (CoS).***

(ii) Right of Way

The site of the project highway comprises the land as described in **Annex-II** of Schedule**-A.**

(iii) Type of shoulders

(a) In built-up sections, footpaths/covered drains shall be provided in the following stretches:

Sl. No.	Left Side			Right Side		
	From	To	Length (m)	From	To	Length (m)
1	0+000	0+070	70	0+000	0+210	210
2	0+300	1+420	1120	0+610	0+920	310
3	3+020	7+390	4370	1+100	1+400	300
4	7+890	8+900	1010	3+020	4+550	1530
5	-	-		4+830	7+390	2560
6	-	-		8+190	8+900	710

Other Locations of Footpath shall be as per TCS/Schedule D

(b) In open country, paved shoulders of 1.5 m width shall be provided and balance 1.0 m shall be covered with granular material in full depth up to GSB layer as shown in typical cross section.

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

(iv) Lateral and vertical clearances at underpasses

(a) Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per paragraph 2.10 of the Manual.

(b) Lateral clearance: The width of the opening and vertical clearances at underpasses shall be as follows:

Sl. No	Design Chainage	Clear span/opening (m)	Vertical Clearance (m)	Remarks
1	1+220/NH40	1 X 7.0	4.5	SVUP
2	8+655/NH40	1 x 35.0	5.5	VUP
3	9+622/NH40	1 x 7.0	4	SVUP
4	0+510/NH44	1 x 7.0	4	SVUP

VUP: Vehicular Underpass; LVUP: Light Vehicular Underpass; SVUP: Small Vehicular Underpass;

Note: - IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP.

(v) Lateral and vertical clearances at overpasses

(a) Lateral and vertical clearances at overpasses shall be as per paragraph 2.11 of the Manual.
(b) Lateral clearances at overpasses shall be as follows:

S. No.	Design Chainage	Clear Span (m)	Vertical Clearance (m)	Remarks
1	0+010/NH40	1 x 35.0	5.50	VOP

(vi) Slip Roads/Service Roads: Slip roads along Project highway shall be constructed at the locations and for the lengths indicated below-

Ch. From	Ch. To	Width	Length (m)	Remarks
1+070	1+370	3.5	300	On both sides
8+270	8+900	5.5	630	On both sides
0+190/NH-44	0+730/NH-44	5.5	540	On both sides along Guwahati-Shillong-Jowai Road (NH44)
		Total	**1470**	

***Total length of Slip road/ Service road excluding taper/acceleration/deceleration length is 2x1.470 = 2.940 km (Including Both Sides)**

Note:

1. ***The length of slip road shown in above tables is minimum and increase in length/ width of slip road/ approach road, if required, shall be deemed to be part of project and no Change of Scope shall be admissible on this account.***
2. ***Stone pitching/ Toe wall shall be provided as per site condition for maintaining level difference between main carriageway and service road, and shall not attract any Change of Scope (CoS).***

(vii) **Grade separated structures**

(a) Grade separated structures shall be provided as per paragraph 2.13 of the Manual. The requisite particulars are given below:

i) Overpass

Sl. No.	Design Chainage	Span arrangement(m)	Road to be carried under the structure	Width of Structure (m)
1	0+010	1x35.0	NH-40	12

ii) Vehicular Underpass (VUP) :

	Design Chainage	Span arrangement (m)	Road to be carried under the structure	Min. Vertical clearance (m)	Width of Structure (m)
1	8+655	1 x 35	Shillong – Nongstoin Road (NH-44)	5.50	12

iii) Light Vehicular Underpass

S. No.	Design Chainage	Span arrangement (m)	Road to be carried under the structure	Min. Vertical clearance (m)	Width of Structure (m)
NIL					

iv) Small Vehicular Underpass

	Design Chainage	Span arrangement(m)	Road to be carried under the structure	Min. Vertical clearance (m)	Width of structure (m)
1	1+220	1 X 7	Army opening gate (Both side)	4.5	21
2	9+622/NH40	1 x 7	Village Road	4.0	12
3	0+510/NH44	1 x 7	Village Road	4.0	12

Note: -

(i) Any Change in location/width shall not constitute as Change of Scope or any other

claim whatsoever.

(ii) IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP

(iii) The Design and drawings of the above structure is within the scope of EPC Contractor. The same may be finalized as per actual site conditions and FRL of P&P.

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

S. No.	Location (Design Chainage)	Type of Structure	Cross road at		
			Existing level	Raised Level	Lowered Level
1	0+010	VOP	NH-40	NH-44	----
2	1+220	SVUP	NH-40	-----	Access to Army office
3	8+655	VUP	NH-44E	NH-40	---
4	9+622	SVUP	Village Road	NH-40	---
5	0+510/NH44	SVUP	Access to Army Hospital	NH-44	---

(viii) Cattle and pedestrian under pass / over pass

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

Sl. No.	Location	Type of crossing
NIL		

(ix) Typical cross-sections of the Project Highway

The typical cross-sections shall be developed as applicable, in accordance with clause 2.16 of the Manual (IRC:SP:73-2018). 4 lane divided carriageway (with or without footpath) shall be done from design km. 0+000 to km. 8+270. Indicative TCS are presented in Appendix B-I. Additional TCS as required shall be developed by EPC Contractor.

The indicative TCS for Project Highway are as follows-

S.No.	Design Chainage		Length (m)	TCS Type
	From	To		
NH 40 (Shillong-Dawki Road)				
1	0+000	1+420	1420	Type 1
2	1+420	3+020	1600	Type 2
3	3+020	7+400	4380	Type 1
4	7+400	7+850	450	Type 2
5	7+850	8+270	420	Type 1
6	8+270	8+900	630	Type 4
7	8+900	10+670	1770	Type 3
	Sub-Total:		**10670**	
NH 44 (Guwahati-Jowai Road)				
S.No.	**Design Chainage**		**Length (m)**	**TCS Type**
	From	**To**		
8	0+000	0+190	190	Type 5
9	0+190	0+730	540	Type 4

10	0+730	0+930	200	Type 5
		Sub-Total:	**930**	
		Grand Total:	**11600**	

Note: 1) Any Change in location/length shall not constitute as Change of Scope (CoS) or any other claim whatsoever.

2) The length shown in the above table for TCS are minimum and increase in length for Type TCS will not attract any COS.

3. Intersections and Grade Separators

All intersections and grade separators shall be as per section 3 of the Manual.
Existing intersections which are deficient shall be improved to the prescribed standards.

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

(i) **At grade Intersections**

All intersections as per the site requirement shall be designed and constructed in accordance with the manual. A list of intersections is given in below table**.** Draft layout of major junctions is given in indicative Plan & Profile drawings for reference.

Sl. No	Proposed Chainage	Classification of Road	Type of Junction (T, Y, +)	Type of cross road	Side	Road leading to
	Major Junctions					
1	0+000	NH 40/NH 44	+ Junction	2-Lane BT	Both	Left- Guwahati Right- Jowai
2	1+990	Existing NH40	T Junction	2-Lane BT	Right	3rd Mile, Upper Shillong
3	8+655	NH 44E	T Junction	2-Lane BT	Right	Nongstoin
	Minor Junctions					
1	0+080	City Road	T Junction	2-Lane BT	Right	Upper Shillong
2	0+210	City Road	Y Junction	Intermediate BT	Left	Upper Shillong
3	0+570	City Road	T Junction	Intermediate BT	Right	Lummawbah
4	0+610	City Road	T Junction	Intermediate BT	Right	Lummawbah
5	0+740	City Road	T Junction	Lane BT	Left	Post Office
6	0+800	City Road	T Junction	1-Lane BT	Left	Signal Center
7	0+840	City Road	Y Junction	2-Lane BT	Right	HQ 101
8	1+310	City Road	T Junction	1-Lane BT	Right	Upper Shillong
9	3+052	City Road	T Junction	2-Lane BT	Right	3rd Mile, Upper Shillong

Sl. No	Proposed Chainage	Classification of Road	Type of Junction (T, Y, +)	Type of cross road	Side	Road leading to
10	3+730	City Road	T Junction	1-Lane BT	Right	Sanmer
11	4+800	Village Road	+ Junction	1-Lane BT	Both	Shillong Peak, Mawklot
12	5+710	Village Road	Y Junction	1-Lane BT	Right	Mattlang
13	6+201	City Road	T Junction	2-Lane BT	Left	A.H. & Veterinary
14	6+400	City Road	T Junction	4-Lane BT	Left	HQ eastern air command
15	6+660	City Road	Y Junction	2-Lane BT	Right	ALG Area, EAC
16	6+920	City Road	T Junction	4-Lane BT	Left	HQ Eastern air command
17	7+290	Existing NH40	+ Junction	2-Lane BT	Both	Elephant falls, 7th Mile
18	8+280	Village Road	Y Junction	1-Lane BT	Left	Baniun
19	9+515	Village Road	+ Junction	1-Lane BT	Both	Baniun
20	10+130	Existing NH40	Y Junction	2-Lane BT	Left	Ritmawniew
21	10+670	Village Road	Y Junction	1-Lane BT	Right	Marbaniun

Note: It is clarified that if any other junction is identified during development of the project highway in addition to those mentioned above shall also be improved with proper drainage facilities as per standards. It shall be covered within the scope of work. The Number, location & type of junction shown in above table are minimum and increase in number will not attract change of Scope on this account.

(ii) **Grade separated intersection without ramps**

S. No.	Design Chainage	Salient Feature (Formation width) (m)	Minimum Length of Viaduct (m)	Road to be carried Under structure	Type of Structure
Nil					

4. Road Embankment and Cut Section

(i) Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/ cuttings shall conform to the Specifications and Standards given in Section 4 of the Manual and the specified cross-sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

(ii) Raising of the existing road/New carriageway the existing road shall be raised as per design requirements in accordance with the manual in conformity to the minimum FRL.

The Contractor may adopt suitable slope (angle) for the embankment as per the availability of fill material/design requirements. The slopes shall be checked for safety against failure. The slopes shall be protected with turfing/geo synthetics /geo green blanket/geo cells/stone pitching or any other method as per schedule D.

Wherever required, toe wall/retaining wall/Breast Wall/other protection works along with drainage system shall be provided to contain the toe of the earthwork, so that all the features shown in the TCS are accommodated in the ROW provided.

(iii) All of surplus cutting soils shall be transported and be disposed to the Spoil Banks in accordance with the Clause 3.1 of Schedule D.

5 Pavement Design

(i) Pavement design shall be carried out in accordance with Section 5 of the Manual.

(ii) Type of pavement

Flexible pavement shall be provided for the entire length of project highway.

(iii) Design requirements - as per paragraph 5.4, 5.9 and 5.10 of the manuals.

(a) Design Period and strategy Flexible pavement shall be designed for a minimum design period of 20 years. Stage construction shall not be permitted.

(b) Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic of not less than 30 MSA.

(iv) Reconstruction of Stretches

The entire stretch of the existing road shall be reconstructed.

6. Road Side Drainage

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

(a) Covered drain / open drain shall be provided in the following stretches

Sl. No.	Left			Right		
	From	To	Length (m)	From	To	Length (m)
i) Covered Drain Locations						
1	0+000	0+070	70	0+000	0+210	210
2	0+300	1+420	1120	0+610	0+920	310
3	3+000	7+390	4390	1+100	1+400	300
4	7+890	8+900	1010	3+000	4+550	1550
5	-	-	-	4+830	7+390	2560
6	-	-	-	8+190	8+900	710
Along NH-44						
7	0+000	0+930	930	0+000	0+930	930
	Total Length (m)		**7520**	**Total Length (m)**		**6570**
ii) Lined Open drain locations (Hill Side)						
1	1+420	2+050	630	1+810	2+500	690
2	2+610	2+980	370	7+390	8+190	800
3	7+390	7+890	500	9+870	10+670	800
	Total Length (m)		**1500**	**Total Length (m)**		**2290**
iii) Lined Open drain locations (Valley Side)						
1	2+210	2+280	70	1+510	1+640	130
2	2+320	2+610	290	1+640	1+810	170
3	-	-	-	2+640	2+930	290
4	-	-	-	9+260	9+870	610
	Total Length (m)		**360**	**Total Length (m)**		**1200**

Note: The above locations are minimum. Additional locations if any required as per site condition shall be provided as per manual. It shall not be treated as change in scope of work.

7. Designs of Structures

(i) General

(a) All bridges, culverts and other structures shall be designed and constructed in accordance with section 7 of the Manual and shall conform the cross-sectional features and other details specified therein.

b) Width of new bridges are shown as follows:

S. No.	Design Chainage	Existing Chainage	Width of structure and cross-sectional features	Remarks
1	0+275	82/015	13.00m	Existing Retain + New 2 lane, NH-40
2	8+940	-	13.00m	New 2 lane, NH-40
3	9+870	-	16.00m	New 2 lane, NH-40

c) The following structures shall be provided with footpaths

Sl. No.	Design Chainage	Existing Chainage	Remarks
1	0+275	82/015	2 lane bridge with One side footpath
2	7+218	90/258	4 lane bridge with both side footpath
3	8+940	-	2 lane bridge with both side footpath
4	9+870	-	2 lane bridge with both side footpath

(d) All bridges shall be high level bridges.

(e) The structures shall be designed to carry utility services like electric cable, water pipe line, OFC etc. as per the requirement of site.

(f) Cross-section of the new culverts and bridges at deck level shall conform to the typical cross-sections given in section 7 of the Manual.

(g) IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP.

(ii) Culverts

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

(b) Scope for Reconstruction of existing culverts/ New additional culverts / Partially Executed culverts:

Sl. No.	Design Chainage	Clear Span (m)/ (nos. xLxH/dia)	Prop. Type	Proposal for improvement	Remarks
1	0+064	1 x 2.0 x 2.0	Box	New	
2	0+600	1 x 2.0 x 1.5	Box	New	

Sl. No.	Design Chainage	Clear Span (m)/ (nos. xLxH/dia)	Prop. Type	Proposal for improvement	Remarks
3	0+960	1 x 2.0 x 1.5	Box	New	
4	1+150	1 x 2.0 x 1.5	Box	New	
5	1+430	1 x 2.0 x 1.5	Box	New	
6	1+654	1 x 2.0 x 2.0	Box	New	
7	2+060	1 x 2.0 x 1.5	Box	New	
8	2+315	1 x 2.0 x 1.5	Box	New	
9	2+550	1 x 3.0 x 3.0	Box	New	
10	2+625	1 x 2.0 x 1.5	Box	New	
11	2+755	1 x 2.0 x 2.0	Box	New	
12	2+978	1 x 2.0 x 1.5	Box	New	
13	3+432	1 x 2.0 x 1.5	Box	Reconstruction	
14	4+135	1 x 2.0 x 2.0	Box	New	
15	4+650	1 x 2.0 x 2.0	Box	New	
16	4+840	1 x 2.0 x 1.5	Box	New	
17	5+100	1 x 2.0 x 1.5	Box	Reconstruction	
18	5+785	1 x 2.0 x 1.5	Box	Reconstruction	
19	6+005	1 x 2.0 x 1.5	Box	Reconstruction	
20	6+210	1 x 2.0 x 1.5	Box	Reconstruction	
21	6+430	1 x 2.0 x 1.5	Box	Reconstruction	
22	6+810	1 x 2.0 x 1.5	Box	Reconstruction	
23	8+055	1 x 2.0 x 1.5	Box	New	Partially Executed upto (RHS) Raft
24	8+330	1 x 2.0 x 1.5	Box	New	Partially Executed upto(RHS) PCC
25	9+250	1 x 2.0 x 2.0	Box	New	
26	10+390	1 x 2.0 x 1.5	Box	New	Partially Executed upto (RHS) Raft
27	10+593	1 x 2.0 x 1.5	Box	New	Partially Executed upto(RHS) PCC

Note:

1. The proposed locations are minimum. Any change in number/length/span/height shall not be treated as change in scope of work.

2. The culvert location planned as Table above shall be adjusted accordingly to the exact location of cross-water stream or existing culvert located based on the topographic survey performed by the Contractor for the final drawings of the Detailed Design.

3. Cross road culvert to be provided at the location of Major Junction/ Minor Junctions for proper drainage facilities and utility purposes etc. as per manual and shall not be treated as change of scope.

4. For partially executed culverts at Ch. 8+055, Ch. 8+330, Ch. 10+390 & Ch. 10+593, the balance scope shall be remaining items and components as per approved design & drawing.

(c) Widening of existing culverts

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

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

(iii)

Bridges

(a) Existing bridges to be re-constructed/widened

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

Sl. No.	Bridge location (Ch)	Salient details of existing bridge	Adequacy or otherwise of the existing waterway, vertical clearance, etc.	Remarks
			Nil	

(ii) The following narrow bridges shall be widened:

Sl. No.	Design Chainage	Existing Chainage	Span Arrangement	Existing width (m)	Proposed Total Width (m)	Cross-section at deck level for widening
1	7+218	90/258	1 x 8.0	15.30	25.6	4-Lane

(b) Additional new bridges

Major Bridges

Sl. No	Design Chainage	Name of Nallah	Span arrangement (m)	Total Width of Structure (m)
			nil	

Minor Bridges

S No.	**Design Chainage**	**Existing Chainage**	**Proposed Span (m)**	**Proposed Width (m)**	**Remarks**
1	0+275	82/015	1x50	13.0	Existing Retain + Additional new 2 lane, NH-40
2	8 + 940	Bypass	1x14	12.0	Ritmawniew Bypass New 2 lane, NH-40
3	9+870	Bypass	1x14 (skew)	16.0	Ritmawniew Bypass New 2 lane, NH-40

Note:

1. Proposed span arrangement is minimum and any increase in length/span/height shall not be treated as change in scope of work.

2. IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP.

3. The typical GAD of Minor Bridges attached in this CA may be considered as indicative. Design and drawings may be finalized as per actual site conditions.

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

Sl. No.	Location at Chainage	Remarks
	NIL	

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

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

The following bridges shall be retained with repairs:

S. No.	Design Chainage	Existing Chainage	Remarks
1	0+275	82/015	• Wearing coat shall be replaced. • Damaged expansion joint shall be replaced. • Spalling of concrete shall be repaired with epoxy grouting. • Abutment quadrant slopes shall be maintained along with stone pitching on slopes and suitable protection as per site requirement. • Damaged railing/parapet to be replaced. • Missing drainage spouts and gratings with down-take pipe to be provided. • Any other repair required as per site condition in consent with Authority's Engineer/Authority.

(e) Drainage system for bridge decks

An effective drainage system for bridge decks shall be provided as specified in the Manual.

(iv) Rail-road bridges

(a) Design, construction and detailing of ROB shall be as specified in section 7 of the Manual.

(b) Road over-bridges

Road over-bridges (road over rail) shall be provided at the following locations

	Design Chainage	Route	Span arrangement (m)	Total Length (m)	Width (m)
			nil		

(c) Road under-bridges

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

Sl. No.	Location of Level crossing (Ch)	Number and length of span(m)
	NIL	

Grade separated structures

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2 (vi), 2 (vii) and 2 (ix) of this Annex-I.

(v) Repairs and strengthening of bridges and structures

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

Bridges

Sl. No.	Location	Nature and extent of repairs to be carried out
	As per table on para 7 (iii) d	

ROB / RUB

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

Overpasses/Underpasses and other structures

Sl. No.	Location of Structure(Ch)	Nature and extent of repairs/strengthening to be carried out
		NIL

(vi) List of Major/Minor Bridges, VOP & SVUP

The following is the list of the Major bridges/ Minor Bridges / VOP / SVUP

Sl. No.	Location/ Design Chainage	Type
1	0+510/NH-44	SVUP
2	0+010 NH-40/NH-44	VOP
3	0+275	Additional 2 Lane Minor Bridge
4	1+220	SVUP
5	7+218	Minor Bridge widening
6	8+655	VUP
7	8+940	New 2 Lane Minor Bridge
8	9+622	SVUP
9	9+870	New 2 Lane Minor Bridge

(vii) Slope Protection Structures

Structures for Slope protection and Retaining/ Breast Walls shall be designed and constructed as stipulated in Schedule-D.

Structures to be constructed for slope protection shown in the following Table:

(a) Breast wall

S. no.	LHS				RHS			
	From	To	Length (m)	Height above FRL	From	To	Length (m)	Height above FRL
1	At junction 0+000		90	3.0	0+080	0+210	130	3.0
2	0+320	0+370	50	3.0	1+840	1+920	80	3.0
3	0+540	0+600	60	3.0	2+350	2+500	150	3.0
4	0+600	0+720	120	1.5	2+640	2+720	80	1.5
5	0+810	0+920	110	3.0	2+760	2+930	170	1.5
6	0+920	1+090	170	1.5	3+180	3+670	490	1.5
7	1+090	1+220	130	3.0	5+310	5+520	210	3.0
8	1+310	1+420	110	3.0	6+330	6+390	60	1.5
9	2+630	2+790	160	1.5	6+440	6+570	130	3.0
10	2+790	2+890	100	3.0	6+640	6+760	120	1.5
11	2+890	2+970	80	1.5	-	-	-	-
12	5+980	6+100	120	1.5	-	-	-	-
13	8+500	8+810	310	3.0	-	-	-	-
14	9+040	9+090	50	3.0				
15	10+250	10+450	200	3.0				
	Total Length (m)		**1860**		**Total Length (m)**		**1620**	

Note: The proposed locations are minimum and change in length/height shall not be treated as change in scope of work.

(b) Retaining wall

Sl. No.		LHS		RHS		
	From	To	Length (m)	From	To	Length (m)
1	2+500	2+610	110	0+200	0+350	150
2	2+970	3+000	30	0+350	0+420	70
3	3+050	3+110	60	0+450	0+520	70
4	3+110	3+690	580	0+550	0+610	60
5	4+560	4+730	170	0+870	0+970	100
6	5+300	5+390	90	0+970	1+050	80
7	6+170	6+250	80	1+050	1+330	280
8	6+420	6+500	80	1+700	1+810	110
9	7+160	7+215	55	1+810	1+840	30
10	7+220	7+240	20	2+500	2+640	140
11	8+810	8+855	45	2+930	3+000	70
12	8+980	9+020	40	4+850	5+220	370
13	9+100	9+238	138	5+980	6+100	120
14	9+260	9+350	90	7+190	7+215	25
15	9+350	9+430	80	7+220	7+240	20
16	9+445	9+890	445	7+680	7+730	50

Sl. No.	LHS			RHS		
	From	To	Length (m)	From	To	Length (m)
17	10+240	10+310	70	8+470	8+855	385
18	10+490	10+600	110	8+980	9+130	150
19	--	--	--	9+130	9+238	108
20	--	--	--	9+260	9+350	90
21	--	--	--	9+350	9+440	90
22	--	--	--	9+445	9+600	155
23	--	--	--	9+610	9+890	280
	Total Length (m)		**2293**	**Total Length (m)**		**3003**

(c) Retaining Wall Partially Executed

Sl. No.	Chainage		LHS	
	From	To	Length (m)	Executed Work
1	10+260	10+310	50	PCC Work done
2	10+260	10+285	25	Foundation 1st Lift Completed

(viii) Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates:
Boundary wall complete with iron angle & barbed wire fencing shall be constructed by the Contractor in the Army/ Air Force Area with a minimum height of 3.0 m above the Ground Level.
The location of Boundary wall to be provided after demolition of existing boundary wall is given as follows:

Sr. No.	Chainage (m)		Side	Type of Proposal	Proposal as per Site	Length (m) Including Junction Locations
	From	To				
Auxiliary Alignment (NH 44, Guwahati-Jowai Road)						
1	0+055	0+300	LHS	1	Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates	272.5
2	0+400	0+938	LHS	1		517.5
3	0+055	0+200	RHS	1		143.0
4	0+200	0+360	RHS	1		160.0
5	0+360	0+370	RHS	1		34.00
6	0+440	0+520	RHS	1		79.5
7	0+530	0+938	LHS	1		419.0
Main Alignment (NH 40, Shillong-Dawki Road)						
8	0+080	0+200	RHS	1		120.5
9	0+220	0+260	RHS	1		44.5
10	0+350	0+365	RHS	1		15.0
11	0+365	0+400	RHS	1		35.0
12	0+445	0+455	RHS	1		10.0
13	0+455	0+505	RHS	1		50.0
14	0+505	0+560	RHS	1		85.00

15	0+580	0+600	RHS	1	Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates.	30.0
16	0+620	0+810	RHS	1		177.5
17	0+825	0+845	RHS	1		21.0
18	0+880	0+940	RHS	1		59.0
19	0+940	1+230	RHS	1		291.0
20	1+250	1+320	RHS	1		80.5
21	0+290	0+450	LHS	1		161.0
22	0+530	0+720	LHS	1		173.5
23	0+800	1+220	LHS	1		417.5
24	1+240	1+430	LHS	1		198.5
25	6+340	7+160	RHS	1		820.0
					TOTAL LENGTH (m) :	**4415.00**

Location of Gates adjacent to Boundary wall-

S. No	Chainages	LHS / RHS
1.	Km 0+140 (Jhalupara, NH 44)	LHS
2.	Km 0+500 (MH Shillong, NH 44)	RHS
3.	Km 0+520 (MH Shillong, NH 44)	LHS
4.	Km 0+690 (MH Shillong, NH 44)	RHS
5.	Km 0+150 (Garrison Engineer, NH 40)	RHS
6.	Km 0+ 370 (Infantory T A C O Y, NH 40)	LHS
7.	Km 0+570 (LMO QTRS, NH 40)	LHS
8.	Km 0+840 (Workshop Area, NH 40)	RHS
9.	Km 0+870 (HQ 101, NH 40)	RHS
10.	Km 1+220 (HQ 101, NH – 40)	RHS

Note:

1. The above proposed locations are minimum and minor change in length shall not be treated as change in scope of work.

2. The Design and drawings of the above structure is within the scope of EPC Contractor. The same may be finalized in consultation with Authority's Engineer and Defence Officials as per actual site conditions.

3. The quality of construction shall be strictly maintained as per Good Industry Practice/ Technical Specifications as per requirement of Defence Establishment. Minor upside variation within 5% of the scope shall be constructed by the EPC Contractor without Change of Scope (CoS).

4. The Boundary wall shall be constructed in lieu of the existing wall after demolishing the same. The executed work of boundary wall shall in no case be downgraded w.r.t. the current infrastructure in terms of Dimensions, Technical Specifications and Quality Standards and shall be constructed in accordance with the feasibility of Defence Establishment.

5. The Gates shall be provided at the indicated locations mentioned above along the Boundary wall openings, without attracting any Change of Scope (CoS).

(ix) Slope Protection

As the project involve cutting of existing hill slopes, it is imperative that slopes are stabilized for insuring longevity of the slopes and the roads.

The contractor shall be responsible for accurate assessment of the actual requirement as per schedule D & prepare design for slope protection & stabilization as per schedule D.

Any increase in quantity over the above will not be considered as change of scope. Therefore, contractor should carry out thorough investigation at site and assess the requirement of slope protection and slide prone zone and other safety features at his own before submission of bid.

(x) Disposal of Debris: - As per Manual.

8. Traffic Control Devices and Road Safety Works

(i) Traffic control devices and road safety devices and road furniture shall be provided in accordance with Section 9 of the Manual.

(a) Traffic/ Road Signs:

Traffic signs viz roadside signs, overhead signs, kerb mounted signs etc. along the entire Project highway shall be provided in accordance with section 9 of the manual.

Overhead traffic signs: - Full Width Overhead signs shall be provided in accordance with section 9 of the manual

Minimum number of full overhead gantry sign – 3 nos and cantilever overhead gantry sign – 3 nos shall be provided.

(b) Pavement Marking:

Pavement markings shall cover road marking for the entire Project Highway as per manual.

(c) Safety Barrier:

Semi rigid W-beam crash barriers shall be installed all along the project highway on earthen shoulders on either side of main carriageway at the locations given below:

Sl. No	LHS		Length	RHS		Length (m)
	From	To	(m)	From	To	
1	2+050	2+200	150	2+280	2+340	60
2	2+280	2+340	60	2+500	2+640	140
3	2+500	2+640	140	2+920	3+000	80
4	2+970	3+000	30	8+900	9+950	1050

5	8+900	9+950	1050			
6	10+170	10+670	500			
	Total Length (m)		**1930**	**Total Length (m)**		**1330**

Note: The above proposed length/ locations are minimum. Crash barrier/other suitable safety barriers along the Project highway shall be provided as per schedule D and Any change in length shall not be treated as change in scope of work.

(ii) Specifications of the reflecting sheeting

Retro reflective sheeting should be of high intensity grade with encapsulated lens or with micro prismatic retro reflective element in accordance with ASTM Standard D 956-04 in accordance with Clause 9.2.3 of the Manual.

9. Roadside Furniture

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

a) Road studs - Road studs shall be provided for the entire Project highway at median openings, bridges, VUP/Interchange/Flyover structures, approaches of bridges, VUP/Interchange/ Flyover, at curves on shoulder edge line, junctions, slip roads on both side of edge lines etc. in accordance with the manual.

b) LED traffic beacons - Shall be provided on entire project highway near pedestrian crossings, public gathering places, junctions etc. in accordance with the manual.

c) Pedestrian Guard Rail: Provide pedestrian guardrail at each bus stop location and other locations as per manual.

d) Delineators: Delineators for the entire Project Highway at the locations as suggested in relevant IRC Manual recommended in Schedule D.

e) Noise barriers: shall be provided in accordance with manual; Locations shall be decided as per site condition in consent with Authority.

f) Concrete Crash Barrier, Metal Beam Crash Barrier, Separators (MS Railings) – as per manual.

g) Traffic Safety Devices wherever required.

h) Hectometer/ Kilometer Stones.

10. COMPULSORY AFFORESTATION

The number of trees which are required to be planted by the Agency as compensatory afforestation should be as per Forest Conservation Act, thrice the number of trees to be cut.

11. HAZARDOUS LOCATIONS

The safety measures shall be provided at all hazardous/sinking/land slide locations as per the manual in consultation with the Authority's Engineer The safety barriers shall also be provided at the following hazardous structure (Bridges, culverts) locations**:**

Sl. No.	Location stretch from (Ch) to (Ch)	LHS/RHS
	As per schedule D	

12.SPECIAL REQUIREMENTS FOR HILL ROADS

In accordance with Section 13 of the Manual (from IRC: SP: 73-2018), IRC: SP: 1998 & recommended practice for treatment of embankment and road side slopes for erosion control (first revision) IRC: 56-2011 and relevant IRC codes & The cutting slope surface except on Hard Rock classified as per Clause 301.2 of MORTH Specifications for Road and Bridge Works shall be protected by the Seeding and Mulching as per Clause 301.8 of MORTH Specification, and the embankment slope shall be protected by Turfing as per Clause 301.7 of MORTH Specification.

Sl. No.	Design Ch (From)	Design Ch (To)	LHS/RHS
	As per schedule D		

15. UTILITY DUCT

(a) RCC Box/Pipe type Utility Ducts in Defence area shall be provided as follows-

Sl. No.	Location	Type	Size (Nos x Span x Height/ Dia)	Remarks
1	Opp. MH Shillong (Rilbong to Anjali Segment)	Box Type	1 nos. x 2.0 m x 1.5 m	All these Utility Ducts should have provision of Inspection Box/ Chamber
2	Opp. GE Shillong	Pipe	1 nos. x 0.9 m dia	
3	Opp. 101 Area Gate	Box Type	1 nos. x 1.5 m x 1.5 m	
4	Opp. 101 Area CSD	Box Type	1 nos. 1.5 m x 1.5 m	
5	Opp. QM office MH (Rilbong to Garikhana Segment)	Pipe	1 nos. x 0.6 m dia	

Note:

1. The above proposed locations are minimum and change location/dimension shall not be treated as change in scope of work.

2. The Design and drawings of the above structure is within the scope of EPC Contractor. The same may be finalized as per actual site conditions / Defence specifications.

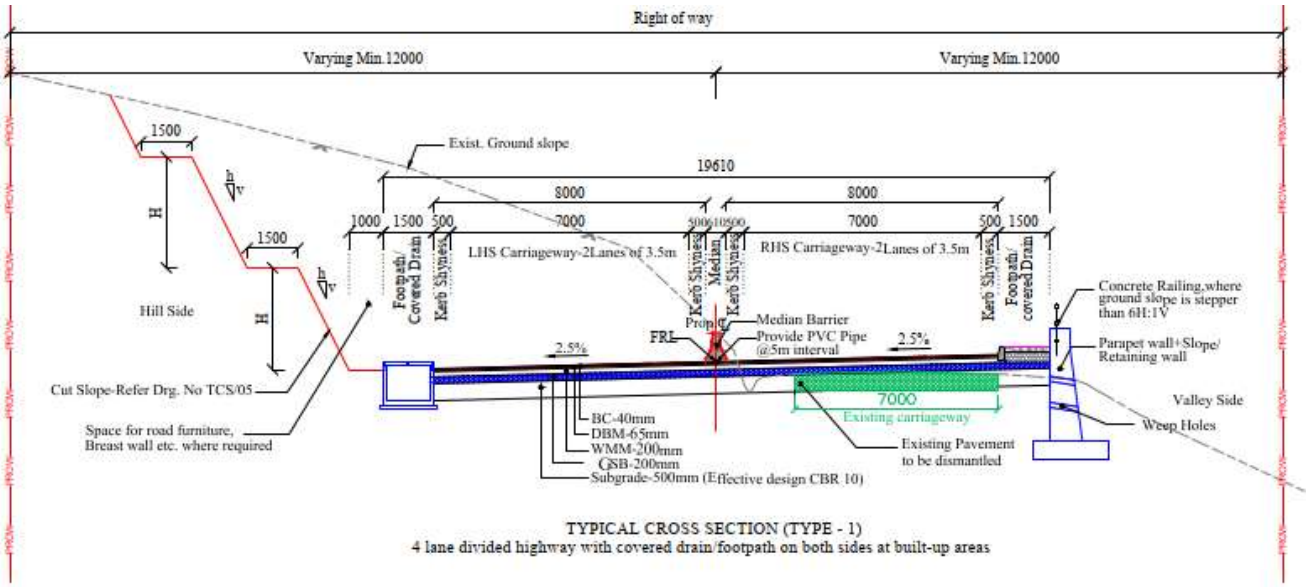
3. The quality of construction shall be strictly maintained as per Good Industry Practice/ Technical Specifications as per requirement of Defence Establishment.

(b) Utility Ducts across the remaining project highway shall be provided as per manual/site conditions.

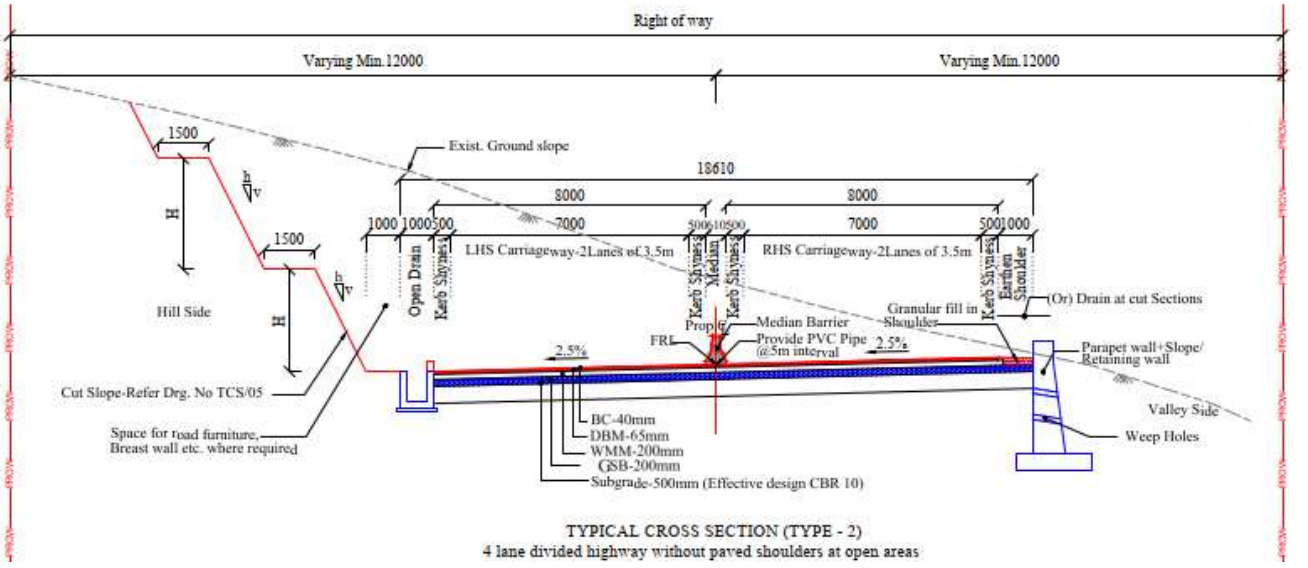
16. CHANGE OF SCOPE

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

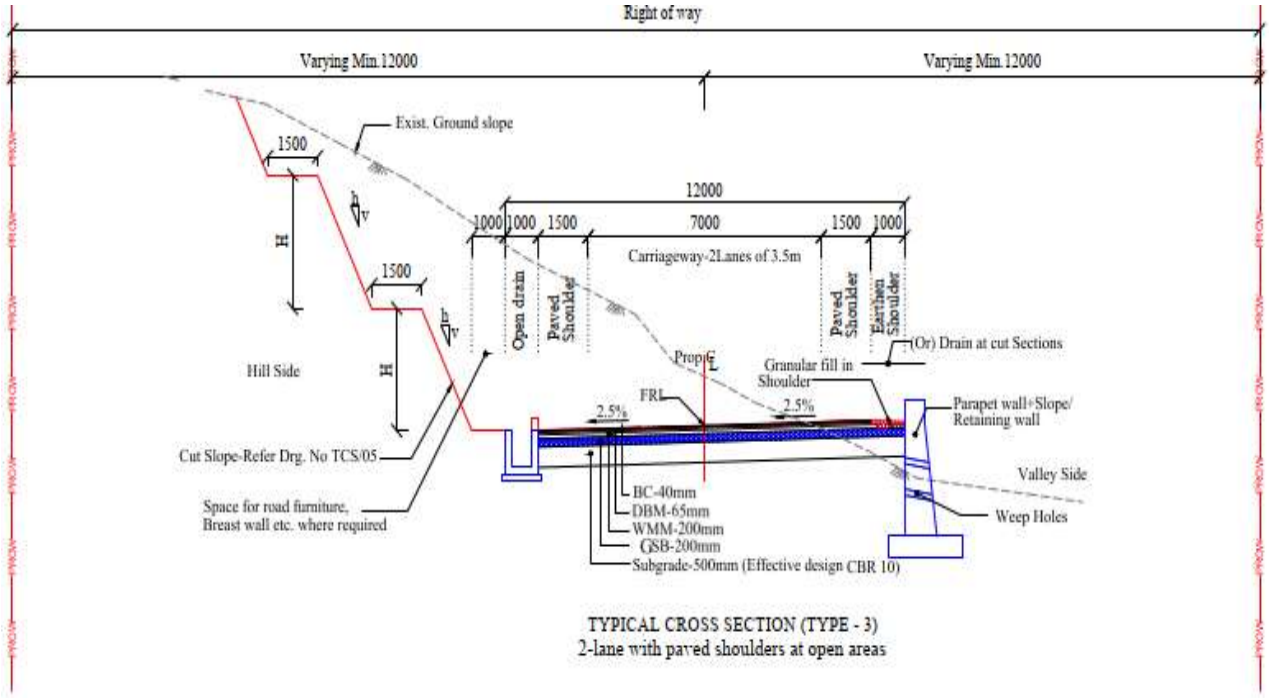
Appendix B-I



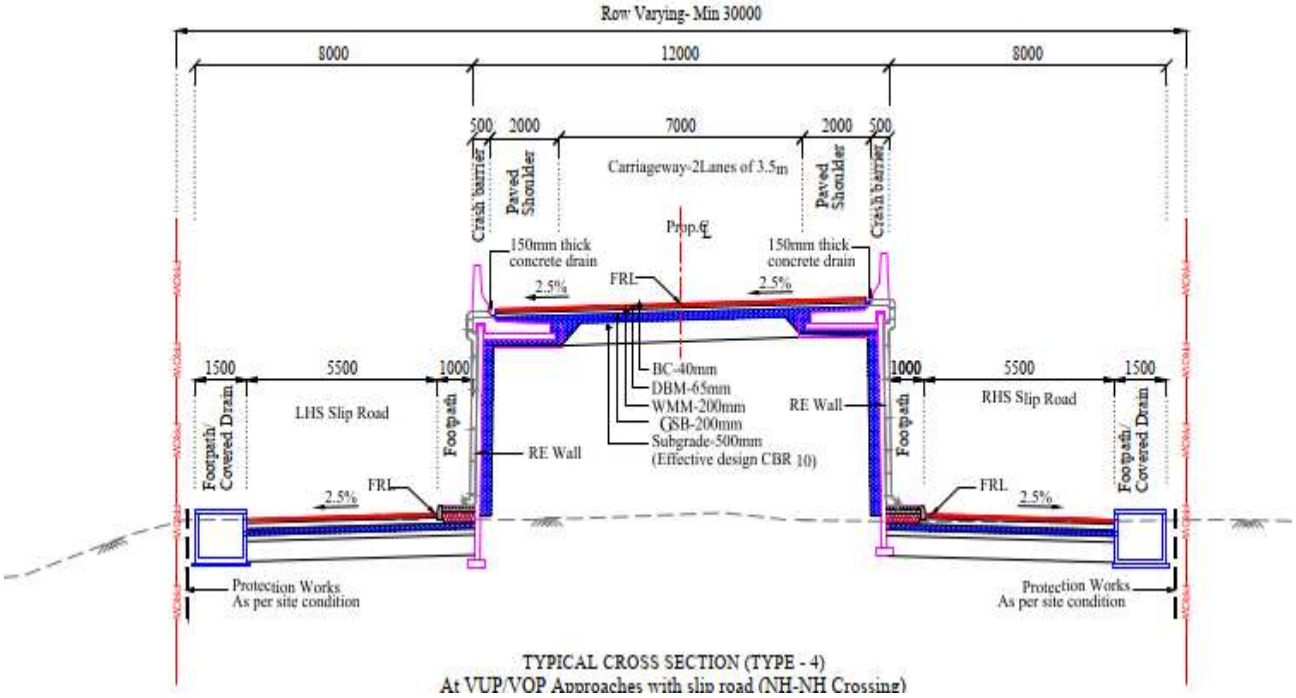
TYPICAL CROSS SECTION (TYPE - 1)
4 lane divided highway with covered drain/footpath on both sides at built-up areas



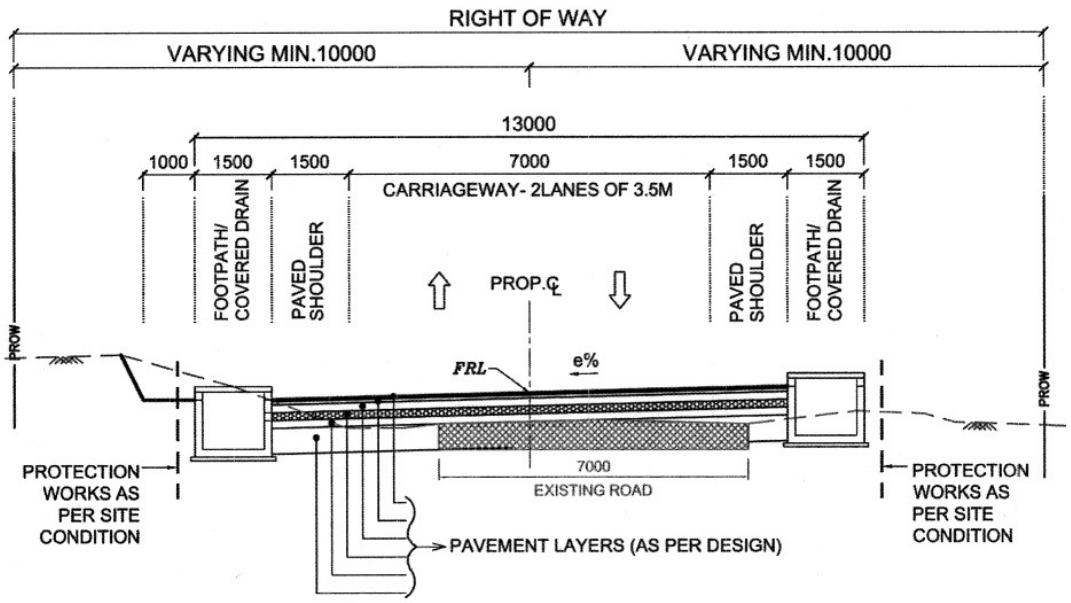
TYPICAL CROSS SECTION (TYPE - 2)
4 lane divided highway without paved shoulders at open areas



TYPICAL CROSS SECTION (TYPE - 3)
2-lane with paved shoulders at open areas



TYPICAL CROSS SECTION (TYPE - 4)
At VUP/VOP Approaches with slip road (NH-NH Crossing)



Typical Cross Section (Type - 5)

2-lane with paved shoulders at built-up areas

Schedule-C

SCHEDULE – C *(See Clause 2.1)* **Project Facilities**

1 Project Facilities

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

(a) Toll plazas.
(b) Roadside furniture.
(c) Pedestrian facilities.
(d) Land Scaping and Tree Plantation.
(e) Truck lay-byes.
(f) Wayside amenities.
(g) Bus-bays and Passenger shelters.
(h) Others.
1. Highway Patrol Units
2. Highway lighting
3. Emergency Medical Services
4. Crane Services
5. Communication System
6. Advance Traffic Management System (A. T. M. S.)
7. Operation and Maintenance Center

2 Description of Project Facilities

(a) Toll Plazas

Toll Plaza shall be provided as per as stipulated in section 10 of the Manual. Canopy of Toll plaza should be designed to withstand load of solar panels in addition to other design loads. Location of toll plaza is as per the following details.

Sl. No.	Toll Plaza ID	Design Chainage	Side	Min Number of Lanes
		NIL		

Note: Installation of two number dedicated ETC lane (one lane in each direction) and Hybrid ETC System with provision of medium speed WIM with bending plate technology in each lane, and Static Weigh Bridge (one lane in each direction) at Toll Plaza and Configuration with Advance Traffic Management System.

Above mentioned toll lanes are indicative. However, the actual requirement of toll lanes shall be assessed by Contractor as per actual site condition and Manual. The increase in number of toll lanes shall not be treated as change of scope.

Solar panels shall be erected over the Toll Plaza Canopy to generate the green energy. Same

shall be utilized for toll plaza lighting and other energy requirement within toll plaza area along with conventional lighting.

(b) Roadside furniture as per **clause 9 of Annex-I Schedule B**

(c) Pedestrian facilities.

Pedestrian Guard rails shall be provided at junctions, Truck lay byes, bus bays and near schools and hospitals as per provisions in section 9.8 of the Manual

i. Pedestrian guardrail: Provide pedestrian guardrail at each bus stop location and at other locations as per manual.

ii. Pedestrian Crossings: Provide pedestrian crossing facilities on locations as recommended in Schedule D.

(d) Land Scaping and Tree Plantation.

Land Scaping and tree plantation of the highway shall be provided as per section 11 of the manual. The locations for these provisions shall be finalized in consultation with Authority Engineer**.**

(e) Truck lay-byes

Truck Lay bye shall be provided at the following locations in accordance with section 12.5 of the manual.

Sl. No.	Design Chainage	Side	Nearest Village
Nil			

(f) Way-side Amenities

As stipulated in section 12.10 of the manual, Way-side Amenities shall be provided at the following locations:

S. No.	Design Chainage	Side
Nil		

(g) Bus-bays and Passenger shelters

Minimum 2x4 nos. of Bus Bays with Bus Shelter shall be provided along the project highway. Tentative locations for Bus Bays are indicated below, however, the same shall be finalized as per suitability of location and site requirement in consultation with the Authority's Engineer/ Authority. As stipulated in section 12.6 of the Manual, Bus-bays and shelters shall be provided at below indicative locations.

S. No.	Design Chainage		Location
	Left	Right	
1	1+290	1+370	Mahadev Khola
2	3+470	3+500	4th Mile
3	4+500	4+520	5th Mile
4	7+250	7+250	Elephant Falls

Note: However, the location of bus bays and passenger shelters shall be finalized as per

suitability of location and site requirement in consultation with Authority. Any change in location shall not treated as change of scope.

(h) Others

1. Highway Patrol unit – as per manual
2. Highway LED Lighting: LED Lighting shall be provided at the following locations:

a. LED Lighting shall be provided at approach to bridges, Flyover, built up areas, Toll Plaza, Bus stops, truck Lay-byes and rest areas as per manual recommended in Schedule D.

b. Apart from above locations lighting shall be provided at underpasses and ROB/RUB and as per site condition in consultation with Engineer and shall not be treated as change of scope. On all grade separated structures Lightings will be provided on Top & Underside as per clause 12.4 of IRC SP 73-2018.

c. High Mast Lighting shall be provided at all Major Junctions, Toll plaza locations or any other location as per clause 12.4.3 of IRC SP 73-2018.

3. Emergency Medical Services: Emergency medical Services shall be provided as per provisions of the manual.

4. Cranes services: One Cranes with 30 MT Capacity.

5. Communication System: Communication System shall be provided as per provisions of the manual.

6. Advance Traffic Management System (ATMS) as per technical specification: Provisions of other facilities, if required may be made in similar manner.

7. Operation and Maintenance Centre: Operation and Maintenance Centre shall be provided as per provisions of the manual.

Schedule-D

SCHEDULE - D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1 Construction

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

2 Design Standards

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

a) Manual of Specifications and Standards for Two Laning of Highways with paved shoulder (IRC: SP: 73-2018), referred to herein as the Manual.

Annex - I

(Schedule-D)

Specifications and Standards for Construction

1 Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Two-Laning of Highways with paved shoulder (IRC: SP:73-2018), referred to as the Manual and Indian Road Congress (IRC) Codes and Standards and MORTH Specifications for Road and Bridge Works.

Where the aforesaid Manuals, guidelines, codes, standards and specifications are silent on any aspect, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2 Deviations from the Specifications and Standards

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

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

1) IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP.

2) Width of bridges

Sl. No.	Item	Description of Deviation	As per manual	Clause Reference
1	Width of bridges	Width bridges on hill road – 16m (0.5+1.5+0.5)+(0.5+1.5+7+1.5 +0.5)+(0.5+1.5+0.5) = 2.5+11+2.5 1) At Minor bridge 7+218 width is 26m due to 4 lane bridge. 2) At Minor bridge 9+916 width is 16.m 3) At Minor bridge 8+940 width is 13 m	Width of bridge on plain/rolling terrain – 18m (0.5+1.5+0.5)+(0.5 +2.5+7+ 2.5+0.5)+(0.5+1.5+ 0.5) = 2.5+13+2.5	Clause 7.3 (ii) Figure 7.6

Schedule – E

(See Clause 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1. Maintenance Requirements

1.1. The Contractor shall, at all-time 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 "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (FIFTH REVISION, April 2013)", including latest corrections slips, issued by the Ministry of Surface Transport & Highways, Government of India and published by the Indian Roads Congress.

Where the specifications for a work are not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

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: SP:35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [30th September] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities

All damages occurring to the Project Highway on account of torrential rains, floods, earthquake or other natural disasters shall be undertaken by the Contractor at its own cost and/or out of the proceeds of insurance.

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	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,**	
(i)	Edge drop at shoulders exceeding 40	7 (Seven) days
(ii)	Variation by more than 1% in the prescribed slope of camber/cross fal (shall not be less than the camber or the main carriageway)	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	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**	
(i)	Damage to shape or position, poor visibility or loss of retro-reflectivity	48 hours
(ii)	Painting of KM stone, railing, parapets,	As and when required/Once every year
(iii)	Damaged/missing road signs required 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	24 hours
(ii)	Removal of fallen trees from	4 hours
(iii)	Deterioration in health of trees and	Timely watering and treatment
(iv)	Trees and bushes requiring	30 (Thirty) days
(v)	Removal of vegetation affecting sight line	15 (fifteen) days
(f)	**Rest area**	
(i)	Cleaning of toilets	Every 4 hours
(ii)	Defects in electrical, water and	24 hours
(g)	**Toll Plaza**	
(h)	**Other Project Facilities, Rest Area and**	
(i)	Damage in pedestrian facilities, truck lay- buys, bus-bays, bus-shelters, cattle, crossings, [Traffic Aid Posts, Medical Aid Posts]	15 (fifteen) days
(ii)	Damaged vehicles or debris on the	4 (Four) hours
(iii)	Malfunctioning of the mobile cranes	4 (four) hours
Bridges		
(a)	**Superstructure**	
(i)	Any damage, cracks, spalling/scaling Temporary measures Permanent	 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**	
(i)	Cracks and damages including settlement and tilting, Spalling,	30 (thirty) days
(d)	**Bearings (metallic) of bridges**	
(i)	Deformation	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	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 of safety)
(iv)	Rain-cuts or erosion of banks of the side	7 (seven) days
(v)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach Slabs, pitching, apron, toes, floor	30 (thirty) days
(vii)	Growth of vegetation affecting the structure or obstructing the	15 (fifteen) days
(g)	**Hill Roads**	
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours
(iii)	Snow requiring clearance	24 (twenty four) hours

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

Schedule-F

(See Clause 3.1.5(a))

APPLICABLE PERMITS

1. **Applicable Permits**

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 Panchayat and Pollution Control Board for installation of crushers.

(c) License for use of explosives.

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

(e) License 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, clearances or approvals required under Applicable Laws.

1.2 Applicable permits, as required, relating to environmental protection and conservation shall have been produced by the Authority in accordance with the provisions of this Agreement

Schedule-G
(See Clause 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE
Annex-I
(See Clause 7.1.1)
PERFORMANCE SECURITY

The Managing Director,
NHIDCL,
3rd Floor, PTI Building, 4,
Parliament Street, New Delhi-110001

WHEREAS:

(A) _____ [name and address of contractor] (hereinafter called "the Contractor") and [**NHIDCL**], (**"the Authority"**) have entered into an agreement (the **"Agreement"**) for Package-I - Improvement to 2 lane with paved shoulder of NH-40 section from Km 81+740 to Km 93+490 (design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to Km 0+930, total length 11.600 Km in the state of Meghalaya on EPC mode under JICA Loan Assistance, 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 and Defects Liability Period (as defined in the Agreement) in a sum of Rs. …. Crore (Rupees …. Crore) (the "**Guarantee Amount**").

(C) We, ……. through our branch at …….. (the "**Bank**") have agreed to furnish this bank guarantee (hereinafter called the "**Guarantee**") by way of Performance Security.

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during Construction Period and Defects Liability Period under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the guarantee amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank

of General Manager in the NHIDCL that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference 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 ****$1. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.

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

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent 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 Para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

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

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

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)
(Name)
(Designation)
(Code
Number)
(Address)

NOTES:

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

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

Annex-II
(Schedule-G)
(See Clause 7.5.3)
Form for Guarantee for Withdrawal of Retention Money

The Managing Director,
NHIDCL,
3rd Floor, PTI Building, 4, Parliament Street New Delhi-110001

WHEREAS:

[Name and address of contractor] (hereinafter called "**the Contractor**") has executed an agreement (hereinafter called the "Agreement") with the [NHIDCL], (hereinafter called "the Authority") for the **"Package-I - Improvement to 2 lane with paved shoulder of NH-40 section from Km 81+740 to Km 93+490 (design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to Km 0+930, total length 11.600 Km in the state of Meghalaya on EPC mode under JICA Loan Assistance (Balance Works)."** subject to and in accordance with the provisions of the Agreement.

(A) In accordance with the Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called "**Retention Money**") after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.

(B) 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……. in words) (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 NHIDCL that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the

Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

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

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

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

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of the Completion Certificate specified in Clause 12.4 of the Agreement.

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

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted 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 para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This guarantee shall also be operable at our…… Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/

renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

Schedule-H

(See Clauses10.1 (iv) and 19.3)

1 Contract Price Weightages

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

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

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
	1	2	3	4
1	Road works including culverts, widening and repair of culverts.	43.189%	**A - Widening and strengthening of existing road/ Geometric Improvements**	
			(1) Earthwork up to top of the Subgrade	11.699%
			(2) Subbase course (GSB)	6.645%
			(3) Non-bituminous base course (WMM)	4.664%
			(4) Bituminous base	6.323%
			(5) wearing coat	4.000%
			(6) widening and repair of Culverts	------
			B.1 – Reconstruction realignment/ bypass (Flexible pavement)	
			(1) Earthwork up to top of the Subgrade	20.703%
			(2) Subbase course (GSB)	9.014%
			(3) Non-bituminous base course (WMM)	6.986%
			(4) Bituminous base	9.484%
			(5) wearing coat	6.010%
			B.2 – Reconstruction realignment / bypass (Rigid Pavement)	
			(1) Earthwork up to top of the Subgrade	0.00%
			(2) Subbase course (GSB)	0.00%

			(3) Dry lean concrete (DLC)	0.00%
			(4) Pavement quality concrete (PQC) course	0.00%
			C.1 - Reconstruction/ New Service road (flexible Pavement)	
			Slip Roads along Project Highway	
			(1) Earthwork up to top of the Subgrade	0.221%
			(2) Subbase course (GSB)	1.519%
			(3) Non-bituminous base course (WMM)	1.165%
			(4) Bituminous base	1.361%
			(5) wearing coat	0.944%
			D. - Reconstruction/ New culverts on existing road, realignment, bypasses	9.262%
2	Minor Bridges/ Underpasses/ Overpasses	12.529%	**A.1 - Widening and repairs of Minor Bridges**	
			(1)Widening of existing bridges	3.204%
			(2) Rehabilitation of existing bridges	0.571%
			A.2 - New of Minor Bridges	
			(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap	8.418%
			(2) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	21.071%
			(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.906%
			(4) **Guide Bunds and River**	

			Training works: (On completion of Guide Bunds and river training works complete in all respects.)	0.00%
			B.1 - Widening and repairs of Underpasses/Overpasses	
			Underpasses/ Overpasses	0.00%
			B.2 – New Underpasses/Overpasses	
			(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap	16.298%
			(2) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified as specified.	11.151%
			(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	38.381%
3	Major Bridge works and ROB/RUB/elevated	0.00%	**A.1 - Widening and repairs of existing major bridges**	
			(1) Foundation:	0.00%

	sections/flyovers including viaducts, if any		(2) Sub-structure:	0.00%
			(3) Super-structure: (including bearings.)	0.00%
			(4) Wearing Coat including expansion joints	0.00%
			(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
			(6) Wing walls/return walls	0.00%
			(7) Guide bunds, river training works etc.	0.00%
			(8) Approaches (including retaining walls, stone pitching, protection works).	0.00%
			A.2 - New major bridges	
			(1) Foundation:	0.00%
			(2) Sub-structure:	0.00%
			(3) Super-structure: (including bearings.)	0.00%
			(4) Wearing Coat including expansion joints	0.00%
			(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
			(6) Wing walls/return walls	0.00%
			(7) Guide bunds, river training works etc.	0.00%
			(8) Approaches (including retaining walls, stone pitching, protection works).	0.00%
			B.1 - Widening and repairs of (a) ROB and (b) RUB	
			(1) Foundation	0.00%
			(2) Sub structure	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat: (a) in case of ROB - wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB - rigid pavement under RUB including drainage facility complete in all respect as specified.	0.00%
			(5) Miscellaneous items (like	0.00%

			hand rails, crash barriers, road markings etc.)	
			(6) wing walls/return walls	0.00%
			(7) Approaches (including retaining walls, stone pitching, protection works).	0.00%
			B.2 - New ROB / RUB	
			(1) Foundation	0.00%
			(2) Sub structure	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat: (a) in case of ROB - wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB - rigid pavement under RUB including drainage facility complete in all respect as specified.	0.00%
			(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%
			(6) wing walls/return walls	0.00%
			(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%
			C.1 - Widening and repairs of Elevated section/Flyover/Grade Separators	
			(1) Foundation	0.00%
			(2) Sub structure	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat including expansion joint	0.00%
			(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%
			(6) wing walls/return walls	0.00%
			(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%
			C.2 - New Elevated	

			section/Flyover/Grade Separators	
			(1) Foundation:	0.00%
			(2) Sub-structure:	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat including expansion joint	0.00%
			(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%
			(6) wing walls/return walls	0.00%
			(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%
4	Other works	44.282%	(i) Toll plaza	0.00%
			(ii) Road side drains	20.732%
			(iii) Road signs, markings, km stones safety Devices etc.	15.612%
			(iv) Project facilities	
			(a) Bus Bay with shelter	0.151%
			(b) Truck laybys	0.000%
			(c) Rest areas	0.000%
			(d) others (to be specified)	
			(i) Street Lighting	1.540%
			(ii) Maintenance of existing road	1.779%
			(iii) Utility Ducts	0.196%
			(iv) Utility Ducts in defence area	1.701%
			(v) Junction improvement works including Connecting road & Junction under Grade separator, noise barrier.	4.899%
			(v) Road side plantation	0.00%
			(vi) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROBs/RUBs.	0.00%
			(vii) Protection works retaining wall/Breast walls/toe walls other than approaches to the	34.998%

			bridges, elevated sections, flyovers/ grade separators and ROBs/RUBs.	
			(viii) Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates.	16.263%
			(ix) Safety and traffic management during construction	0.151%
			(x) Side Slope Protection Works- Turfing and stone pitching	1.978%

1.3 Procedure of estimating the value of work done.

1.3.1 Road works

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

Table 1.3.1

Stage of Payment	**Percentage -weightage**	**Payment Procedure**
A - Widening and strengthening of existing road/ Geometric Improvement		
(1) Earthwork up to top of the sub-grade	11.699%	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 05 (Five) percent of the total length.
(2) Sub-base Course	6.645%	
(3) Non bituminous Base course (WMM)	4.664 %	
(4) Bituminous Base course (DBM)	6.323%	
(5) Wearing Coat	4.000%	
(6) widening and repair of culverts	0.00%	Cost of ten completed culverts shall be determined pro rata with respect to the total number of culverts. Payment shall be made on the completion of at least One culverts.

Stage of Payment	Percentage	Payment Procedure
B.1 - Reconstruction realignment/bypass (Flexible		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 0.500 Km length, whichever is less.
(1) Earthwork up to top of the sub-grade	20.703%	
(2) Sub base course	9.014%	
(3) Non bituminous Base course	6.986%	
(4) Bituminous Base course	9.484%	
(5) Wearing Coat	6.010%	
B.2 - Reconstruction/ realignment/bypass (Rigid		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 1 (One) km. length, whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-base Course	0.00%	
(3) Dry lean concrete (DLC)	0.00%	
(4) Pavement quality concrete (PQC) course	0.00%	
C.1 - Reconstruction/ New Service road (flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 0.500 Km length.
Slip Roads along Project Highway		
(1) Earthwork up to Subgrade top	0.221%	
(2) Subbase course (GSB)	1.519%	
(3) Non-bituminous base course (WMM)	1.165%	
(4) Bituminous base	1.361%	
(5) wearing coat	0.944%	
D. Reconstruction & New Culverts on existing road, realignments, bypasses	9.262%	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least 1 (One) culvert.

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

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

Where P= Contract Price. And L = Total length in km.
Similarly, the rates per km for other stages shall be worked out accordingly.

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

1.3.2 Minor Bridges and Underpasses/Overpasses.

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

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
A.1 - Widening and repairs of Minor Bridges		Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge.
(1) Widening of existing bridges	3.204%	
(2) Rehabilitation of existing bridges	0.571%	
A.2 - New of Minor Bridges		
(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap	8.418%	(i) Foundation +Sub Structure: Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation + sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation +substructure of each bridge subject to completion of at least two foundations along with sub-structure up to abutment/pier cap level of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load

(2) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	21.071%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub- clause.

Stage of Payment	**Weightage**	**Payment Procedure**
(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.906%	Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.
(4) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	0.00%	Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bunds and River training Works in all respects as specified

B.1 - Widening and repairs of Underpasses/Overpasses	0.00%	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpass/overpasses. Payment shall be made on the completion of widening & repair works of an underpass/overpasses.
B.2 - New Underpasses/Overpasses		
(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap	16.298%	Foundation + Substructure: Cost of each Underpass/ Overpass shall be determined on pro- rata basis with respect to the total linear length (m) of the Underpasses/ Overpasses Payment against foundation + Sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation + Sub Structure of each Underpasses Overpasses subject to completion of at least two foundations along with sub- structure upto abutment/pier cap level each underpass/overpass. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

(2) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified	11.151%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause.

(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	38.381%	Payment shall be made on pro-rata basis on completion of a stage i.e completion of approaches in al respects as specified

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

Table 1.3.3

Stage of payment	Weightage	Payment procedure
A.1 - Widening and repairs of existing major bridges		
(1) Foundation:	0.00%	Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of at least two foundations of the major bridge. In case where load testing is required for foundation, the trigger of firs payment shall include load testing also where specified.
(2) Sub-structure:	0.00%	Payment against Substructure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of the major bridge subject to completion of at least two sub-structures

Stage of payment	Weightage	Payment procedure
		of abutments/piers up to abutment/pier cap level of the major bridge.
(3) Super-structure: (including bearings.)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified.
(4) Wearing Coat including expansion joints	0.00%	Wearing Coat: Payment shall be made o completion of wearing coat including expansion joints complete in all respects a specified.

(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be mad on completion of all miscellaneous work like hand rails, crash barriers, road markings etc. complete in all respects a specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall b made on completion of all wing walls/retur walls complete in all respects as specified.
(7) Guide bunds, River Training works etc.	0.00%	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	Approaches: Payments shall be made o completion of both approaches includin stone pitching, protection works, etc. complete in all respects as specified.
A.2 - New major bridges		
(1) Foundation	0.00%	Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of a least two foundations of the major bridge. In case where load testing is required fo foundation, the trigger of first payment sha include load testing also where specified.
(2) Sub-structure:	0.00%	Payment against Substructure shall b made on pro-rata basis on completion of stage i.e. not less than 25% of the scop of sub- structure of the major bridge subjec to completion of at least two sub-structures c abutments/piers up to abutment/pier ca level of the major bridge.
(3) Super-structure: (including bearings.)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified.
(4) Wearing Coat including	0.00%	Wearing Coat: Payment shall be made on

Stage of payment	Weightage	Payment procedure
expansion joints		completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Guide bunds, River Training works etc.	0.00%	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B.1 - Widening and repairs of (a) ROB and (b) RUB		
(1) Foundation	0.00%	Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to completion of at least two foundations of the ROB/RUB In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.00%	Sub-structure: Payment against sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB subject to completion of at least two sub-structures of abutments/piers up to abutment/pier cap level of the ROB/RUB.
(3) Super-structure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified.

(4) Wearing Coat including expansion joints in case of ROB. In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%	Wearing Coat: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility
(3) Super-structure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage
Stage of payment		i.e. completion of super- structure including bearings of at least one span in all respects as specified complete in all respects as specified
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including retaining walls, stone pitching, protection works).	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified
B.2 - New ROB / RUB		
(1) Foundation	0.00%	Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to completion of at least two foundations of the ROB/RUB In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.00%	Sub-structure: Payment against sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB bridge subject to completion of at least two sub-structures of abutments/piers up to abutment/pier cap level of the ROB/RUB.

(4) Wearing Coat including expansion joints in case of ROB. In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%	Wearing Coat: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls /Reinforced Earth wall, stone pitching and protection works)	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified
C.1 - Widening and repairs of Elevated section/Flyover/Grade Separators		
(1) Foundation	0.00%	Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. subject to completion of at least two foundations of the Structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.00%	Sub-structure: Payment against sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure or structure subject to completion of at least two sub-structures of abutments/piers up to abutment/pier cap level of the structure.
(3) Super-structure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified.

(4) Wearing Coat including expansion joints	0.00%	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous work like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified

Stage of payment	Weightage	Payment procedure
C.2 - New Elevated section/Flyover/Grade Separators		
(1) Foundation	0.00%	Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. subject to completion of at least two foundations of the Structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.00%	Sub-structure: Payment against sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure subject to completion of at least two sub-structures of abutments/piers up to abutment/pier cap level of the structure.
(3) Super-structure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage .e. completion of super- structure including bearings of at least one span in all respects as specified.
(4) Wearing Coat including expansion joints	0.00%	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified

1.3.4 Other works.

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

Table 1.3.4

Stage of Payment	Weightage	Payment procedure
(i) Toll plaza	0.00%	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
(ii) Road side drains	20.732%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% of the total length.
(iii) Road signs, markings stones safety Devices, etc.	15.612%	
(iv) Project facilities		Payment shall be made on pro rata basis for completed facilities.
a) Bus bays	0.151%	
b) Truck laybys	0.000%	
c) Rest areas	0.000%	
d) Others (To be specified)		
(i) Street Lighting	1.540%	
(ii) Maintenance of Existing road	1.779%	Payment shall be made on pro rata basis every three months.
(iii) Utility Ducts	0.196%	Payment shall be made on pro rata basis for completed facilities.
(iv) Utility Ducts in Defence area	1.701%	Cost of Utility duct at each location shall be determined on pro rata basis with respect to the total scope of work . Payment shall be made on the completion of facility at at least 1 (One) location.
(v) Junction improvement	4.899%	Payment shall be made on pro rata basis for completed facilities.

	works including connecting roads & junction under Grade separator.		
(vi)	Road Side Plantation	0.000%	Unit of measurement is linear length.
(vii)	Protection works retaining wall/Breast walls/toe walls other than approaches to the bridges, elevated section, flyovers/grade separators and ROBs/RUBs.	34.998%	Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% of the total length.
(viii)	Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates	16.263%	Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% of the total length
(ix)	Safety and traffic management during construction.	0.151%	Payment shall be made on pro rata basis every three months.
(x)	Side slope protection works turfing and stone pitching	1.978%	Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% of the total length.

2. Procedure for payment for Maintenance.

2.1 The cost for maintenance shall be as stated in Clause 14.1.(i)

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