

EPC Schedules

For

“Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir.”

**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD
(MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF INDIA)
3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET,
NEW DELHI – 110001**

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Schedules

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SCHEDULE - A

*(See Clauses 2.1 and 8.1)***SITE OF THE PROJECT****1 The Site**

- 1.1 Site of the 2-Laning of existing Chenani to Sudhmahadev road section from Km 0.000 to Km 22.713 (Total Length = 22.713 Km) in the state of Jammu & Kashmir on EPC basis, Project Highway shall include the land, buildings, structures and road works as described in **Annex-I** of this Schedule-A.
- 1.2 The dates of handing over the Right of Way to the Contractor are specified in **Annex-II** of this Schedule-A.
- 1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.
- 1.4 The alignment plans of the Project Highway are specified in **Annex-III**. In the case of sections where no modification in the existing alignment of the Project Highway is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be upgraded. The proposed profile of the Project Highways shall be followed by the contractor with minimum FRL as indicated in the alignment plan. The contractor, however, improve/upgrade the Road Profile as indicated in Annexure-III based on site/design requirement.
- 1.5 The status of the environment clearances obtained or awaited is given in **Annex IV**.

Annex - I
(Schedule-A)

Site

1. Site

Site of the 2-Laning of existing Chenani to Sudhmahadev Project Highway comprises the road section of Chenani to Sudhmahadev commencing from km 0.000 to km 22.713 i.e. (existing length 22.713 km) in the State of Jammu and Kashmir. The land, carriageway and structures comprising the Site are described below.

2. Land

The entire road passes through hilly terrain. The site of the Project Highway comprises the land as described below:

S. No.	Chainage (km)		ROW (m)	Remarks
	From	To		
1	0.000	22.713	15	

3. Carriageway

The present carriageway of the Project Highway is varying from Single to Two Lane configuration. The type of the existing pavement is flexible.

Sr. no.	Existing Chainage		Length (km)	Carriageway Width
	From (km)	To (km)		
1	0.000	1.700	1.700	10.800
2	1.700	2.300	0.600	7.000
3	2.300	2.900	0.600	5.500
4	2.900	3.700	0.800	7.000
5	3.700	22.713	19.013	3.900
	Total Length		22.713	

4. Major Bridges

The Site includes the following Major Bridges:

S.No.	Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub- structure	Superstructure		
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.	Chainage (km)	Type of Structure		No. of Spans with span length (m)	Width (m)	ROB/ RUB
		Foundation	Superstructure			
NIL						

6 Grade separators

The Site includes the following grade separators:

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

7 Minor bridges

The Site includes the following minor bridges:

S.No.	Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-structure	Superstructure		

S.No.	Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-structure	Superstructure		
1	1.063	Open	Wall Type	Solid Slab	30.00	8.50
2	5.036	Open	Wall Type Masonry	Composite Steel Girder	24.80	4.20
3	13.744	Open	Wall Type	Solid Slab	7.80	5.20

8 Railway level crossings

The Site includes the following railway level crossings:

S. No.	Location (km)	Remarks
NIL		

9 Underpasses (vehicular, non vehicular)

The Site includes the following underpasses:

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

10 Culverts

The Site has the following culverts:

Sr. No	Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
1	0.486	Pipe	1 X 0.90	12.00
2	1.560	Pipe	1 X 1.20	12.00
3	1.620	Pipe	1 X 0.90	9.00
4	2.229	Pipe	1 X 1.20	9.00
5	3.000	Pipe	1 X 1.20	9.00
6	3.100	Pipe	1 X 1.20	9.00
7	3.675	Pipe	1 X 1.20	9.00

Sr. No	Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
8	3.725	Blocked		
9	4.100	Pipe	1 X 0.60	7.40
10	4.469	Pipe	1 X 0.60	7.40
11	4.508	Pipe	1 X 1.20	7.40
12	4.580	Pipe	1 X 1.20	7.40
13	4.660	Pipe	1 X 1.20	7.40
14	4.775	Pipe	1 X 1.20	7.40
15	4.880	Pipe	1 X 1.20	7.40
16	5.125	Pipe	1 X 0.60	7.40
17	5.375	Pipe	1 X 0.60	7.40
18	5.425	CAUSEWAY		
19	5.637	Pipe	1 X 1.20	7.40
20	5.713	Pipe	1 X 0.60	7.40
21	5.863	Pipe	1 X 0.60	7.40
22	5.997	Pipe	1 X 0.60	7.40
23	6.116	Pipe	1 X 0.90	7.40
24	6.300	Pipe	1 X 0.60	7.40
25	6.533	Pipe	1 X 1.20	7.40
26	6.697	Pipe	1 X 0.60	7.40
27	6.911	Slab	1 X 0.75	7.40
28	7.077	Pipe	1 X 0.90	7.40
29	7.209	Pipe	1 X 0.90	7.40
30	7.348	Slab	1 X 0.30	7.40
31	7.449	Pipe	1 X 0.30	7.40
32	7.712	Pipe	1 X 0.90	7.40
33	7.754	Pipe	1 X 0.30	7.40
34	7.982	Pipe	1 X 0.60	7.40
35	8.237	Pipe	1 X 0.90	7.40
36	8.265	Pipe	1 X 0.90	7.40
37	8.719	Pipe	1 X 0.60	7.40
38	8.811	Pipe	1 X 0.30	7.40
39	8.918	Pipe	1 X 0.30	7.40
40	9.163	Pipe	1 X 0.90	7.40
41	9.308	Pipe	1 X 0.90	7.40
42	9.500	Pipe	1 X 0.60	7.40
43	9.760	Pipe	1 X 0.30	7.40

Sr. No	Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
44	9.867	Pipe	1 X 0.60	7.40
45	9.998	Pipe	1 X 0.60	7.40
46	10.066	Pipe	1 X 0.75	7.40
47	10.400	Stone Masonry	1 X 0.60	7.40
48	10.709	Pipe	1 X 1.20	7.40
49	10.811	Pipe	1 X 0.60	7.40
50	11.123	Stone Masonry	1 X 0.75	7.40
51	11.307	Pipe	1 X 0.60	7.40
52	11.357	Slab	1 X 1.00	7.40
53	11.560	Stone Masonry	1 X 1.00	7.40
54	12.272	Pipe	1 X 0.60	7.40
55	12.528	Pipe	1 X 0.60	7.40
56	12.955	Pipe	1 X 0.60	7.40
57	13.081	Pipe	1 X 0.90	7.40
58	13.391	Stone Masonry	1 X 1.00	7.40
59	13.501	Pipe	1 X 0.90	7.40
60	14.064	Stone Masonry	1 X 1.00	7.40
61	14.208	Stone Masonry	1 X 1.00	7.40
62	14.279	Stone Masonry	1 X 0.50	7.40
63	14.512	Stone Masonry	1 X 0.75	7.40
64	14.900	CAUSEWAY		
65	15.085	Stone Masonry	1 X 0.70	7.40
66	15.138	Pipe	1 X 0.90	7.40
67	15.621	Pipe	1 X 0.90	7.40
68	15.731	Pipe	1 X 0.60	7.40
69	15.945	Pipe	1 X 0.60	7.40
70	16.405	Pipe	1 X 0.90	7.40
71	16.455	Stone Masonry	1 X 1.00	7.40
72	16.911	Stone Masonry	1 X 0.75	7.40
73	17.041	Pipe	1 X 1.20	7.40
74	17.296	Slab	1 X 1.20	7.40
75	17.641	Pipe	1 X 0.60	7.40
76	17.681	Pipe	1 X 0.90	7.40
77	17.840	Slab	1 X 0.50	7.40
78	18.077	Stone Masonry	1 X 0.50	7.40
79	18.168	Pipe	1 X 0.90	7.40

Sr. No	Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
80	18.325	Slab	1 X 0.75	7.40
81	18.383	Slab	1 X 1.50	7.40
82	18.653	Slab	1 X 1.20	7.40
83	18.767	Slab	1 X 1.00	7.40
84	18.859	Pipe	1 X 1.20	7.40
85	18.947	Pipe	1 X 1.20	7.40
86	19.109	Pipe	1 X 1.20	7.40
87	19.214	Pipe	1 X 1.20	7.40
88	19.282	Slab	2 X 1.00	7.40
89	19.361	Pipe	1 X 0.60	7.40
90	19.413	CAUSEWAY		
91	19.498	Blocked		
92	19.747	Pipe	1 X 1.20	7.40
93	19.837	Pipe	1 X 0.90	7.40
94	19.878	Pipe	1 X 0.90	7.40
95	20.087	Pipe	1 X 1.20	7.40
96	20.198	Pipe	1 X 1.20	7.40
97	20.317	Pipe	1 X 1.20	7.40
98	20.577	Pipe	3 X 1.20	7.40
99	20.869	Slab	1 X 0.80	7.40
100	21.103	Slab	1 X 1.00	7.40
101	21.113	Slab	1 X 0.80	7.40
102	21.375	Slab	1 X 0.80	7.40
103	22.169	Slab	1 X 0.50	7.40
104	22.679	Slab	1 X 0.80	7.40

11 Bus bays

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

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

12 Truck Lay byes

The details of truck lay byes are as follows:

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

13 Road side drains

The details of the roadside drains are as follows:

S. No.	Location		Type	
	From km	to km	Masonry/cc (Pucca)	Earthen (Kutchra)
1	0.000	1.700	cc (Pucca)	
2	1.700	1.900	cc (Pucca)	
3	1.900	2.400	cc (Pucca)	
4	2.400	2.900	cc (Pucca)	
5	2.900	3.900	cc (Pucca)	
6	3.900	20.500	cc (Pucca)	
7	20.500	21.600	cc (Pucca)	
8	21.600	22.713	cc (Pucca)	

14 Major junctions

The details of major junctions are as follows:

S. No.	Location		At grade	Separated	Category of Cross Road			
	From km	to km			NH	SH	MDR	Others
1	0.000 (Km 24.711 of NH-44)		At Grade		44			Start of Project Road

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

15 Minor junctions

The details of the minor junctions are as follows:

S. No.	Location		Type		
	From km	To km	Y -junction	T -junction	Cross road
1	1.500		Y		
2	3.050			T	
3	12.225		Y		
4	21.550		Y		

16 Bypasses

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

S. No.	Name of bypass (town)	Chainage (km) From km to km	Length (in Km)
NIL			

17 Other structures

Nil.

Annex - II
(Schedule-A)

Dates for providing Right of Way

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

Sl. No	From km to km	Length (km)	Width (m)	Date of providing ROW*
1	2	3	4	5
(A) Full Right of Way (full width)				
Stretch. 1	-	-	-	-
(B) Part Right of Way (Full width)				
Stretch. 1	From Km 0.000 to Km 0.800	0.800	24	On Appointed Date
Stretch. 2	From Km 0.840 to Km 1.466	0.626	24	
Stretch. 3	From Km 2.750 to Km 3.050	0.300	24	
Stretch. 4	From Km 3.300 to Km 4.100	0.800	24	
Stretch. 5	From Km 4.167 to Km 4.273	0.106	24	
Stretch. 6	From Km 4.900 to Km 5.400	0.500	24	
Stretch. 7	From Km 5.558 to Km 5.700	0.142	24	
Stretch. 8	From Km 6.000 to Km 6.185	0.185	24	
Stretch. 9	From Km 6.400 to Km 6.600	0.200	24	
Stretch. 10	From Km 6.825 to Km 7.400	0.575	24	
Stretch. 11	From Km 7.447 to Km 7.553	0.106	24	
Stretch. 12	From Km 7.700 to Km 8.783	1.083	24	
Stretch. 13	From Km 8.800 to Km 9.003	0.203	24	
Stretch. 14	From Km 9.254 to Km 10.200	0.946	24	
Stretch. 15	From Km 10.600 to Km 10.900	0.300	24	
Stretch. 16	From Km 11.100 to Km 11.400	0.300	24	
Stretch. 17	From Km 11.625 to Km 11.700	0.075	24	
Stretch. 18	From Km 12.100 to Km 13.300	1.200	24	
Stretch. 19	From Km 13.555 to Km 14.180	0.625	24	

Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir

Sl. No	From km to km	Length (km)	Width (m)	Date of providing ROW*
1	2	3	4	5
Stretch. 20	From Km 14.447 to Km 14.553	0.106	24	
Stretch. 21	From Km 14.700 to Km 14.893	0.193	24	
Stretch. 22	From Km 15.055 to Km 16.300	1.245	24	
Stretch. 23	From Km 16.700 to Km 16.990	0.290	24	
(C) Realignment				
Stretch. 1	From Km 0.800 to Km 0.840	0.040	24	Within 150 days after the appointed Date as per clause 8.2 of DCA
Stretch. 2	From Km 1.466 to Km 2.750	1.284	24	
Stretch. 3	From Km 3.050 to Km 3.300	0.250	24	
Stretch. 4	From Km 4.100 to Km 4.167	0.067	24	
Stretch. 5	From Km 4.273 to Km 4.900	0.627	24	
Stretch. 6	From Km 5.400 to Km 5.558	0.158	24	
Stretch. 7	From Km 5.700 to Km 6.00	0.300	24	
Stretch. 8	From Km 6.185 to Km 6.400	0.215	24	
Stretch. 9	From Km 6.600 to Km 6.825	0.225	24	
Stretch. 10	From Km 7.400 to Km 7.447	0.047	24	
Stretch. 11	From Km 7.553 to Km 7.700	0.147	24	
Stretch. 12	From Km 8.783 to Km 8.800	0.017	24	
Stretch. 13	From Km 9.003 to Km 9.254	0.251	24	
Stretch. 14	From Km 10.200 to Km 10.600	0.400	24	
Stretch. 15	From Km 10.900 to Km 11.100	0.200	24	
Stretch. 16	From Km 11.400 to Km 11.625	0.225	24	
Stretch. 17	From Km 11.700 to Km 12.100	0.400	24	
Stretch. 18	From Km 13.300 to Km 13.555	0.255	24	
Stretch. 19	From Km 14.180 to Km 14.447	0.267	24	
Stretch. 20	From Km 14.553 to Km 14.700	0.147	24	
Stretch. 21	From Km 14.893 to Km 15.055	0.162	24	
Stretch. 22	From Km 16.300 to Km 16.700	0.400	24	

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

Annex - III
(Schedule-A)

Alignment Plans

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

The Alignment Plan & Profile for the project section is attached as “Appendix-A” to “Annexure-III” of Schedule-A.

Annex - IV
(Schedule-A)

Environment Clearances

The project Highway does not require Environment Clearance as per MoEF corrigendum dated 22.08.2013.

4

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[To be published in the Gazette of India, Extraordinary, Part II, Section 3,
Sub-section(ii)]

MINISTRY OF ENVIRONMENT AND FORESTS NOTIFICATION

New Delhi, the 22nd August, 2013

S.O. 2559 (E).- Whereas by notification of the Government of India in the Ministry of Environment and Forests vide number S.O.1533(E), dated the 14th September, 2006 issued under sub-section (1) and clause (v) of sub-section (2) of section (3) of the Environment (Protection) Act, 1986 read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government directed that on and from the date of its publication, the required construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule to the said notification entailing the capacity addition with change in process or technology and or product mix shall be undertaken in any part of India only after prior environmental clearance from the Central Government or as the case may be, by the State level Environment Impact Assessment Authority, duly constituted by the Central Government under sub-section (3) of section 3 of the said Act, in accordance with the procedure specified therein;

And whereas the Government of India in the Ministry of Environment and Forests had constituted a High Level Committee under the Chairmanship of Member (Environment and Forests and Science and Technology), Planning Commission, vide OM No.21-270/2008-IA.III dated the 11th December, 2012 to review the provisions of Environmental Impact Assessment Notification, 2006 relating to granting Environmental Clearances for Roads, Buildings and Special Economic Zone projects and provisions under the OM dated the 7th February, 2012 issued by the Ministry of Environment and Forests regarding guidelines for High Rise Buildings;

And whereas one of the terms of reference (ToR) of the Committee was to review the requirement of Environmental Clearance for highway expansion projects upto the right of way of 60 meters and length of 200 kms under Environmental Impact Assessment notification;

Appendix A – I

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

Sr. No	Existing Chainage (Km)	Design Chainage (Km)
1	0.000	0.000
2	1.000	Realignment
3	2.000	Realignment
4	3.000	Realignment
5	4.000	Realignment
6	5.000	Realignment
7	6.000	Realignment
8	7.000	4.083
9	8.000	Realignment
10	9.000	Realignment
11	10.000	6.111
12	11.000	6.914
13	12.000	7.841
14	13.000	8.771
15	14.000	9.491
16	15.000	Realignment
17	16.000	Realignment
18	17.000	12.069
19	18.000	13.000
20	19.000	13.685
21	20.000	14.556
22	21.000	15.340
23	22.000	Realignment
24	22.713	16.990

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

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

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 Two-Laning

Project is construction/improvement of the existing single lane road to two lane with paved shoulder and new two - lane in virgin land in accordance with IRC-SP:73: 2015, IRC / SP: 48: 1998 and other relevant codes including standard good practice of the road construction.

1 WIDENING OF THE EXISTING HIGHWAY

- 1.1 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 mountainous/hilly terrain to the extent land is available.

1.2 WIDTH OF CARRIAGEWAY

- 1.2.1 Two-Laning with paved shoulders shall be undertaken. The paved carriageway shall be 7(seven) m wide in accordance with the typical cross sections drawings in the Manual.

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

Sl. No.	Built-up stretch (Township)	Location (km to km)	Width (m)	Typical cross section (Ref. to Manual)
1	Chenani	From Km 0.000 to Km 0.800	7.0	Fig. 2.13 of IRC: SP 73-2015

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

^{\$} The contents of this Annex-I may be modified in accordance with the structure of the Project.

2 GEOMETRIC DESIGN AND GENERAL FEATURES

2.1 General

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

2.2 Design speed

The design speed shall be the minimum design speed of 50 km per hr for mountainous/hilly terrain as per IRC SP 48:1998/ IRC SP 73:2015.

2.3 Improvement of the existing road geometrics

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

Sl. No.	Stretch	Type of deficiency	Remarks
	(from km to km)		
1	from km 0.094 to km 0.126	Radius of 80 m	
2	from km 0.167 to km 0.301	Radius of 100 m	
3	from km 0.379 to km 0.444	Radius of 100 m	
4	from km 0.812 to km 0.912	Radius of 80 m	
5	from km 0.971 to km 1.067	Radius of 80 m	
6	from km 2.628 to km 2.697	Radius of 100 m	
7	from km 6.342 to km 6.625	Radius of 100 m	
8	from km 8.059 to km 8.093	Radius of 100 m	
9	from km 8.152 to km 8.19	Radius of 100 m	
10	from km 8.252 to km 8.398	Radius of 125 m	
11	from km 9.224 to km 9.452	Radius of 80 m	
12	from km 9.966 to km 10.144	Radius of 100 m	
13	from km 10.312 to km 10.469	Radius of 80 m	
14	from km 10.67 to km 10.856	Radius of 100 m	
15	from km 12.167 to km 12.226	Radius of 100 m	
16	from km 14.77 to km 14.93	Radius of 100 m	
17	from km 15.165 to km 15.233	Radius of 100 m	
18	from km 15.878 to km 15.97	Radius of 100 m	
19	from km 16.445 to km 16.572	Radius of 100 m	

2.4 Right of Way

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

2.5 Type of shoulders

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

Sl. No.	Stretch (from km to km)	Fully paved shoulders/ footpaths	Reference to cross section
1	From Km 0.000 to Km 0.800	Footpath	Fig 2.13 of IRC:SP 73-2015

- (b) In open country, the shoulder shall be hard granular shoulder (with locally available material) on both sides of the carriageway as per typical cross sections provided in para 2.11 of Schedule B.
- (c) Design and specifications of paved shoulders and granular material shall conform to the requirements specified in paragraphs 5.10 and 5.11 of the Manual.

2.6 Lateral and vertical clearances at underpasses

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

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

Sl. No.	Location (chainage) (from km to km)	Span/opening (m)	Remarks
NIL			

2.7 Lateral and vertical clearances at overpasses

2.7.1 Lateral and vertical clearances at overpasses shall be as per paragraph 2.11 of the Manual.

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

Sl. No.	Location (chainage) (from km to km)	Span/opening (m)	Remarks
NIL			

2.8 Service roads

Service roads shall be constructed at the locations and for the lengths indicated below:

Sl No.	Location of service road (from km to km)	Right hand side (RHS)/Left hand side (LHS)/ or Both sides	Length (km) of service road
NIL			

2.7 Grade separated structures

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

Sl. No.	Location of structure	Length (m)	Number and length of spans (m)	Approach gradient	Remarks, if any
NIL					

2.7.2 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:

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

2.8 Cattle and pedestrian underpass /overpass

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

Sl. No.	Location	Type of crossing
NIL		

2.9 Typical cross-sections of the Project Highway

Following typical cross sections shall be provided for the Project Highway
However to be designed as per manual.

Summary of TCS				
Sr. No.	Detail	TCS	Length	
			(m)	(Km)
1	One side Hill & One side Valley (Breast Wall on hill side)	1	6902.00	6.902
2	One side Hill & One side Valley (Drain on Hill Side)	2	451.00	0.451
3	One side Valley & One side Built up or open area	3	800.00	0.800
4	Approach to Bridge	4	1000.00	1.000
5	One side Hill & One side Valley (Breast Wall and Gabion Box Protection on hill side)	5	1676.00	1.676
6	Realignment	6	5734.00	5.734
7	Bridge		427.00	0.427
	Total Length		16990.00	16.990

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 tables below:

(a) At-grade intersections

Sl. No.	Location of intersection	Type of intersection	Other features
1	0.000	Y	Link to Srinagar
2	1.273	Y	Link to Patni top
3	8.064	Y	Link to Village Road
4	15.883	Y	Link to Village Road

(b) Grade separated intersection with/without ramps

Sl. No.	Location	Salient features	Minimum length of viaduct to be provided	Road to be carried over/under the structures
NIL				

4 ROAD EMBANKMENT AND CUT SECTION

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

4.2 Raising of the existing

The existing road shall be raised in the following sections:

Sl. No.	Section (from km to km)	Length	Extent of raising [Top of finished road level]
NIL			

5 PAVEMENT DESIGN

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

5.2 Type of pavement

Flexible Pavement is proposed throughout the length of the project Highway Highway in accordance with IRC: 37-2012. Clause 2.2 of IRC: 37-2012 identifies five types of flexible pavements. The estimated cost of civil works is based on flexible pavements consisting of Granular base, Sub base, DBM and BC. The composition of the pavement is as follows:

Layer	Thickness (mm)
BC	40
DBM	80
WMM - I	125
WMM - II	125
GSB - I	100
GSB - II	100
Subgrade	500
Total Thickness	1070

5.3 Design requirements

5.3.1 Design Period and strategy

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

5.3.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for a design traffic of 20 million standard axles.

Sr. no.	Design Chainage (km)		Length (km)	15 Year MSA
	From	To		
1	0.000	16.990	16.990	20

5.4 Reconstruction/Realignment of stretches

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

Sl. No.	Stretch		Remarks
	From km	To km	
1	0.000	0.800	Reconstruction of Existing Pavement
2	0.800	0.840	Proposed Realignment Section
3	0.840	1.466	Reconstruction of Existing Pavement
4	1.466	2.750	Proposed Realignment Section
5	2.750	3.050	Reconstruction of Existing Pavement
6	3.050	3.300	Proposed Realignment Section
7	3.300	4.100	Reconstruction of Existing Pavement
8	4.100	4.167	Proposed Realignment Section
9	4.167	4.273	Reconstruction of Existing Pavement
10	4.273	4.900	Proposed Realignment Section
11	4.900	5.400	Reconstruction of Existing Pavement
12	5.400	5.558	Proposed Realignment Section
13	5.558	5.700	Reconstruction of Existing Pavement
14	5.700	6.000	Proposed Realignment Section
15	6.000	6.185	Reconstruction of Existing Pavement
16	6.185	6.400	Proposed Realignment Section
17	6.400	6.600	Reconstruction of Existing Pavement
18	6.600	6.825	Proposed Realignment Section
19	6.825	7.400	Reconstruction of Existing Pavement
20	7.400	7.447	Proposed Realignment Section
21	7.447	7.553	Reconstruction of Existing Pavement
22	7.553	7.700	Proposed Realignment Section
23	7.700	8.783	Reconstruction of Existing Pavement

Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir

Sl. No.	Stretch		Remarks
	From km	To km	
24	8.783	8.800	Proposed Realignment Section
25	8.800	9.003	Reconstruction of Existing Pavement
26	9.003	9.254	Proposed Realignment Section
27	9.254	10.200	Reconstruction of Existing Pavement
28	10.200	10.600	Proposed Realignment Section
29	10.600	10.900	Reconstruction of Existing Pavement
30	10.900	11.100	Proposed Realignment Section
31	11.100	11.400	Reconstruction of Existing Pavement
32	11.400	11.625	Proposed Realignment Section
33	11.625	11.700	Reconstruction of Existing Pavement
34	11.700	12.100	Proposed Realignment Section
35	12.100	13.300	Reconstruction of Existing Pavement
36	13.300	13.555	Proposed Realignment Section
37	13.555	14.180	Reconstruction of Existing Pavement
38	14.180	14.447	Proposed Realignment Section
39	14.447	14.553	Reconstruction of Existing Pavement
40	14.553	14.700	Proposed Realignment Section
41	14.700	14.893	Reconstruction of Existing Pavement
42	14.893	15.055	Proposed Realignment Section
43	15.055	16.300	Reconstruction of Existing Pavement
44	16.300	16.700	Proposed Realignment Section
45	16.700	16.990	Reconstruction of Existing Pavement

6 ROADSIDE DRAINAGE

Drainage system including surface and subsurface drain for the Project

Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir

Highway shall be provided as per Section 6 of the Manual.

Sl.	DESIGN CHAINAGE (Km)		Length (m)	TCS TYPE	Drain
	FROM	TO			
1	0.000	0.800	0.800	TCS 3	Lined covered drain
2	1.015	1.466	0.451	TCS 2	RRM Drain on Hill Side

7 DESIGN OF STRUCTURES

7.1 General

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

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

Sl. No.	Bridge at km	Width of carriageway and cross- sectional features [@]
1	0.928	11 m and overall width 16 m
2	2.575	11 m and overall width 16 m
3	4.220	11 m and overall width 16 m
4	7.500	11 m and overall width 16 m
5	8.730	11 m and overall width 16 m
6	8.950	11 m and overall width 16 m
7	9.334	11 m and overall width 16 m
8	13.270	11 m and overall width 16 m
9	14.500	11 m and overall width 16 m
10	14.840	11 m and overall width 16 m

7.1.3 The following structures shall be provided with footpaths:

Sl. No.	Location at km	Remarks
1	0.928	Major Bridge
2	2.575	Major Bridge
3	4.220	Minor Bridge
4	7.500	Minor Bridge
5	8.730	Minor Bridge
6	8.950	Minor Bridge
7	9.334	Minor Bridge
8	13.270	Minor Bridge
9	14.500	Minor Bridge
10	14.840	Minor Bridge

7.1.4 All bridges shall be high-level bridges or as per site requirement.

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

Sl. No.	Bridge at km	Utility service to be carried	Remarks
NIL			

[@] Attach typical cross-section, if necessary.

7.2 Culverts

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

7.2.2 *Reconstruction of existing culverts:*

The existing culverts at the following locations shall be re-constructed as new culverts:

Sl. No	Survey Chainage (m)	Existing Type of Structure	Existing Span arrangement		Design Chainage (m)	Proposed Structure	Proposed Span Arrangement (m)
			No.	Clear Span			
1	486	Pipe	1	0.90	466	Box	2X2
2	1560	Pipe	1	1.20	1357	Box	2X2
3	1620	Pipe	1	0.90	1417	Box	2X2
4	5637	Pipe	1	1.20	2880	Box	2X2
5	5713	Pipe	1	0.60	2957	Box	2X2
6	6116	Pipe	1	0.90	3281	Box	2X2
7	6533	Pipe	1	1.20	3641	Box	2X2
8	6697	Pipe	1	0.60	3806	Box	2X2
9	6911	Slab	1	0.75	3996	Box	2X2
10	7077	Pipe	1	0.90	4160	Box	2X2
11	8719	Pipe	1	0.60	5156	Box	2X2
12	8918	Pipe	1	0.30	5347	Box	2X2
13	9163	Pipe	1	0.90	5569	Box	2X2
14	9308	Pipe	1	0.90	5700	Box	2X2
15	9867	Pipe	1	0.60	5991	Box	2X2
16	9998	Pipe	1	0.60	6127	Box	2X2
17	11123	Stone Masonry	1	0.75	7033	Box	2X2
18	11357	Slab	1	1.00	7252	Box	2X2
19	12272	Pipe	1	0.60	8114	Box	2X2
20	12528	Pipe	1	0.60	8361	Box	2X2
21	13081	Pipe	1	0.90	8860	Box	2X2
22	13391	Stone Masonry	1	1.00	9140	Box	2X2
23	14064	Stone Masonry	1	1.00	9558	Box	2X2
24	14208	Stone Masonry	1	1.00	9695	Box	2X2
25	14279	Stone Masonry	1	0.50	9767	Box	2X2
26	14512	Stone Masonry	1	0.75	9991	Box	2X2
27	14900	Causeway			10377	Box	2X2
28	15138	Pipe	1	0.90	10636	Box	2X2
29	15621	Pipe	1	0.90	11087	Box	2X2
30	15731	Pipe	1	0.60	11200	Box	2X2
31	15945	Pipe	1	0.60	11412	Box	2X2
32	16405	Pipe	1	0.90	11646	Box	2X2
33	16455	Stone Masonry	1	1.00	11696	Box	2X2
34	17041	Pipe	1	1.20	12110	Box	2X2

Sl. No	Survey Chainage (m)	Existing Type of Structure	Existing Span arrangement		Design Chainage (m)	Proposed Structure	Proposed Span Arrangement (m)
			No.	Clear Span			
35	17296	Slab	1	1.20	12320	Box	2X2
36	17641	Pipe	1	0.60	12637	Box	2X2
37	17681	Pipe	1	0.90	12680	Box	2X2
38	17840	Slab	1	0.50	12835	Box	2X2
39	18077	Stone Masonry	1	0.50	13075	Box	2X2
40	18168	Pipe	1	0.90	13163	Box	2X2
41	18325	Slab	1	0.75	13300	Box	2X2
42	18859	Pipe	1	1.20	13550	Box	2X2
43	18947	Pipe	1	1.20	13634	Box	2X2
44	19214	Pipe	1	1.20	13888	Box	2X2
45	19282	Slab	2	1.00	13956	Box	2X2
46	19361	Pipe	1	0.60	14032	Box	2X2
47	19413	Causeway			14079	Box	2X2
48	19498	Choked			14155	Box	2X2
49	19747	Pipe	1	1.20	14357	Box	2X2
50	19837	Pipe	1	0.90	14440	Box	2X2
51	19878	Pipe	1	0.90	14481	Box	2X2
52	20087	Pipe	1	1.20	14667	Box	2X2
53	20198	Pipe	1	1.20	14745	Box	2X2
54	20317	Pipe	1	1.20	14840	Box	2X2
55	20869	Slab	1	0.80	15210	Box	2X2
56	21103	Slab	1	1.00	15442	Box	2X2
57	21113	Slab	1	0.80	15450	Box	2X2
58	21375	Slab	1	0.80	15714	Box	2X2
59	22169	Slab	1	0.50	16463	Box	2X2
60	22679	Slab	1	0.80	16965	Box	2X2

7.2.3 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 [specify]
NIL			

7.2.4 Additional new culverts shall be constructed as per particulars given in the table below:

Sl. No	Design Chainage (m)	Proposed Structure	Proposed Span Arrangement(m)
1	782	Box	2X2
2	1122	Box	2X2
3	1240	Box	2X2
4	1600	Box	2X2
5	1780	Box	2X2
6	1940	Box	2X2
7	2120	Box	2X2
8	3100	Box	2X2
9	3760	Box	2X2
10	4280	Box	2X2
11	4540	Box	2X2
12	4850	Box	2X2
13	5825	Box	2X2
14	6225	Box	2X2
15	6630	Box	2X2
16	6750	Box	2X2
17	8460	Box	2X2
18	10500	Box	2X2
19	10780	Box	2X2
20	11325	Box	2X2
21	12580	Box	2X2
22	12980	Box	2X2
23	13450	Box	2X2
24	14220	Box	2X2
25	15380	Box	2X2
26	15880	Box	2X2
27	16000	Box	2X2
28	16540	Box	2X2
29	16720	Box	2X2
30	16840	Box	2X2

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

Sl. No.	Location at km	Type of repair required
NIL		

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

7.3 Bridges

7.3.1 Existing bridges to be re-constructed/widened

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

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

*Attach GAD

- (ii) The following narrow bridges shall be widened:

Sl. No.	Location (km)	Existing width (m)	Extent of widening (m)	Cross-section at deck level for widening @
NIL				

@ Attach cross-section

7.3.2 Additional new bridges

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

Sl. No.	Location (km)	Total length (m)	Remarks, if any
1	0.928	75	
2	2.575	250	

Sl. No.	Location (km)	Total length (m)	Remarks, if any
3	4.220	6	
4	7.500	6	
5	8.730	6	
6	8.950	6	
7	9.334	60	
8	13.270	6	
9	14.500	6	
10	14.840	6	

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

Sl. No.	Location at km	Remarks
NIL		

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

Sl. No.	Location at km	Remarks
NIL		

7.3.5 *Drainage system for bridge decks*

An effective drainage system for bridge decks shall be provided as specified in paragraph 7.20 of the Manual

7.3.6 *Structures in marine environment*
NIL

7.4. Rail-road bridges

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual.

7.4.2 *Road over-bridges*

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

Sl. No.	Location of Level crossing (chainage km)	Length of bridge (m)
NIL		

7.4.3 *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 (chainage km)	Number and length of span (m)
NIL		

7.5 Grade separated structures

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2.9 and 3 of this Annex-I.

7.6 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:

A. Bridges

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

B. ROB / RUB

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

C. Overpasses/Underpasses and other structures

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

7.7 List of Major Bridges and Structures

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

Sl. No.	Location
1	0.928
2	2.575

8 TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

- 8.1 Traffic control devices and road safety works shall be provided in accordance with Section 9 of the Manual.
- 8.2 Specifications of the reflective sheeting.
- 8.3 The minimum quantity of Traffic signages and pavement marking are tabulated here:

Sl. No.	Traffic Signages, Road Marking and other appurtenances	unit	Quantity
1	Road Marking: -Lines, dashes, arrows	Sqm	10035
2	90 cm equilateral triangle	Nos.	82
3	60 cm x 50 cm rectangular	Nos.	663
4	90 cm x 30 cm rectangular	Nos.	54
5	90 cm circular	Nos.	10
6	60 cm circular		10
7	60 cm x 45 cm rectangular		64
8	90 cm high octagon	Nos.	4
9	Over Head Sign Truss	MT	2
10	5th Km Stone –New	Nos.	3
11	Ordinary Km Stone	Nos.	15
12	Hectometer Stone	Nos.	68
13	Studs	Nos.	9540
14	Boundary pillars	Nos.	136

9 ROADSIDE FURNITURE

- 9.1 Roadside furniture shall be provided in accordance with the provisions of Section 9 of the Manual.

Overhead traffic signs: location and size: 2 No's (At Major Junction: Start & End)

COMPULSORY AFFORESTATION

Refer to paragraph 11.1 of the Manual and specify the number of trees which are required to be planted by the Contractor as compensatory afforestation.

10 HAZARDOUS LOCATIONS

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

Sl. No.	Location stretch from (km) to (km)	Side
1	From Km 0.840 to Km 0.890	Two
2	From Km 0.965 to Km 1.015	Two
3	From Km 1.015 to Km 1.274	One
4	From Km 1.274 to Km 1.466	One
5	From Km 2.400 to Km 2.450	Two
6	From Km 2.700 to Km 2.750	Two
7	From Km 2.750 to Km 3.050	One
8	From Km 3.300 to Km 4.10	One
9	From Km 4.167 to Km 4.217	Two
10	From Km 4.223 to Km 4.273	Two
11	From Km 4.900 to Km 5.400	One
12	From Km 5.558 to Km 5.700	One
13	From Km 6.00 to Km 6.185	One
14	From Km 6.400 to Km 6.600	One
15	From Km 6.825 to Km 7.400	One
16	From Km 7.447 to Km 7.497	Two
17	From Km 7.503 to Km 7.553	Two
18	From Km 7.700 to Km 8.677	One
19	From Km 8.677 to Km 8.727	Two
20	From Km 8.733 to Km 8.783	Two
21	From Km 8.800 to Km 8.897	One

Sl. No.	Location stretch from (km) to (km)	Side
22	From Km 8.897 to Km 8.947	Two
23	From Km 8.953 to Km 9.003	Two
24	From Km 9.254 to Km 9.304	Two
25	From Km 9.364 to Km 9.414	Two
26	From Km 9.414 to Km 10.200	One
27	From Km 10.600 to Km 10.900	One
28	From Km 11.100 to Km 11.400	One
29	From Km 11.625 to Km 11.700	One
30	From Km 12.100 to Km 13.217	One
31	From Km 13.217 to Km 13.267	Two
32	From Km 13.273 to Km 13.323	Two
33	From Km 13.323 to Km 13.300	One
34	From Km 13.555 to Km 14.180	One
35	From Km 14.447 to Km 14.497	Two
36	From Km 14.503 to Km 14.553	Two
37	From Km 14.700 to Km 14.787	One
38	From Km 14.787 to Km 14.837	Two
39	From Km 14.843 to Km 14.893	Two
40	From Km 15.055 to Km 16.300	One
41	From Km 16.700 to Km 16.990	One

11 Retaining Wall

- a) Retaining Walls: Retaining walls shall be Provided to arrest damage cause to the valley side and the road, by under cutting by stream or other water course as per site requirement.

12 SPECIAL REQUIREMENT FOR HILL ROADS

In accordance with section 13 of the manual (from IRC: SP: 73-2015), IRC: SP 48: 1998 and Recommended practices for Treatment of Embankment and Roadside slopes for Erosion control (First Revision), IRC: 56-2011 and relevant IRC codes.

Slope Protection

As the project involves cutting of existing hill slopes, it is imperative that slopes are stabilized for ensuring longevity of the slope and the road. Slope stability,

erosion control and landslide correction shall be accomplished in accordance with IRC: SP: 48-1998. Reference may be drawn from IRC: 56-2011.

The minimum quantity of protection work shall be as below:

Type of Protection Work			
Sr. No.	Protection Work		
1	Breast wall		
	From (km)	To (km)	Length (km)
	0.800	0.840	0.040
	1.466	2.400	0.934
	2.750	3.050	0.300
	3.050	3.300	0.250
	3.300	4.100	0.800
	4.100	4.167	0.067
	4.273	4.900	0.627
	4.900	5.400	0.500
	5.400	5.558	0.158
	5.558	5.700	0.142
	5.700	6.000	0.300
	6.000	6.185	0.185
	6.185	6.400	0.215
	6.400	6.600	0.200
	6.600	6.825	0.225
	6.825	7.400	0.575
	7.400	7.447	0.047
	7.553	7.700	0.147
	7.700	8.677	0.977
	8.783	8.800	0.017
	8.800	8.897	0.097
	9.003	9.254	0.251
	9.414	10.200	0.786
	10.200	10.600	0.400
	10.600	10.900	0.300
	10.900	11.100	0.200
	11.100	11.400	0.300
	11.400	11.625	0.225
	11.625	11.700	0.075
	11.700	12.100	0.400
	12.100	13.217	1.117
	13.323	13.555	0.232
	13.555	14.180	0.625

Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir

Type of Protection Work			
Sr. No.	Protection Work		
	14.180	14.447	0.267
	14.553	14.700	0.147
	14.700	14.787	0.087
	14.893	15.055	0.162
	15.055	16.300	1.245
	16.300	16.700	0.400
	16.700	16.990	0.290
	Total Length		14.312
2	Retaining Wall		
	From (km)	To (km)	Length (km)
	0.200	0.350	0.150
	1.250	1.450	0.200
	1.500	2.500	1.000
	2.700	3.050	0.700
	3.650	3.750	0.100
	3.900	4.100	0.200
	4.400	4.650	0.250
	5.000	5.100	0.100
	6.800	6.950	0.150
	7.400	7.600	0.200
	8.100	8.200	0.100
	9.700	9.800	0.100
	9.900	10.000	0.100
	10.000	10.250	0.250
	12.100	12.200	0.100
	13.500	13.650	0.150
	14.900	15.050	0.150
	Total Length		4.000
3	Gabion wall		
	From (km)	To (km)	Length (km)
	9.414	10.200	0.786
	10.600	10.900	0.300
	11.100	11.400	0.300
	16.700	16.990	0.290
	Total Length		1.676
4	Boulder Pitching for high Embankment		
	From (km)	To (km)	Length (km)
	0.840	0.890	0.050

Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir

Type of Protection Work			
Sr. No.	Protection Work		
	0.965	1.015	0.050
	2.400	2.450	0.050
	2.700	2.750	0.050
	4.167	4.217	0.050
	4.223	4.273	0.050
	7.447	7.497	0.050
	7.503	7.553	0.050
	8.677	8.727	0.050
	8.733	8.783	0.050
	8.897	8.947	0.050
	8.953	9.003	0.050
	9.254	9.304	0.050
	9.364	9.414	0.050
	13.217	13.267	0.050
	13.273	13.323	0.050
	14.447	14.497	0.050
	14.503	14.553	0.050
	14.787	14.837	0.050
	14.843	14.893	0.050
	Total Length		1.000
5	Energy Dissipation Basin		
	From (km)	To (km)	Length (km)
	0.840	0.890	0.050
	0.965	1.015	0.050
	2.400	2.450	0.050
	2.700	2.750	0.050
	4.167	4.217	0.050
	4.223	4.273	0.050
	7.447	7.497	0.050
	7.503	7.553	0.050
	8.677	8.727	0.050
	8.733	8.783	0.050
	8.897	8.947	0.050
	8.953	9.003	0.050
	9.254	9.304	0.050
	9.364	9.414	0.050
	13.217	13.267	0.050
	13.273	13.323	0.050

Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir

Type of Protection Work			
Sr. No.	Protection Work		
	14.447	14.497	0.050
	14.503	14.553	0.050
	14.787	14.837	0.050
	14.843	14.893	0.050
	Total Length		1.000

13 CHANGE OF SCOPE

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

Indicative Chainages with applicable typical Cross section

Sr. No.	Design Chainage		Length (Km)	TCS Type	Remarks
	From (Km)	To (Km)			
1	0.000	0.800	0.800	3	One side Valley & One side Built up or open area
2	0.800	0.840	0.040	6	Realignment
3	0.840	0.890	0.050	4	Approach to Bridge
4	0.890	0.965	0.075	bridge	Bridge
5	0.965	1.015	0.050	4	Approach to Bridge
6	1.015	1.274	0.259	2	One side Hill & One side Valley (Drain on Hill Side)
7	1.274	1.466	0.192	2	One side Hill & One side Valley (Drain on Hill Side)
8	1.466	2.400	0.934	6	Realignment
9	2.400	2.450	0.050	4	Approach to Bridge

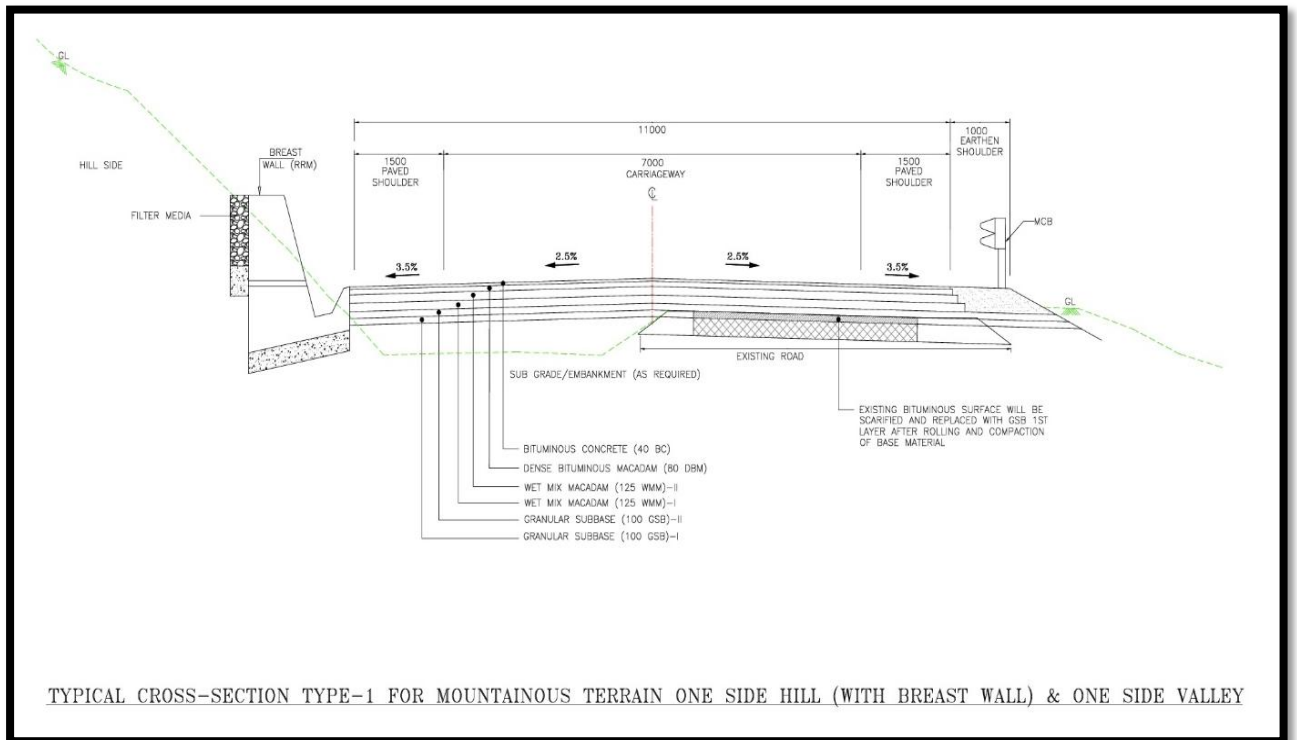
Sr. No.	Design Chainage		Length (Km)	TCS Type	Remarks
	From (Km)	To (Km)			
10	2.450	2.700	0.250	bridge	Bridge
11	2.700	2.750	0.050	4	Approach to Bridge
12	2.750	3.050	0.300	1	One side Hill & One side Valley (Breast Wall on hill side)
13	3.050	3.300	0.250	6	Realignment
14	3.300	4.100	0.800	1	One side Hill & One side Valley (Breast Wall on hill side)
15	4.100	4.167	0.067	6	Realignment
16	4.167	4.217	0.050	4	Approach to Bridge
17	4.217	4.223	0.006	bridge	Bridge
18	4.223	4.273	0.050	4	Approach to Bridge
19	4.273	4.900	0.627	6	Realignment
20	4.900	5.400	0.500	1	One side Hill & One side Valley (Breast Wall on hill side)
21	5.400	5.558	0.158	6	Realignment
22	5.558	5.700	0.142	1	One side Hill & One side Valley (Breast Wall on hill side)
23	5.700	6.000	0.300	6	Realignment
24	6.000	6.185	0.185	1	One side Hill & One side Valley (Breast Wall on hill side)
25	6.185	6.400	0.215	6	Realignment
26	6.400	6.600	0.200	1	One side Hill & One side Valley (Breast Wall on hill side)
27	6.600	6.825	0.225	6	Realignment
28	6.825	7.400	0.575	1	Bridge
29	7.400	7.447	0.047	6	Realignment
30	7.447	7.497	0.050	4	Approach to Bridge

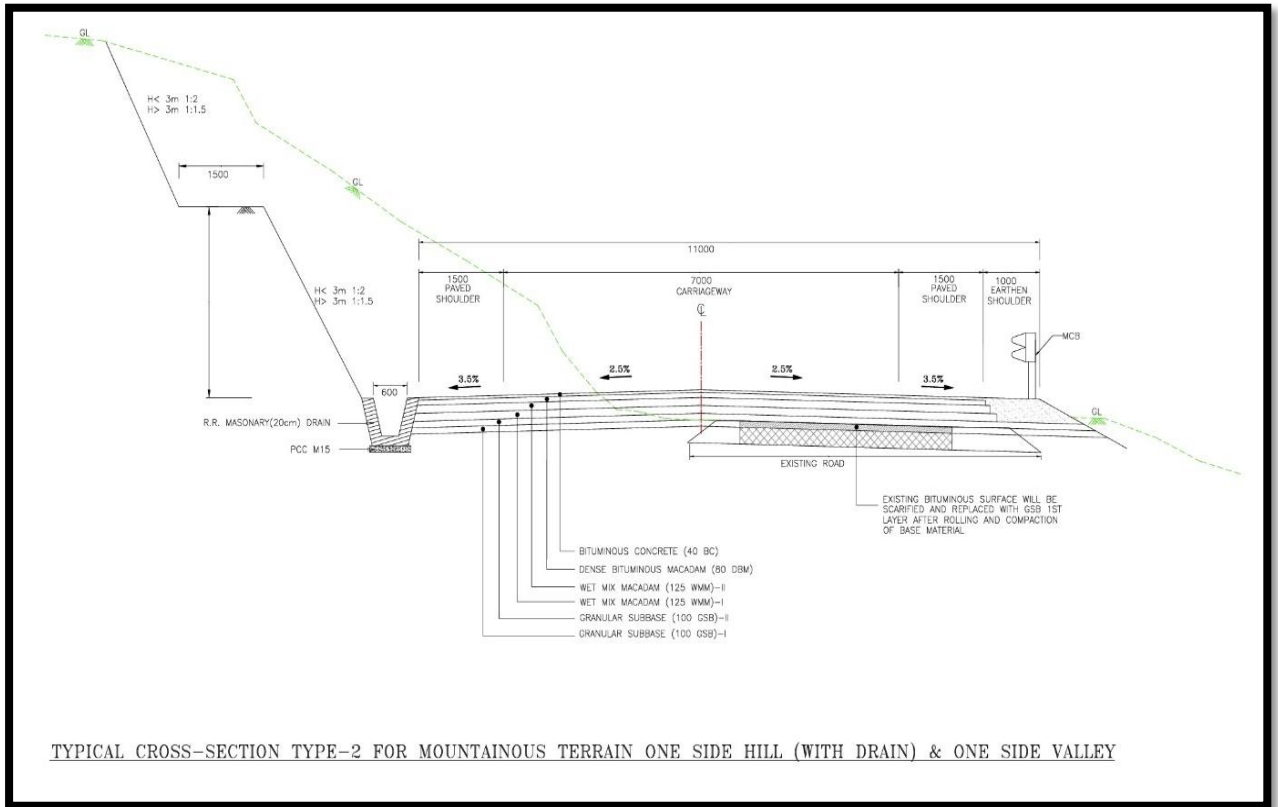
Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir

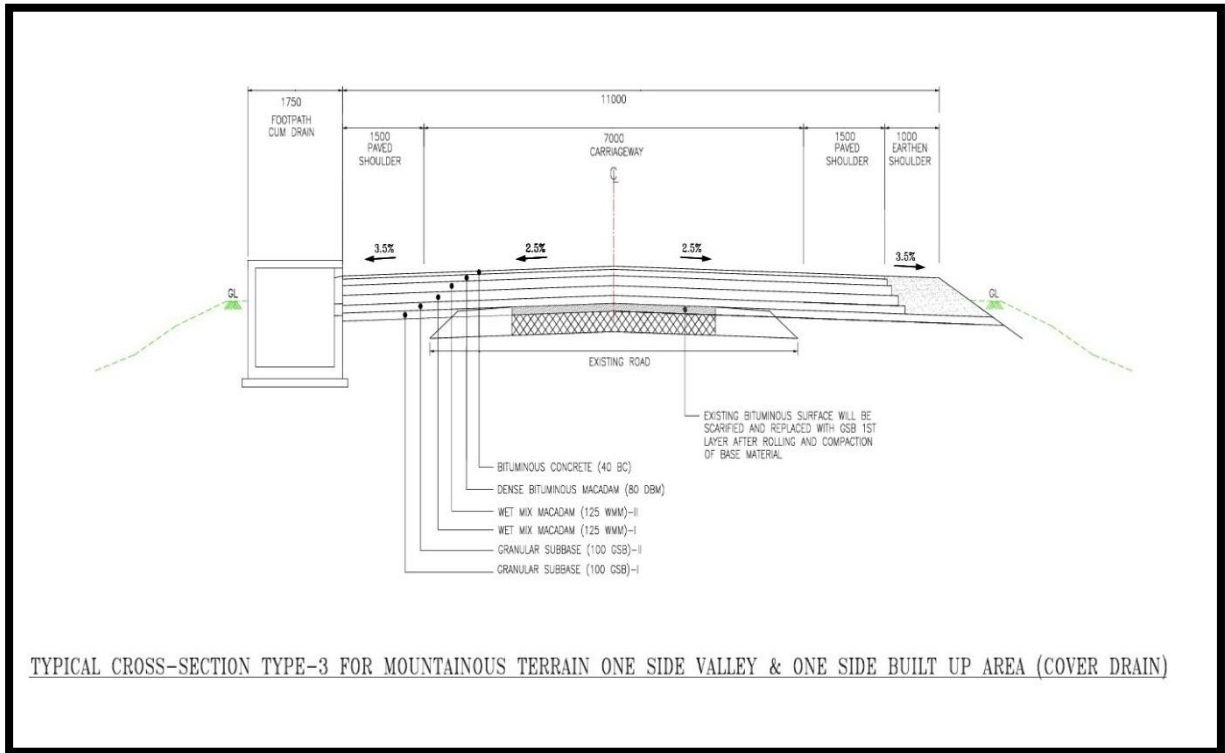
Sr. No.	Design Chainage		Length (Km)	TCS Type	Remarks
	From (Km)	To (Km)			
31	7.497	7.503	0.006	bridge	Bridge
32	7.503	7.553	0.050	4	Approach to Bridge
33	7.553	7.700	0.147	6	Realignment
34	7.700	8.677	0.977	1	One side Hill & One side Valley (Breast Wall on hill side)
35	8.677	8.727	0.050	4	Approach to Bridge
36	8.727	8.733	0.006	bridge	Bridge
37	8.733	8.783	0.050	4	Approach to Bridge
38	8.783	8.800	0.017	6	Realignment
39	8.800	8.897	0.097	1	Approach to Bridge
40	8.897	8.947	0.050	4	Approach to Bridge
41	8.947	8.953	0.006	bridge	Bridge
42	8.953	9.003	0.050	4	Approach to Bridge
43	9.003	9.254	0.251	6	Realignment
44	9.254	9.304	0.050	4	Approach to Bridge
45	9.304	9.364	0.060	bridge	Bridge
46	9.364	9.414	0.050	4	Approach to Bridge
47	9.414	10.200	0.786	5	One side Hill & One side Valley (Breast Wall and Gabion Box Protection on hill side)
48	10.200	10.600	0.400	6	Realignment
49	10.600	10.900	0.300	5	One side Hill & One side Valley (Breast Wall and Gabion Box Protection on hill side)
50	10.900	11.100	0.200	6	Realignment

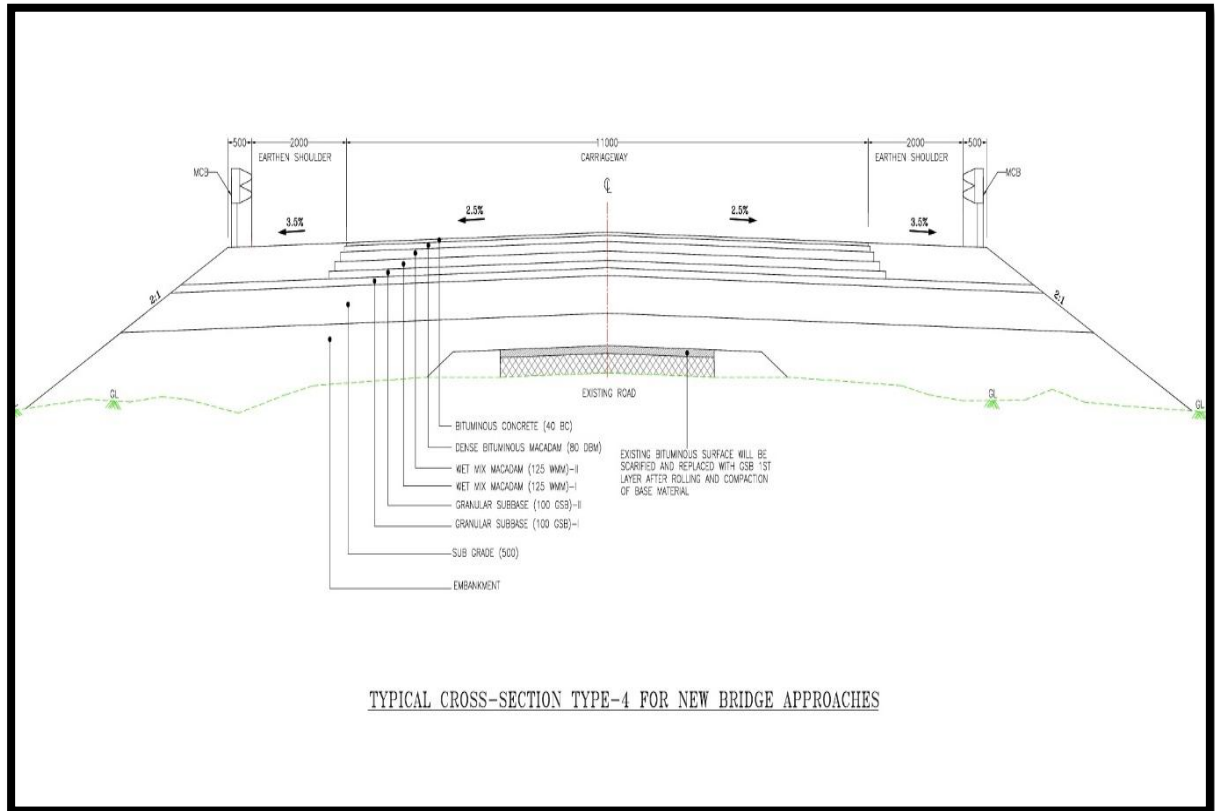
Sr. No.	Design Chainage		Length (Km)	TCS Type	Remarks
	From (Km)	To (Km)			
51	11.100	11.400	0.300	5	One side Hill & One side Valley (Breast Wall and Gabion Box Protection on hill side)
52	11.400	11.625	0.225	6	Realignment
53	11.625	11.700	0.075	1	Realignment
54	11.700	12.100	0.400	6	Realignment
55	12.100	13.217	1.117	1	Realignment
56	13.217	13.267	0.050	4	Approach to Bridge
57	13.267	13.273	0.006	bridge	Bridge
58	13.273	13.323	0.050	4	Approach to Bridge
59	13.323	13.555	0.255	6	Realignment
60	13.555	14.180	0.625	1	One side Hill & One side Valley (Breast Wall and Gabion Box Protection on hill side)
61	14.180	14.447	0.267	6	Realignment
62	14.447	14.497	0.050	4	Approach to Bridge
63	14.497	14.503	0.006	bridge	Bridge
64	14.503	14.553	0.050	4	Approach to Bridge
65	14.553	14.700	0.147	6	Realignment
66	14.700	14.787	0.087	1	One side Hill & One side Valley (Breast Wall and Gabion Box Protection on hill side)
67	14.787	14.837	0.050	4	Approach to Bridge
68	14.837	14.843	0.006	bridge	Bridge
69	14.843	14.893	0.050	4	Approach to Bridge
70	14.893	15.055	0.162	6	Realignment

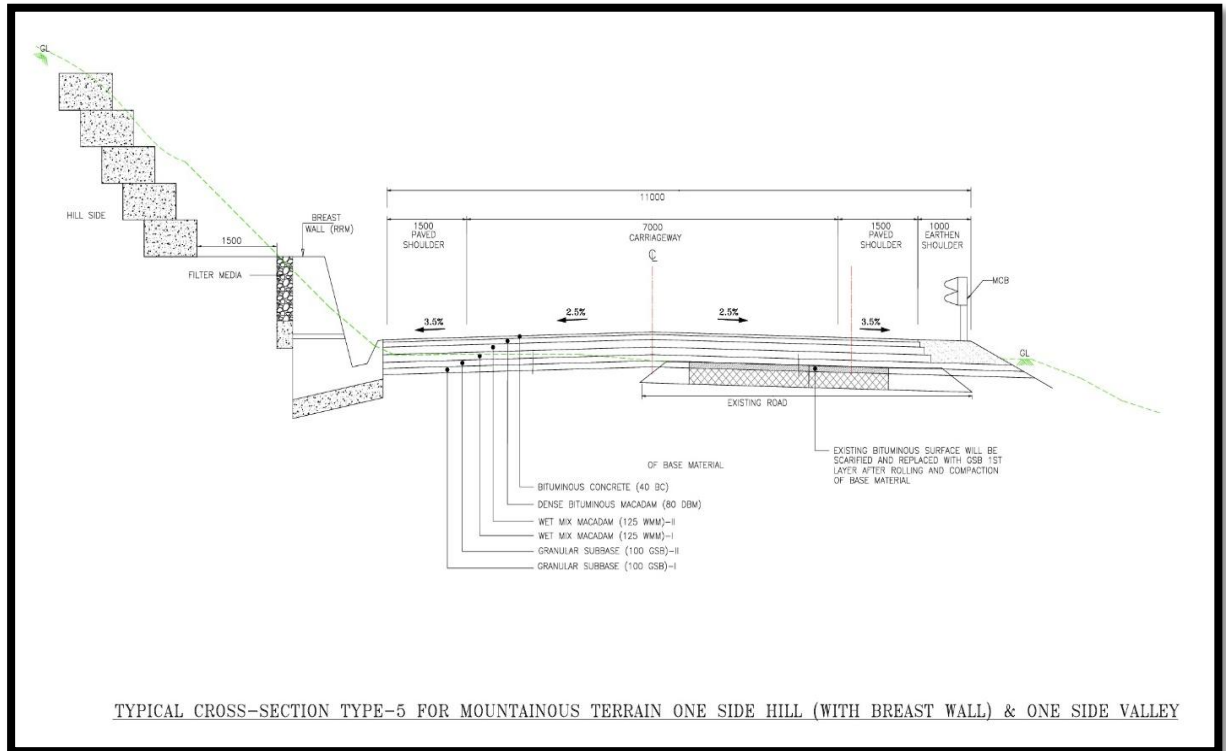
Sr. No.	Design Chainage		Length (Km)	TCS Type	Remarks
	From (Km)	To (Km)			
71	15.055	16.300	1.245	1	One side Hill & One side Valley (Breast Wall and Gabion Box Protection on hill side)
72	16.300	16.700	0.400	6	Realignment
73	16.700	16.990	0.290	5	One side Hill & One side Valley (Breast Wall and Gabion Box Protection on hill side)
Total Length			16.990		

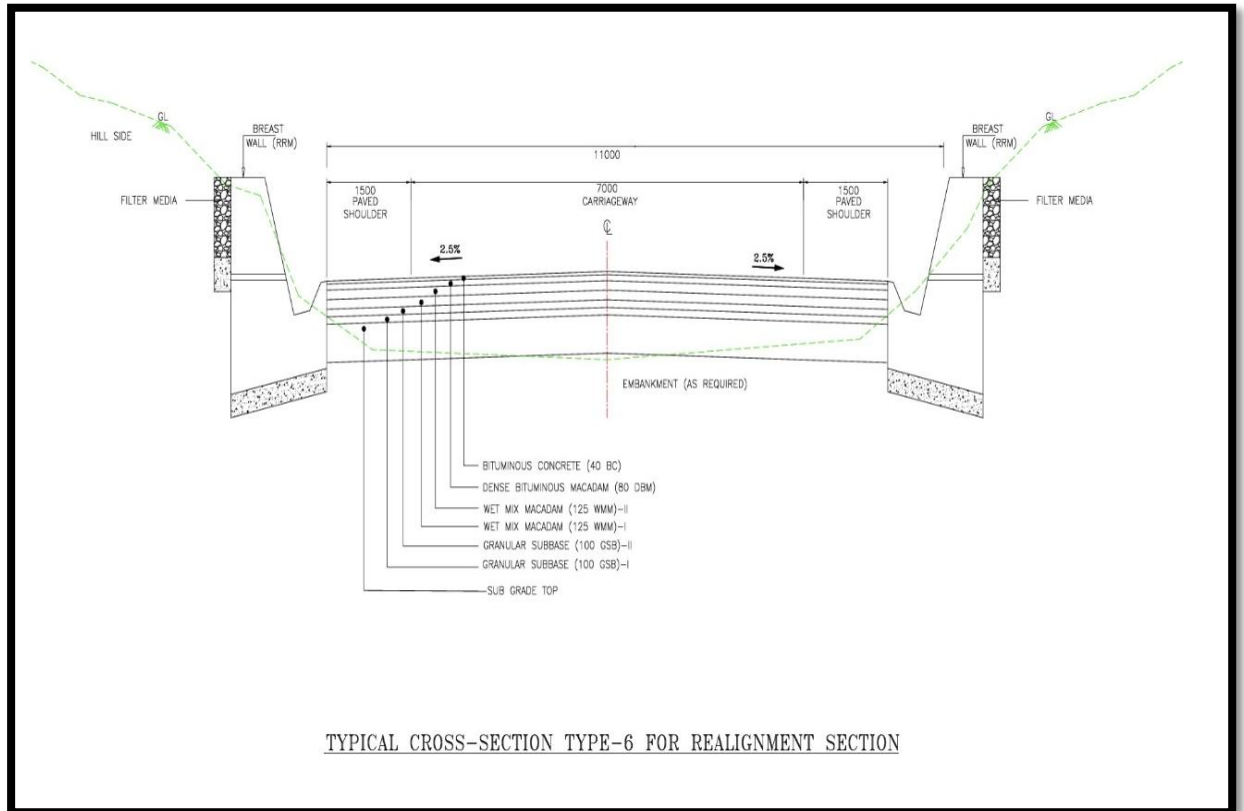












SCHEDULE - C
(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

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

- (a) roadside furniture;
- (b) pedestrian facilities;
- (c) bus-bays and bus shelters;

2 Description of Project Facilities

Each of the Project Facilities is described below:

S. No.	Project Facility	Location	Design Requirements	Other essential details
1	Bus bays	7.890		LHS
2		8.210		RHS
3		15.125		LHS
4		15.300		RHS

Note: Provide adequate details of each Project Facility to ensure their design and completion in accordance with the project-specific requirements and the provisions of the Manual.

(a) Road side furniture

The roadside furniture shall include :

i. Traffic Signs

Traffic signs include roadside signs ,overhead signs and kerb mounted signs along the entire Project highway

ii. Pavement Markings

Pavement marking shall cover road marking for the entire Project highway

iii. Crash barrier

Provide W-beam crash barrier along the Project highway at the location as suggested in schedule D.

iv. Delineators

For Entire Project highway at the location as suggested in applicable manual.

v. Boundary Stones

For Entire Project highway

(b) Location of Pedestrian facilities:

The Pedestrian facilities shall include the Provision of the

i Pedestrian guard rail : Provide Pedestrian guard rail at each bus stop locations

ii Pedestrian crossing: Provide pedestrian crossing facilities on service roads

(c) others to be specified**1) Highway Lighting**

Lighting shall be provide at below mentioned location

(i) Approaches to bridges, Built up Areas, Bus stop and as per schedule D(IRC:SP 73:2015, IRC: SP 48 :1998)

(II)High mast lighting shall be provide at all Major junctions.

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:

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 (IRC:SP:73-2015) and Hill Road Manual (IRC:SP: 48-1998), referred to as the Manual, and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2 Deviations from the Specifications and Standards

- 2.1 The terms "Concessionaire", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively.
- 2.2 Notwithstanding anything to the contrary contained in Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:

Note 1: Deviations from the aforesaid Specifications and Standards shall be listed out here. Such deviations shall be specified only if they are considered essential in view of project-specific requirements.

SR. No	Item	Provisions			Deviation								
1	Design Speed	For Mountainous Terrain Ruling /Min Speed is 50 km/h			Stretch		Speed (kmph)						
					Design Chainage								
					From (Km)	To (Km)							
							0.094	0.126	45				
							0.812	0.912	45				
							0.971	1.067	45				
							9.224	9.452	45				
							10.312	10.469	45				
2	Radius of Curve	<table><tr><td>Nature of Terrain</td><td>Desirable Minimum Radius</td><td>Absolute Minimum Radius</td></tr><tr><td>Mountainous terrain</td><td>150m</td><td>75m</td></tr></table>			Nature of Terrain	Desirable Minimum Radius	Absolute Minimum Radius	Mountainous terrain	150m	75m	Stretch		Type of Deficiency
					Nature of Terrain	Desirable Minimum Radius	Absolute Minimum Radius						
					Mountainous terrain	150m	75m						
					Design Chainage								
					From (Km)	To (Km)							
							0.094	0.126	Radius of 80 m				
							0.167	0.301	Radius of 100 m				
							0.379	0.444	Radius of 100 m				
							0.812	0.912	Radius of 80 m				
							0.971	1.067	Radius of 80 m				
							2.628	2.697	Radius of 100 m				
							6.342	6.625	Radius of 100 m				
							8.059	8.093	Radius of 100 m				
							8.152	8.190	Radius of 100 m				
							8.252	8.398	Radius of 125 m				

			9.224	9.452	Radius of 80 m	
			9.966	10.144	Radius of 100 m	
			10.312	10.469	Radius of 80 m	
			10.670	10.856	Radius of 100 m	
			12.167	12.226	Radius of 100 m	
			14.770	14.930	Radius of 100 m	
			15.165	15.233	Radius of 100 m	
			15.878	15.970	Radius of 100 m	
			16.445	16.572	Radius of 100 m	

SCHEDULE - E
(See Clauses 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1 Maintenance Requirements

- 1.1 The Contractor shall, at all times maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.
- 1.2 The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.
- 1.3 All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

2 Repair/rectification of Defects and deficiencies

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

3 Other Defects and deficiencies

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

4 Extension of time limit

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

5 Emergency repairs/restoration

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

6 Daily inspection by the Contractor

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

7. Pre-monsoon inspection / Post-monsoon inspection

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

8. Repairs on account of natural calamities

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

Annex - I
(Schedule-E)

Repair/rectification of Defects and deficiencies

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

Nature of Defect or deficiency		Time limit for repair/rectification
ROADS		
(a)	Carriageway and paved shoulders	
(i)	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days
(ii)	Roughness value exceeding 2,200 mm in a stretch of 1 km (as measured by a calibrated bump integrator)	120 (one hundred and twenty) days
(iii)	Pot holes	24 hours
(iv)	Any cracks in road surface	15 (fifteen) days
(v)	Any depressions, rutting exceeding 10 mm in road surface	30 (thirty) days
(vi)	Bleeding/skidding	7 (seven) days
(vii)	Any other defect/distress on the road	15 (fifteen) days
(viii)	Damage to pavement edges	15 (fifteen) days
(ix)	Removal of debris, dead animals	6 hours
(b)	Granular earth shoulders, side slopes, drains and culverts	
(i)	Variation by more than 1 % in the prescribed slope of camber/cross fall (shall not be less than the camber on the main carriageway)	7 (seven) days

Nature of Defect or deficiency		Time limit for repair/rectification
(ii)	Edge drop at shoulders exceeding 40 mm	7 (seven) days
(iii)	Variation by more than 15% in the prescribed side (embankment) slopes	30 (thirty) days
(iv)	Rain cuts/gullies in slope	7 (seven) days
(v)	Damage to or silting of culverts and side drains	7 (seven) days
(vi)	Desilting of drains in urban/semi-urban areas	24 hours
(vii)	Railing, parapets, crash barriers	7 (seven) days (Restore immediately if causing safety hazard)
(c)	Road side furniture including road sign and pavement marking	
(i)	Damage to shape or position, poor visibility or loss of retro-reflectivity	48 hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required/Once every year
(iii)	Damaged/missing road signs requiring replacement	7 (seven) days
(iv)	Damage to road mark ups	7 (seven) days
(d)	Road lighting	
(i)	Any major failure of the system	24 hours
(ii)	Faults and minor failures	8 hours
(e)	Trees and plantation	
(i)	Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs	24 hours
(ii)	Removal of fallen trees from carriageway	4 hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment

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

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

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

SCHEDULE - F
(See Clause 3.1.7(a))

APPLICABLE PERMITS

1 Applicable Permits

- 1.1 The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:
- (a) Permission of the State Government for extraction of boulders from quarry;
 - (b) Permission of Village Panchayats and Pollution Control Board for installation of crushers;
 - (c) Licence for use of explosives;
 - (d) Permission of the State Government for drawing water from river/reservoir;
 - (e) Licence from inspector of factories or other competent Authority for setting up batching plant;
 - (f) Clearance of Pollution Control Board for setting up batching plant;
 - (g) Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant;
 - (h) Permission of Village Panchayats and State Government for borrow earth; and
 - (i) Any other permits or clearances required under Applicable Laws.
- 1.2 Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority in accordance with the provisions of this Agreement.

SCHEDULE – G

(See Clauses 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE

Annex-I

(See Clause 7.1.1)

[Performance Security/Additional Performance Security]

[DG(RD)&SS,

Ministry of Road Transport & Highways

Transport Bhawan, New Delhi]

WHEREAS:

- (A) _____ [name and address of contractor] (hereinafter called the “**Contractor**”) and [name and address of the authority], (hereinafter called the “**Authority**”) have entered into an agreement (hereinafter called the “**Agreement**”) for the construction of the ***** section of [National Highway No. **] on Engineering, Procurement and Construction (the “**EPC**”) basis, subject to and in accordance with the provisions of the Agreement
- (B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Construction Period/ Defects Liability Period and Maintenance Period} (as defined in the Agreement) in a sum of Rs..... cr. (Rupees crore) (the “**Guarantee Amount**”).
- (C) We, through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (*hereinafter called the “**Guarantee**”*) by way of Performance Security.

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

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

2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways Authority of India], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.
3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank

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

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

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)

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

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

[DG(RD)&SS,

Ministry of Road Transport & Highways

Transport Bhawan, New Delhi]

WHEREAS:

- (A) [name and address of contractor] (hereinafter called the “**Contractor**”) has executed an agreement (hereinafter called the “**Agreement**”) with the [name and address of the authority], (hereinafter called the “**Authority**”) for the construction of the **2 Lane with Paved Shoulder Chenani – Sudhmahadev section of NH-244 (Old NH-1B)-Phase-I in the state of Jammu and Kashmir** Engineering, Procurement and Construction (the “**EPC**”) basis, subject to and in accordance with the provisions of the Agreement.
- (B) In accordance with Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called the “**Retention Money**”) after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.
- (C) We, through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (hereinafter called the “**Guarantee**”) for the amount of Rs. ----- cr. (Rs.-----crore) (the “**Guarantee Amount**”).

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

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

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

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Retention Money and any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Retention Money.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of the Completion Certificate specified in Clause 12.4 of the Agreement.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the

undersigned has full powers to do so on behalf of the Bank.

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

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

Form for Guarantee for Advance Payment

[DG(RD)&SS,

Ministry of Road Transport & Highways
Transport Bhawan, New Delhi]

WHEREAS:

- (A) [name and address of contractor] (hereinafter called the “**Contractor**”) has executed an agreement (hereinafter called the “**Agreement**”) with the [name and address of the authority], (hereinafter called the “**Authority**”) for the construction of the **2 Lane with Paved Shoulder Chenani – Sudhmahadev section of NH-244 (Old NH-1B)-Phase-I in the state of Jammu and Kashmir** on Engineering, Procurement and Construction (the “**EPC**”) basis, subject to and in accordance with the provisions of the Agreement
- (B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest bearing (@ Bank Rate) advance payment (herein after called “**Advance Payment**”) equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second} installment of the Advance Payment is Rs. ----- cr. (Rupees ----- crore) and the amount of this Guarantee is Rs. ----- cr. (Rupees ----- crore) (the “**Guarantee Amount**”)§.
- (C) We, through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (*hereinafter called the “Guarantee”*) for the Guarantee Amount.

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and

§ The Guarantee Amount should be equivalent to 110% of the value of the applicable instalment.

without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways Authority of India], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the instalment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.
3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Advance Payment.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect on ****.^{\$} Unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, the Bank shall be discharged from its liabilities hereunder.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

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

(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 Clauses 10.1.4 and 19.3)

Contract Price Weightages

- 1.1 The Contract Price for this Agreement is Rs. *****
- 1.2 Proportions of the Contract Price for different stages of Construction of the Project Highway shall be as specified below:

Item	Weightage	Stage for Payment	Percentage weightage
1	2	3	4
Site Clearance	0.50%	Cutting of trees	9.74%
		Clearing and grubbing road land	11.25%
		Dismantling of existing bituminous surface	10.89%
		Dismantling of kilometer stone	0.10%
		Dismantling of existing structures	63.03%

Road works including culverts, minor bridges, underpasses, overpasses, approaches to ROB/RUB/ Major Bridges/ Structures (but excluding service roads)	46.15%	A- Widening and strengthening of existing road	
		(1) Earthwork up to top of the sub-grade	22.82%
		(2) Granular work (sub- base, base, shoulders)	11.92%
		(3) Dense Bituminous Macadam (DBM)	8.47%
		(4) Bituminous Concrete	4.59%
		B- New 2-lane realignment/bypass	
		(1) Earthwork up to top of the sub-grade	8.49%
		(2) Granular work (sub- base, base, shoulders)	5.66%
		(3) Dense Bituminous Macadam (DBM)	4.26%
		(4) Bituminous Concrete	2.31%
		C- New culverts, minor bridges, underpasses, overpasses on existing road, realignments, bypasses:	

		(1) Culverts (2) Minor bridges	20.91% 10.58%
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Major Bridge works and ROB/RUB	26.13%	C- New Major Bridges (1) Foundation (2) Sub-structure (3) Super-structure (including crash barriers etc. complete) (4) Approaches (excluding Retaining Wall) (5) Retaining Wall	35% 25% 40% [**] [**]
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Other works	27.22%	(i) Road side drains	2.64%
		(ii) Road signs, markings, km stones, safety devices,	5.67%
		(iii) Project facilities	0.55%
		(iv) Other items	
		(Major Junction, Minor Junction, Miscellaneous)	1.99%
		(v) Protection works (88.19%)	
		a) Crash Barrier	7.37%
		b) Breast Wall	54.34%
		c) Gabion Wall	5.93%
		d) RE Wall	26.26%
		e) Boulder Pitching for High Embankment	6.01%
		f) Energy Dissipation Basin	0.09%
		(vi) Safety and traffic management during construction	0.96 %

Note: The above list is illustrative and may require modification as per the scope of the work.

1.3 Procedure of estimating the value of work done

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

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

Table 1.3.1

Stage of Payment	Percentage - weightage	Payment Procedure
Site Clearance (0.50%)		
Cutting of trees	9.74%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length. @
Clearing and grubbing road land	11.25%	
Dismantling of existing bituminous surface	10.89%	
Dismantling of kilometre stone	0.10%	
Dismantling of existing structures	68.09%	
A-Widening and strengthening		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full
(1) Earthwork up to top of the sub-grade	22.82%	
(2) Granular work (sub-base, base, shoulders)	11.92%	
(3) Dense Bituminous Macadam(DBM)	8.47%	
(4) Bituminous Concrete (BC)	4.59%	
B- New 2-lane realignment, bypass		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full
(1) Earthwork up to top of the sub-grade	8.49%	
(2) Granular work (sub-base, base, shoulders)	5.66%	

Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir

Stage of Payment	Percentage - weightage	Payment Procedure
(3) Dense Bituminous Macadam (DBM)	4.26%	length or 5 (five) km length.
(4) Bituminous Concrete (BC)	2.31%	
C- New culverts, minor bridges, underpasses, overpasses on existing road, realignments, bypasses:		
(1) Culverts	20.91%	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of five culverts.
(2) Minor bridges	10.58%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of a minor bridge

@. 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:

$$\text{Cost per km} = P \times \text{weightage for road work} \times \text{weightage for bituminous work} \times (1/L)$$

Where P= Contract Price

L = Total length in km

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

1.3.2 Major Bridge works and ROB/RUB.

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

Table 1.3.2

1.3.3 Structures

Procedure for estimating the value of structure work shall be as stated in table 1.3.3:

Table 1.3.3

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) Road side drains	2.64%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 % (ten per cent) of the total length.
(ii) Road signs, markings, km stones, safety devices, ...	5.67%	

Stage of Payment	Weightage	Payment Procedure
(iii) Project Facilities a) Bus bays	0.55%	Payment shall be made on pro rata basis for completed facilities.
(iv) Other items <ul style="list-style-type: none"> • (Major Junction • Minor Junction • Miscellaneous) 	1.99%	Payment shall be made for completed items.
		Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(v) Protection works a) Crash Barrier b) Breast Wall c) Gabion Wall d) RE Wall e) Boulder Pitching for high Embankment f) Energy Dissipation Basin	88.19% 7.37% 54.34% 5.93% 26.26% 6.01% 0.09%	

(vi) Safety and traffic management during construction	0.96%	Payment shall be made on prorate basis every six months.
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2. Procedure for payment for Maintenance

- 2.1 The cost for maintenance shall be as stated in Clause 14.1.1.
- 2.2 Payment for Maintenance shall be made in quarterly instalments in accordance with the provisions of Clause 19.7.

SCHEDULE - I
(See Clause 10.2.4)

DRAWINGS

1 Drawings

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

2 Additional Drawings

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

Annex - I
(Schedule - I)

List of Drawings

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

SCHEDULE - J
(See Clause 10.3.2)

PROJECT COMPLETION SCHEDULE

1 Project Completion Schedule

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

2 Project Milestone-I

- 2.1 Project Milestone-I shall occur on the date falling on the 180th (one hundred and eightieth) day from the Appointed Date (the “**Project Milestone-I**”).
- 2.2 Prior to the occurrence of Project Milestone-I, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 10% (ten per cent) of the Contract Price.

3 Project Milestone-II

- 3.1 Project Milestone-II shall occur on the date falling on the 365th (three hundred and sixty fifth) day from the Appointed Date (the “**Project Milestone-II**”).
- 3.2 Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 30% (thirty per cent) of the Contract Price.

4 Project Milestone-III

- 4.1 Project Milestone-III shall occur on the date falling on the [550th (five hundred and fiftieth)] day from the Appointed Date (the “**Project Milestone-III**”).
- 4.2 Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 60% (sixty per cent) of the Contract Price.

5 Scheduled Completion Date

- 5.1 The Scheduled Completion Date shall occur on the 730th (seven hundred and thirty)] day from the Appointed Date.
- 5.2 On or before the Scheduled Completion Date, the Contractor shall have completed construction in accordance with this Agreement.

6 Extension of time

Upon extension of any or all of the aforesaid Project Milestones or the Scheduled Completion Date, as the case may be, under and in accordance with the provisions of this Agreement, the Project Completion Schedule shall be deemed to have been amended accordingly.

SCHEDULE - K

(See Clause 12.1.2)

Tests on Completion

1 Schedule for Tests

- 1.1 The Contractor shall, no later than 30 (thirty) days prior to the likely completion of construction, notify the Authority's Engineer and the Authority of its intent to subject the Project Highway to Tests, and no later than 10 (ten) days prior to the actual date of Tests, furnish to the Authority's Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Works.
- 1.2 The Contractor shall notify the Authority's Engineer of its readiness to subject the Project Highway to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule-K.

2 Tests

- 2.1 Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include [***].
- 2.2 Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometre.
- 2.3 Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to load testing.
- 2.4 Other tests: The Authority's Engineer may require the Contractor to carry out

or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards.

- 2.5 Environmental audit: The Authority's Engineer shall carry out a check to determine conformity of the Project Highway with the environmental requirements set forth in Applicable Laws and Applicable Permits.
- 2.6 Safety Audit: The Authority's Engineer shall carry out, or cause to be carried out, a safety audit to determine conformity of the Project Highway with the safety requirements and Good Industry Practice.

3 Agency for conducting Tests

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

4 Completion Certificate

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

SCHEDULE - L
(See Clause 12.2 and 12.4)

PROVISIONAL CERTIFICATE

- 1 I, (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated (the "**Agreement**"), for construction of the **2 Lane with Paved Shoulder Chenani – Sudhmahadev section of NH-244 (Old NH-1B)-Phase-I in the state of Jammu and Kashmir** (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been undertaken to determine compliance of the Project Highway with the provisions of the Agreement.
- 2 Works that are incomplete on account of Time Extension have been specified in the Punch List appended hereto, and the Contractor has agreed and accepted that it shall complete all such works in the time and manner set forth in the Agreement. In addition, certain minor works are incomplete and these are not likely to cause material inconvenience to the Users of the Project Highway or affect their safety. The Contractor has agreed and accepted that as a condition of this Provisional Certificate, it shall complete such minor works within 30 (thirty) days hereof. These minor works have also been specified in the aforesaid Punch List.
- 3 In view of the foregoing, I am satisfied that the Project Highway from km 0.000 to km 16.990 can be safely and reliably placed in service of the Users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into operation on this the day of 20.....

ACCEPTED, SIGNED, SEALED

SIGNED, SEALED AND

AND DELIVERED

DELIVERED

For and on behalf of
CONTRACTOR by:

For and on behalf of
Authority's ENGINEER by:

(Signature)

(Signature)

Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir

COMPLETION CERTIFICATE

- 1 I, (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated (the "**Agreement**"), for construction of **2 Lane with Paved Shoulder Chenani – Sudhmahadev section of NH-244 (Old NH-1B)-Phase-I in the state of Jammu and Kashmir** (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of

the Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

SCHEDULE - M
(See Clauses 14.6, 15.2 and 19.7)

PAYMENT REDUCTION FOR NON-COMPLIANCE

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

- 1.1 Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.
- 1.2 Any deduction made on account of non-compliance with the Maintenance Requirements shall not be paid even after compliance subsequently. The deductions shall continue to be made every month until compliance is done.
- 1.3 The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph 2.

2. Percentage reductions in lump sum payments

- 2.1 The following percentages shall govern the payment reduction:

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

(i)	Desilting, cleaning, vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
S. No.	Item/Defect/Deficiency	Percentage
(ii)	Any Defects in superstructures, bearings and sub-structures	10%
(iii)	Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers	5%
(d)	Roadside Drains	
(i)	Cleaning and repair of drains	5%
(e)	Road Furniture	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5 th km stones	5%
(f)	Miscellaneous Items	
(i)	Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	Defects in Other Project Facilities	5%

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

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

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

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

L1 = Non-complying length

L = Total length of the road,

R = Reduction (the amount to be deducted for non compliance for a

particular item/Defect/deficiency

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

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

SCHEDULE - N
(See Clause 18.1.1)

SELECTION OF AUTHORITY'S ENGINEER

1 Selection of Authority's Engineer

- 1.1 The provisions of the Model Request for Proposal for Selection of Technical Consultants, issued by the Ministry of Finance in May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Authority's Engineer.
- 1.2 In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule-N.

2 Terms of Reference

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

3 Appointment of Government entity as Authority's Engineer

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

Annex – I
(Schedule - N)

TERMS OF REFERENCE FOR AUTHORITY’S ENGINEER

1 Scope

- 1.1 These Terms of Reference (the “**TOR**”) for the Authority’s Engineer are being specified pursuant to the EPC Agreement dated (the “**Agreement**”), which has been entered into between the [name and address of the Authority] (the “**Authority**”) and (the “**Contractor**”) for **Construction of 2 Lane with Paved Shoulder Chenani – Sudhmahadev section of NH-244 (Old NH-1B)-Phase-I in the state of Jammu and Kashmir** on Engineering, Procurement, Construction (EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.
- 1.2 The TOR shall apply to construction and maintenance of the Project Highway.

2 Definitions and interpretation

- 2.1 The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.
- 2.2 References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.
- 2.3 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, *mutatis mutandis*, to this TOR.

3. General

- 3.1 The Authority’s Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.
- 3.2 The Authority’s Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:
- (a) any Time Extension;
 - (b) any additional cost to be paid by the Authority to the Contractor;

Widening and upgradation to 2 lane with paved shoulder configuration and geometric improvement from km 0.000 to km 16.990 on Chenani – Sudhmahadev section of NH-244 in the State of Jammu & Kashmir

- (c) the Termination Payment; or
 - (d) any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs. 5,000,000 (Rs. fifty lakh).
- 3.3 The Authority's Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.
- 3.4 The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2.
- 3.5 The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.
- 3.6 In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.
- 4 Construction Period**
- 4.1 During the Construction Period, the Authority's Engineer shall review the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1.6. The Authority's Engineer shall complete such review and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.
- 4.2 The Authority's Engineer shall review any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.

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- 4.3 The Authority's Engineer shall review the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty-one) days stating the modifications, if any, required thereto.
- 4.4 The Authority's Engineer shall complete the review of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.
- 4.5 The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.
- 4.6 The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.
- 4.7 The Authority's Engineer shall inspect the Construction Works and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.
- 4.8 The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.
- 4.9 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4.9, the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.
- 4.10 The Authority's Engineer shall test check at least 20 (twenty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.
- 4.11 The timing of tests referred to in Paragraph 4.9, and the criteria for

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

- 4.12 In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.
- 4.13 The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.
- 4.14 In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.
- 4.15 Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.4.
- 4.16 Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.
- 4.17 In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.
- 4.18 The Authority's Engineer shall carry out, or cause to be carried out, all the

Tests specified in Schedule-K and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph 4.18 and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5. Maintenance Period

- 5.1 The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.
- 5.2 The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.
- 5.3 The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.
- 5.4 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule-E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.
- 5.5 The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project Highway for undertaking maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6 Determination of costs and time

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

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

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

7. Payments

7.1 The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2.4 (d).

7.2 Authority's Engineer shall -

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

(b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause 19.10.

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

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

8. Other duties and functions

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

9 Miscellaneous

- 9.1 A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.
- 9.2 The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including „as-built“ Drawings, and keep them in its safe custody.
- 9.3 Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.
- 9.4 The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.
- 9.5 The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

SCHEDULE - O

(See Clauses 19.4.1, 19.6.1, and 19.8.1)

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

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

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

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

3. Contractor's claim for Damages

Note: The Contractor shall submit its claims in a form acceptable to the Authority.

SCHEDULE - P
(See Clause 20.1)

INSURANCE

1. Insurance during Construction Period

- 1.1 The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the Completion Certificate, the following insurances for any loss or damage occurring on account of Non Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:
- (a) insurance of Works, Plant and Materials and an additional sum of [15 (fifteen)] per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and
 - (b) insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.
- 1.2 The insurance under paragraph 1.1 (a) and (b) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

The Contractor shall effect and maintain insurance cover for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3. Insurance against injury to persons and damage to property

- 3.1 The Contractor shall insure against its liability for any loss, damage, death or bodily injury, or damage to any property (except things insured under Paragraphs 1 and 2 of this Schedule or to any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this Agreement. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.
- The insurance cover shall be not less than: Rs. 20000000.00

- 3.2 The insurance shall be extended to cover liability for all loss and damage to the Authority's property arising out of the Contractor's performance of this Agreement excluding:
- (a) the Authority's right to have the construction works executed on, over, under, in or through any land, and to occupy this land for the Works; and
 - (b) damage which is an unavoidable result of the Contractor's obligations to execute the Works.

4. **Insurance to be in joint names**

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

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