National Highways Authority of India

(Ministry of Road, Transport & Highways)
Government of India

Six laning of Kagal-Satara section of NH-48 (old NH-4) [Package – II from km 658.000 to km 725.000] in the State of Maharashtra to be executed on BOT (Toll) mode under Bharatmala Pariyojana

TECHNICAL SCHEDULE – A, B, C & D

G-5 & 6, Sector – 10, Dwarka, New Delhi – 110 075

SCHEDULE – A

SCHEDULE – A
(See Clause 10.1)

SITE OF THE PROJECT

1 The Site

1.1 Site of the Six-Lane Project Highway shall include the land, buildings, structures and road works as described in Annex -I of this Schedule-A.

1.2 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 Concessionaire, and such inventory shall form part of the memorandum referred to in clause 10.3.1 of the Agreement.

1.3 Additional land required for Toll Plazas, Traffic Aid Posts, Medical Aid Posts and vehicle rescue posts or for construction of works specified in Change of Scope Order issued under Clause 16.2.3 of this agreement shall be acquired in accordance with the provisions of Clause 10.3.6 of this Agreement. Upon acquisition, such land shall form part of the Site and vest in the Authority.

Annexure - 1

(Schedule - A)

1 Site

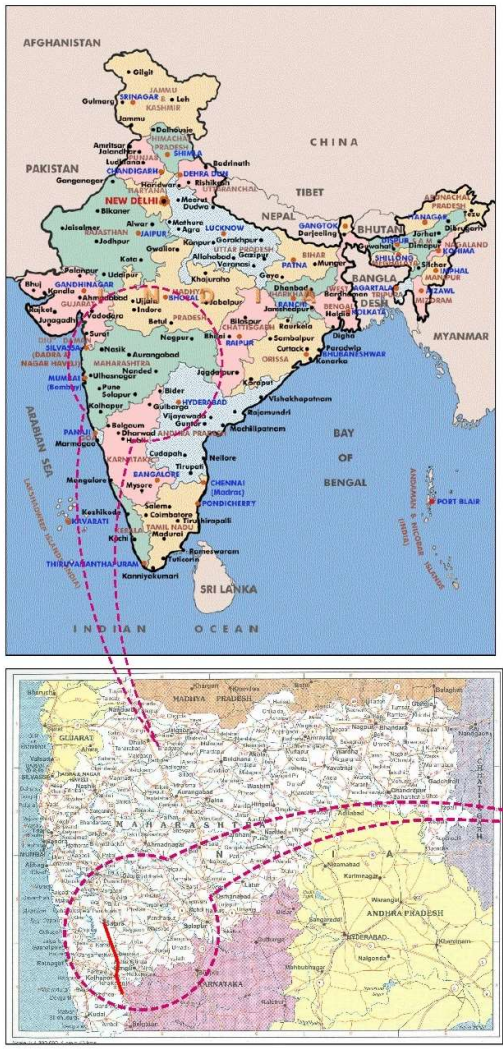
The Site of the Six-Lane Project Highway comprises the section of National Highway 4 commencing from Km 658.000 to Km 725.000 i.e. the Pethnaka – Satara section, passing through the Sangli and Satara district in the State of Maharashtra.

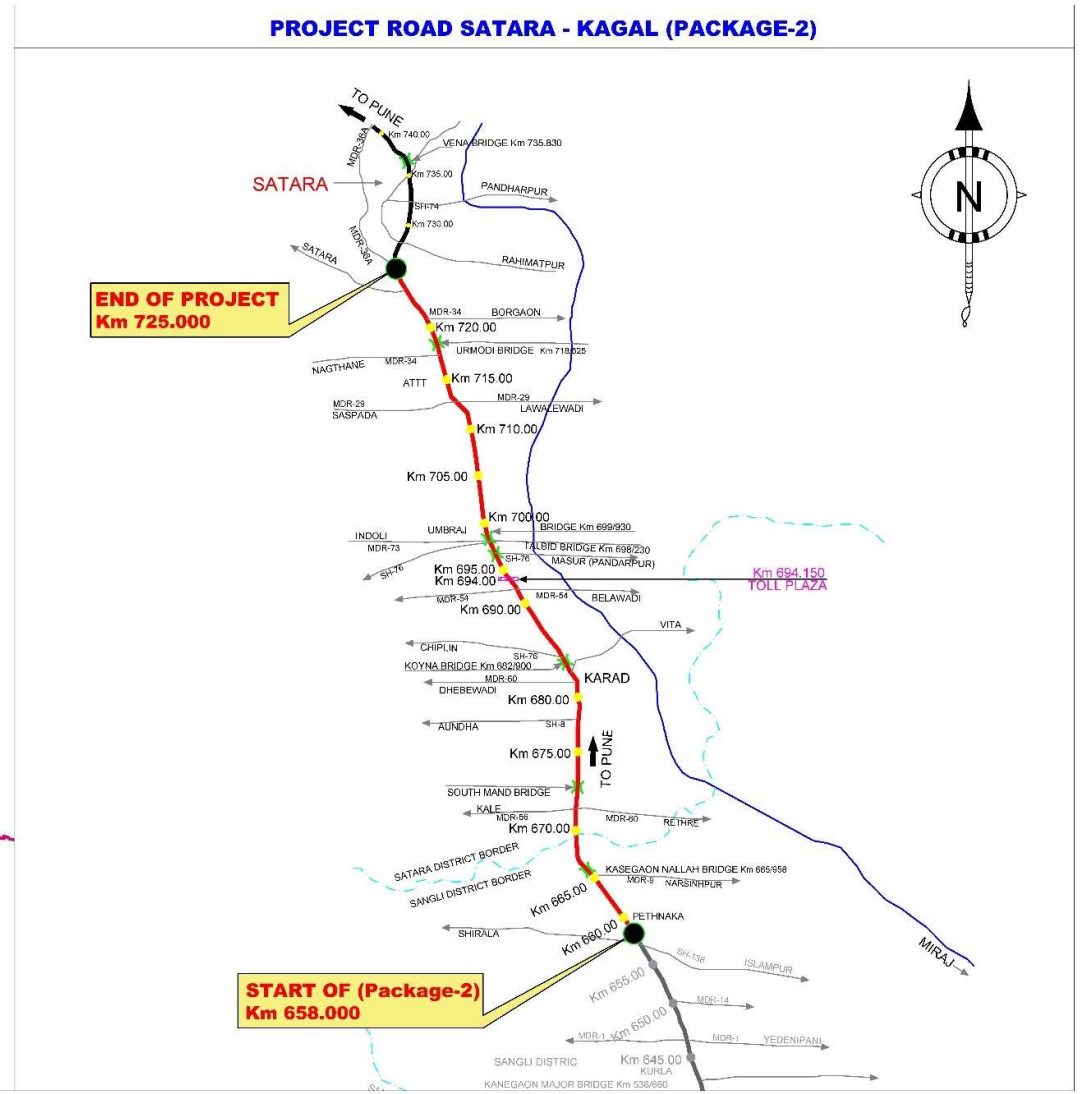
The Index map depicting the project road is also enclosed. The existing road is four lane divided carriageway with paved shoulder and mix of flexible and rigid pavements along its length.

The land use pattern of project corridor is principally Urban/Commercial, Industrial, rural, agricultural and linear plantation. The alignment traverses through plain to rolling terrain.

The land, carriageway and structures comprising the Site are described below.

Index Map


AFGHANISTAN
PAKISTAN
CHINA
TIBET
NEPAL
BHUTAN
BANGLA DESH
MYANMAR
BAY OF BENGAL
SRI LANKA
INDIAN OCEAN
ARABIAN SEA
NEW DELHI
MADHYA PRADESH
GUJARAT
MAHARASHTRA
ANDHRA PRADESH
KARNATAKA


PROJECT ROAD SATARA - KAGAL (PACKAGE-2)
TO PUNE
SATARA
VENA BRIDGE Km 735.830
PANDHARPUR
RAHIMATPUR
END OF PROJECT
Km 725.000
BORGAON
URMODI BRIDGE
NAGTHANE
ATTT
LAWALEWADI
SASPADA
UMBRAJ
INDOLI
BRIDGE Km 699/930
TALBID BRIDGE Km 698/230
MASUR (PANDARPUR)
Km 694.150
TOLL PLAZA
BELAWADI
VITA
CHIPLIN
KOYNA BRIDGE Km 682/900
DHEBEWADI
KARAD
AUNDHA
SOUTH MAND BRIDGE
KALE
RETHRE
SATARA DISTRICT BORDER
SANGLI DISTRICT BORDER
KASEGAON NALLAH BRIDGE Km 665/958
NARSINHPUR
PETHNAKA
SHIRALA
ISLAMPUR
MIRAJ
START OF (Package-2)
Km 658.000
YEDENIPANI
SANGLI DISTRIC
KURLA
KANEGAON MAJOR BRIDGE Km 538/660
N

2 Land

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

S. No.	Chainage (km)		Construction Zone within ROW	Total ROW	Date of Handover of Construction Zone	Date of Handover of Balance ROW
	From	To	(In m)	(In m)		
1	658.000	659.900	53	60	As per the provisions of Concession Agreement	As per the provisions of Concession Agreement
2	659.900	660.573	51.5	60		
3	660.573	660.727	51.5	80		
4	660.727	660.845	51.5	60		
5	660.845	660.900	51.5	76		
6	660.900	660.950	53	76		
7	660.950	661.525	53	60		
8	661.525	661.590	51.5	60		
9	661.590	661.710	51.5	80		
10	661.710	662.075	51.5	60		
11	662.075	663.940	53	60		
12	663.940	664.000	51.5	60		
13	664.000	664.094	51.5	63		
14	664.094	664.206	51.5	80		
15	664.206	664.500	51.5	60		
16	664.500	664.760	51.5	59		
17	664.760	664.800	53	59		
18	664.800	665.000	53	61		
19	665.000	665.400	53	60		
20	665.400	665.575	51.5	60		
21	665.575	665.600	51.5	66		
22	665.600	665.685	51.5	59		
23	665.685	665.837	51.5	79		
24	665.837	665.950	51.5	59		
25	665.950	666.000	51.5	72		
26	666.000	666.200	53	72		
27	666.200	667.200	53	60		
28	667.200	667.600	53	66		
29	667.600	667.940	53	68		
30	667.940	668.000	51.5	68		
31	668.000	668.345	51.5	62		
32	668.345	668.455	51.5	78		
33	668.455	668.540	51.5	63		
34	668.540	669.200	53	63		
35	669.200	669.400	51.5	63		
36	669.400	669.600	51.5	80		
37	669.600	669.800	51.5	64		
38	669.800	670.000	53	64		
39	670.000	670.400	53	62		
40	670.400	670.600	53	66		
41	670.600	670.630	53	85		

S. No.	Chainage (km)		Construction Zone within ROW	Total ROW	Date of Handover of Construction Zone	Date of Handover of Balance ROW
	From	To	(In m)	(In m)		
42	670.630	670.800	51.5	85	As per the provisions of Concession Agreement	As per the provisions of Concession Agreement
43	670.800	671.300	51.5	82		
44	671.300	671.500	51.5	85		
45	671.500	671.600	51.5	95		
46	671.600	671.690	51.5	71		
47	671.690	672.000	51.5	61		
48	672.000	673.000	51.5	60		
49	673.000	673.350	51.5	61		
50	673.350	673.600	53	61		
51	673.600	673.700	53	62		
52	673.700	674.000	53	74		
53	674.000	674.150	53	63		
54	674.150	674.650	51.5	63		
55	674.650	675.000	53	63		
56	675.000	675.125	53	67		
57	675.125	675.355	53	72		
58	675.355	676.025	53	63		
59	676.025	676.230	51.5	63		
60	676.230	676.510	51.5	59		
61	676.510	676.625	51.5	63		
62	676.625	677.000	53	63		
63	677.000	677.200	53	66		
64	677.200	677.390	53	63		
65	677.390	677.450	51.5	63		
66	677.450	677.640	51.5	60		
67	677.640	677.830	53	60		
68	677.830	678.000	51.5	60		
69	678.000	678.820	48	48		
70	678.820	678.860	43.5	54		
71	678.860	678.960	43.5	60		
72	678.960	679.000	43.5	54		
73	679.000	681.435	43.5	48		
74	681.435	682.300	43.5	48		
75	682.300	682.400	48	48		
76	682.400	682.560	51.5	51.5		
77	682.560	682.600	50	51.5		
78	682.600	682.650	50	60		
79	682.650	683.100	34	60		
80	683.100	683.300	47.5	57		
81	683.300	683.400	47.5	57		
82	683.400	683.500	47.5	64		
83	683.500	683.900	47.5	61		
84	683.900	683.955	47.5	60		
85	683.955	684.465	53	60		
86	684.465	684.500	51.5	60		

S. No.	Chainage (km)		Construction Zone within ROW	Total ROW	Date of Handover of Construction Zone	Date of Handover of Balance ROW
	From	To	(In m)	(In m)		
87	684.500	684.900	51.5	68	As per the provisions of Concession Agreement	As per the provisions of Concession Agreement
88	684.900	685.200	51.5	60		
89	685.200	685.460	51.5	63		
90	685.460	686.000	53	63		
91	686.000	686.283	53	76		
92	686.283	686.340	53	70		
93	686.340	686.480	53	63		
94	686.480	686.675	51.5	63		
95	686.675	686.830	51.5	80		
96	686.830	687.080	51.5	60		
97	687.080	687.863	53	60		
98	687.863	688.363	51.5	60		
99	688.363	689.000	53	60		
100	689.000	689.275	53	74		
101	689.275	689.350	51.5	74		
102	689.350	689.480	51.5	61		
103	689.480	689.650	51.5	81		
104	689.650	689.800	51.5	61		
105	689.800	689.875	51.5	60		
106	689.875	690.000	53	60		
107	690.000	690.225	53	61		
108	690.225	690.725	51.5	61		
109	690.725	691.000	53	61		
110	691.000	691.984	53	62		
111	691.984	692.000	51.5	62		
112	692.000	692.200	51.5	63		
113	692.200	692.370	51.5	81		
114	692.370	693.000	51.5	61		
115	693.000	693.700	51.5	60		
116	693.700	693.800	60	60		
117	693.800	694.050	90	90		
118	694.050	694.200	90	92		
119	694.200	694.650	90	90		
120	694.650	694.835	81	83		
121	694.835	695.100	60	62		
122	695.100	695.240	53	62		
123	695.240	695.800	51.5	62		
124	695.800	697.000	53	62		
125	697.000	697.100	51.5	61		
126	697.100	697.470	51.5	72		
127	697.470**	697.600**	51.5	72		
128	697.600**	697.720**	50	61		
129	697.720**	697.900**	51.5	72		
130	697.900**	698.000**	50	52		
131	698.000**	698.200**	51.5	68		

S. No.	Chainage (km)		Construction Zone within ROW	Total ROW	Date of Handover of Construction Zone	Date of Handover of Balance ROW
	From	To	(In m)	(In m)		
132	698.200**	698.350**	53	68	As per the provisions of Concession Agreement	As per the provisions of Concession Agreement
133	698.350**	698.400**	53	61		
134	698.400	698.450	53	61		
135	698.450	698.500	51.5	61		
136	698.500	698.700	51.5	59		
137	698.700	698.800	51.5	68		
138	698.800	699.700	48	48		
139	699.700	699.985	51.5	60		
140	699.985	700.050	51.5	66		
141	700.050	700.220	53	66		
142	700.220	700.830	53	60		
143	700.830	701.330	51.5	60		
144	701.330	702.140	53	60		
145	702.140	702.640	51.5	60		
146	702.640	703.030	53	60		
147	703.030	703.270	53	66		
148	703.270	703.600	53	60		
149	703.600**	703.900**	53	60		
150	703.900**	704.050**	51.5	60		
151	704.050**	704.170**	51.5	76		
152	704.170**	704.500**	51.5	60		
153	704.500**	704.580**	53	60		
154	704.580	705.180	53	60		
155	705.180	705.680	51.5	60		
156	705.680	707.000	53	60		
157	707.000	707.553	53	60		
158	707.553	707.760	51.5	60		
159	707.760	707.915	51.5	80		
160	707.915	708.153	51.5	60		
161	708.153	708.400	53	60		
162	708.400	709.600	53	60		
163	709.600	710.200	51.5	60		
164	710.200	710.460	53	60		
165	710.460	710.860	51.5	60		
166	710.860	711.030	51.5	76		
167	711.030	711.240	51.5	60		
168	711.240	711.340	51.5	78		
169	711.340	711.640	51.5	60		
170	711.640	711.740	53	60		
171	711.740	711.820	51.5	60		
172	711.820	711.980	51.5	80		
173	711.980	712.200	51.5	60		
174	712.200	712.560	53	60		
175	712.560	712.635	53	66		
176	712.635	712.890	53	72		

S. No.	Chainage (km)		Construction Zone within ROW	Total ROW	Date of Handover of Construction Zone	Date of Handover of Balance ROW
	From	To	(In m)	(In m)		
177	712.890	713.000	53	60	As per the provisions of Concession Agreement	As per the provisions of Concession Agreement
178	713.000	713.650	51.5	60		
179	713.650	713.750	51.5	77		
180	713.750	714.200	51.5	59		
181	714.200	714.850	53	59		
182	714.850	715.550	51.5	59		
183	715.550	716.655	53	59		
184	716.655	716.755	53	79		
185	716.755	717.600	53	57		
186	717.600	717.936	51.5	57		
187	717.936	718.060	51.5	80		
188	718.060	718.100	51.5	59		
189	718.100	718.220	51.5	75		
190	718.220	718.265	51.5	59		
191	718.265	718.400	51.5	65		
192	718.400	718.500	53	65		
193	718.500	718.560	34	65		
194	718.560	718.760	34	59		
195	718.760	719.000	34	65		
196	719.000	719.324	53	59		
197	719.324	719.545	51.5	59		
198	719.545	719.690	51.5	79		
199	719.690	719.924	51.5	59		
200	719.924	720.335	53	59		
201	720.335	720.735	51.5	59		
202	720.735	721.250	53	59		
203	721.250	721.310	53	65		
204	721.310	721.550	53	71		
205	721.550	722.030	53	59		
206	722.030	722.320	51.5	59		
207	722.320	722.450	51.5	77		
208	722.450	722.600	51.5	59		
209	722.600	724.070	53	59		
210	724.070	724.370	53	65		
211	724.370	724.432	53	59		
212	724.432	725.000	51.5	59		

Note:

1 . ***** *At these locations the new VUP including approaches and Service Roads are under construction by NHAI as separate Contract. The same shall be part of this Concession Agreement. Although no improvements is envisaged at these locations, improvements, if any, based on the actual site conditions as per Manual / Specifications and Standards is within the scope of the Concessionaire. Actual chainage may differ based on site condition.

3 Carriageway

The present carriageway of the Project Highway is a 4-lane divided carriageway with paved shoulder in its entire length and mix of flexible and rigid pavements along its length.

S. No	Chainage (km)		Carriageway (m)		Paved Shoulder(m)		Earthen Shoulder(m)		Median Width (m)
	From	To	LHS	RHS	LHS	RHS	LHS	RHS	
1	658.000	664.200	10.5	10.5	-	-	2	2	4.5
2	664.200	664.500	10.5	10.5	-	-	2	2	junction
3	664.500	666.000	7.50	11.0	-	-	2	2	4.9
4	666.000	668.000	11.0	11.0	-	-	2	2	Varies 4.9 to 7.0
5	668.000	668.400	7.25	7.25	1.5	1.5	2	2	7
6	668.400	668.600	11.0	11.0	-	-	2	2	7
7	668.600	669.025	7.25	7.25	1.5	1.5	2	2	7
8	669.025	670.550	7.25	7.25	1.5	1.5	2	2	Varies 7.0 to 5.0
9	670.550	671.880	7.25	7.25	1.5	1.5	2	2	5
10	671.880	672.040	7.25	7.25	1.5	1.5	2	2	7
11	672.040	672.300	7.25	7.25	1.5	1.5	2	2	
12	672.300	677.000	7.25	7.25	1.5	1.5	2	2	7
13	677.000	677.460	11.0	11.00	-	-	2	2	Varies 7.0 to 1.5
14	677.460	678.500	11.0	11.00	-	-	2	2	1.5
15	678.500	682.600	11.0	11.00	-	-	2	2	1.5
16	682.600	682.800	7.25	10.50	0.25	0.5	2	2	3
17	682.800	683.000	10.5	10.50	0.5	0.5	2	2	3
18	683.000	684.100	10.5	10.50	0.5	0.5	2	2	2
19	684.100	684.150	7.25	7.25	1.5	1.5	2	2	Varies 2.0 to 5.0
20	684.150	685.300	7.25	7.25	1.5	1.5	2	2	5
21	685.300	692.230	7.25	7.25	1.5	1.5	2	2	7
22	692.230	692.325	7.25	7.25	1.5	1.5	2	2	Varies 7.0 to 5.5
23	692.325	692.900	7.25	7.25	1.5	1.5	2	2	5.5
24	692.900	693.000	7.25	7.25	1.5	1.5	2	2	Varies 5.5 to 5.0
25	693.000	693.950	7.25	7.25	1.5	1.5	2	2	5
26	693.950	694.400	7.25	7.25	1.5	1.5	2	2	Varies 5.0 to 3.0 to 5.0

S. No	Chainage (km)		Carriageway (m)		Paved Shoulder(m)		Earthen Shoulder(m)		Median Width (m)
	From	To	LHS	RHS	LHS	RHS	LHS	RHS	
27	694.400	695.575	7.25	7.25	1.5	1.5	2	2	5
28	695.575	695.700	7.25	7.25	1.5	1.5	2	2	Varies 5.0 to 7.0
29	695.700	698.100	7.25	7.25	1.5	1.5	2	2	7
30	698.100	698.200	7.25	7.25	1.5	1.5	2	2	Varies 7 to 1.2
31	698.200	698.600	7.25	7.25	1.5	1.5	2	2	Varies 1.2 to 1.85
32	698.600	699.000	11.0	11.00	-	-	2	2	1.85
33	699.000	699.900	7.25	7.25	1.5	1.5	2	2	1.85
34	699.900	700.000	7.25	7.25	1.5	1.5	2	2	Varies 1.85 to 5.0
35	700.000	725.000	7.25	7.25	1.5	1.5	2	2	5

4 Major Bridge

The site includes the following major bridges:

S. No.	Chainage (km)	Location	Overall length (m)	Span Arrangement (m)	Overall width (m)	Super-structure type	Sub- Structure type
1	682.741	Left	213.50	7 x 30.5	9.5	PSC Girders	RCC Circular Pier and counterfort abutment
2	682.741	Right	213.50	7 x 30.5	14.0	PSC Girders	RCC Circular Pier and counterfort abutment
3	718.650	Left	107.15	2 x 26.80 + 26.90 + 26.65	8.5	PSC Girders	RCC Wall type elliptical piers and Spill through abutment
4	718.650	Right	107.15	2 x 26.80 + 26.90 + 26.65	14.0	PSC Girders	RCC Wall type elliptical piers and Spill through abutment

5 ROBs

The site includes the following rail over bridges (ROBs)

S. No.	Chainage (km)	Location	Overall length (m)	Span Arrangement (m)	Overall width (m)	Super-structure Type	Sub-Structure Type
NIL							

6 Grade Separators / Flyovers

The site includes the following grade separators/ flyovers:

S. No.	Chainage (km)	Location	Overall length (m)	Span Arrangement (m)	Overall width (m)	Super-structure Type	Sub-Structure Type
1	680.615	Left	20.00	1 x 20.0	12.0	PSC Girders	RCC Circular Pier
2	680.615	Right	20.00	1 x 20.0	12.0	PSC Girders	RCC Circular Pier
3	680.742	Left	40.00	2 x 20.0	12.0	PSC Girders	RCC Circular Pier
4	680.742	Right	40.00	2 x 20.0	12.0	PSC Girders	RCC Circular Pier
5	682.159	Right	360.00	18 x 20.0	12.0	PSC Girders	RCC Circular Pier
6	683.580	Left	40.00	2 x 20.0	12.0	PSC Girders	RCC Circular Pier
7	683.580	Right	40.00	2 x 20.0	12.0	PSC Girders	RCC Circular Pier

Flyover across

S. No.	Chainage (km)	Location	Overall length (m)	Span Arrangement (m)	Overall width (m)	Super-structure Type	Sub-Structure Type
NIL							

7 Minor Bridges

(a) The site includes the following minor bridges on main carriageway:

S. No.	Chainage (km)	Location	Overall length (m)	Span Arrangement (m)	Overall width (m)	Super-structure type	Sub- Structure type
1	658.750	Left	11.55	1x2.0+ 1x1.86 +3x1.92+ 1.93	12.0	RCC Solid Slab	Masonry Type/RCC
2	658.750	Right	13.50	2 x 4.29 + 1 x 4.92	12.0	RCC Solid Slab	RCC Wall Type Piers
3	662.708	Left	15.70	2 x 7.85	11.8	RCC Solid Slab	Stone masonry Wall Type Piers Widen with RCC Box
4	662.708	Right	15.70	2 x 7.85	11.8	RCC Box	RCC 2-Cell Box type
5	664.965	Left	7.80	2 x 3.9	12.0	RCC Solid Slab	Stone masonry Arch
6	664.965	Right	8.00	1 x 8	12.0	RCC Solid Slab	RCC Wall Type Piers

S. No.	Chainage (km)	Location	Overall length (m)	Span Arrangement (m)	Overall width (m)	Super-structure type	Sub- Structure type
7	665.987	Left	29.40	1x9.3+ 1x10.6 +1x9.5	16.5	RCC Solid Slab	masonry Type/RCC
8	665.987	Right	29.40	1x9.3+ 1x10.6 +1x9.5	16.5	RCC Solid Slab	RCC Wall Type Piers
9	668.535	Left	20.70	2 x 6.65 + 1 x7.0	12.0	RCC Solid Slab	Stone masonry Wall Type Piers Widen with RCC Box
10	668.535	Right	20.70	2 x 6.65 + 1 x7.0	12.0	3-Cell Box	RCC 3-Cell Box type
11	670.410	Left	32.30	2 x 6.4 x + 3x 6.5	12.0	RCC Solid Slab	Stone masonry Wall Type Piers Widen with RCC Box
12	670.410	Right	32.30	2 x 6.4 x + 3x 6.5	12.0	3-Cell Box	RCC 3-Cell Box type
13	671.100	Left	52.50	3 x 17.5	14.0	RCC T beam girder	RCC Circular Pier
14	671.100	Right	52.50	3 x 17.5	13.4	RCC T beam girder	RCC Circular Pier
15	679.145	Left	7.00	1 x 7.0	11.8	RCC Solid Slab	masonry Type/RCC
16	679.145	Right	7.00	1 x 7.0	11.8	RCC Box	Box Cell
17	693.453	Left	15.30	3 x 5.1	12.0	Arch Bridge Widen with Solid Slab	Stone masonry Arch Type
18	693.453	Right	15.30	3 x 5.1	12.0	Box	RCC 3-Cell Box type
19	698.258	Left	44.47	1x16.117 + 1x14.18 + 1x14.18	12.0	RCC Solid Slab	Stone masonry Arch Type Piers
20	698.258	Right	44.47	1x16.1 + 1x14.18 + 1x14.18	12.0	RCC T beam girder	Wall type
21	699.950	Left	56.00	4 x 14.0	8.4	Arch Bridge	Stone masonry Arch Type Piers
22	699.950	Right	56.00	2 x 28.0	12.0	PSC Precast I- Girder	RCC Circular Pier
23	713.598	Left	14.60	1 x 14.6	12.0	T-beam girders	masonry Type/RCC
24	713.598	Right	14.64	1 x 14.6	12.0	T-beam girders	Wall type
25	714.170	Left	14.00	1 x 14.0	12.0	Arch bridge	Brick Wall type
26	714.170	Right	14.00	1 x 14.0	12.0	T beam girders	Wall type

(b) The site includes the following minor bridges on service road:

S. No.	Chainage (km)	Location	Overall length (m)	Span Arrangement (m)	Overall width (m)	Type
1	671.100	Left	52.50	3 x 17.5	12.0	Arch Bridge

8 Vehicular Underpass (VUPs) and Pedestrian Underpass (PUP)/ Cattle Underpass (CUP)

The site includes the following underpasses:

S. No.	Chainage (km)	Span Arrangement (m)	Width (m)	Type of Structure	Remarks
1	660.120	1 x 6.0 x 3.5	27.6	RCC Box Structure	PUP/CUP
2	665.764	1 x 8.0 x 4.5	27.800	RCC Box Structure	VUP
3	665.900	1 x 3.7 x 2.7	28.0	RCC Box Structure	PUP/CUP
4	669.500	1 x 8.0 x 4.5	29.900	RCC Box Structure	VUP
5	670.805	1 x 6.0 x 3.5	27.9	RCC Box Structure	PUP/CUP
6	671.560	1 x 10.5 x 4.5	28.300	RCC Box Structure	VUP
7	673.100	1 x 6.0 x 3.5	29.9	RCC Box Structure	PUP/CUP
8	674.400	1 x 3.0 x 2.75	30.0	RCC Box Structure	PUP/CUP
9	676.320	1 x 10.5 x 4.5	30.000	RCC Box Structure	VUP
10	677.640	1 x 6.0 x 3.5	24.6	RCC Box Structure	PUP/CUP
11	678.950	1 x 6.0 x 3.5	24.5	RCC Box Structure	PUP/CUP
12	680.280	1 x 8.0 x 4.5	24.0	RCC Box Structure	VUP
13	680.600	1 x 6.0 x 2.75	24.5	RCC Box Structure	PUP/CUP
14	680.980	1 x 6.0 x 3.5	24.1	RCC Box Structure	PUP/CUP
15	681.500	1 x 8.0 x 3.5	12.0	RCC Box Structure	PUP/CUP
16	684.715	1 x 6.0 x 3.5	27.9	RCC Box Structure	PUP/CUP
17	685.140	1 x 3.0 x 2.75	29.8	RCC Box Structure	PUP/CUP
18	686.762	1 x 10.5 x 4.5	29.9	RCC Box Structure	VUP
19	688.113	1 x 6.0 x 3.5	30.0	RCC Box Structure	PUP/CUP
20	689.575	1 x 8.0 x 4.5	29.8	RCC Box Structure	PUP/CUP
21	690.475	1 x 6.0 x 3.5	30.0	RCC Box Structure	PUP/CUP
22	692.290	1 x 10.5 x 4.5	30.0	RCC Box Structure	VUP
23	695.488	1 x 6.0 x 3.5	28.6	RCC Box Structure	PUP/CUP
24	698.800	1 x 10.5 x 4.5	26.6	RCC Box Structure	VUP
25	698.900	1 x 6.0 x 3.5	26.5	RCC Box Structure	PUP/CUP
26	699.250	1 x 6.0 x 2.7	27.6	RCC Box Structure	PUP/CUP
27	699.400	1 x 10.5 x 4.5	27.5	RCC Box Structure	VUP
28	699.800	1 x 6.0 x 3.0	30.4	RCC Box Structure	PUP/CUP
29	701.084	1 x 6.0 x 3.5	27.9	RCC Box Structure	PUP/CUP
30	702.386	1 x 6.0 x 3.5	27.9	RCC Box Structure	PUP/CUP
31	705.427	1 x 6.0 x 3.5	27.9	RCC Box Structure	PUP/CUP
32	707.848	1 x 8.0 x 4.5	27.9	RCC Box Structure	VUP
33	709.862	1 x 6.0 x 3.5	27.9	RCC Box Structure	PUP/CUP

S. No.	Chainage (km)	Span Arrangement (m)	Width (m)	Type of Structure	Remarks
34	711.901	1 x 8.0 x 4.0	27.8	RCC Box Structure	VUP
35	713.410	1 x 3.7 x 2.7	27.9	RCC Box Structure	PUP/CUP
36	713.925	1 x 6.0 x 3.5	27.9	RCC Box Structure	PUP/CUP
37	718.144	1 x 3.7 x 2.7	28.3	RCC Box Structure	PUP/CUP
38	719.625	1 x 10.5 x 4.5	26.9	RCC Box Structure	VUP
39	720.535	1 x 6.0 x 3.0	26.6	RCC Box Structure	PUP/CUP
40	722.278	1 x 6.0 x 3.5	27.9	RCC Box Structure	PUP/CUP
41	724.682	1 x 6.0 x 3.5	27.9	RCC Box Structure	PUP/CUP

Foot-over Bridge

Chainage (km)	Cross Length (m)	Width (m)	Super structure Type
681.725	41.10	3	Steel

9 Overpass

Chainage (km)	Cross Length (m)	Width (m)	Super structure Type
NIL			

10 Culverts on Main Carriageway

The site includes the following Box/Slab/Arch and pipe culverts:

Box/Slab/Arch Culverts

S. No.	Chainage (km)	Type of Structure	Width(m)	Size (m)
1	658.580	Box	28.45	1x4.0
2	659.590	Box	28.80	5x 1.2
3	660.780	Box	28.35	1x3
4	660.800	Box	28.45	1x4.3
5	661.160	Box	28.37	1x5
6	661.350	Slab	28.30	1x3.8
7	662.040	Box	29.25	1x4
8	665.193	Slab	28.38	1x3.4
9	666.922	Slab	31.90	1x3.5
10	666.955	Slab	31.80	1x5.2
11	667.330	Box	31.65	1x4
12	667.519	Slab	31.65	1x2.0
13	667.930	Box	30.50	1x4
14	668.040	Box	30.55	1x4
15	674.750	Box	30.65	1x5.4
16	675.500	Box	29.56	1x4
17	675.700	Box	30.50	1x4
18	675.945	Slab	30.50	1x2.0
19	676.273	Box	30.50	1x3

S. No.	Chainage (km)	Type of Structure	Width(m)	Size (m)
20	676.900	Box	30.65	1x2
21	677.950	Slab	34.55	1x6
22	679.100	Box	24.60	1x6
23	684.075	slab	24.45	1x3
24	684.314	Box	29.00	1x2
25	685.525	Box	31.07	1x3.5
26	687.153	Box	31.77	1x2.75
27	687.477	Box	30.70	1x3
28	687.521	Slab	30.70	1x2.0
29	688.306	Box	30.75	1x3.5
30	688.546	Box	30.50	1x3.1
31	689.010	Box	30.50	1x3
32	690.388	Box	30.50	1x3
33	690.585	Box	30.50	1x3
34	691.362	Box	30.40	1x3
35	692.875	Box	28.90	1x2.1
36	693.562	Box	30.22	1x3
37	694.940	Box	28.70	1x2.5
38	695.005	slab	28.70	1x2.5
39	695.247	slab	31.50	1x4.5
40	695.319	Slab	31.50	1x2.0
41	695.782	slab	30.35	1x3
42	696.620	Box	31.45	1x3.5
43	699.355	Slab	31.55	1x6
44	700.207	slab	31.45	1x2
45	700.327	slab	31.55	1x2
46	702.117	slab	28.61	1x2
47	703.276	slab	28.60	1x2
48	705.106	slab	27.20	1x2
49	705.490	slab	27.20	1x2
50	706.340	arch/Box	27.10	1x2.5
51	706.840	arch/Box	26.40	1x4.2
52	706.963	Box	26.40	1x4
53	707.600	Box	27.34	1x4
54	707.739	slab	27.34	1x3
55	708.151	slab	29.80	1x1.5
56	708.200	slab	26.40	1x6
57	708.607	arch	27.20	1x2
58	708.796	slab	28.50	1x3
59	709.425	slab	33.80	1x6.5
60	709.683	arch	28.50	1x3
61	710.012	slab	27.40	1x1.2
62	711.400	Box	26.88	1x2.2
63	711.600	Box	31.43	1x2.2

S. No.	Chainage (km)	Type of Structure	Width(m)	Size (m)
64	712.220	arch	26.20	1x3
65	712.550	arch	28.15	1x3
66	713.046	arch	28.15	1x3
67	714.600	slab	28.10	1x6
68	715.550	Box	26.70	1x5
69	715.850	Box	26.30	1x2.3
70	716.500	Box	26.40	1x6
71	717.350	Box	27.00	1x3
72	717.500	Box	28.80	1x3
73	718.500	slab	28.80	1x4
74	719.471	slab	28.80	1x3
75	720.250	arch	37.50	1x3.2
76	720.550	slab	30.40	1x2
77	721.525	arch	27.06	1x6
78	721.958	Box	28.65	1x4.2
79	722.750	Box	27.50	1x4
80	723.291	Box	26.40	1x1.2
81	723.380	Box	27.00	1x2.5
82	724.193	Box	27.10	1x3.5
83	724.460	Box	32.15	1x2

Pipe Culverts

S No.	Culvert No.	Location (km)	Width (m)	Number of pipes	Diameter of pipe (m)
1	660/1	659.125	35.95	1	1.2
2	660/2	659.269	35.80	1	1.2
3	662/3	661.672	36.30	2	1
4	663/2	662.421	31.85	2	1
5	664/1	663.386	34.13	2	1
6	664/2	664.950	32.80	2	1
7	667/1	666.712	32.75	2	1
8	668/2	667.644	32.55	2	1
9	669/3	668.900	30.45	1	1.2
10	670/1	669.370	35.86	2	1.2
11	671/1	670.340	35.24	1	1
12	671/2	670.780	32.60	1	1.2
13	671/3	670.860	32.50	1	1.2
14	-	671.665	31.81	1	1.2
15	673/1	672.200	31.81	1	1.2
16	674/1	673.425	31.30	1	1
17	-	675.041	31.30	1	1.2
18	676/1	675.150	31.98	2	1.2
19	678/1	677.150	25.20	3	1.2
20	678/2	677.400	24.85	1	1.2
21	679/1	678.200	27.95	4	1

S No.	Culvert No.	Location (km)	Width (m)	Number of pipes	Diameter of pipe (m)
22	679/2	678.780	25.50	4	1
23	679/3	678.810	25.70	3	1.2
24	-	679.397	25.70	1	1.2
25	680/3	679.607	25.55	1	0.9
26	-	679.818	25.70	1	1.2
27	680/4	679.850	27.04	1	1.2
28	680/5	679.900	27.04	1	1
29	681/1	680.200	30.40	1	1.2
30	681/2	680.250	30.40	1	1.2
31	682/1	681.400	27.80	1	1.2
32	682/2	681.650	24.86	1	1.2
33		683.100	23.90	1	0.6
34	684/1	683.500	27.80	4	2
35	684/2	683.700	24.86	3	1.5
36	685/3	684.595	31.60	1	1
37	685/4	684.900	35.90	2	1.2
38	686/2	685.900	31.84	1	0.9
39	687/1	686.147	32.10	1	1.2
40	687/2	686.800	32.10	2	1.2
41	688/2	687.321	32.40	1	1.2
42	-	687.985	32.40	1	1.2
43	689/1	688.162	30.80	1	1.2
44	689/4	688.420	29.90	2	1.2
45	-	688.750	30.20	1	1.2
46	-	688.984	29.90	1	1.2
47	690/2	689.172	31.90	2	1.2
48	690/3	689.460	32.90	1	1.2
49	691/1	690.828	32.40	1	1.2
50	691/3	690.895	32.30	1	1.2
51	691/4	690.993	32.30	1	1.2
52	692/1	691.117	31.50	2	1.2
53	692/3	691.410	34.20	1	1
54	692/4	691.554	34.40	1	1
55	692/5	691.751	36.50	1	1
56	-	691.941	32.40	2	1
57	694/3	-	28.95	1	1
58	695/1	694.630	31.05	1	1.2
59	695/2	694.693	30.65	2	1
60	695/3	-	30.70	2	1
61	696/2	695.211	31.50	1	1.2
62	696/4	695.498	29.15	2	1.2
63	696/5	695.735	30.35	1	1.5
64	697/1	696.020	30.75	1	1.2
65	697/2	696.320	31.30	1	1
66	698/1	697.005	31.04	2	1.2

S No.	Culvert No.	Location (km)	Width (m)	Number of pipes	Diameter of pipe (m)
67	698/2	697.592	27.10	2	1.2
68	698/3	697.900	27.10	5	1.2
69	698/4	698.736	27.10	1	1
70	698/5	698.785	27.10	2	1.2
71	700/5	-	29.17	2	1.2
72	701/3	700.474	29.17	2	0.9
73	703/3	702.885	28.50	2	0.9
74	703/4	-	30.80	2	1
75	704/2	703.772	28.40	2	0.9
76	706/2	705.409	31.95	1	1.2
77	706/3	705.847	32.44	1	0.9
78	707/1	706.132	32.16	2	0.9
79	707/2	706.610	29.17	1	1.2
80	710/2	709.500	29.17	1	1.2
81	711/2	710.682	31.10	1	1.2
82	711/3	710.928	28.17	1	1.2
83	711/4	711.110	28.20	1	1.2
84	713/1	712.236	34.10	1	1.2
85	713/2	712.436	28.17	1	1.2
86	713/3	712.800	34.80	1	1
87	714/2	713.540	29.90	1	1
88	714/3	713.693	29.75	1	1
89	716/1	715.050	31.65	1	1
90	716/2	715.200	31.90	1	1
91	718/1	717.100	30.05	1	1
92	718/4	717.430	28.20	1	0.4
93	719/2	718.930	28.20	1	1.2
94	720/1	719.078	33.95	1	1.2
95	720/2	719.350	33.85	1	0.4
96	720/3	719.822	34.55	1	1
97	721/1	720.216	31.52	1	1
98	721/2	720.300	31.95	2	1.1
99	721/3	720.400	29.82	1	1
100	721/4	720.850	32.30	2	0.9
101	723/1	722.240	30.95	1	1
102	723/2	722.500	31.95	1	1
103	724/1	723.040	28.17	1	1
104	725/1	724.025	31.95	2	0.9
105	725/4	724.619	31.70	1	1.5
106	725/5	724.833	30.95	1	1.2

11 Culverts on Service Road

S No.	Culvert No.	Location (km)	Number of pipes	Diameter of pipe (m)
1	660/1	659.125	1	1.20

S No.	Culvert No.	Location (km)	Number of pipes	Diameter of pipe (m)
2	660/2	659.269	1	1.20
3	662/3	661.672	2	1.00
4	663/2	662.421	2	1.00
5	664/1	663.386	2	1.00
6	664/2	664.950	2	1.00
7	667/1	666.712	2	1.00
8	668/2	667.644	2	1.00
9	669/3	668.900	1	1.20
10	670/1	669.370	2	1.20
11	671/1	670.340	1	1.00
12	671/2	670.780	1	1.20
13	671/3	670.860	1	1.20
14	-	671.665	1	1.20
15	673/1	672.200	1	1.20
16	674/1	673.425	1	1.00
17	-	675.041	1	1.20
18	676/1	675.150	2	1.20
19	678/1	677.150	3	1.20
20	678/2	677.400	1	1.20
21	679/1	678.200	4	1.00
22	679/2	678.780	4	1.00
23	679/3	678.810	3	1.20
24	-	679.397	1	1.20
25	680/3	679.607	1	0.90
26	-	679.818	1	1.20
27	680/4	679.850	1	1.20
28	680/5	679.900	1	1.00
29	681/1	680.200	1	1.20
30	681/2	680.250	1	1.20
31	682/1	681.400	1	1.20
32	682/2	681.650	1	1.20
33	684/1	683.500	4	2.00
34	684/2	683.700	3	1.50
35	685/3	684.595	1	1.00
36	685/4	684.900	2	1.20
37	686/2	685.900	1	0.90
38	687/1	686.147	1	1.20
39	687/2	686.800	2	1.20
40	688/2	687.321	1	1.20
41	-	687.985	1	1.20
42	689/1	688.162	1	1.20
43	689/4	688.420	2	1.20
44	-	688.750	1	1.20
45	-	688.984	1	1.20
46	690/2	689.172	2	1.20

S No.	Culvert No.	Location (km)	Number of pipes	Diameter of pipe (m)
47	690/3	689.460	1	1.20
48	691/1	690.828	1	1.20
49	691/3	690.895	1	1.20
50	691/4	690.993	1	1.20
51	692/1	691.117	2	1.20
52	692/3	691.410	1	1.00
53	692/4	691.554	1	1.00
54	692/5	691.751	1	1.00
55	-	691.941	2	1.00
56	694/3	-	1	1.00
57	695/1	694.630	1	1.20
58	695/2	694.693	2	1.00
59	695/3	-	2	1.00
60	696/2	695.211	1	1.20
61	696/4	695.498	2	1.20
62	696/5	695.735	1	1.50
63	697/1	696.020	1	1.20
64	697/2	696.320	1	1.00
65	698/1	697.005	2	1.20
66	698/2	697.592	2	1.20
67	698/3	697.900	5	1.20
68	698/4	698.736	1	1.00
69	698/5	698.785	2	1.20
70	700/5	-	2	1.20
71	701/3	700.474	2	0.90
72	703/3	702.885	2	0.90
73	703/4	-	2	1.00
74	704/2	703.772	2	0.90
75	706/2	705.409	1	1.20
76	706/3	705.847	1	0.90
77	707/1	706.132	2	0.90
78	707/2	706.610	1	1.20
79	710/2	709.500	1	1.20
80	711/2	710.682	1	1.20
81	711/3	710.928	1	1.20
82	711/4	711.110	1	1.20
83	713/1	712.236	1	1.20
84	713/2	712.436	1	1.20
85	713/3	712.800	1	1.00
86	714/2	713.540	1	1.00
87	714/3	713.693	1	1.00
88	716/1	715.050	1	1.00
89	716/2	715.200	1	1.00
90	718/1	717.100	1	1.00
91	718/4	717.700	1	1.00

S No.	Culvert No.	Location (km)	Number of pipes	Diameter of pipe (m)
92	719/2	718.930	1	1.20
93	720/1	719.078	1	1.20
94	720/2	719.250	1	1.00
95	720/3	719.822	1	1.00
96	721/1	720.216	1	1.00
97	721/2	720.300	2	1.20
98	721/3	720.400	1	1.00
99	721/4	720.850	2	0.90
100	723/1	722.240	1	1.00
101	723/2	722.500	1	1.00
102	724/1	723.040	1	1.00
103	725/1	724.025	2	0.90
104	725/4	724.619	1	1.50
105	725/5	724.833	1	1.20

12 Total Number of Structures

The total number of structures on the Site is noted below:

(a) No. of Major Bridges - 002

(b) No. of Railway Over Bridges - NIL

(c) No. of Grade Separators - 004

(d) No. of Minor Bridges on Main Carriageway - 013

(e) No. of Minor Bridges on Service Road - 001

(f) No. of Vehicular and Non Vehicular Underpasses - 041

(g) No. of Foot Over Bridges - 001

(h) No. of Arch/Box Culverts on Main Carriageway - 053

(i) No. of Pipe Culverts on Main Carriageway - 106

(j) No. of Slab Culverts on Main Carriageway - 030

(k) No. of Culverts on Service Road - 105

13 Service Road

A. The site includes following location of service roads on Left side:

S. No.	Chainage (km)		Length (Km)	Width(m)
	From	To		
1	659.200	659.600	0.40	3.2
2	659.600	660.000	0.40	3.5
3	660.000	660.200	0.20	7.0
4	660.200	660.400	0.20	5.5

S. No.	Chainage (km)		Length (Km)	Width(m)
	From	To		
5	660.400	661.000	0.60	5.0
6	661.000	661.400	0.40	5.2
7	661.400	661.600	0.20	5.3
8	661.600	662.000	0.40	5.5
9	662.000	662.400	0.40	5.3
10	662.400	664.200	1.80	5.0
11	664.200	664.600	0.40	3.8
12	664.600	664.800	0.20	3.9
13	664.800	665.200	0.40	4.0
14	665.200	665.400	0.20	5.0
15	665.400	665.600	0.20	5.2
16	665.600	666.000	0.40	4.0
17	666.000	666.200	0.20	3.8
18	666.200	666.600	0.40	3.6
19	666.600	667.000	0.40	3.7
20	667.000	667.400	0.40	4.0
21	667.400	667.800	0.40	3.9
22	667.800	668.000	0.20	3.6
23	668.000	668.400	0.40	6.0
24	668.400	668.600	0.20	7.5
25	668.600	671.000	2.40	5.5
26	671.000	671.200	0.20	5.7
27	671.200	671.400	0.20	6.5
28	671.400	671.800	0.40	6.6
29	671.800	672.000	0.20	5.6
30	672.000	672.600	0.60	5.5
31	672.600	673.000	0.40	5.7
32	673.000	673.200	0.20	5.4
33	673.200	673.800	0.60	5.5
34	673.800	674.000	0.20	5.2
35	674.000	676.000	2.00	5.5
36	676.000	676.800	0.80	5.7
37	676.800	677.200	0.40	5.2
38	677.200	678.000	0.80	5.5
39	678.000	678.500	0..50	5.3
40	678.500	678.600	0.60	5.3
41	678.600	678.800	0.20	5.5
42	678.800	679.800	1.00	5.0
43	679.800	680.000	0.20	6.0
44	680.000	681.800	1.80	7.5
45	681.800	682.200	0.40	7.0

S. No.	Chainage (km)		Length (Km)	Width(m)
	From	To		
46	682.200	682.600	0.40	7.5
47	683.000	683.200	0.20	7.0
48	683.200	683.800	0.60	13.5
49	683.800	684.000	0.20	5.5
50	684.000	684.400	0.40	5.7
51	684.400	684.800	0.40	5.5
52	684.800	685.200	0.40	6.0
53	685.200	685.600	0.40	5.8
54	685.600	686.200	0.60	5.5
55	686.200	686.400	0.20	4.0
56	686.400	687.800	1.40	3.7
57	687.800	688.000	0.20	5.8
58	688.000	688.200	0.20	3.8
59	688.200	688.600	0.40	3.9
60	688.600	688.800	0.20	4.0
61	688.800	689.200	0.40	3.8
62	689.200	689.400	0.20	4.0
63	689.400	689.800	0.40	5.5
64	689.800	690.000	0.20	4.0
65	690.000	690.200	0.20	3.8
66	690.200	692.200	2.00	3.9
67	692.200	692.400	0.20	5.0
68	692.400	694.200	1.80	3.9
69	694.200	694.600	0.40	5.3
70	694.800	695.200	0.40	3.6
71	695.200	695.400	0.20	4.1
72	695.400	695.800	0.40	4.0
73	698.400	698.600	0.20	7.0
74	698.600	699.800	1.20	6.8
75	700.200	701.600	1.40	4.0
76	701.600	701.800	0.20	3.8
77	701.800	706.000	4.20	4.0
78	706.000	706.200	0.20	3.9
79	706.200	708.000	1.80	3.8
80	708.000	708.800	0.80	4.1
81	709.400	710.200	0.80	3.6
82	710.800	712.200	1.40	4.0
83	712.800	713.200	0.40	3.7
84	713.200	713.600	0.40	4.2
85	713.600	713.800	0.20	3.8
86	713.800	714.200	0.40	4.2

S. No.	Chainage (km)		Length (Km)	Width(m)
	From	To		
87	716.400	717.200	0.80	3.6
88	717.200	717.600	0.40	4.0
89	717.600	717.800	0.20	5.5
90	717.800	718.350	0.55	4.5
91	719.000	725.000	6.00	5.5

B. The site includes following location of service roads on Right side

S. No.	Chainage (km)		Length (Km)	Width(m)
	From	To		
1	660.000	660.200	0.20	5.2
2	660.200	660.400	0.20	5.5
3	660.400	660.800	0.40	4.0
4	660.800	661.800	1.00	3.5
5	661.800	662.000	0.20	3.4
6	662.000	663.000	1.00	3.5
7	664.200	664.600	0.40	4.0
8	664.600	664.800	0.20	3.8
9	664.800	665.200	0.40	3.9
10	665.200	665.400	0.20	3.7
11	665.400	665.600	0.20	5.5
12	665.600	666.000	0.40	4.2
13	666.800	667.400	0.60	4.0
14	669.200	669.600	0.40	6.0
15	671.200	671.600	0.40	6.2
16	671.600	672.000	0.40	5.5
17	672.000	673.000	1.00	5.6
18	673.000	673.400	0.40	5.0
19	673.400	673.800	0.40	5.2
20	673.800	674.000	0.20	5.3
21	674.000	674.400	0.40	5.2
22	674.400	677.800	3.40	5.5
23	677.800	678.000	0.20	9.0
24	678.000	678.500	0.50	5.0
25	678.500	678.600	0.10	5.0
26	678.600	678.800	0.20	5.4
27	678.800	679.800	1.00	5.5
28	679.800	680.000	0.20	5.7
29	680.000	681.200	1.20	7.5
30	681.200	682.200	1.00	6.0
31	682.200	682.400	0.20	7.5
32	683.200	683.800	0.60	9.0

S. No.	Chainage (km)		Length (Km)	Width(m)
	From	To		
33	683.800	684.000	0.20	6.1
34	684.000	684.400	0.40	5.0
35	684.400	684.800	0.40	6.0
36	684.800	685.000	0.20	5.0
37	685.000	685.400	0.40	6.0
38	685.400	686.000	0.60	4.2
39	686.000	686.600	0.60	5.0
40	686.600	686.800	0.20	8.7
41	686.800	687.000	0.20	8.5
42	687.000	687.400	0.40	5.3
43	687.400	687.800	0.40	3.8
44	687.800	690.600	2.80	3.9
45	690.600	691.200	0.60	4.0
46	691.200	692.600	1.40	3.8
47	692.600	692.800	0.20	3.9
48	692.800	694.000	1.20	5.0
49	694.200	694.600	0.40	3.8
50	694.600	694.800	0.20	4.1
51	694.800	695.200	0.40	4.4
52	695.200	695.400	0.20	3.8
53	695.400	695.600	0.20	3.7
54	695.600	698.000	2.40	4.0
55	698.600	699.200	0.60	7.2
56	699.200	699.800	0.60	6.0
57	700.800	702.550	1.75	4.0
58	704.100	704.300	0.20	4.0
59	705.000	705.400	0.40	4.0
60	705.400	705.600	0.20	3.7
61	705.600	706.000	0.40	4.0
62	706.000	706.200	0.20	3.6
63	706.200	708.000	1.80	3.4
64	708.000	708.800	0.80	4.0
65	709.400	710.400	1.00	4.0
66	710.800	711.800	1.00	4.0
67	711.800	712.000	0.20	3.8
68	712.800	713.600	0.80	3.5
69	713.600	713.800	0.20	3.0
70	713.800	714.200	0.40	4.0
71	716.400	716.600	0.20	4.0
72	716.600	717.600	1.00	3.8
73	717.600	718.000	0.40	5.5

S. No.	Chainage (km)		Length (Km)	Width(m)
	From	To		
74	718.000	718.350	0.35	5.7
75	718.800	719.800	1.00	4.0
76	719.800	720.000	0.20	5.5
77	720.000	720.400	0.40	5.0
78	720.400	720.600	0.20	3.8
79	722.200	722.600	0.40	3.7
80	724.200	724.600	0.40	4.0
81	724.600	724.800	0.20	4.2
82	724.800	725.000	0.20	4.8

14 Junctions

A. Major at-grade junctions

S. No.	Chainage (km)	Side	Type	Leading To
1	671.560	Both	X- junction	Left -Wathar MDR 56, Right -Rethare MDR 60
2	676.320	Both	X- junction	Pachwad Phata (SH-80)
3	697.800	Both	Cross -Junction	Left - Bhawani Wadi, Right -Pandharpur
4	718.000	LHS	T- Junction	Patan

B. Minor junctions

S. No.	Chainage (km)	Side	Type	Leading To
1	660.500	Both	X- junction	R-Nerale
2	663.450	LHS	T- junction	Desai Mala
3	664.350	Both	Cross -Junction	L-Shene , R-Yevalewadi Village
4	665.775	Both	X- junction	L-Kasegaon,R-Kasegaon
5	668.260	LHS	T- junction	Kasegaon
6	669.350	Both	X- junction	L-Belewada,R-Malkhed
7	670.800	LHS	T- junction	Belewada Malkhed
8	672.160	Both	X- junction	L-Kale,R-Field
9	673.070	LHS	T- junction	Wathar
10	674.400	Both	X- junction	L-Narayanawadi,R-Dtke
11	677.625	LHS	T- junction	Nandlapur
12	678.900	LHS	T- junction	Dakinwadi
13	684.700	LHS	Y- junction	Munde
14	686.775	RHS	T- junction	village
15	688.100	LHS	T- junction	village
16	688.750	RHS	Y- junction	village
17	692.275	Both	X- junction	L-Belewadi,R-Talbid
18	695.500	Both	X- junction	L & R-Warade Village
19	698.900	LHS	Y- junction	village
20	701.075	Both	X- junction	village
21	703.750	LHS	Y- junction	village
22	704.200	LHS	Y- junction	Indoli
23	705.425	Both	X- junction	Village

S. No.	Chainage (km)	Side	Type	Leading To
24	706.175	LHS	T- junction	village
25	706.825	LHS	T- junction	village
26	707.850	Both	X- junction	L-Pali,R-Kashil
27	708.100	RHS	Y- junction	colony
28	708.150	RHS	Y- junction	colony
29	708.525	RHS	Y- junction	colony
30	709.850	Both	X- junction	colony
31	711.900	Both	X- junction	L-Mohan Hotel
32	713.400	Both	X- junction	L-Village,R-Atit Bus Stand
33	719.630	Both	X- junction	L-Borgaon Phata,R-Apsinghe
34	720.475	Both	X- junction	L-Borgaon Phata,R-Chuhni
35	722.275	Both	X- junction	L-Bharat Gaon,R-Bharatwadi
36	724.700	LHS	Y- junction	Valase

15 Existing Steel Railing

S. No.	Chainage (km)		Length (m)	Remarks
	From	To		
1	660.350	660.480	120	LHS
2	660.350	660.430	80	RHS
3	665.280	665.420	140	LHS
4	665.280	665.560	280	RHS
5	665.500	665.700	200	Median
6	681.200	682.600	1400	LHS
7	681.200	681.750	550	RHS
8	681.700	682.550	1700	Median

16 Bus Bays and Truck Lay Byes

S. No.	Chainage (km)	Side
NIL		

Truck Lay Byes

S. No.	Chainage (km)	Side
NIL		

(a) No. of Bus bays on LHS - NIL
(b) No. of Bus bays on RHS - NIL
(c) No. of Truck lay-byes on LHS - NIL
(d) No. of Truck lay-byes on RHS - NIL

17 Location of Flexible and Rigid Pavement

The site includes Flexible and Rigid Pavement at following locations:

A Flexible carriageway

List of Flexible Pavement (LHS)				List of Flexible Pavement (RHS)		
S. No.	Chainage		Length in Km.	Chainage		Length in Km.
	From	To		From	To	
1	658.000	668.000	10.000	665.400	665.600	0.200
2	668.000	678.500	10.500	665.870	666.000	0.130
3	678.500	697.000	18.500	677.000	678.500	1.500
4	697.000	725.000	28.000	678.500	678.700	0.200

B. Rigid Carriageway

S. No.	List of Rigid Pavement (LHS)			List of Rigid Pavement (RHS)		
	Chainage		Length in Km.	Chainage		Length in Km.
	From	To		From	To	
1	-	-	-	658.000	665.400	7.400
2	-	-	-	665.600	665.870	0.270
3	-	-	-	666.000	668.000	2.000
4	-	-	-	668.000	677.000	9.000
5	-	-	-	678.700	679.000	0.300
6	-	-	-	679.000	684.000	5.000
7	-	-	-	684.000	697.000	13.000
8	-	-	-	697.000	725.000	28.000

18 Location of Retaining /RE Walls

S. No.	Location (km)		Side
	From	To	
1	659.900	660.200	Left & Right
2	665.500	665.700	Left & Right
3	665.800	665.900	Left & Right
4	669.300	669.700	Left & Right
5	670.650	670.800	Left & Right
6	671.600	671.820	Left & Right
7	676.150	676.550	Left & Right
8	677.700	677.850	Left & Right
9	680.150	681.142	Left & Right
10	681.600	682.444	Left & Right
11	683.100	684.000	Left & Right
12	685.080	685.300	Left & Right
13	686.580	686.820	Left & Right
14	689.500	689.700	Left & Right
15	690.400	690.500	Left & Right
16	692.000	692.425	Left
17	692.200	692.425	Right
18	695.350	695.450	Left & Right
19	698.700	699.700	Left & Right
20	709.600	710.050	Left & Right

S. No.	Location (km)		Side
	From	To	
21	722.270	722.400	Left
22	724.500	724.650	Left & Right

19 Location of Overhead Gantry Signs

S. No.	Chainage (km)	Width (m)	Type
1	681.450	28.4	Overhead Gantry
2	682.550	28.4	Overhead Gantry
3	686.000	28.4	Overhead Gantry
4	697.400	28.4	Overhead Gantry
5	698.400	28.4	Overhead Gantry
6	706.500	26.5	Overhead Gantry
7	725.000	26.4	Overhead Gantry

20 Location of Lined Drains.

S. No.	Chainage (km)		Side	Type
	From	To		
1	659.900	660.200	Both	Lined Drain
2	662.600	662.800	Both	Lined Drain
3	665.500	665.900	Both	Lined Drain
4	668.200	666.520	Left	Lined Drain
5	669.200	669.800	Left	Lined Drain
6	670.100	670.350	Both	Lined Drain
7	670.650	671.000	Both	Lined Drain
8	671.250	671.800	Both	Lined Drain
9	672.850	673.200	Both	Lined Drain
10	774.000	774.700	Both	Lined Drain
11	675.500	675.950	Right	Lined Drain
12	676.050	676.600	Both	Lined Drain
13	677.500	677.900	Both	Lined Drain
14	677.900	679.100	Right	Lined Drain
15	678.200	678.280	Both	Lined Drain
16	678.760	679.100	Left	Lined Drain
17	679.350	679.450	Left	Lined Drain
18	680.150	682.250	Left	Lined Drain
19	680.000	682.250	Left	Lined Drain
20	680.000	682.000	Left	Lined Drain
21	683.250	683.975	Both	Lined Drain
22	684.500	684.875	Both	Lined Drain
23	685.050	685.300	Both	Lined Drain
24	685.500	687.100	Both	Lined Drain
25	687.900	688.260	Both	Lined Drain
26	689.320	689.800	Both	Lined Drain
27	690.350	690.670	Both	Lined Drain
28	692.000	692.600	Both	Lined Drain
29	693.430	693.470	Both	Lined Drain
30	694.050	694.150	Left	Lined Drain
31	694.050	694.250	Both	Lined Drain

S. No.	Chainage (km)		Side	Type
	From	To		
32	695.300	695.700	Both	Lined Drain
33	698.000	698.150	Left	Lined Drain
34	698.260	698.500	Both	Lined Drain
35	698.600	699.720	Both	Lined Drain
36	701.000	701.190	Both	Lined Drain
37	702.210	702.475	Both	Lined Drain
38	702.680	702.800	Right	Lined Drain
39	702.300	705.520	Both	Lined Drain
40	707.450	707.500	Left	Lined Drain
41	707.600	708.100	Both	Lined Drain
42	709.600	710.050	Left	Lined Drain
43	711.650	711.900	Right	Lined Drain
44	713.300	713.450	Right	Lined Drain
45	713.800	714.000	Both	Lined Drain
46	718.000	718.200	Right	Lined Drain
47	719.620	719.660	Left	Lined Drain
48	719.400	719.650	Right	Lined Drain
49	720.300	721.500	Both	Lined Drain
50	720.200	720.350	Right	Lined Drain
51	720.475	720.625	Right	Lined Drain
52	721.900	722.400	Left	Lined Drain
53	722.200	722.400	Right	Lined Drain
54	724.450	724.650	Both	Lined Drain

21 Location of Entry & Exit Ramps

S. No.	Chainage (km)	Description
1	659.500	Entry (L)
2	659.500	Exit (R)
3	663.285	Exit (L)
4	663.285	Entry (R)
5	670.675	Exit (L)
6	670.675	Entry (R)
7	673.750	Entry (L)
8	673.750	Exit (R)
9	675.310	Exit (L)
10	675.310	Entry (R)
11	682.650	Entry (L)
12	683.300	Exit (L)
13	683.000	Entry (R)
14	686.060	Entry (L)
15	686.060	Exit (R)
16	689.285	Exit (L)
17	689.285	Entry (R)
18	693.050	Entry (L)
19	693.050	Exit (R)
20	694.700	Exit (L)
21	694.700	Entry (R)
22	700.200	Exit (L)
23	700.200	Entry (R)
24	703.250	Exit (L)

S. No.	Chainage (km)	Description
25	703.250	Entry (R)
26	708.650	Entry (L)
27	708.650	Exit (R)
28	712.850.	Exit (L)
29	712.850	Entry (R)
30	714.300	Entry (L)
31	714.300	Exit (R)
32	716.350	Exit (L)
33	716.350	Entry (R)
34	718.300	Entry (L)
35	718.300	Exit (R)
36	718.970	Exit (L)
37	719.000	Entry (R)
38	721.515	Exit (L)
39	721.515	Entry (R)
40	724.100	Entry (L)
41	724.100	Exit (R)

22 Existing Toll Plazas

- Near km. 694.150 – TASWADE Toll Plaza with 8 number of toll lanes (4 lanes in each direction)

23 Permanent Bridge, Tunnel or Flyover having length more than 60 meters

The Site includes the following permanent bridge/ tunnel / flyover with length as noted below:

(a) Bridge – 2
(b) Tunnel – NIL
(c) Flyover – 1

24 Bypass costing Rs. 10 Crore or more

The Site includes the following bypass which was constructed at the cost noted below:

(a) Bypass – NIL

25 Existing Utilities

(a) Electrical Utilities

The site includes following electrical utilities

Chainage (km)		Electric Pole	Transformer	HTP Tower
From	To			
658.000	659.000	3	x	x
659.000	660.000	x	x	x

Chainage (km)		Electric Pole	Transformer	HTP Tower
From	To			
692.000	693.000	1	x	x
693.000	694.000	x	x	x

Chainage (km)		Electric Pole	Transformer	HTP Tower
From	To			
660.000	661.000	12	x	x
661.000	662.000	3	x	x
662.000	663.000	x	x	x
663.000	664.000	3	x	x
664.000	665.000	6	x	x
665.000	666.000	4	x	x
666.000	667.000	5	1	x
667.000	668.000	x	x	x
668.000	669.000	4	x	x
669.000	670.000	11	x	x
670.000	671.000	1	x	x
671.000	672.000	x	x	x
672.000	673.000	1	x	x
673.000	674.000	2	x	x
674.000	675.000	x	x	x
675.000	676.000	2	x	x
676.000	677.000	8	x	x
677.000	678.000	2	x	x
678.000	679.000	21	1	x
679.000	680.000	24	x	x
680.000	681.000	5	x	x
681.000	682.000	x	x	x
682.000	683.000	x	x	x
683.000	684.000	1	x	x
684.000	685.000	15	x	x
685.000	686.000	19	x	x
686.000	687.000	35	x	x
687.000	688.000	1	x	x
688.000	689.000	x	x	x
689.000	690.000	7	x	x
690.000	691.000	x	x	x
691.000	692.000	10	x	x
TOTAL		**205**	**2**	**0**

Chainage (km)		Electric Pole	Transformer	HTP Tower
From	To			
694.000	695.000	5	x	x
695.000	696.000	13	x	x
696.000	697.000	11	x	x
697.000	698.000	35	x	x
698.000	699.000	24	x	x
699.000	700.000	2	x	x
700.000	701.000	28	x	x
701.000	702.000	22	x	x
702.000	703.000	6	x	x
703.000	704.000	11	x	x
704.000	705.000	2	x	x
705.000	706.000	3	x	x
706.000	707.000	4	x	x
707.000	708.000	7	x	x
708.000	709.000	11	x	x
709.000	710.000	x	x	x
710.000	711.000	3	x	x
711.000	712.000	6	x	x
712.000	713.000	4	1	x
713.000	714.000	12	1	x
714.000	715.000	12	x	x
715.000	716.000	x	x	x
716.000	717.000	2	x	x
717.000	718.000	3	x	x
718.000	719.000	4	x	x
719.000	720.000	4	x	x
720.000	721.000	4	x	x
721.000	722.000	5	x	x
722.000	723.000	1	1	x
723.000	724.000	3	x	x
724.000	725.000	4	x	x
TOTAL		**252**	**3**	**0**

SCHEDULE – B

SCHEDULE – B

(See clause 2.1)

DEVELOPMENT OF THE PROJECT HIGHWAY

1 Development of the Project Highway

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

2 Six-Laning

2.1 Six-Laning shall include the Project Highway as described in Annex-I of this Schedule-B and Annex-I of Schedule-C.

2.2 Six-Laning shall be completed by the Concessionaire in conformity with the Specifications and Standards set forth in Annex-I of Schedule-D.

Annexure - 1
(Schedule –B)

DESCRIPTION OF SIX-LANING

The project road starts from near Pethnaka at km 658.000 of NH 4 and ends at km 725.000. The road passes through the Sangli and Satara district of Maharashtra state. The existing road is four lane divided carriageway with paved shoulder and mix of flexible and rigid pavements along its length.

1. **Width of Carriageway**

1.1 The paved carriageway shall be 27.00m wide excluding the median which shall remain unchanged.
Provided that in the following urban stretches, the width of carriageway shall be:

S. No.	Chainage (km)		Name of Village/Town
	From	To	
1	659.800	660.600	Nerale
2	665.000	666.200	Kasegaon
3	671.000	672.200	Kasegaon
4	678.500	682.200	Karad
5	684.400	685.100	Gote
6	685.600	686.800	Kodeche
7	698.100	699.700	Umbraj
8	701.000	701.500	Korti
9	707.000	707.300	Kashil
10	707.600	708.400	Ichasnal
11	709.800	710.200	Ramkrishna Nagar
12	713.000	714.000	Atit
13	717.500	718.300	Murud
14	719.300	719.800	Borgaon
15	722.200	722.600	Bhart Gaon

1.2 Except as otherwise provided in this Agreement, the width of the paved carriageway shall conform to Clause 1.1 of Annex-I of Schedule-B above.

2. **Project Facilities**

Project facilities shall be constructed in conformity with Annex-I of Schedule-C.

3. **Specifications and Standards**

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

4. Other Features of Six laning

4.1 Typical Cross Sections

The project highway shall be widened to six lane divided carriageway standard with paved shoulder and with or without service roads.

The typical cross-sections of six lane highway are as indicated in **Appendix B-I**.

Additional earth retaining structures shall have to be provided where necessary at the locations of space constraint in order to accommodate 2H: 1V side slopes.

4.2 Drawings

The strip plan, Plan & Profile of Flood affected stretch and Drainage Plan of Flood affected stretch for the project road are enclosed at **Appendix B-II**.

4.3 Bypasses & Realignment/Raising

Bypasses and realignment/raising are proposed as indicated in **Appendix B-III**.

4.4 Service Roads

Service Roads shall be provided in lengths as indicated in **Appendix B-IV**

4.5 At Grade Intersections/ Junctions

At grade intersections shall be provided at the junctions of service roads and all intersecting roads at locations specified in **Appendix B-V** for Major intersections and **Appendix B-VI** for Minor Intersections and these At Grade Intersections shall be developed as per the Manual.

4.6 Grade Separated Structures/ Flyovers

The Grade Separated Structures/ flyovers shall be provided as given at **Appendix B-VII**

4.7 Underpasses

The details of vehicular underpasses are given at Appendix **B-VIII**.
The details of light vehicular underpasses are given at **Appendix B- IX.**

4.8 Major Bridges

The details of Major bridges as indicated in **Appendix B-X**

4.9 Minor Bridges

The details of Minor bridges as indicated in **Appendix B-XI.**

4.10 Culverts

The details of Culverts as indicated in **Appendix B-XII.**

Rehabilitation of existing **structures**

The details of rehabilitation of existing structures as indicated in **Appendix B-XIII.**

4.11 Pavement

1. The existing paved shoulder shall be retained and further widening shall be carried out if the adjacent pavement and the paved shoulder are of same type and the existing paved shoulder shall be removed if the pavement is different from the adjacent carriageway type.

2. Pavement Design
   Flexible Pavement design shall be carried out as per Manual / traffic requirements subject to a minimum design traffic of 120 MSA and minimum pavement composition as below:

   BC - 50 mm
   DBM -140 mm
   WMM - 250 mm
   GSB - 200 mm

   Rigid Pavement design shall be carried out as per Manual / traffic requirement subject to minimum pavement composition as below:

   PQC - 320 mm
   DLC -150 mm
   GSB – 150mm + 75mm (Matching Layer)

3. The design of new pavement shall take into account of matching with existing drainage layer for efficient drainage

4. The existing rigid pavement and proposed new rigid pavement portion shall be tied.

5. All pavement design and strengthening requirements shall be carried out as per Schedule D.

6. All distressed concrete panels/slabs in rigid pavement shall be identified jointly with I.E. and suitably repaired/replaced where required.

7. Detailed structural evaluation of pavements should be carried out using the Falling Weight Deflectometer (FWD) test (IRC117:2015) to assess the residual life of the pavement and its load transfer efficiency (LTE) and based on the analysis, final treatment (relaying/strengthening) may be adopted by the Concessionaire in consultation with IE/NHAI.

4.12 Retaining Wall / RE Wall

Detailed inspection of site are envisaged to determine the exact requirements of RE Wall, Retaining Wall and Toe Wall in the project site. The RE Wall, Retaining Wall and Toe Wall shall be provided as per TCS Schedule at Clause 4.1 of Annex-I of Schedule-B and site requirement and as per the Manual in consultation with Independent Engineer/Authority.

4.12 (a) RE Wall

The tentative locations of RE Walls are given below:

S. No.	Chainage (km)		Length (km)
	From (km)	To (km)	
1	660.200	660.900	0.700
2	661.525	662.075	0.550
3	663.940	664.760	0.820
4	667.940	668.540	0.600
5	671.860	672.850	0.990
6	677.830	678.500	0.670
7	678.660	678.700	0.040
8	678.700	678.820	0.120
9	682.300	682.560	0.260
10	692.584	693.700	1.116
11	*697.000*	*697.470*	*0.470*
12	*697.470***	*698.200***	*0.730*
13	*703.900***	*704.500***	*0.600*
14	710.460	711.640	1.180
15	713.000	713.800	0.800
16	714.850	715.550	0.700

Note:

1. Location and length of RE Wall provided above is as per TCS Schedule is tentative and minimum requirement. The actual length of RE Wall shall be determined by the Concessionaire in accordance with the Manual requirements with approval from the Independent Engineer/Authority. Any increase in the length specified in this Clause 4.12(a) of Annex-I of 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 16.
2. **At these locations the new VUP including approaches and Service Roads are under construction by NHAI as separate Contract. The same shall be part of this Concession Agreement. Although no improvements is envisaged at these locations, improvements, if any, based on the actual site conditions as per Manual / Specifications and Standards is within the scope of the Concessionaire. Actual chainage may differ based on site condition.

4.12 (b) Retaining Wall

The existing partial Retaining Wall to be raised to accommodate the proposed cross section as per TCS Schedule at Clause 4.1 of Annex-I of Schedule-B. In case the proposed Cross Section as per TCS Schedule at Clause 4.1 of Annex-I of Schedule-B is not accommodated, new Retaining Wall to be constructed as per site condition and in consultation with Independent Engineer/Authority. The tentative locations of Retaining Walls are given below:

S. No.	Chainage		Length (km)
	From (km)	To (km)	
1	659.900	660.200	0.300
2	665.400	665.600	0.200
3	665.600	665.870	0.270
4	665.870	666.000	0.130
5	669.200	669.800	0.600
6	670.630	670.700	0.070
7	670.700	671.340	0.640
8	671.340	671.860	0.520
9	672.850	673.350	0.500
10	674.150	674.650	0.500
11	676.025	676.625	0.600
12	677.390	677.640	0.250
13	684.465	685.340	0.875
14	685.340	685.460	0.120
15	686.480	687.080	0.600
16	687.863	688.363	0.500
17	689.275	689.875	0.600

S. No.	Chainage		Length (km)
	From (km)	To (km)	
18	690.225	690.725	0.500
19	691.984	692.584	0.600
20	695.240	695.800	0.560
21	698.450	700.050	1.600
22	700.830	701.330	0.500
23	702.140	702.640	0.500
24	705.180	705.680	0.500
25	707.553	708.153	0.600
26	709.600	710.200	0.600
27	711.740	712.200	0.460
28	713.800	714.200	0.400
29	717.600	718.400	0.800
30	719.324	719.924	0.600
31	720.335	720.735	0.400
32	722.030	722.600	0.570
33	724.432	725.000	0.568

Note: Location and length of Retaining Wall provided above is as per TCS Schedule is tentative and minimum requirement. The actual length of Retaining Wall shall be determined by the Concessionaire in accordance with the Manual requirements with approval from the Independent Engineer/Authority. Any increase in the length specified in this Clause 4.12(b) of Annex-I of 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 16.

4.13 Slope Protection

The side slope shall be protected by using suitable slope protection measures wherever required along the project road.

4.14 Drainage

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

RCC Drain shall conform to the cross- sectional features and other details specified as per Clause 4.1 of Annex-I of Schedule-B. All drains shall suitably discharge in outfall.

Unlined drain shall be provided as per site conditions and design requirements.

4.15 Median Opening

Median openings other than the existing shall be constructed at appropriate locations at every 2 km as per site requirement in consultation with Independent Engineer/Authority as per Schedule D. The tentative location of median opening is given below:

S. No.	Existing Chainage (km)
1	659.500
2	663.200
3	667.200
4	673.500
5	685.400
6	687.400
7	689.000
8	691.150
9	696.000

S. No.	Existing Chainage (km)
10	701.300
11	703.500
12	706.500
13	709.500
14	715.300
15	721.500
16	723.500
17	725.000

Note: All chainages mentioned above are tentative and actual location of median openings shall be in accordance to schedule D in consultation with Independent Engineer /Authority. The same shall not constitute a Change of Scope, save and except any variations arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 16

4.16 Longitudinal Section

The longitudinal section / profile of the project highway shall be designed as per the provisions of Schedule-D, Clause 4.2 of Annex-I of Schedule-B and Clause 4.3 of Annex-I of Schedule-B.

4.17 Road Boundary Wall

Road boundary wall shall be provided along the entire length on either side (including transverse requirements at structure locations) as per Clause 12.2 of the Manual.

4.18 Utility Shifting

Shifting of obstructing existing utilities indicated in Schedule A to an appropriate location in accordance with the standards and specifications of concerned Utility Owning Department is part of the scope of work of the Contractor. 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.

Details of Utilities to be relocated:

(i) Electrical Utilities to be relocated

Km		Electric Pole	Transformer	HTP Tower
From	To			
658.000	659.000	3	x	x
659.000	660.000	x	x	x
660.000	661.000	12	x	x
661.000	662.000	3	x	x
662.000	663.000	x	x	x
663.000	664.000	3	x	x
664.000	665.000	6	x	x
665.000	666.000	4	x	x
666.000	667.000	5	1	x
667.000	668.000	x	x	x
668.000	669.000	4	x	x
669.000	670.000	11	x	x
670.000	671.000	1	x	x
671.000	672.000	x	x	x
672.000	673.000	1	x	x
673.000	674.000	2	x	x
674.000	675.000	x	x	x
675.000	676.000	2	x	x
676.000	677.000	8	x	x
677.000	678.000	2	x	x
678.000	679.000	21	1	x
679.000	680.000	24	x	x
680.000	681.000	5	x	x
681.000	682.000	x	x	x
682.000	683.000	x	x	x
683.000	684.000	1	x	x
684.000	685.000	15	x	x
685.000	686.000	19	x	x
686.000	687.000	35	x	x
687.000	688.000	1	x	x
688.000	689.000	x	x	x
689.000	690.000	7	x	x
690.000	691.000	x	x	x
691.000	692.000	10	x	x
TOTAL		**205**	**2**	**0**

Km		Electric Pole	Transformer	HTP Tower
From	To			
692.000	693.000	1	x	x
693.000	694.000	x	x	x
694.000	695.000	5	x	x
695.000	696.000	13	x	x
696.000	697.000	11	x	x
697.000	698.000	35	x	x
698.000	699.000	24	x	x
699.000	700.000	2	x	x
700.000	701.000	28	x	x
701.000	702.000	22	x	x
702.000	703.000	6	x	x
703.000	704.000	11	x	x
704.000	705.000	2	x	x
705.000	706.000	3	x	x
706.000	707.000	4	x	x
707.000	708.000	7	x	x
708.000	709.000	11	x	x
709.000	710.000	x	x	x
710.000	711.000	3	x	x
711.000	712.000	6	x	x
712.000	713.000	4	1	x
713.000	714.000	12	1	x
714.000	715.000	12	x	x
715.000	716.000	x	x	x
716.000	717.000	2	x	x
717.000	718.000	3	x	x
718.000	719.000	4	x	x
719.000	720.000	4	x	x
720.000	721.000	4	x	x
721.000	722.000	5	x	x
722.000	723.000	1	1	x
723.000	724.000	3	x	x
724.000	725.000	4	x	x
TOTAL		**252**	**3**	**0**

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 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 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 to utility owning department whenever asked by the Contractor. The decision/ approval of utility owning department shall be binding on the Contractor.

(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 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 who would be free to dispose-off the dismantled material as deemed fit by them unless the Contractor 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 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.

Appendix B-I

CROSS SECTIONS SCHEDULE

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
1	658.000	659.200	1.200	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
2	659.200	659.900	0.700	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
3	659.900	660.200	0.300	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
4	660.200	660.900	0.700	7	Flexible	Flexible	Fig 7.8 with Service road widening	Typical cross section for six lane divided highway near approaches to structures
5	660.900	661.525	0.625	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
6	661.525	662.075	0.550	7	Flexible	Flexible	Fig 7.8 with Service road widening	Typical cross section for six lane divided highway near approaches to structures
7	662.075	663.000	0.925	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
8	663.000	663.940	0.940	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
9	663.940	664.760	0.820	7	Flexible	Flexible	Fig 7.8 with Service road widening	Approaches to structures with slip ramp/ service road
10	664.760	665.400	0.640	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
11	665.400	665.600	0.200	4	Flexible	Flexible	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
12	665.600	665.870	0.270	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
13	665.870	666.000	0.130	4	Flexible	Flexible	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
14	666.000	667.400	1.400	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
15	667.400	667.940	0.540	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
16	667.940	668.540	0.600	7	Flexible	Flexible	Fig 7.8 with Service road widening	Typical cross section for six lane divided highway near approaches to structures

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
17	668.540	669.200	0.660	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
18	669.200	669.800	0.600	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
19	669.800	670.470	0.670	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
20	670.470	670.630	0.160	1 (Reconstruction)	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
21	670.630	670.700	0.070	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
22	670.700	671.340	0.640	4	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with Approaches to existing underpasses
23	671.340	671.860	0.520	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
24	671.860	672.850	0.990	7	Flexible	Flexible	Fig 7.8 with Service road widening	Typical cross section for six lane divided highway near approaches to structures
25	672.850	673.350	0.500	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
26	673.350	674.150	0.800	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
27	674.150	674.650	0.500	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
28	674.650	676.025	1.375	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
29	676.025	676.625	0.600	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
30	676.625	677.000	0.375	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
31	677.000	677.390	0.390	3	Flexible	Flexible	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
32	677.390	677.640	0.250	4	Flexible	Flexible	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
33	677.640	677.830	0.190	3	Flexible	Flexible	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
34	677.830	678.500	0.670	7	Flexible	Flexible	Fig 7.8 with Service road widening	Typical cross section for six lane divided highway near approaches to structures
35	678.500	678.660	0.160	3	Flexible	Flexible	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
36	678.660	678.700	0.040	7	Flexible	Flexible	Fig 7.8 with Service road widening	6 Lane Elevated section with strengthening of at grade 4 lane main carriageway with both side existing road
37	678.700	678.820	0.120	7	Flexible	Flexible	Fig 7.8 with Service road widening	6 Lane Elevated section with strengthening of at grade 4 lane main carriageway with both side existing road
38	678.820	682.300	3.480	8	Flexible	Flexible		6 Lane Elevated section with strengthening of at grade 4 lane main carriageway with both side existing road
39	682.300	682.560	0.260	7	Flexible	Flexible	Fig 7.8 with Service road widening	Typical cross section for six lane divided highway near approaches to structures (vup/ pup/ flyover with slip ramp/ service road)
40	682.560	682.650	0.090	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
41	682.650	683.100	0.450	6	Flexible	Flexible	Fig. 2.4, Type A-3	Typical cross section for six lane divided highway with realignment of new left carriageway without service road and with raised median

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
42	683.100	683.955	0.855	5	Flexible	Rigid	Service Road widening	Typical cross section for six lane divided highway with Approaches to Underpass/ Rob with maintaining existing retaining wall
43	683.955	684.405	0.450	3(Reconstruction)	Flexible	Flexible	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
44	684.405	684.465	0.060	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
45	684.465	685.340	0.875	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
46	685.340	685.460	0.120	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
47	685.460	686.480	1.020	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
48	686.480	687.080	0.600	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
49	687.080	687.863	0.783	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
50	687.863	688.363	0.500	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
51	688.363	689.275	0.912	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
52	689.275	689.875	0.600	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
53	689.875	690.225	0.350	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
54	690.225	690.725	0.500	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
55	690.725	691.984	1.259	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
56	691.984	692.584	0.600	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
57	692.584	693.700	1.116	7	Flexible	Flexible	Fig 7.8 with Service road widening	Typical cross section for six lane divided highway near approaches to structures

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
58	693.700	695.100	1.400	TASWADE TOLL PLAZA	Rigid	Rigid	TASWADE TOLL PLAZA	TASWADE TOLL PLAZA
59	695.100	695.240	0.140	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
60	695.240	695.800	0.560	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
61	695.800	697.000	1.200	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
62	697.000	697.470	0.470	7	Flexible	Flexible	Fig 7.8 with Service road widening	Typical cross section for six lane divided highway near approaches to structures
63	*697.470***	*698.200***	*0.730*	*7*	*Flexible*	*Flexible*	*Fig 7.8 with Service road widening*	*Typical cross section for six lane divided highway near approaches to structures*
64	*698.200***	*698.400***	*0.200*	*1*	*Flexible*	*Rigid*	*Fig. 2.7, Type A-6*	*Typical cross section for six lane divided highway with service road and raised median in open country*
65	698.400	698.450	0.050	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
66	698.450	700.050	1.600	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
67	700.050	700.200	0.150	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
68	700.200	700.830	0.630	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
69	700.830	701.330	0.500	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
70	701.330	702.140	0.810	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
71	702.140	702.640	0.500	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
72	702.640	703.600	0.960	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
73	*703.600***	*703.900***	*0.300*	*1*	*Flexible*	*Rigid*	*Fig. 2.7, Type A-6*	*Typical cross section for six lane divided highway with service road and raised median in open country*
74	*703.900***	*704.500***	*0.600*	*7*	*Flexible*	*Flexible*	*Fig 7.8 with Service road widening*	*Typical cross section for six lane divided highway near approaches to structures*
75	*704.500***	*704.580***	*0.080*	*1*	*Flexible*	*Rigid*	*Fig. 2.7, Type A-6*	*Typical cross section for six lane divided highway with service road and raised median in open country*

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
76	704.580	705.000	0.420	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
77	705.000	705.180	0.180	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
78	705.180	705.680	0.500	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
79	705.680	707.553	1.873	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
80	707.553	708.153	0.600	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
81	708.153	708.800	0.647	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
82	708.800	709.600	0.800	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
83	709.600	710.200	0.600	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
84	710.200	710.300	0.100	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
85	710.300	710.460	0.160	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
86	710.460	711.640	1.180	7	Flexible	Flexible	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
87	711.640	711.740	0.100	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
88	711.740	712.200	0.460	4	Flexible	Flexible	Approach & Service road widening	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
89	712.200	712.800	0.600	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
90	712.800	712.900	0.100	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
91	712.900	713.000	0.100	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
92	713.000	713.800	0.800	7	Flexible	Flexible	Approach & Service road widening	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
93	713.800	714.200	0.400	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
94	714.200	714.850	0.650	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
95	714.850	715.550	0.700	7	Flexible	Flexible	Fig 7.8 with Service road widening	Typical cross section for six lane divided highway near approaches to structures
96	715.550	716.220	0.670	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
97	716.220	717.600	1.380	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
98	717.600	718.400	0.800	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
99	718.400	718.500	0.100	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
100	718.500	719.000	0.500	6	Flexible	Rigid	Fig. 2.4, Type A-3	Typical cross section for six lane divided highway with realignment of new left

S. No.	Chainage (km)		Length (km)	Type of C/S Applicable	Proposed Pavement Type		Ref. as per 6 lane manual IRC SP 87-2019	Remarks
	From	To			Left Hand Side (LHS)	Right Hand Side (RHS)		
								carriageway without service road and with raised median
101	719.000	719.324	0.324	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
102	719.324	719.924	0.600	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
103	719.924	720.335	0.411	3	Flexible	Rigid	Fig. 2.9, Type B-2	Typical cross section for six lane divided highway with service road and raised median in built up section (retaining existing service road on LHS/RHS/ or BOTH Sides)
104	720.335	720.735	0.400	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
105	720.735	722.030	1.295	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
106	722.030	722.600	0.570	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses
107	722.600	724.432	1.832	1	Flexible	Rigid	Fig. 2.7, Type A-6	Typical cross section for six lane divided highway with service road and raised median in open country
108	724.432	725.000	0.568	4	Flexible	Rigid	Approach & Service road widening	Typical cross section for six lane divided highway with Approaches to existing underpasses

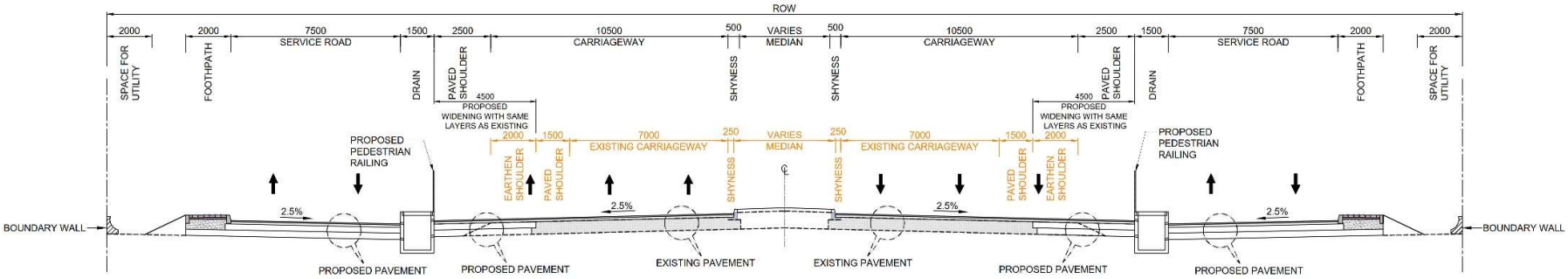
Note:

1 . Any variation in lengths specified in the above table shall not constitute a Change of Scope, save and except any variation in the length arising out of a change of scope expressly undertaken in accordance with the provisions of Article 16.

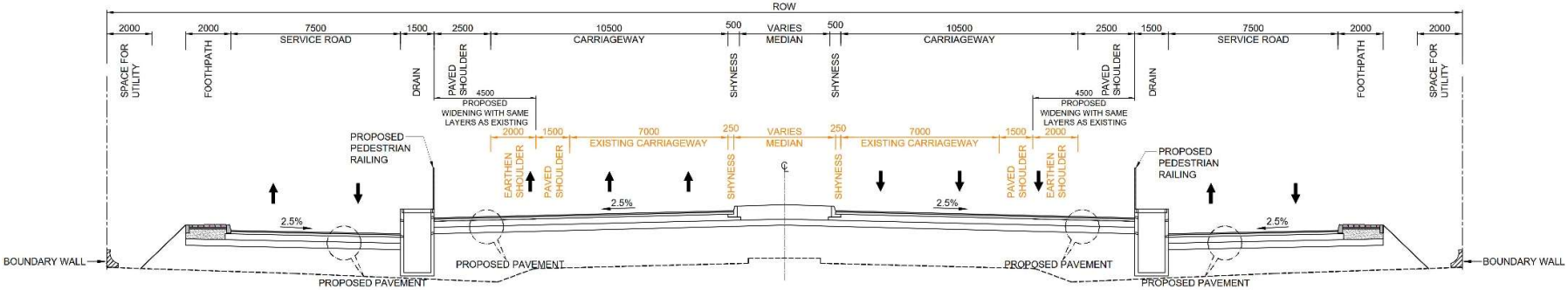
2. **At these locations the new VUP including approaches and Service Roads are under construction by NHAI as separate Contract. The same shall be part of this Concession Agreement. Although no improvements is envisaged at these locations, improvements, if any, based on the actual site conditions as per Manual / Specifications and Standards is within the scope of the Concessionaire. Actual chainage may differ based on site condition.

3. Metal beam crash barrier to be provided all along the project road on both sides of central median and on the outer edge of main carriageway as per the requirements.

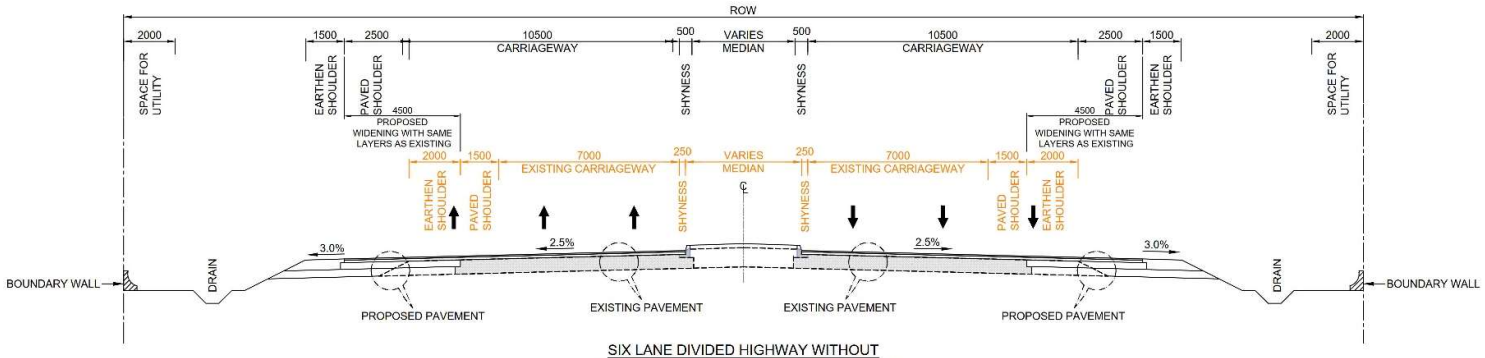
Typical Cross Section



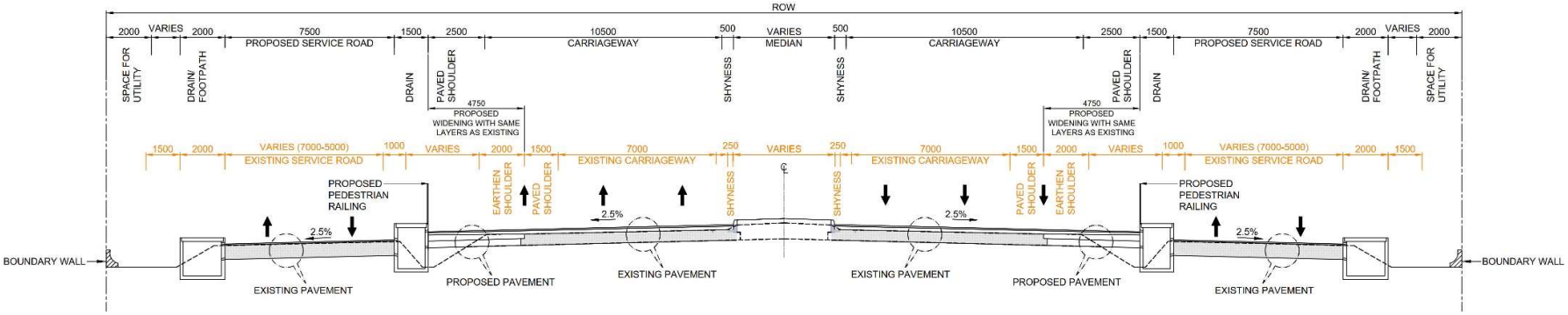
SIX LANE DIVIDED HIGHWAY WITH SERVICE ROAD AND WITH RAISED MEDIAN IN OPEN COUNTRY
WITH PROPOSED SERVICE ROAD LHS / RHS / OR BOTH SIDES
(TYPE-1)



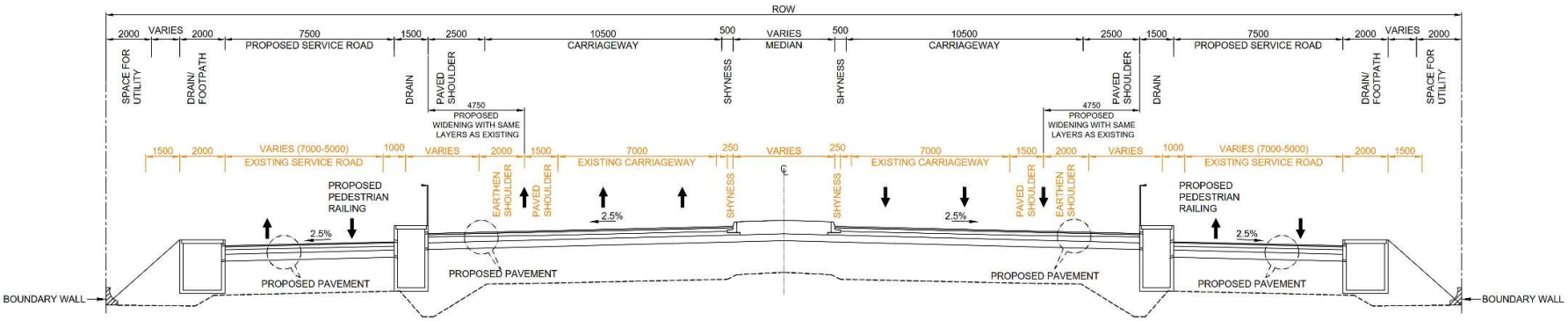
SIX LANE DIVIDED HIGHWAY WITH SERVICE ROAD AND WITH RAISED MEDIAN IN OPEN COUNTRY
WITH PROPOSED SERVICE ROAD LHS / RHS / OR BOTH SIDES
(TYPE-1 RECONSTRUCTION)



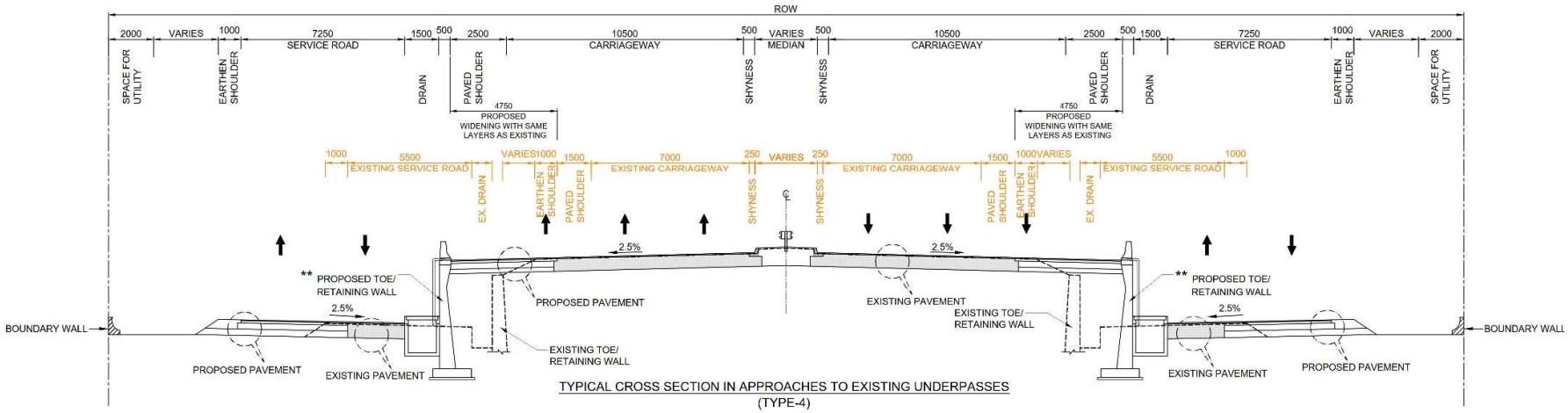
SIX LANE DIVIDED HIGHWAY WITHOUT
SERVICE ROAD AND WITH RAISED MEDIAN
(TYPE-2)



SIX LANE DIVIDED HIGHWAY WITH SERVICE ROAD AND RAISED MEDIAN IN
BUILT UP SECTION RETAINING EXISTING SERVICE ROAD ON LHS / RHS / OR BOTH SIDES
(TYPE-3)

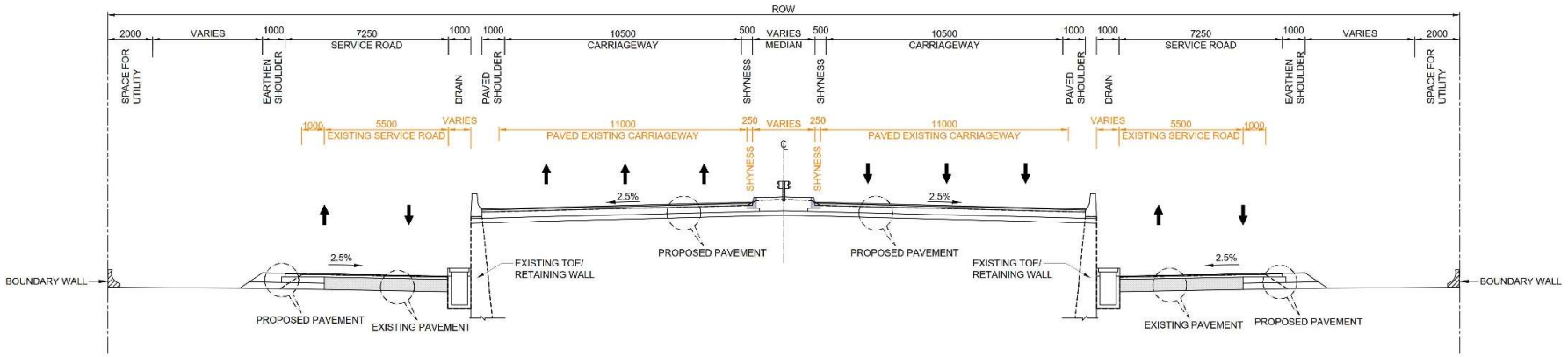


SIX LANE DIVIDED HIGHWAY WITH SERVICE ROAD AND RAISED MEDIAN IN
BUILT UP SECTION RETAINING EXISTING SERVICE ROAD ON LHS / RHS / OR BOTH SIDES
(TYPE-3 RECONSTRUCTION)

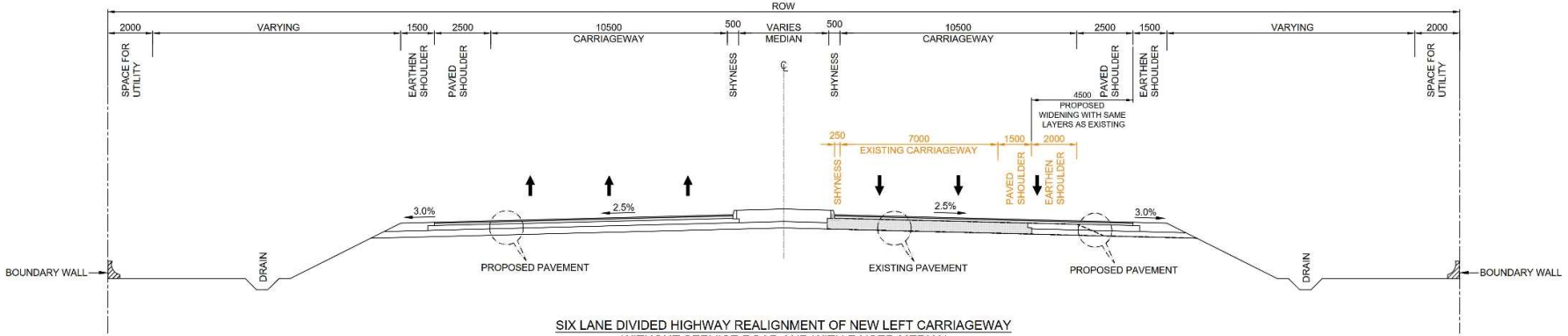


TYPICAL CROSS SECTION IN APPROACHES TO EXISTING UNDERPASSES
(TYPE-4)

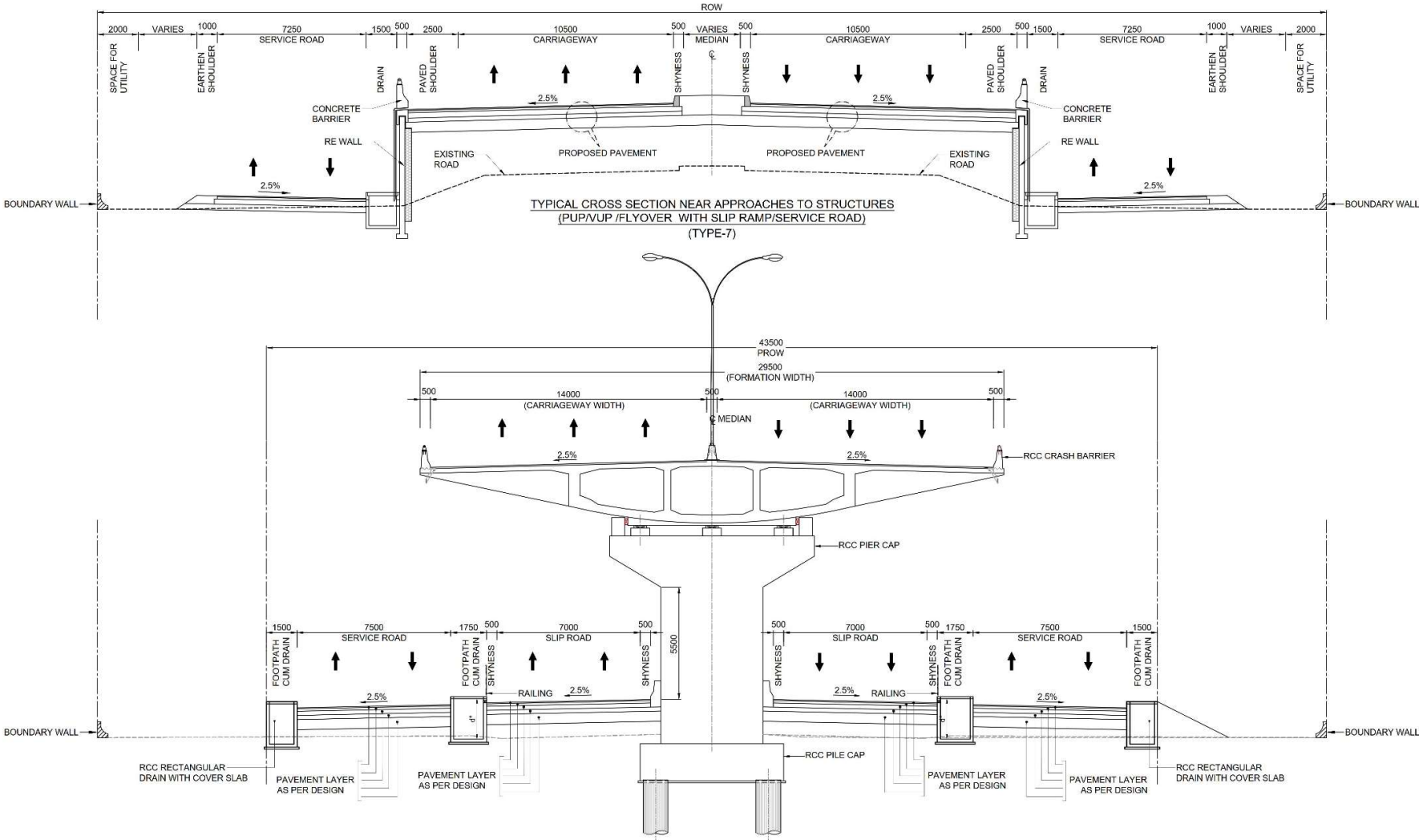
** EXISTING PARTIAL RETAINING WALL TO BE RAISED TO ACCOMMODATE THE PROPOSED CROSS SECTION. IN CASE PROPOSED CROSS SECTION AS MENTIONED IS NOT ACCOMMODATED, NEW RETAINING WALL TO BE CONSTRUCTED AS PER SITE CONDITION.



TYPICAL CROSS SECTION IN APPROACHES TO UNDERPASS /ROB WITH ,
MAINTAINING EXISTING RETAINING WALL
(TYPE-5)



SIX LANE DIVIDED HIGHWAY REALIGNMENT OF NEW LEFT CARRIAGEWAY
WITHOUT SERVICE ROAD AND WITH RAISED MEDIAN
(TYPE-6)


ROW
2000
VARIES
1000
7250
SERVICE ROAD
1500
500
2500
10500
CARRIAGEWAY
500
VARIES
MEDIAN
500
10500
CARRIAGEWAY
2500
500
1500
7250
SERVICE ROAD
1000
VARIES
2000
SPACE FOR UTILITY
EARTHEN SHOULDER
DRAIN
PAVED SHOULDER
SHYNESS
SHYNESS
PAVED SHOULDER
DRAIN
EARTHEN SHOULDER
SPACE FOR UTILITY
CONCRETE BARRIER
RE WALL
EXISTING ROAD
2.5%
PROPOSED PAVEMENT
PROPOSED PAVEMENT
EXISTING ROAD
CONCRETE BARRIER
RE WALL
BOUNDARY WALL
BOUNDARY WALL
TYPICAL CROSS SECTION NEAR APPROACHES TO STRUCTURES
(PUP/VUP /FLYOVER WITH SLIP RAMP/SERVICE ROAD)
(TYPE-7)
43500
PROW
29500
(FORMATION WIDTH)
14000
(CARRIAGEWAY WIDTH)
14000
(CARRIAGEWAY WIDTH)
RCC CRASH BARRIER
RCC PIER CAP
1500
7500
SERVICE ROAD
1750
7000
SLIP ROAD
7000
SLIP ROAD
7500
SERVICE ROAD
1500
FOOTPATH CUM DRAIN
SHYNESS
RAILING
5500
RCC PILE CAP
RCC RECTANGULAR DRAIN WITH COVER SLAB
PAVEMENT LAYER AS PER DESIGN
RCC RECTANGULAR DRAIN WITH COVER SLAB
TYPICAL CROSS SECTION AT VIADUCT PORTION
(6 LANE CARRIAGEWAY)
(TYPE-8)

Appendix B-II

DRAWINGS

Strip plan, Plan & Profile of Flood affected stretch and Drainage Plan of Flood affected stretch for the project road are enclosed

Appendix B-III

BYPASSES & REALIGNMENT/RAISING

1 Bypass & Realignment

Nil

2 Raising

(A) Main Carriageway

a. From existing km 670.500 to km 670.750 – raising at this location along with provision of a balancing culvert on both sides
b. From existing km 670.850 to km 671.025 – raising at this location along with provision of a balancing culvert on both sides

c. From existing km 682.650 to km 683.100 –approaches to proposed Koyna River bridge

d. From existing km 684.200 to km 684.250 – Raising of road

e. From existing km 685.220 to km 686.600 – road section for both side main carriageway to be raised

f. From existing km 718.500 to km 719.000 –approaches to proposed Urmodi River bridge

Note :

1. Plan & Profile for flood affected stretches are attached at Appendix B-II for reference purpose only. The chainage mentioned in Plan & Profile for flood affected stretches are Design chainages. Minimum FRL for the above stretches shall be followed based on the detailed HFL study.

2. Apart from the above-mentioned flood affected stretches, the following stretches of Service Road affected during the recent floods in 2019 and 2021 will require raising as per detailed HFL study/ flooding requirement during execution of widening from 4-lane to 6-lane.

(i) Service Road

a. From Existing Chainage – km 662.700 to km 662.900 - road section for both side service road to be raised.

b. From Existing Chainage – km 665.000 to km 665.050 - road section for both side service road to be raised.

c. From Existing Chainage – km 667.500 to km 667.700 - road section for both side service road to be raised.

d. From Existing Chainage – km 668.500 to km 668.700 - road section for both side service road to be raised.

e. From Existing Chainage – km 670.000 to km 670.150 - road section for both side service road to be raised.

f. From Existing Chainage – km 670.600 to km 670.650 - road section for left side service road to be raised.

g. From Existing Chainage – km 674.600 to km 674.700 - road section for both side service road to be raised.

h. From Existing Chainage – km 675.400 to km 675.600 - road section for both side service road to be raised.

i. From Existing Chainage – km 677.950 to km 678.000 - road section for both side service road to be raised

j. From Existing Chainage – km 679.700 to km 679.720 - road section for right side service road to be raised

k. From Existing Chainage – km 683.500 to km 683.650 - road section for both side service road to be raised

l. From Existing Chainage – km 684.200 to km 684.250 - road section for right side service road to be raised

m. From Existing Chainage – km 685.600 to km 685.850 - road section for both side service road to be raised

n. From Existing Chainage – km 686.200 to km 686.300 - road section for right side service road to be raised

o. From Existing Chainage – km 693.400 to km 693.700 - road section for both side service road to be raised.

p. From Existing Chainage – km 709.500 to km 709.700 - road section for left side service road to be raised.

Appendix B-IV

A) EXISTING SERVICE ROADS TO BE WIDENED / STRENGTHENED

i) LHS

S. No.	Chainage (km)		Length (Km)
	From	To	
1	659.200	659.600	0.400
2	659.600	660.000	0.400
3	660.000	660.200	0.200
4	660.200	660.400	0.200
5	660.400	661.000	0.600
6	661.000	661.400	0.400
7	661.400	661.600	0.200
8	661.600	662.000	0.400
9	662.000	662.400	0.400
10	662.400	664.200	1.800
11	664.200	664.600	0.400
12	664.600	664.800	0.200
13	664.800	665.200	0.400
14	665.200	665.400	0.200
15	665.400	665.600	0.200
16	665.600	666.000	0.400
17	666.000	666.200	0.200
18	666.200	666.600	0.400
19	666.600	667.000	0.400
20	667.000	667.400	0.400
21	667.400	667.800	0.400
22	667.800	668.000	0.200
23	668.000	668.400	0.400
24	668.400	668.600	0.200
25	668.600	671.000	2.400
26	671.000	671.200	0.200
27	671.200	671.400	0.200
28	671.400	671.800	0.400
29	671.800	672.000	0.200
30	672.000	672.600	0.600
31	672.600	673.000	0.400
32	673.000	673.200	0.200
33	673.200	673.800	0.600
34	673.800	674.000	0.200
35	674.000	676.000	2.000
36	676.000	676.800	0.800
37	676.800	677.200	0.400

S. No.	Chainage (km)		Length (Km)
	From	To	
38	677.200	678.000	0.800
39	678.000	678.500	0.50
40	678.500	678.600	0.100
41	678.600	678.800	0.200
42	678.800	679.800	1.000
43	679.800	680.000	0.200
44	680.000	681.800	1.800
45	681.800	682.200	0.400
46	682.200	682.600	0.400
47	683.000	683.200	0.200
48	683.200	683.800	0.600
49	683.800	684.000	0.200
50	684.000	684.400	0.400
51	684.400	684.800	0.400
52	684.800	685.200	0.400
53	685.200	685.600	0.400
54	685.600	686.200	0.600
55	686.200	686.400	0.200
56	686.400	687.800	1.400
57	687.800	688.000	0.200
58	688.000	688.200	0.200
59	688.200	688.600	0.400
60	688.600	688.800	0.200
61	688.800	689.200	0.400
62	689.200	689.400	0.200
63	689.400	689.800	0.400
64	689.800	690.000	0.200
65	690.000	690.200	0.200
66	690.200	692.200	2.000
67	692.200	692.400	0.200
68	692.400	694.200	1.800
69	695.100	695.200	0.100
70	695.200	695.400	0.200
71	695.400	695.800	0.400
72	698.400	698.600	0.200
73	698.600	699.800	1.200
74	700.200	701.600	1.400
75	701.600	701.800	0.200
76	701.800	703.500	1.700
77	703.500	703.600	0.100
78	*703.600***	*704.580***	*0.980*
79	704.580	704.680	0.100

S. No.	Chainage (km)		Length (Km)
	From	To	
80	704.680	706.000	1.32
81	706.000	706.200	0.200
82	706.200	707.000	0.800
83	*707.000***	*708.400***	*1.400*
84	708.400	708.800	0.400
85	709.400	710.200	0.800
86	710.800	712.200	1.400
87	712.800	713.200	0.400
88	713.200	713.600	0.400
89	713.600	713.800	0.200
90	713.800	714.200	0.400
91	716.400	717.200	0.800
92	717.200	717.600	0.400
93	717.600	717.800	0.200
94	717.800	718.350	0.550
95	719.000	725.000	6.000

ii) RHS

S. No.	Chainage (km)		Length (Km)
	From	To	
1	660.000	660.200	0.200
2	660.200	660.400	0.200
3	660.400	660.800	0.400
4	660.800	661.800	1.000
5	661.800	662.000	0.200
6	662.000	663.000	1.000
7	664.200	664.600	0.400
8	664.600	664.800	0.200
9	664.800	665.200	0.400
10	665.200	665.400	0.200
11	665.400	665.600	0.200
12	665.600	666.000	0.400
13	666.800	667.400	0.600
14	669.200	669.600	0.400
15	671.200	671.600	0.400
16	671.600	672.000	0.400
17	672.000	673.000	1.000
18	673.000	673.400	0.400
19	673.400	673.800	0.400
20	673.800	674.000	0.200
21	674.000	674.400	0.400
22	674.400	677.800	3.400
23	677.800	678.000	0.200

S. No.	Chainage (km)		Length (Km)
	From	To	
24	678.000	678.500	0.500
25	678.500	678.600	0.100
26	678.600	678.800	0.200
27	678.800	679.800	1.000
28	679.800	680.000	0.200
29	680.000	681.200	1.200
30	681.200	682.200	1.000
31	682.200	682.400	0.200
32	683.200	683.800	0.600
33	683.800	684.000	0.200
34	684.000	684.400	0.400
35	684.400	684.800	0.400
36	684.800	685.000	0.200
37	685.000	685.400	0.400
38	685.400	686.000	0.600
39	686.000	686.600	0.600
40	686.600	686.800	0.200
41	686.800	687.000	0.200
42	687.000	687.400	0.400
43	687.400	687.800	0.400
44	687.800	690.600	2.800
45	690.600	691.200	0.600
46	691.200	692.600	1.400
47	692.600	692.800	0.200
48	692.800	693.700	0.900
49	695.100	695.200	0.100
50	695.200	695.400	0.200
51	695.400	695.600	0.200
52	695.600	697.340	1.740
53	697.340	697.470	0.130
54	*697.470***	*698.000***	*0.530*
55	698.600	699.200	0.600
56	699.200	699.800	0.600
57	700.800	702.550	1.750
58	*704.100***	*704.300***	*0.200*
59	705.000	705.400	0.400
60	705.400	705.600	0.200
61	705.600	706.000	0.400
62	706.000	706.200	0.200
63	706.200	707.000	0.800
64	*707.000***	*708.400***	*1.400*
65	708.400	708.800	0.400

S. No.	Chainage (km)		Length (Km)
	From	To	
66	709.400	710.400	1.000
67	710.800	711.800	1.000
68	711.800	712.000	0.200
69	712.800	713.600	0.800
70	713.600	713.800	0.200
71	713.800	714.200	0.400
72	716.400	716.600	0.200
73	716.600	717.600	1.000
74	717.600	718.000	0.400
75	718.000	718.350	0.350
76	718.800	719.800	1.000
77	719.800	720.000	0.200
78	720.000	720.400	0.400
79	720.400	720.600	0.200
80	722.200	722.600	0.400
81	724.200	724.600	0.400
82	724.600	724.800	0.200
83	724.800	725.000	0.200

Note:

1. Re-grade/ reconstruction of existing service roads shall be required in the locations of proposed minor bridges, Box/slab culverts and flood affected stretches.
2. Due to retrofitting of six lane on the existing four lane, the Service Road, if required to be shifted outwards on normal embankment, the widening/reconstruction of the Service Road and adjoining drain shall be carried out in consultation with Independent Engineer/Authority. The same shall not constitute any Change of Scope.
3. The Acceleration lane, deceleration lane and transition lane shall be constructed in addition to length given in above table and will be considered as incidental to the project and shall not be counted towards service road/ slip road length.
4. Provision shall be made for proper entry and exit ramps between the main highway and the service roads/slip roads through properly designed acceleration and deceleration length at suitable locations in consultation with Independent Engineer/Authority. The same shall not constitute any Change of Scope.
5. **At these locations the new VUP including approaches and Service Roads are under construction by NHAI as separate Contract. The same shall be part of this Concession Agreement. Although no improvements is envisaged at these locations, improvements, if any, based on the actual site conditions as per Manual / Specifications and Standards is within the scope of the Concessionaire. Actual chainage may differ based on site condition.

B) PROPOSED SERVICE ROAD

i) PROPOSED SERVICE ROAD ON LHS

S. No	Existing Chainage (km)		Length (km)	Side
	From	To		
1	658.000	659.200	1.200	Left
2	695.800	697.000	1.200	Left
3	697.000	697.340	0.340	Left
4	697.340	697.470		Left
5	*697.470***	*698.400***	*0.930*	*Left*
6	699.800	700.200	0.400	Left
7	708.800	709.400	0.600	Left
8	710.200	710.800	0.600	Left
9	712.200	712.800	0.600	Left
10	714.200	716.400	2.200	Left

ii) PROPOSED SERVICE ROAD ON RHS

S. No	Existing Chainage (km)		Length (km)	Side
	From	To		
1	658.000	660.000	2.000	Right
2	663.000	664.200	1.200	Right
3	666.000	666.800	0.800	Right
4	667.400	668.000	0.600	Right
5	668.000	669.200	1.200	Right
6	669.600	671.200	1.600	Right
7	683.000	683.200	0.200	Right
8	*698.000***	*698.400***	*0.400*	*Right*
9	698.400	698.600	0.200	Right
10	699.800	700.800	1.000	Right
11	702.550	703.500	0.950	Right
12	703.500	703.600	0.100	Right
13	*703.600***	*704.100***	*0.500*	*Right*
14	*704.300***	*704.580***	*0.280*	*Right*
15	704.580	704.680	0.100	Right
16	704.680	705.000	0.320	Right
17	708.800	709.400	0.600	Right
18	710.400	710.800	0.400	Right
19	712.000	712.800	0.800	Right
20	714.200	716.400	2.200	Right
21	718.350	718.550	0.200	Right
22	720.600	722.200	1.600	Right
23	722.600	724.200	1.600	Right

Note-

1. The proposed location of service roads is tentative and the same shall be finalized in consultation with Independent Engineer/Authority. Any change in location shall not be treated as change in scope of work.
2. The Acceleration lane, deceleration lane and transition lane shall be constructed in addition to length given in above table and will be considered as incidental to the project and shall not be counted towards service road/ slip road length.
3. Provision shall be made for proper entry and exit ramps between the main highway and the service roads/slip roads through properly designed acceleration and deceleration length at suitable locations in consultation with Independent Engineer/Authority. The same shall not constitute any Change of Scope.
4. **At these locations the new VUP including approaches and Service Roads are under construction by NHAI as separate Contract. The same shall be part of this Concession Agreement. Although no improvements is envisaged at these locations, improvements, if any, based on the actual site conditions as per Manual / Specifications and Standards is within the scope of the Concessionaire. Actual chainage may differ based on site condition.

C) PROPOSED SLIP ROAD

i) PROPOSED SLIP ROAD ON LHS

S. No	Existing Chainage (km)		Length (km)	Side
	From	To		
1	678.830	682.300	3.470	Left

ii) PROPOSED SLIP ROAD ON RHS

S. No	Existing Chainage (km)		Length (km)	Side
	From	To		
1	678.830	682.300	3.470	Right

Note-

1. The proposed location of slip roads is tentative and the same shall be finalized in consultation with Independent Engineer/Authority. Any change in location shall not be treated as change in scope of work.
2. The Acceleration lane, deceleration lane and transition lane shall be constructed in addition to length given in above table and will be considered as incidental to the project and shall not be counted towards service road/ slip road length.
3. Provision shall be made for proper entry and exit ramps between the main highway and the service roads/slip roads through properly designed acceleration and deceleration length at suitable locations in consultation with Independent Engineer/Authority. The same shall not constitute any Change of Scope.

Appendix B-V

AT GRADE MAJOR INTERSECTIONS

At Grade Major Intersections (On cross road locations underneath the flyovers/underpasses & on service road) to be improved are given below:

S. No.	Chainage (km)	Side	Type	Leading To
1	671.560	Both	X- junction	Left -Wathar MDR 56, Right -Rethare MDR 60
2	676.320	Both	X- junction	Pachwad Phata (SH-80)
3	697.800**	Both	Cross -Junction	Left - Bhawani Wadi, Right -Pandharpur
4	718.000	LHS	T- Junction	Patan

Note: 1) All chainages mentioned above are tentative and actual location of junctions shall be as per the site condition and direction of Independent Engineer/Authority.

2) Not to be limited to the above specified locations and it shall be finalized in consultation with Independent Engineer/Authority

3) **At these locations the new VUP including approaches and Service Roads are under construction by NHAI as separate Contract. The same shall be part of this Concession Agreement. Although no improvements is envisaged at these locations, improvements, if any, based on the actual site conditions as per Manual / Specifications and Standards is within the scope of the Concessionaire. Actual chainage may differ based on site condition.

Appendix B-VI

AT GRADE MINOR INTERSECTIONS

At Grade Minor Intersections (On cross road locations underneath the flyovers/underpasses & on service road) to be improved are given below:

S. No.	Existing Chainage (km)	Side	Type	Leading To
1	660.500	BOTH	X- junction	R-Nerale
2	663.450	LHS	T- junction	Desai Mala
3	664.350	Both	X- junction	L-Shene , R-Yevalewadi Village
4	665.775	BOTH	X- junction	L-Kasegaon, R-Kasegaon
5	668.260	LHS	T- junction	Kasegaon
6	669.350	BOTH	X- junction	L-Belewada, R-Malkhed
7	670.800	LHS	T- junction	Belewada Malkhed
8	672.160	BOTH	X- junction	L-Kale, R-Field
9	673.070	LHS	T- junction	Wathar
10	674.400	BOTH	X- junction	L-Narayanawadi, R-Atke
11	677.625	LHS	T- junction	Nandlapur
12	678.900	LHS	T- junction	Dakhinwadi
13	684.700	LHS	Y- junction	Munde
14	686.775	RHS	T- junction	village
15	688.100	LHS	T- junction	village
16	688.750	RHS	Y- junction	village
17	692.275	BOTH	X- junction	L-Belewadi, R-Talbid
18	695.500	BOTH	X- junction	L-Warade Village, R-Warade Village
19	698.900	LHS	Y- junction	village
20	701.075	BOTH	X- junction	village
21	705.425	BOTH	X- junction	Village
22	706.175	LHS	T- junction	village
23	706.825	LHS	T- junction	village
24	707.850	BOTH	X- junction	L-Pali, R-Kashil
25	708.100	RHS	Y- junction	colony
26	708.150	RHS	Y- junction	colony
27	708.525	RHS	Y- junction	colony
28	709.850	BOTH	X- junction	colony
29	711.900	BOTH	X- junction	L-Mohan Hotel
30	713.400	BOTH	X- junction	L-Village, R-Atit Bus Stand
31	719.630	BOTH	X- junction	L-Borgaon Phata, R-Apsinghe
32	720.475	BOTH	X- junction	L-Borgaon Phata, R-Chuhni Pateshwer Nagar

S. No.	Existing Chainage (km)	Side	Type	Leading To
33	722.275	BOTH	X- junction	L-Bharat Gaon, R-Bharatwadi
34	724.700	LHS	Y- junction	Valase

Note: 1) All chainages mentioned above are tentative and actual location of junctions shall be as per the site condition and direction of Independent Engineer/Authority.
2) Not to be limited to the above specified locations and it shall be finalized in consultation with Independent Engineer/Authority

Appendix B-VII

A. Details of Proposed Grade Separated Structure (Flyovers)

S. No.	Existing Chainage (km)	Location	Proposed Structural Configura-tion	Proposed Span Arrangement (m)	Vertical Clearance (m)	Total width (m)	Remarks
1	678.830 to 682.300	Malkapur	2 x 3-lane	8x30+1x25+ 9x30+1x25+ 13x30+1x25+ 11x30+1x35+ 3x30+1x25+ 38x30+1x35+ 28x30	5.5	29.5	Main Carriageway

Note-

1) The proposed location of Grade Separated Structures (Flyovers) are tentative and the same shall be finalized in consultation with Independent Engineer/Authority. Any change in location shall not be treated as change in scope of work.

2) The above locations, Grade separated intersections junction shall be improved as per IRC manual and in consultation with Independent Engineer/Authority. Grade separated Intersections shall be developed as per Schedule D.

B. Details of Dismantling and Demolishing of Flyover including road approaches with lead, lift and disposals

S. No.	Chainage (km)	Side	Span Arrangement (m)	Overall length (m)	Width(m)	Type of Structure
1	680.615	Left	1 x 20.0	20.00	12.0	PSC Girders
2	680.615	Right	1 x 20.0	20.00	12.0	PSC Girders
3	680.742	Left	2 x 20.0	40.00	12.0	PSC Girders
4	680.742	Right	2 x 20.0	40.00	12.0	PSC Girders
5	682.159	Right	18 x 20.0	360.00	12.0	PSC Girders

Appendix B -VIII

A. Details of Proposed Vehicular Underpasses

S. No.	Chainage (km)	Location	Proposed Clear Span (m)	Vertical clearance (m)	Total width (m)	Proposed Structural configuration	Type of super-structure	Type of sub-structure
1	660.500	Nerale	1 x 20	5.5	2x15.1	6-lane divided Carriageway	T-beam girder	RCC pier type
2	664.350	Yevalewadi	1 x 20	5.5	2x15.1	6-lane divided Carriageway	T-beam girder	RCC pier type
3	672.170	Wathar	1 x 20	5.5	2x15.1	6-lane divided Carriageway	T-beam girder	RCC pier type
4	693.500	Near Taswade Toll Plaza	1 x 25	5.5	2x15.1	6-lane divided Carriageway	T-beam girder	RCC pier type
5	697.800**	Pandharpur Junction	1 x 20	5.5	2x15.1	6-lane divided Carriageway	T-beam girder	RCC pier type
6	704.200**	Indoli Phata	1 x 20	5.5	2x15.1	6-lane divided Carriageway	T-beam girder	RCC pier type
7	711.000	Jamgaon	1 x 20	5.5	2x15.1	6-lane divided Carriageway	T-beam girder	RCC pier type
8	713.300	Jamgaon/Atit Bus Stop	1 x 20	5.5	2x15.1	6-lane divided Carriageway	T-beam girder	RCC pier type
9	718.000	Nagathane/Borgaon	1 x 20	5.5	2x15.1	6-lane divided Carriageway	T-beam girder	RCC pier type

Note- 1) Pedestrian and cattle crossing of size 6m X 3.5m with necessary flooring shall be provided on both side of RE wall approaches for pedestrian and cattle movement. The appropriate location shall be decided in consultation with IE.

2) The proposed location of Underpasses are tentative and the same shall be finalized in consultation with Independent Engineer/Authority. Any change in location shall not be treated as change in scope of work.

3) The above locations, Grade separated intersections junction shall be improved as per IRC manual and in consultation with Independent Engineer/Authority. Grade separated Intersections shall be developed as per Schedule D.

4) All underpasses lateral clearance shall include 1.5m wide raised side walk with grills for use of pedestrians.

5) **At these locations the new VUP including approaches and Service Roads are under construction by NHAI as separate Contract. The same shall be part of this Concession Agreement. Although no improvements is envisaged at these locations, improvements, if any, based on the actual site conditions as per Manual / Specifications and Standards is within the scope of the Concessionaire. Actual chainage may differ based on site condition.

B. Details of Dismantling and Demolishing of Vehicular underpass including road approaches with lead, lift and disposals

S. No.	Chainage (km)	Span Arrangement (m)	Width(m)	Type of Structure
1	680.280	1 x 8.0 x 4.5	24	RCC Box Structure

Appendix B-IX

A. Details of Proposed Light Vehicular Underpasses (LVUP)

S. No.	Chainage (km)	Location	Proposed Clear Span (m)	Vertical clearance (m)	Total width (m)	Type of super-structure	Type of sub-structure
1	661.800	Kedarwadi	1x12	4.5	2x15.1	Box Type	RCC Wall
2	668.240	Kasegaon	1x12	4.5	2x15.1	Box Type	RCC Wall
3	678.100	Nandlapur	1x12	4.5	2x15.1	Box Type	RCC Wall
4	715.200	Majgaon Phata	1x12	4.5	2x15.1	Box Type	RCC Wall

Note-

1) The proposed location of Underpasses are tentative and the same shall be finalized in consultation with Independent Engineer/Authority. Any change in location shall not be treated as change in scope of work.

2) The above locations, Grade separated intersections junction shall be improved as per IRC manual and in consultation with Independent Engineer/Authority. Grade separated Intersections shall be developed as per Schedule D.

B. Details of Pedestrian Underpasses (PUP) to be Reconstructed as Light Vehicular Underpasses (LVUP)

S. No.	Chainage (km)	Location	Proposed Structural configuration	Proposed Size (m)	Height (m)	Total width (m)	Remark
NIL							

C. Details of Dismantling and Demolishing of Pedestrian underpass including road approaches with lead, lift and disposals

S. No.	Chainage (km)	Span Arrangement (m)	Width(m)	Type of Structure
1	678.950	1 x 6.0 x 3.5	24.5	RCC Box Structure
2	680.600	1 x 6.0 x 2.75	24.5	RCC Box Structure
3	680.980	1 x 6.0 x 3.5	24.1	RCC Box Structure
4	681.500	1 x 8.0 x 3.5	12	RCC Box Structure
5	681.725			Existing FOB

Appendix B-X

A. Details of Major Bridges Proposed New on Main Carriageway

S. No.	Existing Chainage (km)	Location	Proposal	Proposed Structural configuration	Span arrangement (No. x length) (in m)	Length (m)	Total width (m)
1	682.741	Koyna River	Additional 3-lane proposed on LHS main carriageway	Additional 3-lane	7 x 30.5	213.5	17
2	718.650	Urmodi River	Additional 3-lane proposed on LHS main carriageway	Additional 3-lane	26.8+26.9+ 26.65+26.8	107.15	17

Note- 1) The Location and the proposed span arrangement is tentative and the same shall be finalized in consultation with Independent Engineer. Any change in span arrangement shall not be treated as change in scope of work.

B. Details of Major Bridges Proposed New on Service Road

S. No.	Existing Chainage (km)	Location	Proposal	Proposed Structural configuration	Span arrangement (No. x length) (in m)	Length (m)	Total width (m)
1	682.741	Koyna River	Additional 2-lane proposed on RHS Service Road	Additional 2-lane	7 x 30.5	213.5	11

Note- 1) The Location and the proposed span arrangement is tentative and the same shall be finalized in consultation with Independent Engineer. Any change in span arrangement shall not be treated as change in scope of work.

Appendix B-XI

A. Details of Proposed Minor Bridges on Service Road

S. No.	Existing Chainage (km)	Side	Location	Proposal	Span arrangement (No. x length) (in m)	Length (m)	Total width (m)	Remarks
1	658.750	Left	Peth Naka	2 lane	1 x 12	12	11	New
2	658.750	Right	Peth Naka	2 lane	1 x 12	12	11	New
3	662.708	Left	KedarWadi	2 lane	4 x 10	40	11	New
4	662.708	Right	KedarWadi	2 lane	4 x 10	40	11	New
5	664.965	Left	Kasegaon	2 lane	1 x 8	8	11	New
6	664.965	Right	Kasegaon	2 lane	1 x 8	8	11	New
7	665.987	Left	Kasegaon	2 lane	1 x 30	30	11	New
8	665.987	Right	Malkhed	2 lane	1 x 30	30	11	New
9	668.535	Left	Malkhed Phata	2 lane	2 x 10	20	11	New
10	668.535	Right	Malkhed Phata	2 lane	2 x 10	20	11	New
11	670.410	Left	Wathar	2 lane	3 x 10	30	11	New
12	670.410	Right	Wathar	2 lane	3 x 10	30	11	New
13	671.100	Left	Wathar	2 lane	3 x 17.5	52.5	11	Stone Masonry Arch Bridge Proposed for Reconstruction
14	671.100	Right	Wathar	2 lane	3 x 17.5	52.5	11	New
15	679.145	Left	Malkapur	2 lane	1 x 7	7	11	New
16	679.145	Right	Malkapur	2 lane	1 x 7	7	11	New
17	693.453	Left	Taswade	2 lane	3 x 5.1	15.3	11	New
18	693.453	Right	Taswade	2 lane	3 x 5.1	15.3	11	New
19	699.950	Left	Umbraj (Tarali river)	2 lane	4 x 14	56	11	New

S. No.	Existing Chainage (km)	Side	Location	Proposal	Span arrangement (No. x length) (in m)	Length (m)	Total width (m)	Remarks
20	699.950	Right	Umbraj (Tarali river)	2 lane	4 x 14	56	11	New
21	713.598	Left	Atit	2 lane	1 x 14.6	14.6	11	New
22	713.598	Right	Atit	2 lane	1 x 14.6	14.6	11	New
23	714.170	Left	Majgaon	2 lane	1 x 14.0	14	11	New
24	714.170	Right	Majgaon	2 lane	1 x 14.0	14	11	New

Note- 1) Approaches to both sides of the proposed minor bridges on service road to be raised as per the site requirement.

2) In case of minor bridges for widening/repair, the same shall be reconstructed if the design shows that these are unsafe for design loads. In addition, structural audits needs to be done to assess the condition / suitability of the Structure. No change of scope shall be considered in such cases.

3) The Location and the proposed span arrangement is tentative and the same shall be finalized in consultation with Independent Engineer. Any change in span arrangement shall not be treated as change in scope of work.

B. Details of Dismantling and Demolishing of Minor Bridge on Service Road including road approaches with lead, lift and disposals.

S. No.	Existing Chainage (km)	Span Arrangement (m)	Total width (m)	Remarks
1	671.100	3 x 17.5	12	Dismantling

C. Details of Minor bridges proposed for New/ Reconstruction (On Main Carriageway)

S. No.	Existing Chainage (km)	Location	Proposal	Proposed Structural configuration	Span arrangement (No. x length) (in m)	Length (m)	Total width (m)	Remarks
1	662.708	Kedarwadi	6-lane proposed	RCC Box Structure	4 x 10	40	2x15.1	Re-construction due to hydrology

S. No.	Existing Chainage (km)	Location	Proposal	Proposed Structural configuration	Span arrangement (No. x length) (in m)	Length (m)	Total width (m)	Remarks
2	664.965	Yevlewadi	3-lane proposed on LHS	RCC Box Structure	1 x 8	8	17	Stone masonry Arch slab extension. Proposed for Reconstruction
3	693.453	Taswade	6-lane proposed	RCC Box Structure	3 x 5.1	15.3	2x15.1	New
4	698.258	Umbraj	6-lane proposed	RCC T Girder	3 x 15	45	2x15.1	Reconstruction
5	699.950	Umbraj (Tarali river)	3-lane proposed on LHS	PSC I Girder	4 x 14	56	15.1	Reconstruction
6	713.598	Local Drain	6-lane proposed	RCC I girder	1 x 14.6	14.6	2x15.1	Re-construction due to proposed VUP Approach filling
7	714.170	Majgaon	3-lane proposed on LHS	RCC I girder	1 x 14	14	15.1	New

Note- 1) Approaches to both sides of the proposed minor bridges to be raised as per the site requirement.

2) In case of minor bridges for widening/repair, the same shall be reconstructed if the design shows that these are unsafe for design loads. In addition, structural audits needs to be done to asses the condition / suitability of the Structure. No change of scope shall be considered in such cases.

3) The Location and the proposed span arrangement is tentative and the same shall be finalized in consultation with Independent Engineer. Any change in span arrangement shall not be treated as change in scope of work.

D. Details of Dismantling and Demolishing of Minor Bridge on Main Carriageway including road approaches with lead, lift and disposals.

S. No.	Existing Chainage (km)	Location	Span Arrangement (m)	Total width (m)	Remarks
1	662.708	Left	2 x 7.85	11.8	Dismantling
2	662.708	Right	2 x 7.85	11.8	Dismantling
3	664.965	Left	2 x 3.9	12.0	Dismantling
4	693.453	Left	3 x 5.1	12	Dismantling
5	693.453	Right	3 x 5.1	12	Dismantling
6	698.258	Left	1x16.117 + 1x14.18 + 1x14.18	12.0	Dismantling
7	698.258	Right	1x16.1 + 1x14.18 + 1x14.18	12.0	Dismantling
8	699.950	Left	4 x 14.0	8.4	Dismantling
9	713.598	Left	1 x 14.6	12	Dismantling
10	713.598	Right	1 x 14.6	12	Dismantling
11	714.170	Left	1 x 14.0	12	Dismantling

Appendix B-XII

A. Details of Box/Slab/Arch Culverts Proposed for widening

S. No.	Chainage (km)	Type of Structure	Existing Size (m)
1	658.580	Box	1x4.0
2	659.590	Box	5x 1.2
3	661.160	Box	1x5
4	661.350	Slab	1x3.8
5	665.193	Slab	1x3.4
6	666.922	Slab	1x3.5
7	666.955	Slab	1x5.2
8	667.330	Box	1x4
9	667.519	Slab	1x2.0
10	667.930	Box	1x4
11	674.750	Box	1x5.4
12	675.500	Box	1x4
13	675.700	Box	1x4
14	675.945	Slab	1x2.0
15	676.900	Box	1x2
16	679.100	Box	1x6
17	684.075	slab	1x3
18	684.314	Box	1x2
19	685.525	Box	1x3.5
20	687.153	Box	1x2.75
21	687.477	Box	1x3
22	687.521	Slab	1x2.0
23	688.546	Box	1x3.1
24	689.010	Box	1x3
25	691.362	Box	1x3
26	692.875	Box	1x2.1
27	693.562	Box	1x3
28	694.940	Box	1x2.5
29	695.005	slab	1x2.5
30	696.620	Box	1x3.5
31	700.207	slab	1x2
32	700.327	slab	1x2
33	703.276	slab	1x2
34	705.106	slab	1x2
35	706.340	arch/Box	1x2.5
36	706.840	arch/Box	1x4.2
37	706.963	Box	1x4
38	708.151	slab	1x1.5
39	708.200	slab	1x6
40	708.607	arch	1x2
41	708.796	slab	1x3
42	709.425	slab	1x6.5
43	712.220	arch	1x3

S. No.	Chainage (km)	Type of Structure	Existing Size (m)
44	712.550	arch	1x3
45	713.046	arch	1x3
46	714.600	slab	1x6
47	715.550	Box	1x5
48	715.850	Box	1x2.3
49	717.350	Box	1x3
50	718.500	slab	1x4
51	720.250	arch	1x3.2
52	721.525	arch	1x6
53	721.958	Box	1x4.2
54	722.750	Box	1x4
55	723.291	Box	1x1.2
56	723.380	Box	1x2.5
57	724.193	Box	1x3.5

Note- 1) All chainages mentioned above are tentative and actual location of culverts shall be as per direction of Independent Engineer/Authority. Any increase or decrease of culvert width or culvert numbers as per site requirement shall not be treated as change of scope.
2) In case of culverts for widening, the same shall be reconstructed if the design shows that these are unsafe for design loads. In addition, structural audits need to be done to assess the condition / suitability of the Structure. No change of scope shall be considered in such cases.
3) The overall width of the above culverts shall be equal to Main Carriageway width and service road width including median/separator gaps as per TCS Schedule given in Appendix B-I including the width of existing culverts. In other words, the above culverts shall also be provided in median gap and also between main carriageway and service road/slip road, in case there is any service road/slip road.

B. Details of Box /Slab / Arch culvert to be reconstructed as Box culvert

S. No.	Existing Chainage (km)	Size of Opening (m)
1	660.780	1x3.0
2	660.800	1x4.3
3	662.040	1x4
4	668.040	1x4
5	676.273	1x3
6	677.950	1x6
7	688.306	1x3.5
8	690.388	1x3
9	690.585	1x3
10	695.247	1x4.5
11	695.319	1x2.0
12	695.782	1x3
13	699.355	1x6
14	702.117	1x2
15	705.490	1x2

S. No.	Existing Chainage (km)	Size of Opening (m)
16	707.600	1x4
17	707.739	1x3
18	709.683	1x3
19	710.012	1x1.2
20	711.400	1x2.2
21	711.600	1x2.2
22	716.500	1 x 6.0
23	717.500	1x3
24	719.471	1x3
25	720.550	1x2
26	724.460	1x2

Note- 1) Height to be maintained as per proposed FRL.

2) All chainages mentioned above are tentative and actual location of culverts shall be as per direction of Independent Engineer/Authority. Any increase or decrease of culvert width or culvert numbers as per site requirement shall not be treated as change of scope.

3) In case of culverts for widening, the same shall be reconstructed if the design shows that these are unsafe for design loads. In addition, structural audits need to be done to assess the condition / suitability of the Structure. No change of scope shall be considered in such cases.

4) The overall width of the above culverts shall be equal to Main Carriageway width and service road width including median/separator gaps as per TCS Schedule given in Appendix B-I including the width of existing culverts. In other words, the above culverts shall also be provided in median gap and also between main carriageway and service road/slip road, in case there is any service road/slip road.

C. Pipe Culverts Proposed for widening

S. No.	Chainage (km)	Number of pipes	Diameter of pipe (m)
1	659.125	1	1.2
2	659.269	1	1.2
3	661.672	2	1
4	662.421	2	1
5	663.386	2	1
6	664.950	2	1
7	666.712	2	1
8	667.644	2	1
9	668.900	1	1.2
10	669.370	2	1.2
11	670.340	1	1
12	670.780	1	1.2
13	670.860	1	1.2
14	671.665	1	1.2
15	672.200	1	1.2
16	673.425	1	1

S. No.	Chainage (km)	Number of pipes	Diameter of pipe (m)
17	675.041	1	1.2
18	675.150	2	1.2
19	677.150	3	1.2
20	677.400	1	1.2
21	678.200	4	1
22	678.780	4	1
23	678.810	3	1.2
24	679.397	1	1.2
25	679.607	1	0.9
26	679.818	1	1.2
27	679.850	1	1.2
28	679.900	1	1
29	680.200	1	1.2
30	680.250	1	1.2
31	681.400	1	1.2
32	681.650	1	1.2
33	683.500	4	2
34	683.700	3	1.5
35	684.595	1	1
36	684.900	2	1.2
37	685.900	1	0.9
38	686.147	1	1.2
39	686.800	2	1.2
40	687.321	1	1.2
41	687.985	1	1.2
42	688.162	1	1.2
43	688.420	2	1.2
44	688.750	1	1.2
45	688.984	1	1.2
46	689.172	2	1.2
47	689.460	1	1.2
48	690.828	1	1.2
49	690.895	1	1.2
50	690.993	1	1.2
51	691.117	2	1.2
52	691.410	1	1
53	691.554	1	1
54	691.751	1	1
55	691.941	2	1
56	694/3	1	1
57	694.630	1	1.2
58	694.693	2	1
59	695/3	2	1
60	695.211	1	1.2
61	695.498	2	1.2
62	695.735	1	1.5

S. No.	Chainage (km)	Number of pipes	Diameter of pipe (m)
63	696.020	1	1.2
64	696.320	1	1
65	697.005	2	1.2
66	697.592**	2	1.2
67	697.900**	5	1.2
68	698.736	1	1
69	698.785	2	1.2
70	700/5	2	1.2
71	700.474	2	0.9
72	702.885	2	0.9
73	703.400	2	1
74	703.772**	2	0.9
75	705.409	1	1.2
76	705.847	1	0.9
77	706.132	2	0.9
78	706.610	1	1.2
79	709.500	1	1.2
80	710.682	1	1.2
81	710.928	1	1.2
82	711.110	1	1.2
83	712.236	1	1.2
84	712.436	1	1.2
85	712.800	1	1
86	713.540	1	1
87	713.693	1	1
88	715.050	1	1
89	715.200	1	1
90	717.100	1	1
91	718.930	1	1.2
92	719.078	1	1.2
93	719.822	1	1
94	720.216	1	1
95	720.300	2	1.2
96	720.400	1	1
97	720.850	2	0.9
98	722.240	1	1
99	722.500	1	1
100	723.040	1	1
101	724.025	2	0.9
102	724.619	1	1.5
103	724.833	1	1.2

Note- 1) All chainages mentioned above are tentative and actual location of culverts shall be as per direction of Independent Engineer/Authority. Any increase or decrease of culvert width or culvert numbers as per site requirement shall not be treated as change of scope.
2) In case of culverts for widening, the same shall be reconstructed if the design shows

that these are unsafe for design loads. In addition, structural audits need to be done to assess the condition / suitability of the Structure. No change of scope shall be considered in such cases.

3) The overall width of the above culverts shall be equal to Main Carriageway width and service road width including median/separator gaps as per TCS Schedule given in Appendix B-I including the width of existing culverts. In other words, the above culverts shall also be provided in median gap and also between main carriageway and service road/slip road, in case there is any service road/slip road.

4) **At these locations the new VUP including approaches, Service Roads and other structures are under construction by NHAI as separate Contract. The same shall be part of this Concession Agreement. Although no improvements is envisaged at these locations, improvements, if any, based on the actual site conditions as per Manual / Specifications and Standards is within the scope of the Concessionaire. Actual chainage may differ based on site condition.

D. Details of Pipe Culverts to be reconstructed

S. No.	Chainage (km)	Number of pipes	Diameter of pipe (m)
1	683.100	1	1.2
2	717.430	1	1.2
3	719.350	1	1.2

Note- 1) All chainages mentioned above are tentative and actual location of culverts shall be as per direction of Independent Engineer/Authority. Any increase or decrease of culvert width or culvert numbers as per site requirement shall not be treated as change of scope.

2) In case of culverts for widening, the same shall be reconstructed if the design shows that these are unsafe for design loads. In addition, structural audits need to be done to assess the condition / suitability of the Structure. No change of scope shall be considered in such cases.

3) The overall width of the above culverts shall be equal to Main Carriageway width and service road width including median/separator gaps as per TCS Schedule given in Appendix B-I including the width of existing culverts. In other words, the above culverts shall also be provided in median gap and also between main carriageway and service road/slip road, in case there is any service road/slip road.

Appendix B-XIII

REHABILITATION OF EXISTING STRUCTURES

1. Minor Repairs of Existing Flyovers

S. No.	Chainage (km)	Location	Span Arrangement (m)	Total Length (m)	Super-Structure	Substructure
1	683.580	Left	2 x 20.0	40	PSC Girders	RCC Circular Pier
2	683.580	Right	2 x 20.0	40	PSC Girders	RCC Circular Pier

Note-

1) All above-mentioned existing bridges and structures are proposed to be retained after carrying out necessary repairs and rehabilitation works.
2) Repairs shall include but not limited to general cleaning of structures and area around structures, restoration of slopes and protective works, removal and relaying of existing wearing coat, repair and replacement of drainage spouts, construction of new RCC Crash Barriers in place of old existing railing, providing of new expansion joints and bearings in place of old ones wherever required and repair and rehabilitation of damaged concrete of any etc. to the complete satisfaction of Independent Engineer/Authority.
3) Repair mentioned in 'Note' are only indicative and all major/ minor repairs to structures shall be carried out as per Standard, Manual and in accordance with Good Industry Practice. No extra cost for any structure for any repair shall be entertained

2. Vehicular Underpasses proposed for minor repair

S. No.	Chainage (km)	Span Arrangement (m)	Structure Type
1	665.764	1 x 8.0 x 4.5	RCC Box Structure
2	669.500	1 x 8.0 x 4.5	RCC Box Structure
3	671.560	1 x 10.5 x 4.5	RCC Box Structure
4	676.320	1 x 10.5 x 4.5	RCC Box Structure
5	686.762	1 x 10.5 x 4.5	RCC Box Structure
6	692.290	1 x 10.5 x 4.5	RCC Box Structure
7	698.800	1 x 10.5 x 4.5	RCC Box Structure
8	699.400	1 x 10.5 x 4.5	RCC Box Structure
9	707.848	1 x 8.0 x 4.5	RCC Box Structure
10	711.901	1 x 8.0 x 4.0	RCC Box Structure
11	719.625	1 x 10.5 x 4.5	RCC Box Structure

Note-

1) All above-mentioned existing bridges and structures are proposed to be retained after carrying out necessary repairs and rehabilitation works.
2) Repairs shall include but not limited to general cleaning of structures and area around structures, restoration of slopes and protective works, removal and relaying of existing wearing coat, repair and replacement of drainage spouts, construction of new RCC Crash Barriers in place of old existing railing, providing of new expansion joints and

bearings in place of old ones wherever required and repair and rehabilitation of damaged concrete of any etc. to the complete satisfaction of Independent Engineer/Authority.
3) Repair mentioned in 'Note' are only indicative and all major/ minor repairs to structures shall be carried out as per Standard, Manual and in accordance with Good Industry Practice. No extra cost for any structure for any repair shall be entertained

3. Pedestrian Underpasses proposed for minor repair

S. No.	Chainage (km)	Span Arrangement (m)	Structure Type
1	660.120	1 x 6.0 x 3.5	RCC Box Structure
2	665.900	1 x 3.7 x 2.7	RCC Box Structure
3	670.805	1 x 6.0 x 3.5	RCC Box Structure
4	673.100	1 x 6.0 x 3.5	RCC Box Structure
5	674.400	1 x 3.0 x 2.75	RCC Box Structure
6	677.640	1 x 6.0 x 3.5	RCC Box Structure
7	684.715	1 x 6.0 x 3.5	RCC Box Structure
8	685.140	1 x 3.0 x 2.75	RCC Box Structure
9	688.113	1 x 6.0 x 3.5	RCC Box Structure
10	689.575	1 x 8.0 x 4.5	RCC Box Structure
11	690.475	1 x 6.0 x 3.5	RCC Box Structure
12	695.488	1 x 6.0 x 3.5	RCC Box Structure
13	698.900	1 x 6.0 x 3.5	RCC Box Structure
14	699.250	1 x 6.0 x 2.7	RCC Box Structure
15	699.800	1 x 6.0 x 3.0	RCC Box Structure
16	701.084	1 x 6.0 x 3.5	RCC Box Structure
17	702.386	1 x 6.0 x 3.5	RCC Box Structure
18	705.427	1 x 6.0 x 3.5	RCC Box Structure
19	709.862	1 x 6.0 x 3.5	RCC Box Structure
20	713.410	1 x 3.7 x 2.7	RCC Box Structure
21	713.925	1 x 6.0 x 3.5	RCC Box Structure
22	718.144	1 x 3.7 x 2.7	RCC Box Structure
23	720.535	1 x 6.0 x 3.0	RCC Box Structure
24	722.278	1 x 6.0 x 3.5	RCC Box Structure
25	724.682	1 x 6.0 x 3.5	RCC Box Structure

Note-

1) All above-mentioned existing bridges and structures are proposed to be retained after carrying out necessary repairs and rehabilitation works.
2) Repairs shall include but not limited to general cleaning of structures and area around structures, restoration of slopes and protective works, removal and relaying of existing wearing coat, repair and replacement of drainage spouts, construction of new RCC Crash Barriers in place of old existing railing, providing of new expansion joints and bearings in place of old ones wherever required and repair and rehabilitation of damaged concrete of any etc. to the complete satisfaction of Independent Engineer/Authority.
3) Repair mentioned in 'Note' are only indicative and all major/ minor repairs to structures shall be carried out as per Standard, Manual and in accordance with Good Industry Practice. No extra cost for any structure for any repair shall be entertained

4. Minor Bridges proposed for minor repair

S. No.	Chainage (km)	Location	Span Arrangement (m)	Total Length (m)	Super-Structure	Sub-structure
1	658.750	Left	1x2.0+1x1.86+3x1.92+1.93	11.55	RCC Solid Slab	masonry Type/RCC
2	658.750	Right	2 x 4.29 + 1 x 4.92	13.5	RCC Solid Slab	RCC Wall Type Piers
3	664.965	Right	1 x 8	8	RCC Solid Slab	RCC Wall Type Piers
4	665.987	Left	1x9.3+1x10.6 +1x9.5	29.4	RCC Solid Slab	masonry Type/RCC
5	665.987	Right	1x9.3+1x10.6 +1x9.5	29.4	RCC Solid Slab	RCC Wall Type Piers
6	668.535	Left	2 x 6.65 + 1 x 7	20.7	RCC Solid Slab	Stone masonry Wall Type Piers Widen with RCC Box
7	668.535	Right	2 x 6.65 + 1 x 7	20.7	3-Cell Box	RCC 3-Cell Box type
8	670.410	Left	2 x 6.4 x + 3 x 6.5	32.3	RCC Solid Slab	Stone masonry Wall Type Piers Widen with RCC Box
9	670.410	Right	2 x 6.4 x + 3 x 6.5	32.3	3-Cell Box	RCC 3-Cell Box type
10	671.100	Left	3 x 17.5	52.5	RCC T beam girder	RCC Circular Pier
11	671.100	Right	3 x 17.5	52.5	RCC T beam girder	RCC Circular Pier
12	679.145	Left	1 x 7.0	7	RCC Solid Slab	masonry Type/RCC
13	679.145	Right	1 x 7.0	7	RCC Box	Box Cell
14	699.950	Right	2 x 28.0	56	PSC Precast I- Girder	RCC Circular Pier
15	714.170	Right	1 x 14.0	14	T beam girders	Wall type

Note-

1) All above-mentioned existing bridges and structures are proposed to be retained after carrying out necessary repairs and rehabilitation works.

2) Repairs shall include but not limited to general cleaning of bridges and area around bridges, restoration of slopes and protective works, removal and relaying of existing

wearing coat, repair and replacement of drainage spouts, construction of new RCC Crash Barriers in place of old existing railing, providing of new expansion joints and bearings in place of old ones wherever required and repair and rehabilitation of damaged concrete of any etc. to the complete satisfaction of Independent Engineer/Authority.

3) Repair mentioned in 'Note' are only indicative and all major/ minor repairs to structures shall be carried out as per Standard, Manual and in accordance with Good Industry Practice. No extra cost for any structure for any repair shall be entertained

5. Major Bridges proposed for minor repair

S. No.	Chainage (km)	Location	Span Arrangement (m)	Total Length (m)	Super-Structure Type	Substructure Type
1	682.741	Left	7 x 30.5	213.5	PSC Girders	RCC Circular Pier and counterfort abutment
2	682.741	Right	7 x 30.5	213.5	PSC Girders	RCC Circular Pier and counterfort abutment
3	718.650	Right	2 x 26.80 + 26.90 + 26.65	107.15	PSC Girders	RCC Wall type elliptical piers and Spill through abutment

Note-

1) All above-mentioned existing bridges and structures are proposed to be retained after carrying out necessary repairs and rehabilitation works.

2) Repairs shall include but not limited to general cleaning of bridges and area around bridges, restoration of slopes and protective works, removal and relaying of existing wearing coat, repair and replacement of drainage spouts, construction of new RCC Crash Barriers in place of old existing railing, providing of new expansion joints and bearings in place of old ones wherever required and repair and rehabilitation of damaged concrete of any etc. to the complete satisfaction of Independent Engineer/Authority.

3) Repair mentioned in 'Note' are only indicative and all major/ minor repairs to structures shall be carried out as per Standard, Manual and in accordance with Good Industry Practice. No extra cost for any structure for any repair shall be entertained

SCHEDULE – C

SCHEDULE – C
(See Clause 2.1)

PROJECT FACILITIES

1. Project Facilities

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

(a) Toll Plazas;

(b) Roadside Furniture;

(c) Highway lighting;

(d) Pedestrian Facilities;

(e) Landscaping and Tree Plantation;

(f) Truck Lay-Bys;

(g) Bus-Bays and Bus Shelters;

(h) ;Advance Traffic Management System (ATMS);

(i) Utilities;

(j) Rainwater harvesting.

(k) Others;

a. Highway Patrol Unit(s);
b. Emergency Medical Services
c. Crane Services;
d. Communication System

2. Project Facilities for Six-Laning

Project Facilities forming part of six-Laning and to be completed on or before the Project Completion Date have been described in Annexure -1 of this Schedule-C.

ANNEXURE – 1
(Schedule - C)

Project Facilities for Six – Laning

1 Project Facilities

The Concessionaire shall construct the Project Facilities described in this Annexure - I to form part of the Six- Lane project Highway. The Project Facilities shall include:

(a) Toll Plazas;

(b) Roadside Furniture;

(c) Highway lighting;

(d) Pedestrian Facilities;

(e) Landscaping and Tree Plantation;

(f) Truck Lay-Bys;

(g) Bus-Bays and Bus Shelters;

(h) Advance Traffic Management System (ATMS);

(i) Utilities;

(j) Rainwater harvesting.

(k) Others;

a. Highway Patrol Unit(s);
b. Emergency Medical Services
c. Crane Services;
d. Communication System

2 Description of Project Facilities

Each of the Project Facilities is briefly described below:

2.1 Toll Plazas

The existing toll plaza, including the toll booths as well as administrative building shall be dismantled and reconstructed as a staggered toll plaza (Refer Strip Plan at Appendix B-II of Schedule-B) as per the requirements of Schedule D as per details below:

Chainage (km)	Minimum no. of Toll Lanes	Location
694.400	24 (12 + 12) lanes staggered	Taswade Toll Plaza

(i) The existing Administrative Building at Taswade Toll Plaza shall be dismantled and reconstructed as per the requirements of Schedule D.

(ii) The existing toll booths at Taswade Toll Plaza shall be dismantled and reconstructed as staggered toll booths with 12 toll lanes for each direction of travel as per the requirements of Schedule D.

(iii) All Toll Lanes to be equipped with ETC equipment.

(iv) Separate toilet facilities shall be provided near toll plaza location as per MoRTH Circular F. No. RW/NH-33044/05/2018/S&R (P&B) dated 18th January 2018.

(v) Weigh in Motion (WIM) devices shall be provided in toll lanes at Toll Plaza location.

(vi) Point of Sale (POS) with card swapping machines shall be provided.

(vii) Static weighbridge shall be provided at Toll Plaza.

2.2 Road Side Furniture

The provision of road side furniture shall be finalised as per schedule D and in consultation with the Independent Engineer/Authority.

(i) Traffic Signs and Pavement Markings

Traffic signs and pavement markings shall include roadside signs, overhead signs; kerb mounted signs and road markings along the project highway. The design and marking for the Project Highway shall be as per the design standard indicated in Schedule-D and the location for various treatments shall be finalised in consultation with the Independent Engineer/Authority.

All signs and markings shall be of retro-reflective type

(ii) The cat's eyes or road studs shall be provided to improve the visibility in night-time and wet-weather conditions as per Clause 9.5 of IRC:SP:87-2019.

(iii) W-beam metal crash barriers with delineating reflectors fitted on them shall be provided on all embankments with height 3 m or more

(iv) In low embankments and flat curves, where crash barriers are not provided, these need to be delineated by 1.5 m high reflectorized delineators

(v) W-beam metal crash barriers shall be provided in continuation of the parapet/concrete crash barrier on both side of raised central median and on the outer edges of carriageway subjected to a minimum length of 184.687km, in addition to hazard marker signs in all approaches to and exit from in bridges and other CD structures locations

(vi) All curves with R (radius) less than 750m are to be delineated on outer side of the curve from both the directions (for RH curve it will be on shoulder and for LH curve it will be on median), by chevron signs.

(vii) One-way reflective road studs shall be provided on edge lines and lane lines on the approach to an intersection or a high level bridge/culvert/ROB etc. with high embankment Also, such studs shall be provided along tie sharp curves.

(viii) Traffic Safety Devices, as required

(ix) Boundary Stones

(x) Hectometre / Kilometer Stones

(xi) Traffic Blinker Signals (LED) at intersections

2.3 Highway Lighting

Highway Lighting (LED) shall be provided at the following locations:

2.3.1 Street Lighting

Street Lighting shall be provided at the locations of toll plaza, interchanges/slip roads and on structures such as major bridges, ROB's, Flyovers and Underpasses including high mast at toll plaza/Major junctions, interchange/slip roads locations. Lighting facilities shall be provided both above and beneath at the locations of Interchanges, flyovers, VUPs, LVUPs & PUPs.

In addition, Street lighting shall be provided at urban stretches as defined in Clause 1.1 of Annex-I of Schedule-B.

2.4 Pedestrian Facilities

Pedestrian guard-rail shall be provided on the approaches at the inner edge of the footpath at Bus-bay locations.

Guidelines for the provision of pedestrian facilities on roads with special reference to the Person with Disabilities shall be followed in accordance with MORTH Circular F.No. RW/NH-340661212018-S&R(B)(P&B) dated 25th June 2019 and as per IRC:103-2012 - Guidelines for Pedestrian Facilities.

2.5 Landscaping and Tree Plantation

Tree plantation and landscaping shall be confirming to as per IRC SP 21 provisions.

Landscaping of the highway shall be done on, but not limited to, the following:

- Median
- At Grade intersection locations
- Toll Plaza Area
- At other prominent locations to enhance aesthetics, if required anywhere.

2.6 Proposed Truck Lay-byes locations

The locations are given below:

S. No.	Chainage (Km)	Location	Truck Lay Byes Side
1	675.250	Narayanwadi	Both sides
2	710.925	Khodad	Both sides

2.7 Bus bays and Bus Shelters

New Bus bays and bus shelters shall be provided at locations where passengers are expected to take or get down from bases. For safety separate Bus bays shall be provided at such locations on both sides and proper safety and crossing arrangements provided.

Covered steps along with a ramp for use of disabled persons with railing on either side shall be provided for climbing up/down from Bus Shelter to underpass/overpass to carriageway and vice versa as per Schedule-D.

The locations are given in **–Appendix C-I**.

Exact location will be decided in consultation with Independent Engineer/Authority.

2.8 Advance Traffic Management System (ATMS)

Advance Traffic Management System (ATMS) shall be provided for the entire length of the Project, at the following minimum locations as specified below in accordance with the Manual of Specifications and Standards and as referred in Schedule-D.

S. No.	Type of ATMS	Location	Remarks
1	Mobile Communication System	At such locations so as to cover entire length with mobile communications.	from km 658.000 to km 725.000
2	Variable Message Signs	As per Schedule D	
3	Meteorological Data System	One location (near toll Plaza)	
4	Automatic Traffic Counter and Vehicle Classification	At Toll Plaza	
5	Video Surveillance System	At each side of all Flyover on both direction.	
6	Video Incident Detection System	At every Operation and Maintenance centers.	

Note: In addition to above locations, additional locations shall be identified and provided in accordance to schedule D in consultation with Independent Engineer/Authority. The same 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 16.

2.9 Utilities

Provision for accommodating utilities shall be made over as well as underground within utility corridor on either side of the project highway.

2.10 Rainwater Harvesting

Minimum 02 (Two) Nos. of Rainwater harvesting units per km length of the project stretch shall be provided as part of the scope of the project. Locations shall be finalized by the Independent Engineer, in consultation with the Authority.

a) The locations and design of stretch (i.e.) diameter/length of recharge shaft etc. shall be based on the rain fall intensity and geo-technical strata. The guidelines and norms issued by the Central Ground Board may also be adopted while finalizing the location and design of rainwater harvesting units.

b) Rainwater Harvesting and Artificial recharging shall be provided on all the buildings and structures such as Toll Plaza building, Grade separated structures etc. which are to be developed as a part of project corridor.

2.11 Others;

2.12.1 Highway Patrol Unit(s)

Highway Patrol Unit shall be provided as specified in Clause 12.10 of IRC:SP:87-2019

2.12.2 Emergency Medical Services

Emergency Medical Services shall be provided as specified in Clause 12.11 of IRC:SP:87-2019

2.12.3 Crane Services

Crane Services shall be provided as specified in Clause 12.12 of IRC:SP:87-2019

2.12.4 Communication System

Communication System shall be provided as specified in Clause 12.13 of IRC:SP:87-2019

Appendix C-I

Locations of Bus Bays and Bus Shelters:

S. No.	Chainage (km)	
	LHS	RHS
1	660.650	660.650
2	661.650	661.650
3	664.250	664.250
4	668.400	668.400
5	678.200	678.200
6		683.400
7	683.475	
8	697.700	697.700
9	704.050	704.050
10	711.250	711.250
11	713.700	713.700
12	718.150	718.150
13	722.350	722.350
TOTAL (nos.)	**12**	**12**
	24	

Note- The location indicated in this table is tentative and subjected to be changed/relocated as per the site requirement in consultation with Independent Engineer/Authority.

SCHEDULE - D

SCHEDULE – D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

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

ANNEXURE – 1

(Schedule-D)

Specifications and Standards for Six-Laning

1 Manual of Specifications and Standards to apply

Subject to the provisions of Paragraph 2 of this Annexure -I, Six – Laning of the Project Highway shall conform to the Manual of Specifications and Standards for six laning (IRC:SP:87-2019).

2 Deviation from the Manual

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

S. No.	Item	Provision as per Manual	Modified Provision
1	Median width	Table no. 2.2 of clause 2.5 of the Manual (IRC:SP:87-2019)	Width of existing median is retained in all stretches of road.
2	Minimum width of paved portion of Service Road	2.12.2.1	As per Appendix B-I of Annex-I of Schedule-B
3	Major Bridge over Service Road	Clause 2.12.2.2	As per Appendix B-X of Annex-I of Schedule-B
4	Grade separators/ Flyovers, Vehicular underpasses, Pedestrian underpasses, Major bridges and Minor bridges and approaches to existing Grade separators/ Flyovers, Vehicular underpasses, Pedestrian underpasses	Clause no. 7.3, Clause no. 7.18 and Clause no.7.19 of the Manual (IRC:SP:87-2019)	Existing structures widths are retained without any modifications
5	Cross- sectional features		As per Appendix B-I of Annex-I of Schedule-B
6	RE Wall construction for Grade Separated Structures	Provision of (Geo Grid Steel) Strips is adopted for Reinforced Earth Wall construction.	Cl-3103.1- MORTH specifications
7	Overall width of structures Bridges/ Flyovers/ VUP/ LVUP/ PUP	Clause 7.3	Width of structures for Bridges/flyovers/VUP/ LVUP/ PUP as per Schedule B shall be followed.
8	Tunnels	Clause 10.4.5 – Underground Tunnel at toll plaza	Deleted