Schedules

Schedules A

Schedule-A

(See Clauses 2.1 and 8.1)

Site of the Project

1 The Site

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

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

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

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

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

Annex – I

(Schedule-A)

Site

[Note: Through suitable drawings and description in words, the land, buildings, structures and road works comprising the Site shall be specified briefly but precisely in this Annex-I. All the chainages/ location referred to in Annex-I to Schedule-A shall be existing chainages.]

1. Site-

The project site comprises of NH-321G starting from ex. Km 0+00 at junction with NH-509 at Tedhi Baghia in Agra and ending on ex. Km 52+525 at Nuhkhas of Etah district. The existing pavement is flexible with 5.5m to 7m carriage width. Length of the existing road is 52.525 km.

2. Land-

The Site of the Project Highway comprises the land.

PKG-1 as described in between existing chainage Km 0+000 to Km 52+525. The land, carriageway and structures comprising the Site are described below.

S.No.	Existing Chainage		Length (Km)	Design Chainage		Length (Km)	Existing RoW (mt)	Remark
	From	To		From	To			
1	0	1850	1850	0	1800	1800	10 to 24	
2	1850	2450	600	1800	2400	600	10 to 24	
3	2450	3650	1200	2400	3600	1200	10 to 24	
4	3650	4950	1300	3600	4900	1300	10 to 24	
5	4950	5850	900	4900	5800	900	10 to 24	
6	5850	6350	500	5800	6300	500	10 to 24	
7	6350	8150	1800	6300	8100	1800	10 to 24	
8	8150	9800	1650	8100	9700	1600	10 to 24	
9	9800	10200	400	9700	10100	400	10 to 24	
10	10200	10500	300	10100	10450	350	10 to 24	
11	10500	10800	300	10450	10750	300	10 to 24	
12	10800	12180	1380	10750	12100	1350	10 to 24	
13	12180	13400	1220	12100	13300	1200	10 to 24	
14	13400	13700	300	13300	13600	300	10 to 24	
15	13700	15900	2200	13600	15800	2200	10 to 24	
16	15900	17500	1600	15800	17450	1650	10 to 24	
17	17500	18300	800	17450	18200	750	10 to 24	
18	18300	21900	3600	18200	21800	3600	10 to 24	
19	21900	22400	500	21800	22300	500	10 to 24	
20	22400	22800	400	22300	22700	400	10 to 24	
21	22800	23200	400	22700	23100	400	10 to 24	
22	23200	24050	850	23100	23950	850	10 to 24	
23	24050	24600	550	23950	24500	550	10 to 24	
24	24600	26000	1400	24500	25900	1400	10 to 24	

S.No.	Existing Chainage		Length (Km)	Design Chainage		Length (Km)	Existing RoW (mt)	Remark
	From	To		From	To			
25	26000	26700	700	25900	26600	700	10 to 24	
26	26700	26850	150	26600	26790	190	10 to 24	
27	26850	27700	850	26790	27600	810	10 to 24	
28	27700	28300	600	27600	28200	600	10 to 24	
29	28300	30300	2000	28200	30200	2000	10 to 24	
30	30300	30700	400	30200	30600	400	10 to 24	
31	30700	32600	1900	30600	32500	1900	10 to 24	
32	32600	33300	700	32500	33200	700	10 to 24	
33	33300	34800	1500	33200	34700	1500	10 to 24	
34	34800	35700	900	34700	35600	900	10 to 24	
35	35700	36050	350	35600	35950	350	10 to 24	
36	36050	37900	1850	35950	37800	1850	10 to 24	Jalesar Bypass
37	37900	38350	450	37800	38300	500	10 to 24	
38	38350	38850	500	38300	38800	500	10 to 24	
39	38850	39300	450	38800	39300	500	10 to 24	
40	39300	41450	2150	39300	40600	1300	10 to 24	Realignment
41	41450	41950	500	40600	41100	500	10 to 24	
42	41950	42450	500	41100	41550	450	10 to 24	Realignment
43	42450	44650	2200	41550	43770	2220	10 to 24	
44	44650	44900	250	43770	44030	260	10 to 24	Realignment
45	44900	45700	800	44030	44800	770	10 to 24	
46	45700	45900	200	44800	45000	200	10 to 24	
47	45900	46000	100	45000	45100	100	10 to 24	
48	46000	46150	150	45100	45250	150	10 to 24	
49	46150	46750	600	45250	45850	600	10 to 24	Realignment
50	46750	47000	250	45850	46100	250	10 to 24	
51	47000	49900	2900	46100	49000	2900	10 to 24	
52	49900	52525	2625	49000	51600	2600	10 to 24	Nuhkhas Bypass
Total Length			52525	Total Length		51600		

3. Carriageway

The existing carriageway is having flexible pavement width of 5.5m and 7 m width and 1.0m of earthen shoulder.

S.no	Existing Chainage in km		Length (km)	Lane Configuration	Type of Terrain (m)	Remarks
	From	To				
1	0+000	25+500	25.500	Intermediate Lane	Plain	
2	25+500	39+300	13.800	Two Lane	Plain	
3	39+300	52+525	13.225	Intermediate Lane	Plain	
Total Length			**52.525**			

4. Major Bridges

The Site includes the following Major Bridges:

S.No.	Chainage	Type of Structure	Type of Bridge	Span Arrangement (m)	Over All width
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	Super structure			
1	21.550	Open	PSC Girder	10 x 24.0 + 1 x 12.0 + 1 x 41.5 + 1 x 12.0 + 8 x 15.0 + 4 x 24.0	8.45	ROB

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.	Existing Ch.	Type of Bridge	Span Arrangement	Super Structure Type	Substructure
1	8+775	MNB	5 x 6.6	Arch	Wall Type Brick
2	18+215	MNB	1 x 8.40	Solid Slab	Wall Type Brick
3	23+940	MNB	1 x 4.0 + 1 x 3.0 + 1 x 4.0	Solid Slab	Wall Type Brick
4	26+850	MNB	1 x 4.0 + 2 x 3.8	Solid Slab	Wall Type Brick
5	28+210	MNB	2 x 4.0 + 1 x 4.25	Solid Slab	Wall Type Brick
6	36+000	MNB	3 x 9.0	Solid Slab	Circular RCC
7	42+310	MNB	2 x 3.1	Solid Slab	Wall Type Brick
8	48+263	MNB	3 x 3.5	Solid Slab	Wall Type Brick

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)
1	4+730	VOP		

10. Culverts

The Site has the following culverts:

S. No.	Existing chainage	Span Arrangement	Type of Structure	Existing overall width
1	1+335	1x2.0	Slab	11.50
2	2+650	1x0.9	Pipe	11.50
3	4+500	1x0.3	Pipe	11.50
4	5+032	1x0.3	Pipe	11.50
5	5+980	1x3.0	Slab	11.00
6	6+350	1x0.3	Pipe	11.00
7	10+350	1x2.0	Slab	11.00
8	10+515	1x0.9	Pipe	10.15
9	10+770	1x0.3	Pipe	10.28
10	11+240	1x0.9	Pipe	10.28
11	11+530	1x0.3	Pipe	10.00
12	11+850	1x0.9	Pipe	10.10
13	13+475	1x0.9	Pipe	10.20
14	14+685	1x0.9	Pipe	10.20
15	14+880	1x0.3	Pipe	10.20
16	14+980	1x0.9	Pipe	10.20
17	15+225	1x0.9	Pipe	10.20
18	15+355	1x0.3	Pipe	10.80
19	16+055	1x0.3	Pipe	10.80
20	16+810	1x0.9	Pipe	11.00
21	17+360	1x0.3	Pipe	11.00
22	17+600	1x0.3	Pipe	11.00
23	18+060	1x0.9	Pipe	11.00
24	18+370	1x0.9	Pipe	11.00
25	20+155	1x0.9	Pipe	11.00
26	20+430	1x0.9	Pipe	11.00

S. No.	Existing chainage	Span Arrangement	Type of Structure	Existing overall width
27	20+650	1x0.9	Pipe	11.00
28	20+920	1x0.9	Pipe	11.00
29	22+205	1x0.9	Pipe	11.00
30	22+670	1x0.6	Pipe	11.00
31	22+800	1x0.6	Pipe	11.00
32	22+935	1x0.9	Pipe	10.05
33	23+175	1x0.9	Pipe	10.50
34	23+250	1x0.3	Pipe	10.50
35	24+195	1x0.9	Pipe	10.50
36	24+315	1x0.3	Pipe	10.50
37	24+825	1x0.3	Pipe	10.60
38	25+105	1x3.2	Slab	11.00
39	25+575	1x0.3	Pipe	10.00
40	26+790	1x0.3	Pipe	11.00
41	27+815	1x0.6	Pipe	10.50
42	29+100	1x0.3	Pipe	10.50
43	29+160	1x0.6	Pipe	10.50
44	29+260	2x0.8	Pipe	10.10
45	29+410	2x0.6	Pipe	10.20
46	29+675	1x0.9	Pipe	10.10
47	30+120	1x0.3	Pipe	10.10
48	30+535	2x0.6	Pipe	11.70
49	30+800	1x0.6	Pipe	11.70
50	31+130	1X2.5	Slab	11.70
51	31+935	1x0.3	Pipe	11.70
52	33+285	1X5.0	Slab	8.70
53	33+970	1x0.9	Pipe	11.00
54	34+465	1x0.9	Pipe	11.00
55	34+750	1x0.9	Pipe	11.50
56	34+900	1x0.3	Pipe	11.50
57	35+275	1x0.3	Pipe	11.50
58	35+675	1x1.0	Pipe	10.60
59	36+100	1x0.9	Pipe	15.20
60	37+840	1X2.0	Slab	11.80
61	38+580	1x1.0	Pipe	7.85
62	39+505	1x0.9	Pipe	10.10
63	39+895	1x0.9	Pipe	10.00
64	40+890	1X2.5	Slab	5.50
65	41+700	2x0.9	Arch	5.00
66	42+280	1x0.6	Pipe	5.00
67	43+465	1X0.6	Pipe	5.00
68	43+790	1X0.6	Pipe	10.10

S. No.	Existing chainage	Span Arrangement	Type of Structure	Existing overall width
69	44+845	1X0.6	Pipe	10.00
70	45+765	1X0.6	Pipe	10.00
71	46+230	1X2.0	Slab	9.80
72	46+325	1X2.0	Slab	10.50
73	46+575	1x0.3	Pipe	10.80
74	47+370	1x0.3	Pipe	10.80
75	47+565	1x0.3	Pipe	8.10
76	47+885	1x4.5	Slab	8.30
77	49+515	1X0.9	Pipe	8.30
78	50+380	1X0.9	Pipe	7.95
79	50+750	1x2.0	Slab	10.58
80	51+080	1X0.6	Pipe	8.00
81	51+185	1x2.8	Arch	6.10

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 (Kutcha)
As per site				

14. Major junctions

The details of major junctions are as follows:

S. No.	Existing Ch.	At grade	Separated	Category of Cross Road			
				NH	SH	MDR	Others
1	0+000	At Grade		NH			

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

15. Minor junctions

The details of the minor junctions are as follows:

S. No.	Existing Chainage	Type	Side		Destination
			LHS	RHS	
1	0+260	T		RHS	Tedi Baghia
2	0+310	T		RHS	Gulzar Marg
3	0+400	T		RHS	Tedi Baghia
4	0+490	T	LHS		Moti Lal Yadav Marg
5	0+760	T		RHS	Town
6	0+970	T	LHS		Town
7	1+150	T		RHS	Town
8	1+160	T	LHS		Jalesar Road
9	1+250	Y		RHS	Vidhaya Nagar
10	1+320	Y	LHS		Town
11	1+340	T		RHS	Town
12	1+570	T		RHS	Village Road
13	1+760	T	LHS		Village Road
14	1+820	T	LHS		Village Road
15	2+270	T		RHS	Village Road
16	2+370	T	LHS		Village Road
17	2+700	T		RHS	Village Road
18	3+180	T		RHS	Village Road
19	3+440	T		RHS	Pura Govardhan
20	4+450	T		RHS	Bas Agariya
21	4+600	T	LHS		Bas Inda
22	5+460	T		RHS	Nadau Road
23	5+500	T		RHS	Nadau Road
24	6+900	Y	LHS		Khandauli Etmadpur Road
25	7+420	T	LHS		Mundi Jahangirpur
26	10+320	T		RHS	Village Road
27	11+300	T		RHS	Chirhauli
28	12+580	T		RHS	Garhi
29	12+670	T	LHS		Usmanpur
30	12+920	T	LHS		Usmanpur
31	13+570	T		RHS	
32	13+840	T	LHS		Parihar
33	14+680	T		RHS	Rehtom Road
34	14+850	Y	LHS	RHS	Village Road
35	15+050	T		RHS	Village Road
36	15+620	Y	LHS		Anwal Khera
37	16+140	T		RHS	Village Road
38	16+950	T		RHS	Village Road
39	17+150	T	LHS		Village Road
40	17+640	T	LHS		Village Road
41	18+220	Y	LHS		Khanda
42	18+540	T		RHS	Village Road
43	18+700	T		RHS	Village Road
44	18+850	T	LHS		Khanda
45	19+050	T	LHS		Village Road
46	19+370	T		RHS	Village Road

S. No.	Existing Chainage	Type	Side		Destination
			LHS	RHS	
47	19+880	T		RHS	Biruni
48	20+430	T	LHS		Village Road
49	20+620	T	LHS		Village Road
50	21+100	T		RHS	Village Road
51	21+200	T	LHS		Village Road
52	22+080	T		RHS	Village Road
53	22+170	T	LHS		Village Road
54	22+300	T		RHS	Village Road
55	22+550	T		RHS	Village Road
56	23+000	T		RHS	Village Road
57	23+200	T		RHS	Village Road
58	23+950	Y	LHS		Ahran Drain Road
59	24+200	T	LHS		
60	24+400	T		RHS	Town
61	25+540	T		RHS	Ramnagar
62	25+900	T	LHS		Village Road
63	26+430	T		RHS	Village Road
64	26+480	T	LHS		Mirzapur Sherpur
65	27+880	T	LHS		Town
66	28+200	Y	LHS		Village Road
67	28+220	T		RHS	Bichhpuri
68	30+350	Y	LHS		Village Road
69	31+130	T		RHS	Shahnagar Timarua
70	31+180	T	LHS		Jamon
71	31+890	T		RHS	Village Road
72	32+250	Y		RHS	Village Road
73	33+300	Y	LHS		Naglamitan
74	33+310	Y		RHS	Arazibirhara
75	33+610	T		RHS	Gudau
76	35+430	T	LHS		Village Road
77	35+550	T		RHS	Kosma
78	35+620	Y	LHS		Jamon
79	35+950	T		RHS	Arabgarh
80	37+250	T		RHS	Railway Station
81	38+210	T	LHS		Jalesar
82	39+300	Y		RHS	Rasidpur
83	39+350	T	LHS		Jalesar
84	40+600	T	LHS		Jalesar
85	44+100	T		RHS	Rajarampur
86	46+600	T		RHS	Salamai
87	46+960	T	LHS		Rejua
88	47+500	T		RHS	Salamai
89	48+250	T		RHS	Walidad Pur
90	49+460	T	LHS		Narhuli
91	49+520	T		RHS	Mandanpur

16. Bypasses

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

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

17. Protection work:

The details of the existing metal beam crash barriers are as follows:

S. No.	Section	Length in m	Remarks
Nil			

18. Utilities

Electrical Utilities

The site includes the following electrical utilities: -

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

Sr. No.	Chainage		Length (Km)				Tower				Crossing			
	From	To	132 KV	220 KV	400 KV	765 KV	132 KV	220 KV	400 KV	765 KV	132 KV	220 KV	400 KV	765 KV
1	1+600	1+600					1				1			
2	3+500	3+500									1			
3	4+250	4+250											1	
4	4+650	4+650												1
5	6+350	6+350										1		
6	7+000	7+000									1			
7	8+100	8+100												1
8	12+100	12+100											1	
9	16+500	16+500											1	
10	19+450	19+450									1			
11	21+350	21+350									1			
12	27+750	27+750												1
13	40+350	40+350									1			
14	42+400	42+400												1
15	47+600	47+600											1	
16	47+950	47+950											1	
17	48+350	48+350										1		
	Total										**6**	**2**	**5**	**4**

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

Sr. No.	Chainage		Length (Mtr)			Crossing			Transformer	
	From	To	33KV	11KV	LT	33KV	11KV	LT	Nos	Capacity
1	0+000	1+000	1000	750	-	-	1	-	1	63KVA
									1	160 KVA
									1	400KVA
									1	630KVA
									1	990KVA
2	1+000	2+000	1000	850	-	-	1	-	1	100KVA
3	2+000	3+000	950	850	-	-	1	-	1	250KVA
4	3+000	4+000	300	600	250	1	2	2	-	-
5	4+000	5+000	2000	700	250	-	2	-	1	25KVA
6	5+000	6+000	2000	800	1200	-	3	2	1	250KVA
7	6+000	7+000	1900	1300	250	-	4	1	2	25KVA
									2	16KVA
8	7+000	8+000	1800	1450	750	-	4	1	3	25KVA
									1	63KVA
9	8+000	9+000	2000	1900	80	-	2	1	1	25KVA
									1	100KVA
10	9+000	10+000	200	1500	450	1	2	1	1	25KVA
									2	100KVA
11	10+000	11+000	-	150	400	-	3	1	-	-
12	11+000	12+000	-	100	-	-	-	-	-	-
13	12+000	13+000	-	-	2100	-	2	6	1	25KVA
14	13+000	14+000	-	-	800	1	-	1	-	-
15	14+000	15+000	-	900	1550	-	4	2	7	25KVA
									1	100KVA
									2	250KVA
16	15+000	16+000	-	950	850	-	5	3	2	25KVA
									2	10KVA
									3	16KVA
17	16+000	17+000	-	450	50	-	3	1	2	10KVA
18	17+000	18+000	-	1000	150	-	3	5	7	10KVA
19	18+000	19+000	-	600	250	-	3	1	2	10KVA
20	19+000	20+000	-	1000	-	-	1	-	-	-
21	20+000	21+000	-	1000	-	-	1	-	-	-
22	21+000	22+000	-	100	80	-	3	3	1	25KVA
									3	10KVA
23	22+000	23+000	-	500	260	-	3	3	2	25KVA
									7	10KVA
									1	16KVA
24	23+000	24+000	-	200	-	-	1	-	3	10KVA
25	24+000	25+000	-	350	300	-	2	1	1	25KVA
									1	63KVA

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

Sr. No.	Chainage		Length (Mtr)			Crossing			Transformer	
	From	To	33KV	11KV	LT	33KV	11KV	LT	Nos	Capacity
									1	100KVA
26	25+000	26+000	-	500	350	-	1	2	1	25KVA
									2	16KVA
27	26+000	27+000	-	850	550	-	3	6	2	25KVA
									7	10KVA
28	27+000	28+000	-	-	100	-	1	-	-	-
29	28+000	29+000	-	-	-	-	1	-	-	-
30	29+000	30+000	-	-	50	-	-	-	-	-
31	30+000	31+000	-	400	550	-	1	4	3	25KVA
32	31+000	32+000	-	-	50	-	-	2	-	-
33	32+000	33+000	-	50	50	-	2	1	-	-
34	33+000	34+000	-	550	-	-	3	1	2	25KVA
35	34+000	35+000	-	200	-	-	1	-	-	-
36	35+000	36+000	-	1000	-	-	2	1	2	25KVA
37	36+000	37+000	-	80	-	-	3	-	-	-
38	37+000	38+000	300	200	150	-	4	-	1	100KVA
39	38+000	39+000	500	1550	80	2	2	1	-	-
40	39+000	40+000	-	800	50	4	3	-	-	-
41	40+000	41+000	350	1400	-	-	1	1	-	-
42	41+000	42+000	-	1900	-	-	4	-	1	25KVA
43	42+000	43+000	-	2000	50	-	1	1	-	-
44	43+000	44+000	-	2000	-	-	2	-	-	-
45	44+000	45+000	-	1650	40	-	1	-	3	25KVA
									1	63KVA
46	45+000	46+000	-	1650	50	-	4	1	3	25KVA
									1	63KVA
47	46+000	47+000	-	1900	-	-	-	-	1	10KVA
									1	100KVA
48	47+000	48+000	-	1600	150	-	4	-	-	-
49	48+000	49+000	-	800	-	-	3	-	-	-
50	49+000	50+000	-	-	-	-	2	-	-	-
51	50+000	51+000	-	-	-	-	2	-	-	-
52	51+000	51+600	-	100	-	-	-	-	1	10KVA
Total			**14300**	**39180**	**12290**	**9**	**107**	**56**	**103**	-

(ii) Public Health Utilies (Water/Sewage Pipe Lines)

The site includes the following Public Health Utilities

Sr. No.	Chainage		Length (in Km)				Hand pump	Crossing			
			Water Supply Line		Sewage line			Water Supply Line		Sewage line	
	From	To	With Pumping	With Gravity flow	With Pumping	With Gravity Flow	Nos.	With Pumping	With Gravity Flow	With Pumping	With Gravity Flow
1	00+000	25+400	75mm dia PVC- 302 Mtr 160mm dia PVC- 1624 Mtr 200mm dia PVC- 1560 Mtr 140mm dia PVC- 1500 Mtr Total- 4986 Mtr				78Nos. Hand Pump & 11 Nos. TTSP (10 KL)				
2	25+400	51+600	63mm dia HDPE- 500 Mtr 90mm dia HDPE- 3350 Mtr 110mm dia HDPE-2740 Mtr 140mm dia HDPE-1120 Mtr 200mm dia HDPE-1000 Mtr Total- 8710 Mtr				11 Nos. Hand Pump				

Annex – II

(As per Clause 8.3 (i))

(Schedule-A)

Dates for providing Right of Way of Construction Zone

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

Sl. No	Proposed Chainage		Length (m)	Existing ROW (m)	Proposed ROW (m)	Remarks	Date of providing ROW*
	From (km)	To (km)					
1	2		3	4	5	6	7
(i) Full Right of Way (full width)							
1	26.600	26.790	0.190	-	24	Realignment	**90 % on Appointed Date and balance within 150th (one hundred & fifty) days after the Appointed Date**
2	35.950	37.800	1.850	-	24	Jalesar Bypass	
3	39.300	40.600	1.300	-	24	Realignment	
4	41.100	41.550	0.450	-	24	Realignment	
5	43.770	44.030	0.260	-	24	Realignment	
6	45.250	45.850	0.600	-	24	Realignment	
7	49.000	51.600	2.600	-	24	Nuhkhas Bypass	
	Total Length		**7.250**				
(ii) Part Right of Way (part width)							
(iii) Balance Right of Way (width)							
1	0.000	1.800	1.800	8 to 35	18		
2	1.800	2.400	0.600	8 to 35	24		
3	2.400	3.600	1.200	8 to 35	18		
4	3.600	4.900	1.300	8 to 35	24		
5	4.900	5.800	0.900	8 to 35	18		
6	5.800	6.300	0.500	8 to 35	24		
7	6.300	8.100	1.800	8 to 35	18		
8	8.100	9.700	1.600	8 to 35	24		
9	9.700	10.100	0.400	8 to 35	18		
10	10.100	10.450	0.350	8 to 35	24		
11	10.450	10.750	0.300	8 to 35	18		
12	10.750	12.100	1.350	8 to 35	24		
13	12.100	13.300	1.200	8 to 35	18		
14	13.300	13.600	0.300	8 to 35	24		
15	13.600	15.800	2.200	8 to 35	18		
16	15.800	17.450	1.650	8 to 35	24		
17	17.450	18.200	0.750	8 to 35	18		
18	18.200	21.800	3.600	8 to 35	24		

Sl. No	Proposed Chainage		Length (m)	Existing ROW (m)	Proposed ROW (m)	Remarks	Date of providing ROW*
	From (km)	To (km)					
1	2		3	4	5	6	7
19	21.800	22.300	0.500	8 to 35	18		
20	22.300	22.700	0.400	8 to 35	24		
21	22.700	23.100	0.400	8 to 35	18		
22	23.100	23.950	0.850	8 to 35	24		
23	23.950	24.500	0.550	8 to 35	18		
24	24.500	25.900	1.400	8 to 35	24		
25	25.900	26.600	0.700	8 to 35	18		
26	26.790	27.600	0.810	8 to 35	24		
27	27.600	28.200	0.600	8 to 35	24		
28	28.200	30.200	2.000	8 to 35	24		
29	30.200	30.600	0.400	8 to 35	18		
30	30.600	32.500	1.900	8 to 35	24		
31	32.500	33.200	0.700	8 to 35	24		
32	33.200	34.700	1.500	8 to 35	24		
33	34.700	35.600	0.900	8 to 35	18		
34	35.600	35.950	0.350	8 to 35	24		
35	37.800	38.300	0.500	8 to 35	18		
36	38.300	38.800	0.500	8 to 35	24		
37	38.800	39.300	0.500	8 to 35	18		
38	40.600	41.100	0.500	8 to 35	24		
39	41.550	43.770	2.220	8 to 35	24		
40	44.030	44.800	0.770	8 to 35	24		
41	44.800	45.000	0.200	8 to 35	24		
42	45.000	45.100	0.100	8 to 35	24		
43	45.100	45.250	0.150	8 to 35	24		
44	45.850	46.100	0.250	8 to 35	18		
45	46.100	49.000	2.900	8 to 35	24		
46	**Total Length**		**44.350**				
Total Length of Project			**51.600**				

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

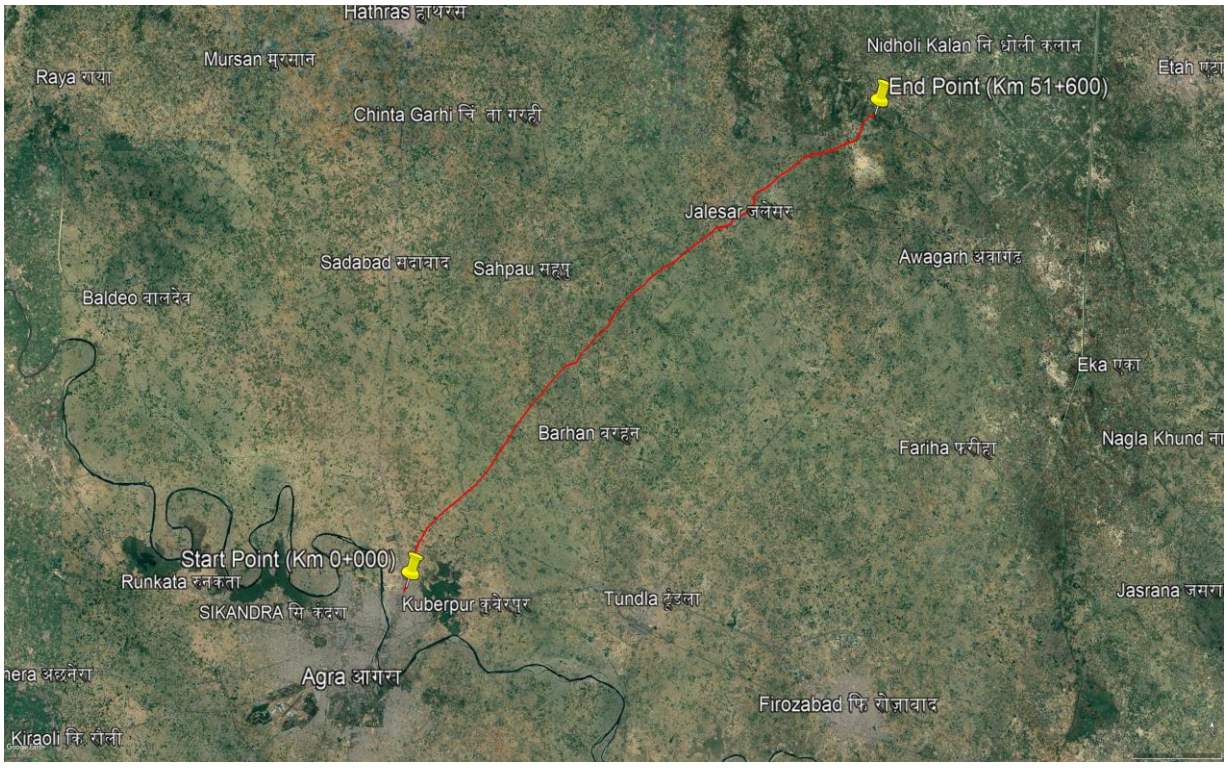
Annex - III

(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:

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



(ii) Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed.

(iii) The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per the relevant specifications/IRC Codes/Manual.

Annex – IV

(Schedule-A)

Environment Clearances

Not required

Schedules B

Schedule - B

(See Clause 2.1)

Development of the Project Highway

1. Development of the Project Highway

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

2. Rehabilitation and augmentation

Rehabilitation and augmentation shall include Two/Four Lane with Paved Shoulder 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][$]

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

Construction of 2/4 lane with paved shoulder from Existing Ch. 0+00 to 52+525 (Design Ch. 0+000 to 51+600) of total length 51.600km. The project road passes through Agra and Etah district of Uttar Pradesh.

1. Widening of the Existing Highway

(i) The Project Highway shall follow the existing alignment unless otherwise specified by the Authority and shown in the alignment plans specified in Annex-III of Schedule-A. The proposed plan & profile, locations of different structures/drains/service & slip road/RE Wall, Chainages of different structures/drains/service & slip road/RE Wall, length of different structures/drains/service & slip road/RE Wall etc. as indicated in the Schedule-A, Schedule-B, Schedule-C & their annexure shall be treated as approximate assessment & as minimum requirement. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for [plain/rolling] terrain to the extent land is available.

(ii) Width of Carriageway

(a) Four-Laning with drain shall be undertaken in built up areas. The carriageway shall be 7x2 (14 m carriageway + 1.75 m drain + 0.5m median) wide in accordance with the typical cross section's drawings.

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

Sr. No.	Design Ch. (Km)		Length (Km)	Remarks
	From	To		
1	0.000	1.800	1.8	TCS 1
2	2.400	3.600	1.2	
3	4.900	8.100	3.2	
4	9.700	10.750	1.05	
5	12.100	15.800	3.7	
6	17.450	18.000	0.55	

[$] The contents of this Annex-I may be modified in accordance with the structure of the Project.

7	21.800	23.100	1.3	
8	23.950	24.500	0.55	
9	25.900	26.600	0.7	
10	30.200	30.600	0.4	
11	34.700	35.600	0.9	
12	37.800	39.300	1.5	
13	45.850	46.100	0.25	

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

2. Geometric Design and General Features

(i) General

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

(ii) Design speed

The design speed shall be the minimum design speed of [80-100 km per hr for plain/ rolling terrain].

(iii) Improvement of the existing road geometrics

In the road sections, where improvement of the existing road geometrics to the prescribed standards is not possible, the existing road geometrics shall be improved as per Section 2 of the Manual IRC: SP 73-2018 and proper road signs and safety measures shall be provided.

(iv) Right of Way

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

(v) Type of shoulders

In built-up sections, footpath cum drain shall be provided in the following stretches:

Sr. No.	Design Ch. (Km)		Length (Km)	Remarks
	From	To		
1	0.000	1.800	1.8	TCS 1
2	2.400	3.600	1.2	
3	4.900	8.100	3.2	
4	9.700	10.750	1.05	
5	12.100	15.800	3.7	
6	17.450	18.000	0.55	
7	21.800	23.100	1.3	
8	23.950	24.500	0.55	
9	25.900	26.600	0.7	
10	30.200	30.600	0.4	
11	34.700	35.600	0.9	
12	37.800	39.300	1.5	

13	45.850	46.100	0.25	

In built-up sections, footpaths cum drains shall be provided as per the given typical cross section in schedule.

In open country, paved shoulders of 1.5 m width shall be provided and balance 1.0m width shall be covered with 150 mm thick compacted layer of granular material shall be provided as per manual.

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

(vi) Lateral and vertical clearances at underpasses

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

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			

(vii) Lateral and vertical clearances at overpasses

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

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			

(viii) Service roads

Service roads shall be constructed at the locations and for the lengths indicated below: [Refer to the provision of relevant Manual and provide details]

Sl No.	**Location of service road** (from km to km)	**Sides**	**Length (km) of service road**
Nil			

(ix) Grade separated structures

Grade separated structures shall be provided as per provision of the relevant Manual. The requisite particulars are given below:

[Refer to the provision of relevant Manual and provide details]

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

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

[Refer to the provision of relevant Manual and specify the type of vehicular under pass/ overpass structure and whether the cross road is to be carried at the existing level, raised or lowered]

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

(x) Cattle and pedestrian underpass /overpass

Cattle and pedestrian underpass/ overpass shall be constructed as follows: [Refer to the provision of relevant Manual and specify the requirements of cattle and pedestrian underpass/ overpass]

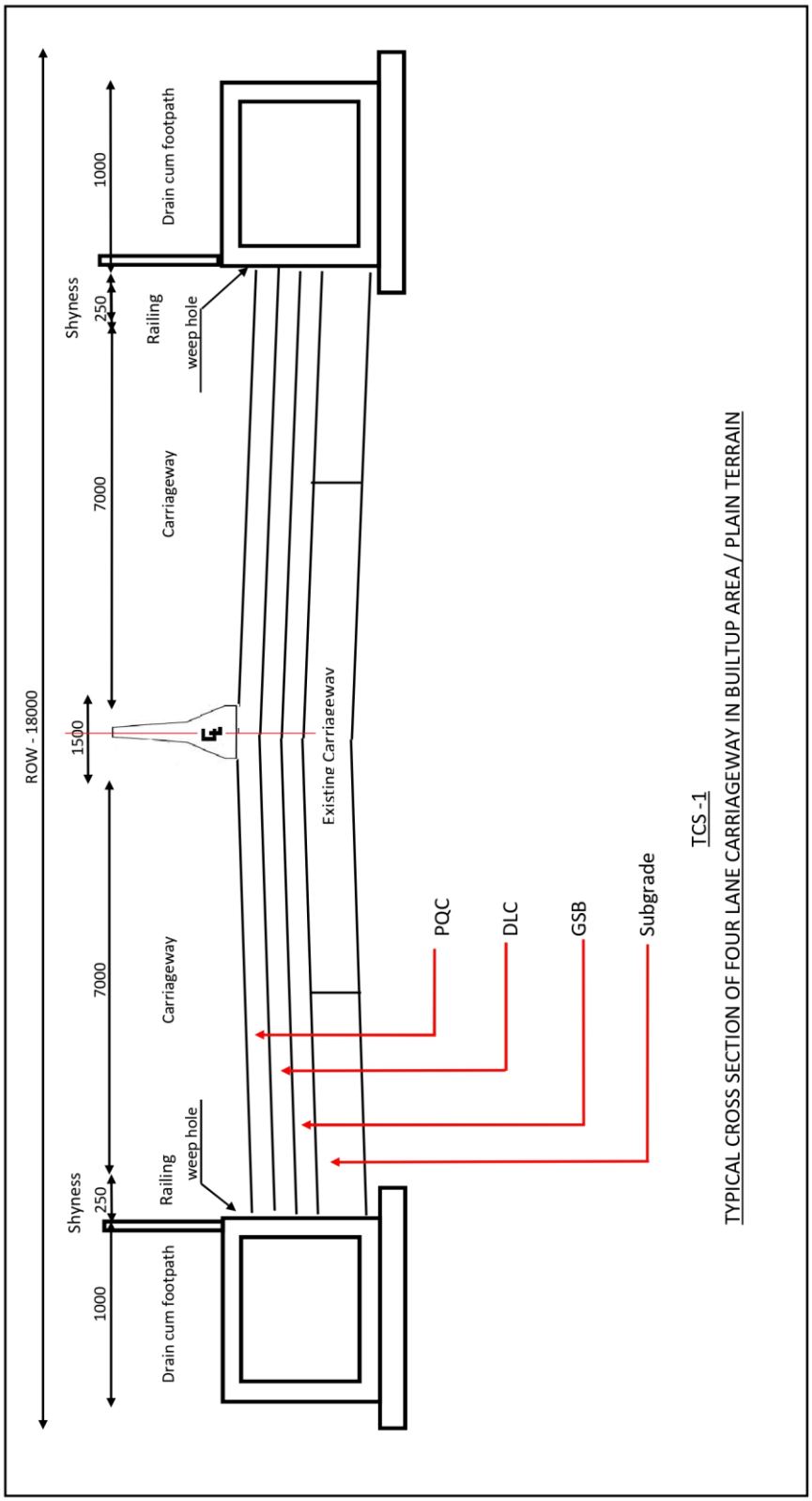
Sl. No.	Location	Type of crossing
Nil		

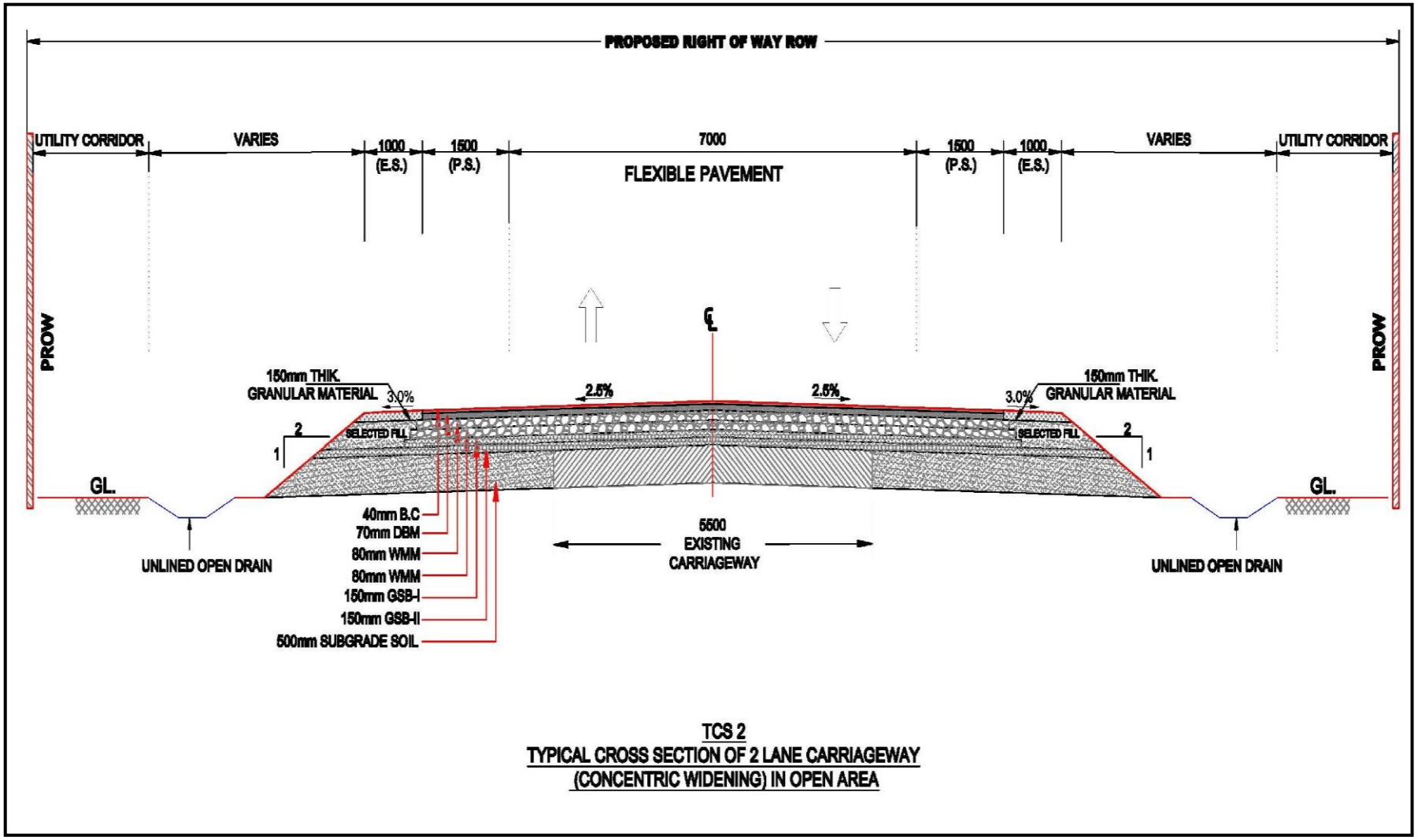
(xi) Typical cross-sections of the Project Highway

Sr. No.	Design Ch. (Km)		Length (Km)	Remarks
	From	To		
1	0.000	1.800	1.8	TCS 1
2	2.400	3.600	1.2	
3	4.900	8.100	3.2	
4	9.700	10.750	1.05	
5	12.100	15.800	3.7	
6	17.450	18.000	0.55	
7	21.800	23.100	1.3	
8	23.950	24.500	0.55	
9	25.900	26.600	0.7	
10	30.200	30.600	0.4	
11	34.700	35.600	0.9	
12	37.800	39.300	1.5	
13	45.850	46.100	0.25	
14	1.8	2.4	0.6	TCS 2
15	3.6	4.9	1.3	
16	8.100	9.700	1.6	

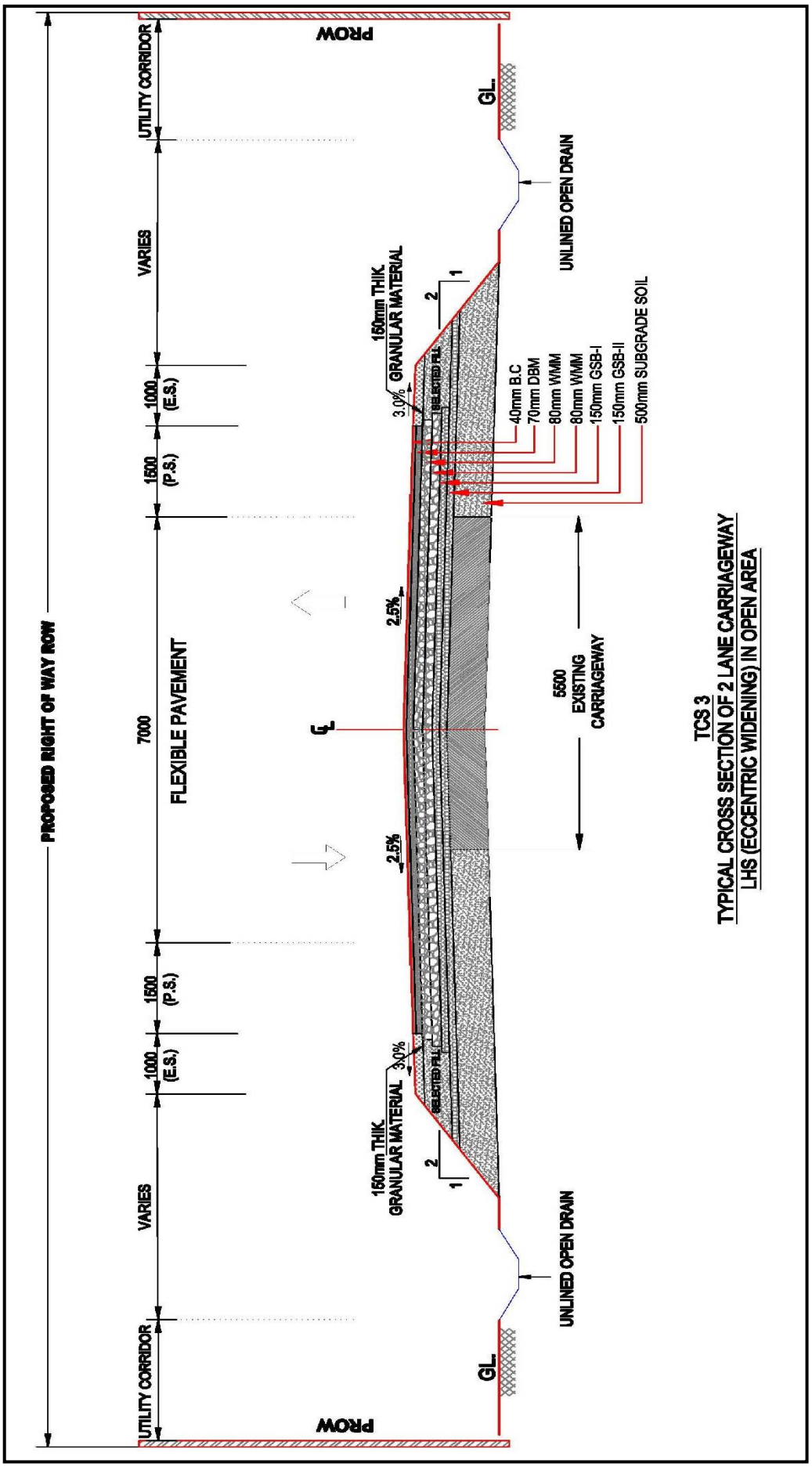
17	10.75	12.1	1.35	
18	15.8	17.45	1.65	
19	18	21.8	3.8	
20	23.1	23.95	0.85	
21	24.5	25.9	1.4	
22	26.79	27.6	0.81	
23	28.2	30.2	2	
24	30.6	32.5	1.9	
25	33.2	34.7	1.5	
26	35.6	35.95	0.35	
27	40.6	41.1	0.5	
28	41.55	43.77	2.22	
29	44.03	44.8	0.77	
30	45.1	45.25	0.15	
31	46.1	49	2.9	
32	44.8	45	0.2	TCS 3
33	27.6	28.2	0.6	
34	32.5	33.2	0.7	TCS 4
35	45	45.1	0.1	
36	26.6	26.79	0.19	
37	35.95	37.8	1.85	
38	39.3	40.6	1.3	
39	41.1	41.55	0.45	TCS 5
40	43.77	44.03	0.26	
41	45.25	45.85	0.6	
42	49	51.6	2.6	
	Total Length		**51.6**	

3. Typical Cross Sections

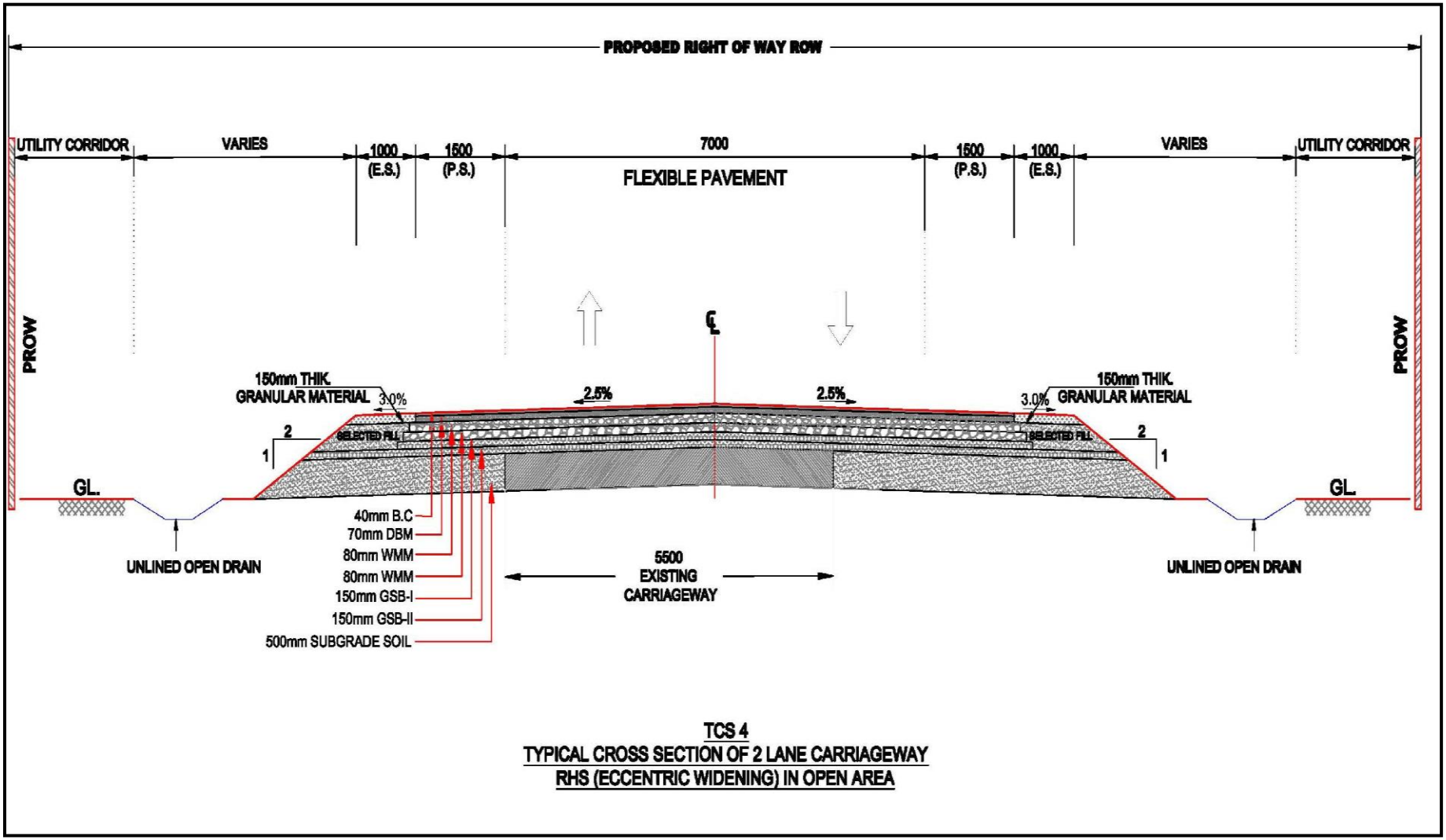




TCS 2
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(CONCENTRIC WIDENING) IN OPEN AREA

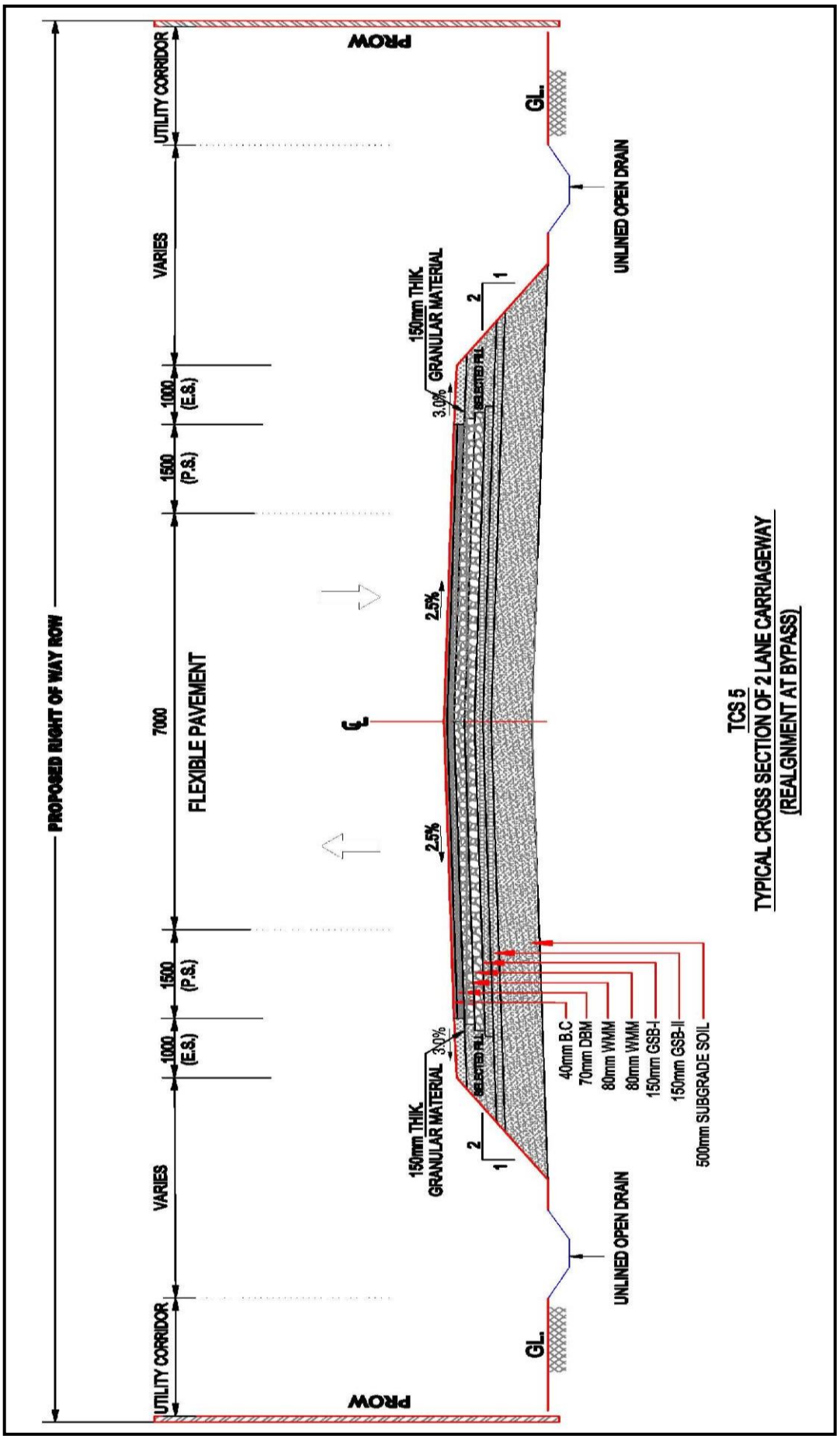


TCS 3
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
LHS (ECCENTRIC WIDENING) IN OPEN AREA



TCS 4

TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
RHS (ECCENTRIC WIDENING) IN OPEN AREA



TCS 5

TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(REALGNMENT AT BYPASS)

4. Intersections and Grade Separators

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

All Major and Minor Junction shall be designed as per relevant IRC manual and standard junction drawings of MoRT&H specification.

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

(i) At-grade intersections

Minor Junctions/ Local road connectivity

There are Minor junctions / Local road connectivity are coming in proposed alignment of the project and the details of the same is given below.

S. No.	Design Chainage	Type	Side		Destination
			LHS	RHS	
1	0.260	T		RHS	Tedi Baghia
2	0.310	T		RHS	Gulzar Marg
3	0.400	T		RHS	Tedi Baghia
4	0.490	T	LHS		Moti Lal Yadav Marg
5	0.760	T		RHS	Town
6	0.970	T	LHS		Town
7	1.150	T		RHS	Town
8	1.160	T	LHS		Jalesar Road
9	1.250	Y		RHS	Vidhaya Nagar
10	1.320	Y	LHS		Town
11	1.340	T		RHS	Town
12	1.570	T		RHS	Village Road
13	1.760	T	LHS		Village Road
14	1.820	T	LHS		Village Road
15	2.270	T		RHS	Village Road
16	2.370	T	LHS		Village Road
17	2.700	T		RHS	Village Road
18	3.180	T		RHS	Village Road
19	3.440	T		RHS	Pura Govardhan
20	4.540	T		RHS	Bas Agariya
21	4.600	T	LHS		Bas Inda
22	5.460	T		RHS	Nadau Road
23	5.500	T		RHS	Nadau Road
24	6.880	Y	LHS		Khandauli Etmadpur Road
25	7.380	T	LHS		Mundi Jahangirpur
26	10.250	T		RHS	Village Road
27	11.200	T		RHS	Chirhauli

S. No.	Design Chainage	Type	Side		Destination
			LHS	RHS	
28	12.500	T		RHS	Garhi
29	12.590	T	LHS		Usmanpur
30	12.850	T	LHS		Usmanpur
31	13.500	T		RHS	
32	13.770	T	LHS		Parihar
33	14.600	T		RHS	Rehtom Road
34	14.780	Y	LHS	RHS	Village Road
35	14.970	T		RHS	Village Road
36	15.550	Y	LHS		Anwal Khera
37	16.060	T		RHS	Village Road
38	16.860	T		RHS	Village Road
39	17.070	T	LHS		Village Road
40	17.560	T	LHS		Village Road
41	18.150	Y	LHS		Khanda
42	18.460	T		RHS	Village Road
43	18.610	T		RHS	Village Road
44	18.770	T	LHS		Khanda
45	18.980	T	LHS		Village Road
46	19.300	T		RHS	Village Road
47	19.810	T		RHS	Biruni
48	20.350	T	LHS		Village Road
49	20.550	T	LHS		Village Road
50	21.030	T		RHS	Village Road
51	21.120	T	LHS		Village Road
52	22.000	T		RHS	Village Road
53	22.090	T	LHS		Village Road
54	22.210	T		RHS	Village Road
55	22.450	T		RHS	Village Road
56	22.920	T		RHS	Village Road
57	23.120	T		RHS	Village Road
58	23.850	Y	LHS		Ahran Drain Road
59	24.120	T	LHS		
60	24.300	T		RHS	Town
61	25.430	T		RHS	Ramnagar
62	25.800	T	LHS		Village Road
63	26.350	T		RHS	Village Road
64	26.400	T	LHS		Mirzapur Sherpur
65	27.800	T	LHS		Town
66	28.100	Y	LHS		Village Road
67	28.120	T		RHS	Bichhpuri
68	30.280	Y	LHS		Village Road
69	31.040	T		RHS	Shahnagar Timarua

S. No.	Design Chainage	Type	Side		Destination
			LHS	RHS	
70	31.100	T	LHS		Jamon
71	31.800	T		RHS	Village Road
72	32.150	Y		RHS	Village Road
73	33.215	Y	LHS		Naglamitan
74	33.225	Y		RHS	Arazibirhara
75	33.525	T		RHS	Gudau
76	35.340	T	LHS		Village Road
77	35.475	T		RHS	Kosma
78	35.530	Y	LHS		Jamon
79	35.850	T		RHS	Arabgarh
80	37.200	T		RHS	Railway Station
81	38.170	T	LHS		Jalesar
82	39.200	Y		RHS	Rasidpur
83	39.250	T	LHS		Jalesar
84	39.925	T	LHS		Jalesar
85	43.230	T		RHS	Rajarampur
86	45.680	T		RHS	Salamai
87	46.050	T	LHS		Rejua
88	46.580	T		RHS	Salamai
89	47.350	T		RHS	Walidad Pur
90	48.550	T	LHS		Narhuli
91	48.620	T		RHS	Mandanpur

S. No.	Design Chainage	Type	Side	Destination
1	0+000	Y	LHS	Start point
2	4+730	X	BHS	VOP
3	39+200	X	BHS	Jalesar Bypass
4	51+600	Y	RHS	Jalesar Bypass

Note: The above nos. and location are tentative and may be modified according to the actual site condition and as approved by the Authority's Engineer.

(ii) 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				

(iii) Flyover: No flyover is proposed along the proposed alignment.

Sr.No.	Existing	Proposed	Type of Proposed Structure	Proposed	Recommendation

	Chainage (Km)	Chainage (Km)		Span Arrangement (No x Span Length) (m)	s
Nil					

5. Road Embankment and Cut Section

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 as per the Manual.

Raising of the existing road [Refer to the provision of relevant Manual and specify sections to be raised]

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]
As per plan and profile			

6. Pavement Design

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

(ii) Type of pavement

The composition of flexible pavement is designed as per guidelines of IRC 37:2018 with IIT PAVE calculations, considering CBR of subgrade as 8%. The Main carriageway is designed for 20 MSA @8% CBR. The composition of Rigid pavement is designed as per guidelines of IRC 58:2015.

(iii) Design requirements

Design Period and strategy

Flexible pavement for new pavement or for widening and strengthening of the existing pavement shall be designed for a minimum design period of 20 years. Rigid pavement shall be designed for a minimum design period of 30 years. Stage construction shall not be permitted. The soaked CBR of subgrade shall not be taken more than 08% for design purpose.

Design Traffic

The Contractor shall design the pavement for traffic 20 MSA.

7. Reconstruction of stretches

[Refer to the provision of relevant Manual and specify the stretches, if any, to be reconstructed.]

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

Sl. No	Proposed Chainage		Length (km)	Remark
	From (km)	To (km)		
1	0.000	26.600	26.600	Reconstruction
2	26.790	35.950	9.160	
3	37.800	39.300	1.500	
4	40.600	41.100	0.500	
5	41.550	43.770	2.220	
6	44.030	45.250	1.220	
7	45.850	49.000	3.150	
	Total Length in km		**44.350**	

8. Roadside Drainage

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

Sr. No.	Description	Total Length in Rm
1	RCC Cover Drain (BHS Side)	38062.00
2	Unlined Open Drain (BHS Side)	68858.00

9. Design of Structures

General

All bridges, culverts and structures shall be designed and constructed in accordance with the provision of relevant Manual and shall conform to the cross- sectional features and other details specified therein. The width of structures shall adhere with Ministry's guideline issued vide circular No. RW/NH-33044/22/2020-S&R (P&B) dated 04.06.2024.

All bridges shall be high-level bridges.

Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections given in the provision of relevant Manual.

Culverts

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

Reconstruction of existing culverts:

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

S.n	Design Ch	Proposed Span	Proposed type	Flow Direction	Proposal
1	1+260	1x2.0	Box	L-R	Reconstruction
2	2+570	1x1.2	Pipe	L-R	Reconstruction
3	4+420	1x1.2	Pipe	L-R	Reconstruction
4	4+955	1x1.2	Pipe	L-R	Reconstruction
5	5+900	1x3.0	Box	L-R	Reconstruction
6	6+260	1x1.2	Pipe	L-R	Reconstruction
7	10+275	1x3.0	Box	L-R	Reconstruction
8	10+440	1x1.2	Pipe	L-R	Reconstruction
9	10+690	1x1.2	Pipe	L-R	Reconstruction
10	11+160	1x1.2	Pipe	R-L	Reconstruction
11	11+455	1x1.2	Pipe	R-L	Reconstruction
12	11+770	1x1.2	Pipe	R-L	Reconstruction
13	13+400	1x1.2	Pipe	R-L	Reconstruction
14	14+605	1x1.2	Pipe	R-L	Reconstruction
15	14+800	1x1.2	Pipe	R-L	Reconstruction
16	14+900	1x1.2	Pipe	R-L	Reconstruction
17	15+145	1x1.2	Pipe	R-L	Reconstruction
18	15+275	1x1.2	Pipe	R-L	Reconstruction
19	15+980	1x1.2	Pipe	L-R	Reconstruction
20	16+730	1x1.2	Pipe	R-L	Reconstruction
21	17+280	1x1.2	Pipe	R-L	Reconstruction
22	17+530	1x1.2	Pipe	R-L	Reconstruction
23	17+980	1x1.2	Pipe	R-L	Reconstruction
24	18+290	1x1.2	Pipe	L-R	Reconstruction
25	20+075	1x1.2	Pipe	L-R	Reconstruction
26	20+350	1x1.2	Pipe	L-R	Reconstruction
27	20+580	1x1.2	Pipe	L-R	Reconstruction
28	22+130	1x1.2	Pipe	L-R	Reconstruction
29	22+590	1x1.2	Pipe	L-R	Reconstruction
30	22+720	1x1.2	Pipe	R-L	Reconstruction
31	22+860	1x1.2	Pipe	R-L	Reconstruction
32	23+095	1x1.2	Pipe	L-R	Reconstruction
33	23+170	1x1.2	Pipe	L-R	Reconstruction
34	24+115	1x1.2	Pipe	L-R	Reconstruction
35	24+235	1x1.2	Pipe	L-R	Reconstruction

S.n	Design Ch	Proposed Span	Proposed type	Flow Direction	Proposal
36	24+745	1x1.2	Pipe	L-R	Reconstruction
37	25+490	1x1.2	Pipe	R-L	Reconstruction
38	27+725	1x1.2	Pipe	R-L	Reconstruction
39	29+015	1x1.2	Pipe	R-L	Reconstruction
40	29+070	1x1.2	Pipe	R-L	Reconstruction
41	29+165	2x1.2	Pipe	R-L	Reconstruction
42	29+320	2x1.2	Pipe	R-L	Reconstruction
43	29+580	1x1.2	Pipe	R-L	Reconstruction
44	30+030	1x1.2	Pipe	R-L	Reconstruction
45	30+445	1x1.2	Pipe	R-L	Reconstruction
46	30+715	1x1.2	Pipe	R-L	Reconstruction
47	31+845	1x1.2	Pipe	L-R	Reconstruction
48	33+200	1X5.0	Box	L-R	Reconstruction
49	33+885	1x1.2	Pipe	R-L	Reconstruction
50	34+380	1x1.2	Pipe	R-L	Reconstruction
51	34+760	1x1.2	Pipe	R-L	Reconstruction
52	34+810	1x1.2	Pipe	L-R	Reconstruction
53	35+190	1x1.2	Pipe	L-R	Reconstruction
54	35+585	1x1.2	Pipe	R-L	Reconstruction
55	36+015	1x1.2	Pipe	R-L	Reconstruction
56	38+515	1x1.2	Pipe	L-R	Reconstruction
57	40+825	1x2.0	Box	L-R	Reconstruction
58	41+385	1x2.0	Box	L-R	Reconstruction
59	42+575	1x1.2	Pipe	L-R	Reconstruction
60	42+900	1x1.2	Pipe	L-R	Reconstruction
61	44+860	1x1.2	Pipe	L-R	Reconstruction
62	46+455	1x1.2	Pipe	L-R	Reconstruction
63	46+645	1x1.2	Pipe	L-R	Reconstruction
64	48+595	1x1.2	Pipe	L-R	Reconstruction

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 the provision of relevant Manual. Repairs and strengthening of existing structures where required shall be carried out.

S. No	Design Ch.	Proposed Span	Proposed Type	Flow Direction	Proposal
1	20+845	1x0.9	Pipe	L-R	Widening
2	25+025	1x3.2	SLAB	R-L	Widening
3	31+040	1X2.5	SLAB	L-R	Widening
4	45+320	1x2.0	SLAB	L-R	Widening
5	46+965	1x4.5	SLAB	L-R	Widening

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

S.n	Design Ch.	Proposed Span	Proposed type	Flow Direction	Proposal

S.n	Design Ch.	Proposed Span	Proposed type	Flow Direction	Proposal
1	26+700	1x2.0	Box	L-R	New Construction
2	36+190	1x2.0	Box	L-R	New Construction
3	36+520	1x2.0	Box	L-R	New Construction
4	36+925	1x2.0	Box	L-R	New Construction
5	37+225	1x2.0	Box	L-R	New Construction
6	37+525	1x2.0	Box	L-R	New Construction
7	37+775	1x3.0	Box	L-R	New Construction
8	39+335	1x2.0	Box	L-R	New Construction
9	39+620	1x2.0	Box	L-R	New Construction
10	40+030	1x2.0	Box	L-R	New Construction
11	40+325	1x2.0	Box	L-R	New Construction
12	43+860	1x2.0	Box	L-R	New Construction
13	43+810	1x2.0	Box	L-R	New Construction
14	45+420	1x3.0	Box	L-R	New Construction
15	45+670	1x2.0	Box	L-R	New Construction
16	49+205	1x2.0	Box	L-R	New Construction
17	49+360	1x2.0	Box	L-R	New Construction
18	49+730	1x2.0	Box	L-R	New Construction
19	50+035	1x4.0	Box	L-R	New Construction
20	50+300	1x2.0	Box	L-R	New Construction
21	50+400	1x2.0	Box	L-R	New Construction
22	50+500	1x2.0	Box	L-R	New Construction
23	50+900	1x2.0	Box	L-R	New Construction
24	51+300	1x2.0	Box	L-R	New Construction

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		

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

Note: The locations of Culverts are tentative; any Change in location will not invite any change of scope.

Bridges

(a) Existing bridges to be retained and repaired.

The existing bridges at the following locations shall be retained and repaired

S. No	Existing Ch.	Design Ch.	Type of Bridge	Span	Type of Bridge	Remaks
1	4+730	4+650	VOP	-	PSC Girder	Retained
2	21+550	21+470	ROB	10X24+1X12+1X41.5+1X12+8X15+4X24	PSC Girder	Retained

(b) Existing bridges to be reconstructed/Widening

The existing bridges at the following locations shall be reconstructed.

S. No	Existing Ch.	Design Ch.	Existing		Proposed		
			Span	Type of Bridge	Span	Type of Bridge	Remarks
1	8+775	8+710	5X6.6	Arch	2X25	Girder	Reconstruction
2	18+215	18+130	1X8.40	Solid Slab	1X8.40	RCC Box	widening
3	23+940	23+860	1X4+1X3+1X4	Solid Slab	1X4+1X3+1X4	RCC Box	widening
4	26+850	26+760	1X4+2X3.8	Solid Slab	2x8	RCC Box	Reconstruction
5	28+210	28+110	2X4+1X4.2	Solid Slab	1X20	RCC Box	Reconstruction

(a) 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.

Sr. No	Design Ch.	Span Arrangement	Type of Bridge	Structure Type	Remark
1	35+910	3 x 10.0	MNB	Solid Slab	New construction
2	39+440	1 x 15.0	MNB	Portal Type	New construction
3	41+430	1 x20.0	MNB	Portal Type	New construction
4	47+350	1 x20.0	MNB	Portal Type	New construction

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

[Refer to the provision of relevant Manual and provide details:]

Sl. No.	Location at km	Remarks
Nil		

Drainage system for bridge decks

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

Structures in marine environment

(Not Applicable)

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

Rail-road bridges

Design, construction and detailing of ROB/RUB shall be as specified in the provision of relevant Manual. [Refer to the provision of relevant Manual and specify modification, if any]

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		

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		

Grade separated structures

nil

Repairs and strengthening of bridges and structures

Refer to paragraph 7.22 of the Manual IRC: SP 73-2018 the existing bridges and structures to be repaired/strengthened, and the nature and extent of repairs /strengthening required are given below. The existing bridges and structures to be repaired/strengthened, and the nature and extent of repairs /strengthening required are given below:

ROB / RUB

Sl. No.	Location of ROB/RUB (km)	Nature and extent of repairs /strengthening to be carried out
21+470 ROB		

Overpasses/Underpasses and other structures

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

List of Flyover

The following is the list of the Flyover:

Sr. No.	Existing Chainage (Km)	Proposed Chainage (Km)	Type of Proposed Structure	Type of Structure	Recommendations
Nil					

10. Traffic Control Devices and Road Safety Works

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

Specifications of the reflective sheeting. [Refer to the provision of relevant Manual and specify]

11. Roadside Furniture

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

Overhead traffic signs: location

Sl. No.	Location	Size
1.	0.000	As per IRC 67 2012
2.	35.950	
3.	49.000	

12. Compulsory Afforestation

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

13. Hazardous Locations

The New Jersey barrier / Railing / Metal beam crash barrier / Anti-glare shall also be provided as per blow details**:**

Thrie Beam Type Crash Barrier

S. No.	Section	Length (m)	Remarks
1	High embankment sections	7200	
	Total Length (m)	**7200**	

14. Utility Corridor

Two-metre-wide strip of land at the extreme edge of ROW shall be kept for accommodating utilities, both over as well as underground. Provisions contained in IRC:98 shall be followed to accommodate utility services in built-up areas of Project Highway. Utility ducts in the form of 600 mm diameter NP-4 Pipe across the Project

Highway along with inspection box/chamber at a spacing of 1 km shall be provided for crossing of underground utilities in built up areas.

15. Landscaping & Tree Plantation

Avenue Plantation: The plantation in the Avenue shall be in accordance with IRC: SP-21-2009 and other prevailing MoRTH / NHAI guidelines along with Tree Guard with bamboo fencing.

Landscaping: Landscaping of the highway shall be done as per Manual and IRC: SP-21-2009 at all locations envisaged therein, but not limited to the following:

(a) Below the Grade Separated intersections, Entry & Exit Ramps and Islands of at grade intersections
(b) Rest Area, Wayside Amenities and O&M Centre

16. 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.

(Schedule B-1)

17. UTILITY SHIFTING AND FELLING OF TREES

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

Notes:

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

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

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

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

Schedules C

Schedule - C

(See Clause 2.1)

Project Facilities

1. Project Facilities

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

Toll plaza[s]; - -Nil

roadside furniture; - as per Manual

pedestrian facilities; - footpath with railing

tree plantation; - as per Manual

truck lay-byes; - Nil

bus-bays and bus shelters / Toilet; - as per list below

others to be specified - as per list below

2. Description of Project Facilities

Each of the Project Facilities is described below:

a) **Toll Plaza- Nil**

b) **Roadside furniture**

The roadside furniture shall include the provision of the section 9 and 12 of Manual IRC: SP 73-2018;

i. Traffic Signs: As per manual the contractor shall install all necessary traffic signs.

ii. Pavement Markings

Pavement markings for the entire Project Highway as per paragraph 9.3 of the Manual IRC: SP 73-2018.

iii. Hectometer / Kilometer stones

For the entire Project Highway as per paragraph 12.3 of the Manual IRC: SP 73-2018.

iv. Street Lighting

For the entire Project Highway as per paragraph 12.4 of the Manual IRC: SP 73-2018 including defect liability period.. Below are the location in built up for street lighting:

S.No.	Design Chainage (km)		Length (km)
	From	To	
1	0.000	1.800	1.800

S.No.	Design Chainage (km)		Length (km)
	From	To	
2	2.400	3.600	1.200
3	4.900	8.100	3.200
4	9.700	10.750	1.050
5	12.100	15.800	3.700
6	17.450	18.200	0.750
7	21.800	23.100	1.300
8	23.950	24.500	0.550
9	25.900	26.600	0.700
10	30.200	30.600	0.400
11	34.700	35.600	0.900
12	37.800	39.300	1.500
13	45.850	46.100	0.250
	Total Length		**17.300**

Other locations where street lighting is proposed:

Sr. No.	Location	Quantity
1	Minor Junctions	93
2	School	6
3	Hospital	4
4	Bus Shelter	23
5	Bridges	All MNB's

v. Steel Railing

As per TCS in built up area and on structures.

vi. Road Stud

For the entire Project Highway, as per paragraph 9.5 of the Manual IRC: SP 73-2018.

c) **Pedestrian facilities**- Steel railing on footpath

d) **Tree Plantation-**

Avenue Plantation: The plantation in the Avenue shall be in accordance with IRC: SP-21-2009 and other prevailing MoRTH / NHAI guidelines along with Tree Guard with bamboo fencing.

Landscaping: Landscaping of the highway shall be done as per Manual and IRC: SP-21-2009 at all locations envisaged therein, but not limited to the following:

Below the Grade Separated intersections, Entry & Exit Ramps and Islands of at grade intersections Rest Area, Wayside Amenities and O&M Centre.

e) **Truck lay buy-** Nil

f) **Bus Bays and Bus Shelters/ Toilet -**

For the entire Project Highway as per paragraph 12.6 of the Manual IRC: SP 73-2018, Bus Bay and Bus Shelter / Toilet shall be provided at the locations below

Bus Bays and Bus Shelters

S.No	Design Chainage	Side (LHS/RHS)	Village Name	Bus Way and Bus Shelter	Remark
1	1.600	LHS	-	Bus Shelter	
2	2.840	LHS	-	Bus Shelter	
3	3.200	RHS	-	Bus Shelter	
4	3.430	RHS	-	Bus Shelter	
5	3.900	LHS	-	Bus Shelter	
6	4.530	RHS	-	Bus Shelter	
7	5.240	LHS	-	Bus Shelter	
8	5.700	RHS	-	Bus Shelter	
9	6.900	LHS	-	Bus Shelter	
10	10.000	RHS	-	Bus Shelter	
11	12.360	RHS	Usmanpur	Bus Shelter	
12	12.700	RHS	Usmanpur	Bus Shelter	
13	14.600	RHS	Anwal Khera	Bus Shelter	
14	15.100	LHS	Anwal Khera	Bus Shelter	
15	17.800	LHS	-	Bus Shelter	
16	21.900	RHS	-	Bus Shelter	
17	22.900	LHS	Jamalnagar Bhains	Bus Shelter	
18	24.300	RHS	Jamalnagar Bhains	Bus Shelter	
19	26.500	LHS	Saraineew	Bus Shelter	
20	33.500	RHS	Gudau	Bus Shelter	
21	38.250	RHS	Jalesar	Bus Shelter	
22	44.400	LHS	Hasangarh	Bus Shelter	
23	46.100	RHS	Rejua	Bus Shelter	

g) **Rest Areas- Nil**

h) **Other:** The contractor shall provide 1 No. of vehicle (SUV – Innova or equivalent) travel up to 3,000 km per month including driver, fuel (diesel) other lubricants, insurances and commercial taxes applicable to the Authority for construction period.

Schedules D

Schedule - D

(See Clause 2.1)

Specifications and Standards

1. Construction

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

2. Design Standards

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

Manual of Specifications and Standards for Two Laning with paved shoulders of Highways IRC: SP:73-2018

For 2 laning of National Highways with paved shoulder, the total width of the shoulder on either side in plain and rolling terrain and provision of continuous raised profile edge line marking shall be followed as per Ministry's Circular No. RW/NH-33044/22/2020-S&R (P&B) dated 04.06.2024.

Annex – I

(Schedule-D)

Specifications and Standards for Construction

1. Specifications and Standards

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

2. Deviations from the Specifications and Standards

(ii) 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.

(iii) [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:

Sl. No.	Clause No.	Details of Item	Provisions in Clause	Description of Deviation
1	2.3	Right of Way	ROW- 30m	ROW taken 24 m in open area and 18 m in built up area due to restrictions.
2	Fig. 2.6	TCS for Built up	2 lane with paved shoulders and service road	4 lane main carriageway with 1.5m median and 1m drain at both sides.
3	-	Design Ch. 37.750	Minimum Design Radius as IRC	Proposed radius as 150m. Restricted at this location along with ensuring road safety measures as per IRC standards.

(iv) Notwithstanding anything to the contrary contained in Paragraph 1 above, the MORTH Specifications for Road and Bridge Works Fifth Revision 2013 shall be followed

(v) As regards, the work of utility shifting, the relevant specifications, relevant rules, regulations and acts of utility owning departments/ agencies shall be applicable.

Schedules E

Schedule - E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

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

ii. The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfilment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.

iii. All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

2. Repair/rectification of Defects and deficiencies

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

3. Other Defects and deficiencies

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

4. Extension of time limit

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

5. Emergency repairs/restoration

Notwithstanding anything to the contrary contained in this Schedule-E, if any Defect, deficiency or deterioration in the Project Highway poses a hazard to safety or risk of damage to property,

the Contractor shall promptly take all reasonable measures for eliminating or minimizing such danger.

6. Daily inspection by the Contractor

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

7. Pre-monsoon inspection / post-monsoon inspection

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

8. Repairs on account of natural calamities

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

Annex – I

(Schedule-E)

Repair/rectification of Defects and deficiencies

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

Table -1: Maintenance Criteria for Pavements:

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
Flexible Pavement (Pavement of MCW, Service Road, approaches of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Potholes	Nil	< 0.1 % of area and subject to limit of 10 mm in depth	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC 82: 2015 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003 (http://www.tfhrc.com/pavement/lttp/reports/03031/)	24-48 hours	MORT&H Specification 3004.2
	Cracking	Nil	< 5 % subject to limit of 0.5 sqm for any 50 m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15 -30 days	MORT&H Specification 3004.2

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
	Corrugations and Shoving	Nil	< 0.1 % of area	Daily	Length Measurement Unit like Scale, Tape, odometer etc.		2-7 days	IRC:82-2015
	Bleeding	Nil	< 1 % of area	Daily			3-7 days	MORT&H Specification 3004.4
	Ravelling / Stripping	Nil	< 1 % of area	Daily			7-15 days	IRC:82-2015 read with IRC SP 81
	Edge Deformation/ Breaking	Nil	< 1 m for any 100 m section and width < 0.1 m at any location, restricted to 30 cm from the	Daily			7- 15 days	IRC:82-2015

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
			edge					
	Roughness BI	2000 mm/km	2400 mm/km	Bi-Annually	Class I Profilometer SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent)	Class I Profilometer: ASTM E950 (98) :2004 –Standard Test Method for measuring Longitudinal Profile of Travelled Surfaces with Accelerometer Established Inertial Profiling Reference ASTM E1656 -94: 2000- Standard Guide for Classification of Automatic Pavement Condition Survey Equipment	180 days	IRC:82-2015
	Skid Number	60SN	50SN	Bi-Annually			180 days	BS: 7941-1: 2006
	Pavement Condition Index	3	2.1	Bi-Annually			180 days	IRC:82-2015

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	**Acceptable**					
	Other Pavement Distresses			Bi-Annually			2-7 days	IRC:82-2015
	Deflection/ Remaining Life			Annually	Falling Weight Deflectometer	IRC 115: 2014	180 days	IRC:115-2014
Rigid Pavement (Pavement of MCW, Service Road, Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Roughness BI	2200mm/km	2400mm/km	Bi-Annually	Class I Profilometer	ASTM E950 (98) :2004 and ASTM E1656 - 94: 2000	180 days	IRC:SP:83-2008
	Skid	Skid Resistance no. at different speed of vehicles		Bi-Annually	SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent)	IRC: SP:83-2008	180 days	IRC: SP:83-2008
		Minimum SN	**Traffic Speed (Km/h)**					
		36	50					

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	**Acceptable**					
		33	65					
		32	80					
		31	95					
		31	110					
Embankment/ Slope	Edge drop at shoulders	Nil	40mm	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC	7-15 days	MORT&H Specification 408.4
	Slope of camber/cross fall	Nil	<2% variation in prescribed slope of camber /cross fall	Daily			7-15 days	MORT&H Specification 408.4
	Embankment Slopes	Nil	<15 % variation in prescribe side slope	Daily			7-15 days	MORT&H Specification 408.4

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
	Embankment Protection	Nil	Nil	Daily	NA		7-15 days	MORT&H Specification
	Rain Cuts/ Gullies in slope	Nil	Nil	Daily Specially During Rainy Season	NA		7-15 days	MORT&H Specification

In addition to the above performance criterion, the contractor shall strictly maintain the rigid pavements as per requirements in the following table

Table -2: **Maintenance Criteria for Rigid Pavements:**

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
CRACKING						
1	**Single Discrete Cracks Not intersecting with any joint**	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	Not applicable
			1	w < 0.2 mm. hair cracks		
			2	w = 0.2 - 0.5 mm, discernible from slow-moving car	Seal without delay	Seal, and stitch if L > lm. Within 7days
			3	w = 0.5 - 1.5 mm, discernible from fast-moving car		
			4	w = 1.5 - 3.0 mm	Seal, and stitch if L > l m. Within 7 days	Staple or Dowel Bar Retrofit, FDR for affected portion. Within 15days
			5	w > 3 mm.		
2	**Single Transverse (or Diagonal) Crack intersecting with one or more joints**	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Route and seal with epoxy. Within 7 days	Staple or Dowel Bar Retrofit. Within 15days
			2	w = 0.2 - 0.5 mm, discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route, seal and stitch, if L > 1 m. Within 7 days	
			4	w = 3.0 - 6.0 mm	Dowel Bar Retrofit. Within 15 days	Full Depth Repair Dismantle and reconstruct affected.
			5	w > 6 mm, usually associated with spalling, and/or slab rocking under	Not Applicable, as it may be full	Portion with norms and specifications -

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
				traffic	depth	See Para 5.5 & 9.2 Within 15days
3	**Single Longitudinal Crack intersecting with one or more joints**	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.5 mm, discernable from slow moving vehicle	Seal with epoxy, if L > 1 m. Within 7 days	Staple or dowel bar retrofit. Within 15days
			2	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route seal and stitch, if L > l m. Within 15 days	-
			3	w = 3.0 - 6.0 mm	Staple, if L > 1 m. Within 15 days	Partial Depth Repair with stapling. Within 15 days
			4	w = 6.0 - 12.0 mm, usually associated with spalling	Not Applicable, as it may be full depth	
			5	w > 12 mm, usually associated with spalling, and/or slab rocking under traffic		Full Depth Repair Dismantle and reconstruct affected portion as per norms and specifications - See Para 5.6.4 Within 15 days
4	**Multiple Cracks intersecting with one or more joints**	**w = width of crack**	0	Nil, not discernible	No Action	-
			1	w < 0.2 mm, hair cracks	Seal, and stitch if L > l m. Within 15 days	
			2	w = 0.2 - 0.5 mm. discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Full depth repair within 15 days	Dismantle, Reinstate subbase,

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			4	w = 3.0 - 6.0 mm panel broken into 2 or 3 pieces		Reconstruct whole slab as per specifications within 30 days
			5	w > 6 mm and/or panel broken into more than 4 pieces		
5	**Corner Break**	w = width of crack L = length of crack	0	Nil, not discernible	No Action	-
			1	w < 0.5 mm; only 1 corner broken	Seal with low viscosity epoxy to secure broken parts Within 7 days	Seal with epoxy seal with epoxy Within 7days
			2	w < 1.5 mm; L < 0.6 m, only one corner broken		
			3	w < 1.5 mm; L < 0.6 m, two corners broken	Partial Depth (Refer Figure 8.3 of IRC:SP: 83-2008) Within 15 days	Full depth repair
			4	w > 1.5 mm; L > 0.6 m or three corners broken		
			5	ree or four corners broken		Reinstate sub-base, and reconstruct the slab as per norms and specifications within 30days
6	**Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)**	w = width of crack L = length (m/m2)	0	Nil, not discernible		No Action
			1	w < 0.5 mm; L < 3 m/m^2	Not Applicable, as it may be full depth	Seal with low viscosity epoxy to secure broken parts. Within 15days
			2	either w > 0.5 mm or L < 3 m/m^2		
			3	w > 1.5 mm and L < 3 m/m^2		
			4	w > 3 mm, L < 3 m/m^2 and		Full depth repair -

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
				deformation		Cut out and replace damaged area taking care not to damage reinforcement. Within 30days
			5	w > 3 mm, L > 3 m/m² and deformation		
Surface Defects						
7	Ravelling or Honeycomb type surface	r = area damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	**Short Term**	**Long Term**
					No action.	Not Applicable
			1	r < 2 %	Local repair of areas damaged and liable to be damaged. Within 15 days	
			2	r = 2 - 10 %		
			3	r = 10-25%	Bonded Inlay, 2 or 3 slabs if affecting. Within 30 days	
			4	r = 25 - 50 %		
			5	r > 50% and h > 25 mm	Reconstruct slabs, 4 or more slabs if affecting. Within 30 days	
8	**Scaling**	r = damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	**Short Term**	**Long Term**
					No action.	Not Applicable
			1	r < **2 %**	Local repair of areas damaged and liable to be damaged. Within 7days	
			2	r = 2 - 10 %		
			3	r = 10 - 20%	Bonded Inlay within 15 days	
			4	r = 20 - 30 %		
			5	r > 30 % and h > 25 mm	Reconstruct slab within 30 days	
9	**Polished Surface/Glazing**	t = texture depth, sand patch test	0		No action.	Not Applicable
			1	t > 1 mm		
			2 '	t = 1 - 0.6 mm	Monitor rate of	

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			3	t = 0.6 - 0.3 mm	deterioration	
			4	t = 0.3 - 0.1 mm		
			5	t < 0.1 mm	Diamond Grinding if affecting 50% or more slabs in a continuous stretch of minimum 5 km. Within 30 days	
10	**Popout (Small Hole), Pothole Refer Para 8.4**	n = number/m^2 d = diameter h = maximum depth	0	d < 50 mm; h < 25 mm; n < 1 per 5 m^2	No action.	Not Applicable
			1	d = 50 - 100 mm; h < 50 mm; n < 1 per 5 m^2	Partial depth repair 65 mm deep. Within 15 days	
			2	d = 50 - 100 mm; h > 50 mm; n < 1 per 5 m^2		
			3	d = 100 - 300 mm; h < 100 mm n < 1 per 5 m^2	Partial depth repair 110mm i.e.10 mm more than the depth of the hole. Within 30 days	
			4	d = 100 - 300 mm; h > 100 mm; n < 1 per 5 m^2		
			5	d > 300 mm; h > 100 mm: n > 1 per 5 m^2	Full depth repair. Within 30 days	

Joint Defects						
11	**Joint Seal Defects**	loss or damage L = Length as % total joint length	0	Difficult to discern.	**Short Term**	**Long Term**
					No action.	Not Applicable
			1	Discernible, L< 25% but of little immediate consequence with regard to ingress of water or trapping incompressible material.	Clean joint, inspect later.	
			3	Notable. L > 25% insufficient protection against ingress of water and trapping incompressible material.	Clean and reapply sealant in selected locations. Within 7 days	
			5	Severe; w > 3 mm negligible protection against ingress of water and trapping incompressible material.	Clean, widen and reseal the joint. Within 7 days	
12	**Spalling of Joints**	w = width on either side of the joint L = length of spalled portion (as % joint length)	0	Nil, not discernible	No action.	Not Applicable
			1	w < 10 mm	Apply low viscosity epoxy resin/ mortar in cracked portion. Within 7 days	
			2	w = 10 - 20 mm, L < 25%		
			3	w = 20 - 40 mm, L > 25%	Partial Depth Repair. Within 15 days	
			4	w = 40 - 80 mm, L > 25%	30 - 50 mm deep, h = w + 20% of w, within 30 days	
			5	w > 80 mm, and L > 25%	50 - 100 mm deep repair. H = w + 20% of w. Within 30 days	

Joint Defects						
13	**Faulting (or Stepping) in Cracks or Joints**	f = difference of level	0	not discernible, < 1 mm	No action.	No action.
			1	f < 3 mm		
			2	f = 3 - 6 mm	Determine cause and observe, take action for diamond grinding	Replace the slab as appropriate. Within 30days
			3	f = 6 - 12 mm	Diamond Grinding	
			4	f= 12 - 18 mm	Raise sunken slab.	Replace the slab as appropriate. Within 30days
			5	f> 18 mm	Strengthen subgrade and sub-base by grouting and raising sunken slab	
14	**Blowup or Buckling**	h = vertical displacement from normal profile	0	Nil, not discernible	**Short Term**	**Long Term**
					No Action	
			1	h < 6 mm		
			2	h = 6 - 12 mm	Install Signs to Warn Traffic within 7 days	
			3	h = 12 - 25 mm		
			4	h > 25 mm	Full Depth Repair. Within 30 days	
			5	shattered slabs, ie 4 or more pieces	Replace broken slabs. Within 30 days	
15	**Depression**	h = negative vertical displacement from normal profile L =length	0	Not discernible, h < 5 mm	No action.	Not Applicable
			1	h = 5 - 15 mm		
			2	h = 15-30 mm, Nos <20% joints	Install Signs to Warn Traffic	
			3	h = 30 - 50 mm		

Joint Defects						
					within 7 days	
			4	h > 50 mm or > 20% joints	Strengthen subgrade. Reinstate pavement at normal level if L < 20 m. Within 30 days	
			5	h > 100 mm		
16	**Heave**	h = positive vertical displacement from normal profile. L = length	0	Not discernible. h < 5 mm	**Short Term**	**Long Term**
					No action.	Scrabble
			1	h = 5 - 15 mm	Follow up.	
			2	h = 15 - 30 mm, Nos <20% joints	Install Signs to Warn Traffic within 7 days	
			3	h = 30 - 50 mm		
			4	h > 50 mm or > 20% joints	Stabilise subgrade. Reinstate pavement at normal level if length < 20 m. Within 30 days	
			5	h > 100 mm		
17	**Bump**	h = vertical displacement from normal profile	0	h < 4 mm	No action	
			1	h = 4 - 7 mm	Grind, in case of new construction within 7 days	Construction Limit for New Construction.
			3	h = 7 - 15 mm	Grind, in case of ongoing Maintenance within 15 days	Replace in case of new construction. Within 30days
			5	h > 15 mm	Full Depth Repair. Within 30 days	Full Depth Repair. Within 30days

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

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

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th>Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td>Highway</td><td>Availability of Safe Sight Distance</td><td>As per IRC SP :84-2014, a minimum of safe stopping sight distance shall be available throughout.
<table><tr><th>Design Speed, kmph</th><th>Desirable Minimum Sight Distance (m)</th><th>Safe Stopping Sight Distance (m)</th></tr><tr><td>100</td><td>360</td><td>180</td></tr><tr><td>80</td><td>260</td><td>130</td></tr></table></td><td>Monthly</td><td>Manual Measurements with Odometer along with video/ image backup</td><td colspan="2">Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments. In case of permanent structure or design deficiency: Removal of obstruction/improvement of deficiency at the earliest Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification.</td><td>IRC:SP 84-2014</td></tr>
<tr><td rowspan="2">Pavement Marking</td><td>Wear</td><td><70% of marking remaining</td><td>Bi-Annually</td><td>Visual Assessment as per Annexure-F of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect - within 2 months</td><td>IRC:35-2015</td></tr>
<tr><td>Day time Visibility</td><td>During expected life Service Time
Cement Road - 130mcd/m²/lux
Bituminous Road - 100mcd/m²/lux</td><td>Monthly</td><td>As per Annexure-D of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect – within 2 months</td><td>IRC:35-2015</td></tr>
</table>

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th>Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td></td><td>Night Time Visibility</td><td>Initial and Minimum Performance for Dry Retro reflectivity during night time:
<table><tr><td>Design Speed</td><td colspan="2">(RL) Retro Reflectivity (mcd/m²/lux)</td></tr><tr><td></td><td>Initial (7 days)</td><td>Minimum Threshold level (TL) & warranty period required up to 2 years</td></tr><tr><td>Up to 65</td><td>200</td><td>80</td></tr><tr><td>65 - 100</td><td>250</td><td>120</td></tr><tr><td>Above 100</td><td>350</td><td>150</td></tr></table>Initial and Minimum Performance for Night Visibility under wet condition (Retro reflectivity):
Initial 7 days Retro reflectivity: 100 mcd/m²/lux
Minimum Threshold Level: 50 mcd/m²/lux</td><td>Bi-Annually</td><td>As per Annexure-E of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect – within 2 months</td><td>IRC:35-2015</td></tr>
<tr><td></td><td>Skid Resistance</td><td>Initial and Minimum performance for Skid Resistance:
Initial (7days): 55BPN
Min. Threshold: 44BPN
*Note: shall be considered under urban/city traffic condition</td><td>Bi-Annually</td><td>As per Annexure-G of IRC:35-2015</td><td></td><td>Within 24 hours</td><td>IRC:35-2015</td></tr>
</table>

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
		encompassing the locations like pedestrian crossings, bus bay, bus stop, cycle track intersection delineation, transverse bar markings etc					
Road Signs	Shape and position	Shape and position as per IRC:67-2012. Signboard should be clearly visible for the design speed of the section.	Daily	Visual with video/image backup	Improvement of shape, in case if shape is damaged. Relocation as per requirement	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 15 Days in case of Gantry/Cantilever Sign boards	IRC:67-2012
	Retro reflectivity	As per specifications in IRC:67-2012	Bi-Annually	Testing of each signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.	Change of signboard	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 1 Month in case ofGantry/Cantilever Sign boards	RC:67-2012
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance measuring	Raising Kerb Height	Within 1 Month	RC 86:1983

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
				tape			
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video/image backup	Kerb Repainting	Within 7-days	RC 35:2015
Other Road Furniture	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2014 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC: SP:84-2014, IRC:35-2015
	Pedestrian Guardrail	Functionality: Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: SP:84-2014
	Traffic Safety Barriers	Functionality: Functioning of Safety Barriers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014, IRC:119-2015
	End Treatment of Traffic Safety Barriers	Functionality: Functioning of End Treatment as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014, IRC:119-2015
	Attenuators	Functionality: Functioning of Attenuators as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP-2014, IRC:119-2015
	Guard Posts and Delineators	Functionality: Functioning of Guard Posts and Delineators as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: 79 – 1981
	Overhead Sign Structure	Overhead sign structure shall be structurally adequate	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:67-2012

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

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Deterioration in health of trees and bushes	Health of plantation shall be as per requirement of specifications & instructions issued by Authority from time to time	Daily	Visual with video/image backup	Timely watering and treatment. Or Replacement of Trees and Bushes.	Within 90 days	IRC:SP:84-2014
	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction by vegetation	Daily	Visual with video/image backup	Removal of Trees	Immediate	IRC:SP 84-2014
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	
Other Project Facilities and Approach roads	Damage or deterioration in Approach Roads, pedestrian facilities, truck lay-bys, bus-bays, bus-shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works		Daily	-	Rectification	15 days	IRC:SP 84-2014

Asset Type	**Performance Parameter**	**Level of Service (LOS)**	**Frequency of Measurement**	**Testing Method**	**Recommended Remedial measures**	**Time limit for Rectification**	**Specifications and Standards**
Pipe/box/slab culverts	Free waterway/ unobstructed flow section	85% of culvert normal flow area to available.	2 times in a year (before and after rainy season)	Inspection by Bridge Engineer as per IRC SP: 35-1990 and recording of depth of silting and area of vegetation.	Cleaning silt up soils and debris in culvert barrel after rainy season, removal of bushes and vegetation, U/s of barrel, under barrel and D/s of barrel before rainy season.	15 days before onset of monsoon and within 30 days after end of rainy season.	IRC 5-2015, IRC SP:40-1993 and IRC SP:13-2004
	Leak-proof expansion joints if any	No leakage through expansion joints	Bi-Annually	Physical inspection of expansion joints as per IRC SP: 35-1990 if any, for leakage strains on walls at joints.	Fixing with sealant suitably	30 days or before onset of rains whichever comes earlier	IRC SP:40-1993 and IRC SP:69-2011
	Structurally sound	Spalling of concrete not more than 0.25 sqm	Bi-Annually	Detailed inspection of all components of culvert as per IRC SP:35-1990 and recording the defects	Repairs to spalling, cracking, delamination, rusting shall be followed as per IRC:SP:40-1993.	15 days	IRC SP 40-1993 and MORTH Specifications clause 2800
		Delamination of concrete not more than 0.25 sq.m.					

		Cracks wider than 0.3 mm not more than 1m aggregate length					
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sqm, damage to solid apron (concrete apron) not more than 1 sqm	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Bridges including ROBs Flyover etc. as applicable	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC or wearing coat	15 days	MORT&H Specification 2811
Bridge -Super Structure	Bumps	No bump at expansion joint	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC on either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORT&H Specification 3004.2 & 2811.

	User safety (condition of crash barrier and guard rail)	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspection and detailed condition survey as per IRC SP: 35-1990.	Repairs and replacement of safety barriers as the case may be	3days	IRC: 5-1998, IRC SP: 84-2014 and IRC SP: 40-1993.
	Rusted reinforcement	Not more than 0.25 sq.m	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out the repairs to affected concrete portion with epoxy mortar / concrete.	15 days	IRC SP: 40-1993 and MORTH Specification 1600.
	Spalling of concrete	Not more than 0.50 sq.m					
	Delamination	Not more than 0.50 sq.m					
	Cracks wider than 0.30 mm	Not more than 1m total length	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, investigating causes for cracks development and carry out necessary rehabilitation.	48 Hours	IRC SP: 40-1993 and MORTH Specification 2800.
	Rainwater seepage through deck slab	Leakage - nil	Quarterly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting of deck slab at leakage areas, waterproofing, repairs to drainage spouts	1 months	MORTH specifications 2600 & 2700.

	Deflection due to permanent loads and live loads	Within design limits.	Once in every 10 years for spans more than 40 m	Load test method	Carry out major rehabilitation works on bridge to retain original design loads capacity	6 months	IRC SP: 51-1999.
	Vibrations in bridge deck due to moving trucks	Frequency of vibrations shall not be more than 5 Hz	Once in every 5 years for spans more than 30m and every 10 years for spans between 15 to 30 m	Laser displacement sensors or laser vibro-meters	Strengthening of super structure	4 months	AASHTO LRFD specifications
	Leakage in Expansion joints	No damage to elastomeric sealant compound in strip seal expansion joint, no leakage of rain water through expansion joint in case of buried and	Bi-Annually	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Replace of seal in expansion joint	15 days	MORTH specifications 2600 and IRC SP: 40-1993.

		asphalt plug and copper strip joint.					
	Debris and dust in strip seal expansion joint	No dust or debris in expansion joint gap.	Monthly	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Cleaning of expansion joint gaps thoroughly	3 days	MORTH specifications 2600 and IRC SP: 40-1993.
	Drainage spouts	No down take pipe missing/broken below soffit of the deck slab. No silt, debris, clogging of drainage spout collection chamber.	Monthly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Cleaning of drainage spouts thoroughly. Replacement of missing/broken down take pipes with a minimum pipe extension of 500mm below soffit of slab. Providing sealant around the drainage spout if any leakages observed.	3 days	MORTH specification 2700.

Bridge-substructure	Cracks/spalling of concrete/ rusted steel	No cracks, spalling of concrete and rusted steel	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out repairs to substructure by grouting/guniting and micro concreting depending on type of defect noticed	30 days	IRC SP: 40-1993 and MORTH specification 2800.
	Bearings	Delamination of bearing reinforcement not more than 5%, cracking or tearing of rubber not more than 2 locations per side, no rupture of reinforcement or rubber	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	In case of failure of even one bearing on any pier/abutment, all the bearings on that pier/abutment shall be replaced, in order to get uniform load transfer on to bearings.	3 months	MORTH specification 2810 and IRC SP: 40-199.

Bridge Foundations	Scouring around foundations	Scouring shall not be lower than maximum scour level for the bridge	Bi-Annually	Condition survey and visual inspection as per IRC SP:35-1990 using Mobile Bridge Inspection Unit. In case of doubt, use Underwater camera for inspection of deep wells in major Rivers.	Suitable protection works around pier/abutment	1 month	IRC SP: 40-1993, IRC 83-2014, MORTH specification 2500
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sq.m, damage to solid apron (concrete apron) not more than 1 sq.m	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching.	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Note: Any Structure during the entire contract period which is found that does not complies with all requirements of this Table will be prepared, rehabilitated or even reconstructed under the scope of the contractor.							

Table 4: Maintenance Criteria for Structures and Culverts:

Table 5: Maintenance Criteria for Hill Roads

In addition to above, for hill roads the following provisions for maintenance is also to done.

Hill Roads		
(i)	Damage to Retaining wall/ Breast wall	7 (Seven) days
(ii)	Landslides requiring clearance	12 (Twelve) hours
(iii)	Snow requiring clearance	24 (Twenty Four) hours

<u>Note:</u> For all tables 1 to 5 above, latest BIS & IRC standards (even those not indicated herewith) along with MoRTH specifications shall be binding for all maintenance activities.

A. Flexible Pavement

Nature of Defect or deficiency		Time limit for repair/ rectification
(b)	**Granular earth shoulders, side slopes, drains and culverts**	
(i)	Variation by more than 1 % in the prescribed slope of camber/cross fall (shall not be less than the camber on the main carriageway)	7 (seven) days
(ii)	Edge drop at shoulders exceeding 40 mm	7 (seven) days
(iii)	Variation by more than 15% in the prescribed side (embankment) slopes	30 (thirty) days
(iv)	Rain cuts/gullies in slope	7 (seven) days
(v)	Damage to or silting of culverts and side drains	7 (seven) days
(vi)	Desilting of drains in urban/semi- urban areas	24 (twenty four) hours
(vii)	Railing, parapets, crash barriers	7 (seven) days (Restore immediately if causing safety hazard)
(c)	**Road side furniture including road sign and pavement marking**	
(i)	Damage to shape or position, poor visibility or loss of retro- reflectivity	48 (forty eight) hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required/ Once every year
(iii)	Damaged/missing signs road requiring replacement	7 (seven) days
(iv)	Damage to road mark ups	7 (seven) days
(d)	**Road lighting**	
(i)	Any major failure of the system	24 (twenty four) hours
(ii)	Faults and minor failures	8 (eight) hours
(e)	**Trees and plantation**	
(i)	Obstruction in a minimum head- room of 5 m above carriageway or obstruction in visibility of road signs	24 (twenty four)hours

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

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

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

Schedule - F

Schedule - F

(See Clause 4.1 (vii)(a))

Applicable Permits

1. Applicable Permits

(iv) The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:

Permission of the State Government for extraction of boulders from quarry;

Permission of Village Panchayats and Pollution Control Board for installation of crushers;

Licence for use of explosives;

Permission of the State Government for drawing water from river/reservoir;

Licence from inspector of factories or other competent Authority for setting up batching plant;

Clearance of Pollution Control Board for setting up batching plant;

Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant;

Permission of Village Panchayats and State Government for borrow earth; and

Any other permits or clearances required under Applicable Laws.

(v) 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

Schedule – G

(See Clauses 7.1 and 19.2)

Annex-I

(See Clause 7.1)

Form of Bank Guarantee

[Performance Security/Additional Performance Security]

Chief Engineer (NH),
UP PWD, Govt. of Uttar Pradesh,
Nirman Bhawan, 96 Mahatma Gandhi Marg
Lucknow – 226001
Email id: cenh.up@gmail.com

(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 "***Rehabilitation and Up-gradation From Km. 0.000 to Km. 51.600 of NH-321G (Agra (Junction on NH-509 at Tedhi Baghia) to Nuhkhas) to two lane with paved shoulder configuration under EPC Mode in the state of Uttar Pradesh on Engineering, Procurement & Construction (EPC)"*** 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 [Superintending Engineer, NH PWD], 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, fulfilment 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

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

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.

Signed and sealed this ……. day of ……., 20…… at ……. SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:
(Signature)

(Name)

(Designation)
(Code Number)
(Address)
NOTES:

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

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

Annex – II

(Schedule - G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

Chief Engineer –Regional Office,
Tedhi Pulia Ring Rd,Tiwari Nagar Colony,
Sector 14, Vikas Nagar, Luckhnow.
Luckhnow, Uttar Pradesh- 226022
Ph No
Email – rolkorth@gmail.com

(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 "***Rehabilitation and Up-gradation From Km. 0.000 to Km. 51.600 of NH-321G (Agra (Junction on NH-509 at Tedhi Baghia) to Nuhkhas) to two lane with paved shoulder configuration under EPC Mode in the state of Uttar Pradesh on Engineering, Procurement & Construction (EPC)" on Engineering, Procurement and Construction (the "EPC)*** 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 + 3%* advance payment (herein after called "**Advance Payment**") equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten

percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second} installment of the Advance Payment is Rs. ------ cr. (Rupees ------ crore) and the amount of this Guarantee is Rs. ------- cr. (Rupees ------ crore) (the **"Guarantee Amount")**[$]**.**

(C) We, …….. through our branch at ……. (the "**Bank"**) have agreed to furnish this bank guarantee (*hereinafter called the* **"Guarantee"**) for the Guarantee Amount.

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

   A letter from the Authority, under the hand of an officer not below the rank of [Chief engineer, Project Beacon (Border Road Organization], 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.

2. 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.

3. 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.

4. 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.

5. This Guarantee is in addition to and not in substitution of any other guarantee or security now

[$] The Guarantee Amount should be equivalent to 110% of the value of the applicable instalment.

or which may hereafter be held by the Authority in respect of or relating to the Advance Payment.

6. 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.

7. 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.

8. 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.

9. 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.

10. 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.

———

[$] 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).

SCHEDULE – H

SCHEDULE - H

See Clauses10.1 (iv) and 19.3

Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs. ----(excluding GST)

Proportions of the Contract Price for different stages of Construction of the Projects Highway shall be as specifed below.

Item	Weightage in % of CP	Stage for Payment	Percentage weightage
1	2	3	4
Road works including culverts, widening and repair of culverts.	73.352%	**A- Widening and strengthening of existing road**	
		(1) Earthwork up to top of the sub-grade	7.60%
		(2) Earthwork in Shoulders	0.71%
		(3) Sub-Base Course	13.76%
		(4) Non-Bituminous Base Course	8.73%
		(5) Bituminous Base Course	10.84%
		(6) wearing Coat	6.43%
		(7) Widening and repair of culverts	1.14%
		B.1- Reconstruction/New 2-lane realignment/ bypass (Flexible pavement)	
		(1) Earthwork up to top of the sub-grade	1.63%
		(2) Earthwork in Shoulders	0.18%
		(3) Sub-Base Course	3.43%
		(4) Non-Bituminous Base Course	2.17%
		(5) Bituminous Base Course	2.70%
		(6) wearing Coat	1.60%
		B.2- Reconstruction 4-lane/ New 2/4-lane realignment/ bypass /Toll Plaza (Rigid Pavement)	
		(1) Earthwork up to top of the sub-grade	3.61%
		(2) Earthwork in Shoulders/Major Junction	0.00%
		(3) Sub Base Course	4.86%
		(4) Dry Lean Concrete (DLC) Course	6.70%
		(5) Pavement Quality Control (PQC) Course	17.62%
		C.1-Reconstruction/New service road (Flexible pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%

		(2) Earthwork in Shoulders	0.00%
		(3) Sub-Base Course	0.00%
		(4) Non-Bituminous Base Course	0.00%
		(5) Bituminous Base Course	0.00%
		(6) wearing Coat	0.00%
		C.2-Reconstruction/New service road (Rigid pavement)	
		(1) Earthwork up to top of the sub-grade	0.0%
		(2) Sub Base Course	0.0%
		(3) Dry Lean Concrete (DLC) Course	0.0%
		(4) Pavement Quality Control (PQC) Course	0.0%
		D-Re-Construction and New culverts on existing road, realignments, by passes:	
		Culverts (length <6m)	6.28%
Minor Bridges/ Underpasses/ Overpasses	7.740%	**A.1- Widening and Repair of Minor bridges (length > 6m and <60m)**	
		Minor bridge	17.36%
		A.2- New Minor bridges (length 6 and <60 m.)	
		(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	28.69%
		(2) Sub-structure: On completion of abutments, piers upto the abutment/ pier cap including wing/ return/ retaining wall upto top	19.19%
		(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	25.77%
		(4) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect, tests on completion in all respect and fit for use	6.28%
		(5) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	0.00%

		(6) Other Ancilliary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion in all respect.	2.71%
		B.1- Widening and repair of underpasses/ overpasses	0.00%
		Underpasses/ Overpasses	0.00%
		B.2 New Underpassess/Overpasses	
		(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	0.00%
		(2) Sub-structure: On completion of abutments, piers upto the abutment/ pier cap including wing/ return/ retaining wall upto top	0.00%
		(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings.	0.00%
		(4) On completion of Retaining / Reinforced earth walls, complete in allrespect and fit for use	0.00%
		(5) Approaches and Other Ancilliary Works: On completion of wearing coat,expansion joints, hand rails, crash barriers, stone pitching, protection works, road signs & markings, tests on completion in all respect. Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass-rigid pavement including drainage facility complete in all respects as specified	0.00%
Major Bridges (length> 60m.) works and ROB/RUB/ elevated sections/flyovers including viaducts, if any	0.000%	**A.1- Widening and repairs of Major Bridges**	
		(1) Foundation: On completion of the foundation work including foundations for return walls, abutments, piers.	
		(2) Sub-structure: On completion of abutments, piers upto the abutment/ pier cap	
		(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings.	
		(4) Wearing Coat including expansion joints	

		(5) Miscellaneous Items like hand rails, crash barriers, road marking etc.	
		(6) Wing walls/ return walls upto top	
		(7) Guide Bunds, River Training works etc.	
		(8) Approaches (including Retaining walls, stone pitching and protection works)	
		A.2- New Major Bridges.	
		(1) Foundation: On completion of the foundation work including foundations for return walls, abutments, piers.	
		(2) Sub-structure: On completion of abutments, piers upto the abutment/ pier cap	
		(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings.	
		(4) Wearing Coat including expansion joints	
		(5) Miscellaneous Items like hand rails, crash barriers, road marking etc.)	
		(6) Wing walls/ return walls	
		(7) Guide Bunds, River Training works etc.	
		(8) Approaches (including Retaining walls, stone pitching and protection works)	
		B.1- Widening and repair of	
		(a) ROB	
		(b) RUB	
		(1) Foundation	
		(2) Sub-structure	
		(3) Super-structure (including bearings)	
		(4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	
		(5) Miscellaneous Items like hand rails, crash barriers, road marking etc.)	
		(6) Wing walls/ return walls	
		(7) Retaining / Reinforced earth walls	

		(8) Approaches and Other Ancillary Works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.)	
		B.2- New ROB/RUB	
		(1) Foundation	
		(2) Sub-structure	
		(3) Super-structure (including bearings)	
		(4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified as specified.	
		(5) Miscellaneous Items like hand rails, crash barriers, road marking etc.)	
		(6) Wing walls/ return walls	
		(7) Approaches (including Retaining walls/ Reinforced Earth wall, stone pitching and protection works)	
		C.1- Widening and repair of Elevated Section/Flyovers/Grade Separators	
		(1) Foundation	
		(2) Sub-structure	
		(3) Super-structure (including bearings)	
		(4) Wearing Coat including expansion joints	
		(5) Miscellaneous Items like hand rails, crash barriers, road marking etc.)	
		(6) Wing walls/ return walls	
		(7) Retaining / Reinforced earth walls	
		(8) Approaches and Other Ancillary Works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.)	
		C.2- New Elevated Section/Flyovers/ Grade Separators	
		(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	
		(2) Sub-structure: On completion of abutments, piers upto the abutment/ pier cap including wing/ return/ retaining wall upto top	

		(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings.	
		(4) Wearing Coat including expansion joints	
		(5) Miscellaneous Items like hand rails, crash barriers, road marking etc.)	
		(6) Wing walls/ return walls	
		(7) Retaining / Reinforced earth walls	
		(8) Approaches and Other Ancillary Works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.)	
Other works	11.306%	(i) Toll Plaza	0.00%
		(ii) Road Side Drains	53.95%
		(iii) Road signs, marking, km stones, safety devices,	1.16%
		(iv) Road marking, Studs & Delineators	3.70%
		(v) Thrie Beam Crash Barrier	7.52%
		(vi) Projects facilities	
		(a) Bus Bays	0.00%
		(b) Wayside Amenities excluding Slip Roads & but including all internal roads (Service areas including Truck Lay-Byes)	0.00%
		(c) Others (to be specified)	
		1. Bus shelter	2.32%
		2. street lighting	21.53%
		3. Toilet Facility	0.00%
		4. Noise Barrier	0.00%
		5.Vehicle for Authority	0.48%
		(vii) Retaining Wall	0.00%
		(viii) Breast Wall	0.00%
		(ix) Street Lighting	0.00%
		(x) Utility Ducts	0.00%
		(xi) Boundary wall	0.00%
		(xii) ATMS	0.00%
		(xiii) Rain Water Harvesting	0.00%
		(xiv) Road side Plantation including Horticultrure in Wayside Aminities	0.00%
		(xv) Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs	0.00%
		(xvi) Safety and traffic management during construction	0.00%
		(xvii) Other miscellaneous works including Connecting Road & Junction under Grade separator	

		(1) Raised Footpath	0.000%
		(2) Mild Steel Guard Rails	5.380%
		(3) Kerb Stones in Median	3.958%
		(4) Interlocking C.C. paver block (80 mm thick, M-30)	0.000%

Utility cost

Item	**Weightage in percentage to the Utility Shifting Price**	**Stage for payment**	**Percentage weightage**
Electrical utilities and public Health Utilities (Water pipe lines and sewage lines)	7.60%	(i) EHT line	31.15%
		(ii) EHT Crossing	46.73%
		(iii) HT/ LT line crossings	7.11%
		(iv) HT/ LT	0.00%
		(V) Transmission	5.98%
		(iii) Water pipe line	9.04%
		(vi) Water pipe line crossings	0.00%
		(vii) Sewage line	0.00%
		(viii) Sewage line Crossings	0.00%

Road works.

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

Stage of Payment	**Percentage-Weightage**	**Payment Procedure**
A-Widening and Strengthening of existing road		Unit of measurement is linear length. Payment of each stage shall be made on prorata basis on completion of a stage in a length of not less than 10(ten) percent of the total length.
(1) Earthwork up to top of the sub-grade	7.60%	
(2) Earthwork in Shoulders	0.71%	
(3) Sub-Base course	13.76%	
(4) Non-Bituminous Base Course	8.73%	
(5) Bituminous Base Course	10.84%	
(6) Wearing Coat	6.43%	
(6) Widening and repair of culverts	1.14%	Cost of ten completed culverts shall be determined pro rata basis with respect to the total no. of culverts. payment shall be made on the completion of at least five culverts.

B.1- Reconstruction/New 2-lane realignment/bypass (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on prorata basis on completion of a stage in full length or 5 (Five) km. length, whichever is less.
(1) Earthwork up to top of the sub-grade	1.63%	
(2) Earthwork in Shoulders	0.18%	
(2) Sub-Base course	3.43%	
(3) Non-Bituminous Base Course	2.17%	
(4) Bituminous Base Course	2.70%	
(5) Wearing Coat	1.60%	
B.2- Reconstruction/New 2-lane realignment/bypass (Rigid Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on prorata basis on completion of a stage in full length or 5(five) km. length, whichever is less.
(1) Earthwork up to top of the sub-grade	3.61%	
(2) Sub-Base course	4.86%	
(3) Dry Lean Concrete (DLC)	6.70%	
(4) Pavement Quality Control (PQC) Course	17.62%	
(5) Earthwork in Shoulders	0.00%	
C.1- Reconstruction/ New service road (Flexible pavement)		Unit of measurement is linear length. Payment of each stage shall be made on prorata basis on completion of a stage in full length or 5(five) km. length, whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Earthwork in Shoulder	0.00%	
(3) Sub-Base course	0.00%	
(4) Non-Bituminous Base Course	0.00%	
(5) Bituminous Base Course	0.00%	
(6) Wearing Coat	0.00%	
C.2- Reconstruction/ New service road (Rigid pavement)		Unit of measurement is linear length. Payment of each stage shall be made on prorata basis on completion of a stage in full length or 5(five) km. length, whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-Base course	0.00%	
(3) Dry Lean Concrete (DLC)	0.00%	

(4) Pavement Quality Control (PQC) Course	0.00%	
D- Re-Construction and New culverts on existing road, realignments, bypasses:		Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts.
(1) Culverts (length <6m)	6.28%	Payments shall be made on the completion of at least five culverts.

For calculation of payment stage for main-carriageway the project length shall be converted into equivalent 2 lane length. For example, if the total length of 4 lane main carriageway is 100 km, then the equivalent length for calculation of payment stage will be 2 x 100 km. Now, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows:

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

Where P = Contract Price

L= Total equivalent 2-Lane length in km as defined above

Similarly, the rates per km for other stages shall be worked out accordingly.

Note: The length affected due to law-and-order problems or litigation during execution including the length not handed over to the Contractor under clause 8.3 of this Contract Agreement due to which the Contractor is unable to execute the work, may be deducted from the total project length for payment purposes. The total length calculated here is only for payment purposes and will not affect and referred in other clauses of the Contract Agreement

Minor Bridges and Underpasses/Overpasses.

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

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
A.1- Widening and repair of minor bridges (length>6m and <60m)	17.36%	Cost of each minor bridge shall be determined on prorata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge

A.2- New Minor Bridges (length>6m &<60m) (1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	28.69%	Foundation: Cost of each minor bridge shall be determined on pro- rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure: On completion of abutments, piers upto the abutment/ pier cap including wing/ return/ retaining wall upto top	19.19%	Sub-structure: Cost of each minor bridge shall be determined on pro- rata basis with respect to the total linear length (m) of the minor bridges. Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of each bridge.
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	25.77%	Payment shall be made on prorate basis on completion of a stage i.e. completion of superstructure including bearings of at least one span in all respects as specified excluding any payment made in pursuance to here in under: If precast girders/segments are used, on casting of all such girders and segments for at least one span and on submission of Indemnity Bond by the Contractor, 40% of the actual cost of such precast girders/segments determined based on SoR prevalent on the Base date within 30 days of submission of the bill therefor. In case the Contract Price is lower! higher than the Estimated Project Cost as per RFP, then the SOR rates shall be reduced/ increased in the same proportion accordingly. Balance payment shall be after erection of / launching of these elements as per stage payment stipulations.
(4) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use	6.28%	Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.
(5) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	0.00%	**Guide Bunds and River Training Works:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bunds and River training Works in all respects as specified

(6) Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion in all respect.	2.71%	Other Ancillary Works: Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
B.1- Widening and repair of underpasses/overpasses	0.00%	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/ overpasses. Payment shall be made on the completion of widening & repair works of a underpass/overpass.
B.2-New Underpasses/Overpasses:		
(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	0.00%	**Foundation:** Cost of each Underpass/ Overpass shall be determined on pro- rata basis with respect to the total linear length (m) of the Underpasses/Overpasses. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of each Underpasses/ Overpasses. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure: On completion of abutments, piers upto the abutment/ pier cap including wing/ return/ retaining wall upto top	0.00%	Sub-structure: Cost of each Underpass/ Overpass shall be determined on pro- rata basis with respect to the total linear length (m) of the underpasses/ Overpasses. Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of each Underpasses/Overpasses.
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure of atleast one span in all respects as specified in the column of "Stage of Payment" in this sub-clause. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) On completion of Retaining / Reinforced earth walls complete in all respect and fit for use	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.

(5) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works, tests on completion in all respect.	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified

Major Bridge works, ROB/RUB and Structures.

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

Table 1.3.3

Stage of Payment	**Weightage**	**Payment Procedure**
A.1- Widening and repairs of Major Bridges		
(1) Foundation: On completion of the foundation work including foundations for return walls, abutments, piers.	0.00%	Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure: On completion of abutments, piers upto the abutment/ pier cap	0.00%	Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of major bridge.
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) Wearing Coat including expansion joints	0.00%	**Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.

(5) Miscellaneous Items like hand rail, crash barrier, road markings etc.	0.00%	**Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls upto top	0.00%	(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/ return walls complete in all respects as specified.
(7) Guide Bunds and River Training Works:	0.00%	**Guide Bunds, River Training works:** Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	**Approaches:** Payments shall be made on pro rata basis on completion of 10% of the scope of each stage.
A.2- New Major Bridges		
(1) Foundation: On completion of the foundation work including foundations for return walls, abutments, piers.	0.00%	Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure: On completion of abutments, piers upto the abutment/ pier cap	0.00%	**Sub-structure:** Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of major bridge.
(3) Super-structure: On completion of the super- structure in all respects including Girder, Deck slab, bearings	0.00%	**Super-structure**: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) Wearing Coat including expansion joints	0.00%	**Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.

(5) Miscellaneous Items like hand rail, crash barrier, road markings etc.	0.00%	**Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls upto top	0.00%	**Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Guide bunds, River Training works etc.	0.00%	**Guide Bunds,** River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	**Approaches:** Payments shall be made on pro rata basis on completion of 10% of the scope of each stage.
B.1- Widening and repairs of		Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(a) ROB		
(b) RUB		
(1) Foundation	0.00%	
(2) Sub-Structure	0.00%	**Sub-structure:** Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Super- Structure (including bearings)	0.00%	**Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) Wearing Coat including expansion joints in case of ROB. In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%	Wearing Coat: Payment shall be made on completion (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.

(5) Miscellaneous Items like hand rail, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall made on completion of miscellaneous works like hand rails, crash barriers, road markings complete in all respects as specified.
(6) Wing walls/return walls.	0.00%	**Wing walls/return walls**: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) On completion of Retaining / Reinforced earth walls complete in all respect and fit for use	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.
(8) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works, tests on completion in all respect.	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
B.2-New		Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(a) ROB		
(b) RUB		
(1) Foundation	0.00%	
(2) Sub-Structure	0.00%	**Sub-structure:** Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Super- Structure (including bearings)	0.00%	**Super-structure:** Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above

(4) Wearing Coat including expansion joints in case of ROB. In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%	**Wearing Coat:** Payment shall be made on completion(a) in case of ROB- wearing coat including expansion joints complete in all respects as specifiedand(b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	**Miscellaneous**: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	**Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) On completion of Retaining / Reinforced earth walls complete in all respect and fit for use	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.
(8) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works, tests on completion in all respect.	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
C.1-Widening and repair of Elevated/Flyovers/Grade Separators		
(1) Foundation	0.00%	Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-Structure	0.00%	**Sub-structure:** Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure

(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%	**Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) Wearing Coat including expansion joints	0.00%	**Wearing Coat:** Payments shall be made on completion of wearing Coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rail, crash barrier, road markings etc.	0.00%	**Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barrier, road markings etc.complete in all respects as specified.
(6) Wing walls/return walls.	0.00%	**Wing walls/return walls**:Payments shall be made on completion of all wing walls/ return walls complete in all respects as specified.
(7) On completion of Retaining / Reinforced earth walls complete in all respect and fit for use	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.
(8) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works, tests on completion in all respect.	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
C.2 New Elevated Section/Flyover/Grade Separators	0.000%	**Foundation** : Cost of each structure shall be determined on pro rata basis with respects to the total linear length (m) of the structure . Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure subject to completion of at least two foundation of the structure . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(1) Foundation		

(2) Sub-Structure	0.000%	**Sub-structure:** Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.000%	**Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) Wearing Coat including expansion joints	0.000%	**Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rail, crash barrier, road markings etc.	0.000%	**Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls.	0.000%	**Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) On completion of Retaining / Reinforced earth walls complete in all respect and fit for use	0.000%	Payments shall be made on pro rata basis on completion of 20% of the total area.
(8) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works, tests on completion in all respect.	0.000%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified

In case of innovative Major Bridge projects like cable suspension/cable stayed/ Extra Dozed and exceptionally long span bridges, the schedule may be modified as per

site requirements before bidding with due approval of DG(RD)&SS, MoRT&H.

The Schedule for exclusive tunnel projects may be prepared as per site requirements before bidding with due approval of DG(RD)&SS, MoRT&H.

Other works.

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

Stage of Payment	Weightage	Payment Procedure
(1) Toll Plaza	0.00%	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plaza.
(2) Road side drains	53.95%	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.
(3) Road signs, markings, km stones, safety devices,	1.16%	
(4) Road markings & Studs	3.70%	
(5) Crash Barrier	7.52%	
(6) Project Facilities		Payment shall be made on pro rata basis for completed facilities.
a) Bus Bays	0.00%	
b) Wayside Amenities excluding Slip Roads & but including all internal roads (Service areas including Truck Lay-Byes)	0.00%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
c) Others (To be specified)		
1. Bus shelter	2.32%	
2. street lighting	21.53%	
3. Toilet Facility	0.00%	
4. Noise Barrier	0.00%	
5.Vehicle for Authority	0.48%	
(7) Rain Water Harvesting	0.00%	
(8) Retaining Wall	0.00%	
(9) RE Wall	0.00%	
(10) Street Lighting	0.00%	
(11) Utility Ducts	0.00%	
(12) ATMS	0.00%	
(13) Road side Plantation including Horticulture in Wayside Amenities	0.00%	
(14) Protection Works other than approaches to thebridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs	0.00%	
(15) Boundary wall	0.00%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(16) Safety and traffic management during construction	0.00%	Payment shall be made on prorate basis every six months.
(17) Other miscellaneous works including Connecting Road &		Payment should be made on pro rata basis on completion of each stage

Junction under Grade separator		
(1) Raised Footpath	0.000%	
(2) Mild Steel Guard Rails		
(3) Kerb Stones in Median	5.380%	
(4) Interlocking C.C. paver block (80 mm thick, M-30)	3.958%	
(5) Interlocking C.C. paver block (80 mm thick, M-30)	0.000%	

1.3.5. Electrical Utilities and public Health Utilities (Water pipelines and sewage lines)

Table 1.3.5

Stage of Payment	Weightage	Payment procedure
(i) EHT line	31%	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rate basis as per its weightage with reference to total cost of EHT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is (i) Erection of Poles-20%, Conductor stringing including laying of cable 30%, (iii) DTR erection (if involved)-15% and (iv) Charging of line including dismantling and site clearance-35% (with DTR) and 50% without DTR)
(ii) EHT Crossing	46.73%	Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to minimum of 4 crossings.
(iiI) HT/ LT line crossings	7.1%	Unit of measurement is as per completed activities. Cost per activity shall be determined on basis as per its weightage pro-rata with reference to total cost of LT/ HT line. Payment shall complete made for activity. (The average weightage of major activities (only for payment purpose) in shifting work is (1) Erection of Poles-20% (ii) Conductor stringing including laying of cable 30%, (iii) DTR erection (if involved)-10% and (iv) Charging of line including dismantling and site clearance-40% (with DTR) and 50% without DTR)
(iv) HT/ LT	0%	Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 10 crossings.

(IV)Trasmision Line	6%	Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 10 crossings.
(iii) Water pipe line	9%	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is laying of pipe-50%, Charging of line including all miscellaneous works and dismantling and site clearance-50%)
(vi) Water pipe line crossings	0%	Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 10 crossings.
(vii) Sewage line	0%	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage activities (only of major for payment purpose) in shifting work is laying of pipe-50%, Charging of line including all miscellaneous works and dismantling and site clearance-50%)
(viii) Sewage line Crossings	0%	Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for completed activity. (The average weightage of major activities in shifting work is laying pipe 50%, Charing of line including all miscellaneous works and dismantling and site clearance-50%)

Procedure for payment for Maintenance

The cost for maintenance shall be as stated in Clause 14.1 (v).
Payment for Maintenance shall be made in accordance with the provisions of Article 14 and Article 19.

Schedule - I

Schedule - I

(See Clause 10.2 (iv))

Drawings

1. Drawings

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

2. Additional Drawings

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

Annex – I

(Schedule - I)

List of Drawings

[**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

Schedule - J

(See Clause 10.3 (ii))

Project Completion Schedule

1. Project Completion Schedule

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

2. Project Milestone-I

(i) Project Milestone-I shall occur on the date falling on the **[35% of the Scheduled Construction Period]** day from the Appointed Date (the "**Project Milestone- I**").

(ii) Prior to the occurrence of Project Milestone-I, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 10% (ten per cent) of the Contract Price.

3. Project Milestone-II

(i) Project Milestone-II shall occur on the date falling on the **[60% of the Scheduled Construction Period]** day from the Appointed Date (the "**Project Milestone- II**").

(ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 35% (thirty five per cent) of the Contract Price **and should have started construction of all bridges**

4. Project Milestone-III

(i) Project Milestone-III shall occur on the date falling on the **[85% of the Scheduled Construction Period]** day from the Appointed Date (the "**Project Milestone- III**").

(ii) Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 70% (seventy per cent) of the Contract Price and **should have** started construction of all project facilities.

5. Scheduled Completion Date

(i) The Scheduled Completion Date shall occur on the [Scheduled Construction Period] day from the Appointed Date.

(ii) On or before the Scheduled Completion Date, the Contractor shall have completed construction in accordance with this Agreement.

6. Extension of time

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

Schedule - K

Schedule - K

(See Clause 12.1 (ii))

Tests on Completion

1. Schedule for Tests

(i) The Contractor shall, no later than 30 (thirty) days prior to the likely completion of construction, notify the Authority's Engineer and the Authority of its intent to subject the Project Highway to Tests, and no later than 10 (ten) days prior to the actual date of Tests, furnish to the Authority's Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Works.

(ii) The Contractor shall notify the Authority's Engineer of its readiness to subject the Project Highway to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule-K.

2. Tests

(i) Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include [***].

(ii) Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a Network Survey Vehicle (NSV) fitted with latest equipments and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometre.

(iii) Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on 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.

(iv) Pavement Strength: The pavement strength is to be measured using Falling Weight Deflectometer (FWD), at least once a year upon Completion of Project.

(v) Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards, except tests as specified in clause 5,but shall include measuring the reflectivity of road markings and road signs; and measuring the illumination level (lux) of lighting using requisite testing equipment.

(vi) 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.

(vii) Safety Audit: The Authority's Engineer shall carry out, or cause to be carried out, a safety audit to determine conformity of the Project Highway with the safety requirements and Good Industry Practice.

3. Agency for conducting Tests

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

4. Completion Certificate

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

5. The Authority Engineer will carry out tests with following equipment at his own cost in the presence of contractor's representative.

Sr. No.	Key metrics of Asset	Equipment to be used	Frequency of condition survey
1	Surface defects of pavement	Network Survey Vehicle (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
2	Roughness of pavement	Network Survey Vehicle (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
3	Strength of pavement	Falling Weight Deflectometer (FWD)	At least once a year
4	Bridges	Mobile Bridge Inspection Unit (MBU)	At least twice a year (As per survey months defined for the state basis rainy season)
5	Road signs	Retro-reflectometer	At least twice a year (As per survey months defined for the state basis rainy season)

The first testing with the help of NSV shall be conducted at the time of issue of Completion Certificate.

Schedule - L

Schedule - L

(See Clause 12.2)

Completion Certificate

1 I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated …… (the "**Agreement**"), for *"**Rehabilitation and Up-gradation From Km. 0.000 to Km. 51.600 of NH-321G (Agra (Junction on NH-509 at Tedhi Baghia) to Nuhkhas) to two lane with paved shoulder configuration under EPC Mode in the state of Uttar Pradesh on Engineering, Procurement & Construction (EPC) mode"*** basis through ……. (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Authority's Engineer by:

(Signature)

(Name)

(Designation) (Address)

Schedule - M

Schedule - M

(See Clauses 14.6, 15.2 and 19.7)

Payment Reduction for Non-Compliance

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

(i) Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.

(ii) Any deduction made on account of non-compliance with the Maintenance Requirements shall not be paid even after compliance subsequently. The deductions shall continue to be made every month until compliance is done.

(iii) The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph 2.

2. Percentage reductions in lump sum payments on monthly basis

(i) The following percentages shall govern the payment reduction:

S. No.	Item/Defect/Deficiency	Percentage
(a)	**Carriageway/Pavement**	
(i)	Potholes, cracks, other surface defects	15%
(ii)	Repairs of Edges, Rutting	5%
(b)	**Road, Embankment, Cuttings, Shoulders**	
(i)	Edge drop, inadequate cross fall, undulations, settlement, potholes, ponding, obstructions	10%
(ii)	Deficient slopes, rain cuts, disturbed pitching, vegetation growth, pruning of trees	5%
(c)	**Bridges and Culverts**	
(i)	Desilting, cleaning. vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
(ii)	Any Defects in superstructures, bearings and sub-structures	10%
(iii)	Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers	5%

S. No.	Item/Defect/Deficiency	Percentage
(d)	**Roadside Drains**	
(i)	Cleaning and repair of drains	5%
(e)	**Road Furniture**	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5th km stones	5%
(f)	**Miscellaneous Items**	
(i)	Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	**Defects in Other Project Facilities**	5%

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

$$R = {}^{P}/_{100} \times (M1 \text{ or } M2) \times {}^{L1}/_{L}$$

Where,

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

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

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

L1= Non-complying length 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

Schedule - N

(See Clause 18.1 (i))

Selection of Authority's Engineer

1. Selection of Authority's Engineer

(i) The provisions of the Model Request for Proposal for Selection of Technical Consultants, issued by the Ministry of Finance in May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Authority's Engineer.

(iii) In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule-N.

2. Terms of Reference

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

3. Appointment of Government entity as Authority's Engineer

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

Annex – I

(Schedule - N)

Terms of Reference for Authority's Engineer

1. Scope

(i) These Terms of Reference (the"TOR") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated ..... (the "Agreement), which has been enteredintobetweenthe[nameandaddressoftheAuthority](the"Authority") and

..... (the "Contractor") for "Rehabilitation and Up-gradation From Km. 0.000 to Km. 51.600 of NH-321G (Agra (Junction on NH-509 at Tedhi Baghia) to Nuhkhas) to two lane with paved shoulder configuration under EPC Mode in the state of Uttar Pradesh on Engineering, Procurement & Construction (EPC)mode." 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.

- In case the bid of Authority's Engineer is invited simultaneously with the bid of EPC project, then the status of bidding of EPC project only to be indicated

(ii) The TOR shall apply to construction and maintenance of the Project Highway.

2. Definitions and interpretation

(i) The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.

(ii) References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.

(iii) The rules of interpretation stated in Article 1 of the Agreement shall apply, mutatis mutandis, to this TOR.

3. General

(i) The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

(ii) The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:

any Time Extension;

any additional cost to be paid by the Authority to the Contractor;

the Termination Payment; or

issuance of Completion Certificate or

any other matter which is not specified in (a), (b), (c) or (d) above and which creates a financial liability on either Party.

(iv) 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.

(v) The Authority's Engineer shall ensure that NSV survey shall be conducted at the following intervals: (13.11.2019)

Before start of the work,

Before issue of provisional/ final completion certificate,

Every 6 months after completion of work

The NSV reports shall be uploaded on PMIS and RAMS portal (http://nsvsurvey.nhai.org/NSVsurvey/)

(vi) The Authority's Engineer in consultation with the Authority shall update PMIS Portal of the Ministry (https://pmis.morthedisha.gov.in/) and also ensure uploading Monthly and Quarterly Progress Report along with Strip Chart on PMIS Portal. Such updations shall be done on the last date of every month/ quarter and if required, on a weekly basis as advised by the Authority. Monthly invoices towards services of the Authority's Engineer shall not be admitted for payment in case of non-compliance of the above.

(vii) 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.

(viii) The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.

(ix) In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

4. Construction Period

(i) During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1 (vi). The Authority's Engineer shall complete such review and approval and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

(ii) The Authority's Engineer shall review and approve any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.

(iii) The Authority's Engineer shall review and approve the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty one) days stating the modifications, if any, required thereto.

(iv) The Authority's Engineer shall complete the review and approve of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.

(v) The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.

(vi) The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.

(vii) The Authority's Engineer shall inspect the Construction Works and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.

(viii) The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.

(ix) For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4 (ix), the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.

(x) The Authority's Engineer shall test check at least 50 (fifty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

(xi) The timing of tests referred to in Paragraph 4 (ix), and the criteria for acceptance/ rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

(xii) In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.

(xiii) The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.

(xiv) In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and

the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

(xv) The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.2.

(xvi) Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.

(xvii) In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.

(xviii) The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate, as the case may be. For carrying out its functions under this Paragraph 4 (xviii) and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5. Maintenance Period

(i) The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.

(ii) The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.

(iii) The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.

(iv) In respect of any defect or deficiency referred to in Paragraph 3 of Schedule- E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.

(v) The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project Highway for undertaking maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6. Determination of costs and time

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

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

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

7. Payments

(i) The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2 (iv) (d).

(i) 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.

(ii) 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.

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

8. Other duties and functions

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

9. Miscellaneous

(i) A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

(ii) The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.

(iii) Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.

(iv) The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.

(v) The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

Schedule - O

(See Clauses 19.4 (i), 19.6 (i), and 19.8 (i))

Forms of Payment Statements

1. Stage Payment Statement for Works

a. The Stage Payment Statement for Works shall state:

b. the estimated amount for the Works executed in accordance with Clause 19.3 (i) subsequent to the last claim;

c. amounts reflecting adjustments in price for the aforesaid claim;

d. the estimated amount of each Change of Scope Order executed subsequent to the last claim;

e. amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2 (iii) (a);

f. total of (a), (b), (c) and (d) above;

g. 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.

h. Net claim: (e) – (f) (iii);

i. 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

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

(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.

(ii) The insurance under sub para (a) and (b) of paragraph 1(i) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

The Contractor shall effect and maintain insurance cover of not less than 15% of the Contract Price for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3. Insurance against injury to persons and damage to property

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

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

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

(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.

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:

Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be [2,200 (two thousand and two hundred only)] mm for each kilometre.

2. Visual and physical test:

The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include measurement of cracking, rutting, stripping and potholes and shall be as per the requirement of maintenance mentioned in Schedule-E.

Schedule-R

(See Clause 14.10)

Taking Over Certificate

I, …….. (Name and designation of the Authority's Representative) under and in accordance with the Agreement dated ……. (the "**Agreement**"), for "***Rehabilitation and Up-gradation From Km. 0.000 to Km. 51.600 of NH-321G (Agra (Junction on NH-509 at Tedhi Baghia) to Nuhkhas) to two lane with paved shoulder configuration under EPC Mode in the state of Uttar Pradesh on Engineering, Procurement & Construction (EPC)***"on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)

***** End of the Document *****