

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1 THE SITE

- 1.1** The site of project highway shall include land, buildings, structures and road works as described in Annex-I of this Schedule-A.
- 1.2** The dates of handing over the Right of Way to the Concessionaire are specified in Annex-II of this Schedule-A.
- 1.3** The 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 this Agreement.
- 1.4** The alignment plans of the Project Highway are specified in Annex-III of Schedule-A. The proposed levels (FRL) as indicated in the alignment plan shall be minimum requirement and treated as an approximate assessment. The Concessionaire shall design the Road Profile as per the finalized Detailed Project Report (DPR) including plan & profile of the project highway based on site/design requirement, prepared by the Concessionaire.
- 1.5** The status of the environment clearances obtained or awaited is given in Annex IV.

ANNEX - I: Site
(Schedule-A)

Site

1 THE SITE

The Site of project highway is a section of National Highway NH-71 (Madanpalle - Tirupati) starts from existing km 59.250 (Design Ch. 55.900) at the end point of Pileru bypass of NH-71 and ends at Existing km 275.148 (Design Ch. 95+717) of Old NH-205, R&B Road near Kallur village, passing through existing NH-71 and greenfield area (in stretches of realignment and bypasses) which falls in Chittoor district, in the State of Andhra Pradesh. The land, carriageway and structures comprising the site are described below.

S. No.	Existing Chainage(Km)	Design Chainage(Km)	Remarks
Section-1			
1	59.250	55+900	
2	60.000	56+649	
3	61.000	57+650	
4	61.525	58+175 to 60+600	Realignment-1
5	64.100		
6	65.000	61+494	
7	66.000	62+494	
8	66.250	62+745 to 63+440	Realignment-2
9	67.000		
10	67.875	64+315 to 66+810	Bypass-1 Chinna Gotigallu
11	70.475		
12	71.000	67+334	
13	72.000	68+311	
14	72.350	68+660 to 69+745	Realignment-3
15	73.500		
16	74.000	70+247	
17	75.000	71+246	
18	76.000	72+242 to 73+815	Bypass-2 Bhakarpeta
19	77.900		
20	78.000	73+916	
21	79.000	74+913	
22	80.000	75+920	
23	81.000	76+923	
24	82.000	77+919	
25	83.000	78+913	
26	84.000	79+913	
27	85.000	80+900	
28	86.000	81+894	

S. No.	Existing Chainage(Km)	Design Chainage(Km)	Remarks
Section-1			
29	87.000	82+862	
30	88.000	83+845	
31	89.000	84+845	
32	89.858	85+700 to 90+000	Bypass-3 Rangampet
33	95.500		
34	96.000	90+500	
35	97.000	91+500	
36	98.000	92+487	
37	98.325	92+800	
Section-2			
38	274.231	94+800	Existing Chainage is as per Old NH- 205
39	275.148	95+717	

2 LAND

The project stretch predominantly passes through plain terrain through Bandakindapalli, Pedda gottigallu, Bommaiahgaripalle, Chinna Gotti Gallu, Tippireddigaripalle, Chattevaripalem, Diguvuru, Bhakarapeta, Nagapatla, Ramireddypalli, Mittapalem and Kaalur villages. Latitude and longitude of the project corridor lies between 13° 39' 15.45" N, 78° 59' 51.54" E and 13° 36' 12.52" N, 79° 20' 24.03" E. An index map showing the existing features of the Project Highway is given at Appendix A-I.

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
Section-1				
1	59.250	59.300	37.6	
2	59.300	59.400	39.5	
3	59.400	59.500	31.4	
4	59.500	59.600	21.9	
5	59.600	59.700	22.3	
6	59.700	59.800	20	
7	59.800	59.900	23.8	
8	59.900	60.000	27.8	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
9	60.000	60.100	31.6	
10	60.100	60.200	20.1	
11	60.200	60.300	27.5	
12	60.300	60.400	23.6	
13	60.400	60.500	29.2	
14	60.500	60.600	19.3	
15	60.600	60.700	25.5	
16	60.700	60.800	31.8	
17	60.800	60.900	32.2	
18	60.900	61.000	48.3	
19	61.000	61.100	31.1	
20	61.100	61.200	43.4	
21	61.200	61.300	51.3	
22	61.300	61.400	50.6	
23	61.400	61.500	39.2	
24	61.500	61.600	32.6	
25	61.600	61.700	33.2	
26	61.700	61.800	27.7	
27	61.800	61.900	24.8	
28	61.900	62.000	25.8	
29	62.000	62.100	33.2	
30	62.100	62.200	38.8	
31	62.200	62.300	36.7	
32	62.300	62.400	45.1	
33	62.400	62.500	38.2	
34	62.500	62.600	31.8	
35	62.600	62.700	22.7	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
36	62.700	62.800	31.3	
37	62.800	62.900	36.4	
38	62.900	63.000	38.7	
39	63.000	63.100	29.8	
40	63.100	63.200	23.4	
41	63.200	63.300	30.8	
42	63.300	63.400	29.5	
43	63.400	63.500	33.2	
44	63.500	63.600	37.2	
45	63.600	63.700	42.9	
46	63.700	63.800	46.9	
47	63.800	63.900	46.5	
48	63.900	64.000	28.9	
49	64.000	64.100	31.6	
50	64.100	64.200	27.6	
51	64.200	64.300	38.5	
52	64.300	64.400	29.8	
53	64.400	64.500	50.8	
54	64.500	64.600	30.6	
55	64.600	64.700	39.2	
56	64.700	64.800	18.1	
57	64.800	64.900	27.6	
58	64.900	65.000	28.8	
59	65.000	65.100	26.9	
60	65.100	65.200	24.3	
61	65.200	65.300	8.8	
62	65.300	65.400	10	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
63	65.400	65.500	26.3	
64	65.500	65.600	49.8	
65	65.600	65.700	40.6	
66	65.700	65.800	34.7	
67	65.800	65.900	22	
68	65.900	66.000	32.6	
69	66.000	66.100	24.9	
70	66.100	66.200	22.3	
71	66.200	66.300	24.7	
72	66.300	66.400	28.7	
73	66.400	66.500	18.8	
74	66.500	66.600	27	
75	66.600	66.700	21.9	
76	66.700	66.800	25.6	
77	66.800	66.900	19.6	
78	66.900	67.000	21	
79	67.000	67.100	27.7	
80	67.100	67.200	29.7	
81	67.200	67.300	26	
82	67.300	67.400	50.8	
83	67.400	67.500	40.5	
84	67.500	67.600	33.9	
85	67.600	67.700	36.8	
86	67.700	67.800	28.6	
87	67.800	67.860	29.9	
88	67.860	67.900	29.9	Bypass-1 (From
89	67.900	68.000	38	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
90	68.000	68.100	23.5	Ch.67.875 to Ch. 70.475)
91	68.100	68.200	22.7	
92	68.200	68.300	26.7	
93	68.300	68.400	34.2	
94	68.400	68.500	23.6	
95	68.500	68.600	21.3	
96	68.600	68.700	25	
97	68.700	68.800	23	
98	68.800	68.900	25.8	
99	68.900	69.000	16.1	
100	69.000	69.100	18.3	
101	69.100	69.200	15.7	
102	69.200	69.300	14.9	
103	69.300	69.400	20.6	
104	69.400	69.500	50.3	
105	69.500	69.600	54.2	
106	69.600	69.700	56	
107	69.700	69.800	60	
108	69.800	69.900	60	
109	69.900	70.000	60	
110	70.000	70.140	36.4	
111	70.140	70.200	36	
112	70.100	70.200	37	
113	70.200	70.300	33.8	
114	70.300	70.400	24.5	
115	70.400	70.500	31.4	
116	70.500	70.600	28.9	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
117	70.600	70.700	20.2	
118	70.700	70.800	16.9	
119	70.800	70.900	21.3	
120	70.900	71.000	27.7	
121	71.000	71.100	25	
122	71.100	71.200	37.7	
123	71.200	71.300	20.4	
124	71.300	71.400	15.6	
125	71.400	71.500	19.9	
126	71.500	71.600	17.9	
127	71.600	71.700	15.9	
128	71.700	71.800	16.5	
129	71.800	71.900	18.5	
130	71.900	72.000	27.4	
131	72.000	72.100	17.3	
132	72.100	72.200	31.6	
133	72.200	72.300	24.4	
134	72.300	72.400	15.2	
135	72.400	72.500	23.6	
136	72.500	72.600	33	
137	72.600	72.700	15.6	
138	72.700	72.800	17	
139	72.800	72.900	19.9	
140	72.900	73.000	23.4	
141	73.000	73.100	22.7	
142	73.100	73.200	28.9	
143	73.200	73.300	21.7	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
144	73.300	73.400	17.0	
145	73.400	73.500	27.8	
146	73.500	73.600	25.2	
147	73.600	73.700	28.3	
148	73.700	73.800	39.5	
149	73.800	73.900	28.7	
150	73.900	74.000	35.6	
151	74.000	74.100	30.2	
152	74.100	74.200	39.5	
153	74.200	74.300	44.7	
154	74.300	74.400	17.8	
155	74.400	74.500	25.9	
156	74.500	74.600	16.1	
157	74.600	74.700	21.6	
158	74.700	74.800	16.3	
159	74.800	74.890	17	
160	74.890	74.900	17	
161	74.900	75.000	22	
162	75.000	75.100	19.3	
163	75.153	75.200	19.4	
164	75.200	75.300	26.6	
165	75.300	75.400	26.1	
166	75.400	75.500	15	
167	75.500	75.600	25.3	
168	75.600	75.700	25.9	
169	75.700	75.800	36.7	
170	75.800	75.900	26.6	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
171	75.900	76.000	32.8	
172	76.000	76.100	37.8	Bypass-2 (From Ch. 76.000 to Ch. 77.900)
173	76.100	76.200	16.7	
174	76.200	76.300	31.6	
175	76.300	76.400	42.5	
176	76.400	76.500	24	
177	76.500	76.600	21.8	
178	76.600	76.700	30.5	
179	76.700	76.800	30.8	
180	76.800	76.900	28.2	
181	76.900	77.000	18	
182	77.000	77.100	13	
183	77.100	77.200	13.2	
184	77.200	77.300	22.6	
185	77.300	77.400	19	
186	77.400	77.500	17.8	
187	77.500	77.600	16.5	
188	77.600	77.700	18	
189	77.700	77.800	16.8	
190	77.800	77.900	18.4	
191	77.900	77.910	17.1	
192	78.000	78.100	39	
193	78.100	78.200	40.8	
194	78.200	78.300	17.6	
195	78.300	78.400	18.5	
196	78.400	78.500	19.8	
197	78.500	78.600	16	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
198	78.600	78.700	16.7	
199	78.700	78.800	14.9	
200	78.800	78.900	21.1	
201	78.900	79.000	19.7	
202	79.000	79.100	17.8	
203	79.100	79.200	19.3	
204	79.200	79.300	23.5	
205	79.300	79.400	34.3	
206	79.400	79.500	20.5	
207	79.500	79.600	25.4	
208	79.600	79.700	26.3	
209	79.700	79.800	30.8	
210	79.800	79.900	17.5	
211	79.900	80.000	16.8	
212	80.000	80.100	21	
213	80.100	80.125	23.6	
214	80.125	89.820	40	
215	89.820	91.300	38.1	Bypass-3 (From Ch. 89.858 to Ch. 95.500)
216	91.300	91.400	38.2	
217	91.400	91.500	21.6	
218	91.500	91.600	25	
219	91.600	91.700	19.5	
220	91.700	91.800	18.3	
221	91.800	91.900	16.7	
222	91.900	92.000	20.1	
223	92.000	92.100	24.3	
224	92.100	92.200	21	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
225	92.200	92.300	24.3	
226	92.300	92.400	20.5	
227	92.400	92.500	17	
228	92.500	92.600	17.7	
229	92.600	92.700	20.3	
230	92.700	92.800	28.5	
231	92.800	92.900	23.6	
232	92.900	93.000	19.5	
233	93.000	93.100	24.6	
234	93.100	93.200	23.7	
235	93.200	93.300	17.6	
236	93.300	93.400	26.6	
237	93.400	93.500	19.7	
238	93.500	93.600	25.8	
239	93.600	93.700	16.5	
240	93.700	93.800	20.1	
241	93.800	93.900	20	
242	93.900	94.000	22	
243	94.000	94.100	21	
244	94.100	94.200	26.7	
245	94.200	94.300	26.3	
246	94.300	94.400	27.3	
247	94.400	94.500	29.2	
248	94.500	94.600	15.7	
249	94.600	94.700	15.2	
250	94.700	94.800	16	
251	94.800	94.900	16.2	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
252	94.900	95.000	17.2	
253	95.000	95.100	23.3	
254	95.100	95.200	23.6	
255	95.200	95.300	26.8	
256	95.300	95.400	31.4	
257	95.400	95.500	40.1	
258	95.500	95.600	34.9	
259	95.600	95.700	36.4	
260	95.700	95.800	34.6	
261	95.800	95.900	42.4	
262	95.900	96.000	43	
263	96.000	96.100	40.8	
264	96.100	96.200	27.4	
265	96.200	96.300	28	
266	96.300	96.400	24.2	
267	96.400	96.500	24.8	
268	96.500	96.600	27.2	
269	96.600	96.700	30.5	
270	96.700	96.800	29.6	
271	96.800	96.900	33	
272	96.900	97.000	32.2	
273	97.000	97.100	22.1	
274	97.100	97.200	20	
275	97.200	97.240	21.2	
276	97.240	97.300	10.6	
277	97.300	97.400	23.5	
283	97.400	97.500	24.8	

S. No.	Existing Chainage (km)		Right of Way (m)	Remarks
	From	To		
284	97.500	97.600	23	
285	97.600	98.325	13	
Section-2				
286	274.231	274.300	32	Existing Chainage is as per Old NH-205
287	274.300	275.148	20	

3 CARRIAGEWAY

The proposed project highway is planned on the existing highway with greenfield corridor wherever realignment and bypasses are proposed.

Sr. No.	Existing Chainage		Lane Configuration
	From (Km)	To (Km)	
1	59.250 (NH-71)	98.325 (NH-71)	2 Lane
4	274.231(Old NH-205)	275.148 (Old NH-205)	2 Lane

4 MAJOR BRIDGE

The site includes the following Major Bridges:

Sr. No.	Existing Chainage (Km)	Foundation	No of Spans with span length (m)	Width (m)	Remarks
Nil					

5 ROAD OVER BRIDGE(ROB)/ROAD UNDER BRIDGE(RUB)

The site includes the following ROB (Road Over Bridge)/ RUB (Road Under Bridge):

S. No.	Existing Chainage (km)	Type of Structure	No. of Spans with span length (m)	ROB/ RUB	Remarks
NIL					

6 GRADE SEPERATOR STRUCTURES

The site includes the following Grade Separators:

Sr. No.	Existing Chainage (Km)	Type of Structure		No of Spans with span length (m)	Width (m)
		Foundation	Super Structure		
NIL					

7 MINOR BRIDGES

The site includes the following Minor Bridges:

Sr. No.	Existing Chainage (Km)	Type of Structure		No of Spans with span length (m)	Width (m)
		Foundation	Super Structure		
1	87.391	Open Foundation	RCC Slab	2x4.5	13.5
2	89.890	Open Foundation	RCC Slab	2x4.15	12.8

8 RAILWAY LEVEL CROSSINGS

The site includes the following Railway Level Crossings:

Sr. No.	Existing Chainage (Km)	Remarks
Nil		

9 VEHICULAR UNDERPASSES

The site includes the following Vehicle Underpasses:

Sr. No.	Existing Chainage (Km)	No of Spans with span length (m)	Width (m)	Type of Structure	Remarks
NIL					

10 CULVERTS

The site has following Culverts:

S. No.	Existing Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width(m)	Remarks
1	59.257	Pipe Culvert	1x1	15	
2	59.346	Pipe Culvert	1x1	15	

S. No.	Existing Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width(m)	Remarks
3	59.425A	Pipe Culvert	1x0.9	6.5	
4	60.110	Slab	1x3	12.5	
5	61.200	Slab	1x1.85	12.8	
6	61.785	Pipe Culvert	2x1	15.1	
7	62.240	Slab	1x2.45	12.9	
8	62.475	Pipe Culvert	2x1	15.4	
9	62.657	Pipe Culvert	2x1	15.25	
10	62.933	Slab	2x2	12	
11	63.475	Pipe Culvert	1x1.2	15.19	
12	63.514	Pipe Culvert	1x1	15.18	
13	64.240	Pipe Culvert	1x1	15	
14	64.637	Pipe Culvert	1x1	15.2	
15	65.484	Pipe Culvert	2x1	15.25	
16	65.956	Pipe Culvert	1x1	15.15	
17	67.090	Pipe Culvert	1x1	15.07	
18	67.270	Pipe Culvert	1x1	15.1	
19	67.382	Pipe Culvert	3x1	15.2	
20	67.625	Pipe Culvert	3x0.9	15.1	
21	67.742	Pipe Culvert	1x1	15.2	
22	68.023	Pipe Culvert	1x1	15.5	
23	68.110	Pipe Culvert	1x1	15.1	
24	68.285	Pipe Culvert	1x1	15.15	

S. No.	Existing Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width(m)	Remarks
25	70.350	Slab	1x3.1	12.2	
26	71.242	Slab	3x1.6	9.8	
27	71.700	Pipe Culvert	1x1	15.15	
28	71.900	Pipe Culvert	2x1	15.1	
29	72.123	Pipe Culvert	1x1	12.85 St. 20.75Skew	
30	73.108	Pipe Culvert	1x1	15.8	
31	73.525	Pipe Culvert	1x1	15.3	
32	73.755	Stone Slab	2x1.8	11.6	
33	74.097	Slab	1x1	12.5	
34	74.146	Slab	1x2.1	12.85	
35	74.692	Pipe Culvert	1x1	14.9	
36	75.100 A	Pipe Culvert	1x0.9	6.4	
37	75.368	Pipe Culvert	1x0.9	15.15	
38	75.413 A	Pipe Culvert	1x0.9	6.4	
39	75.682	Slab	1x1.6	9.75	
40	77.932	Pipe Culvert	1x1	14.43	
41	78.734	Slab	1x1.55	9.9	
42	78.812	Pipe Culvert	2x1	13.86	
43	79.053	slab	1x2	12.00	
44	79.400	Slab	2x2.2	14.55	
45	79.575	Pipe Culvert	2x1	14.8	
46	79.945	Pipe Culvert	1x1	14.8	
47	80.098	Pipe Culvert	1x1.2	15.20	

S. No.	Existing Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width(m)	Remarks
48	80.228	Slab	1x1.6	12.20	
49	80.508	Slab	1x1.6	12.20	
50	80.844	Pipe Culvert	1x1.2	15.20	
51	80.950	Slab	1x1.6	12.20	
52	81.130	Pipe Culvert	1x1	15.00	
53	82.247	Pipe Culvert	2x1	14.20	
54	82.475	Pipe Culvert	2x1	14.60	
55	82.670	Pipe Culvert	2x1.2	15.00	
56	83.220	Pipe Culvert	2x1.2	15.00	
57	83.560	Slab	1x1.6	14.80	
58	83.894	Pipe Culvert	3x0.9	14.80	
59	85.034	Slab	1x4	9.80	
60	85.168	Pipe Culvert	2x1	15.00	
61	85.367	Slab	1x1.9	9.80	
62	86.947	Pipe Culvert	1x1	12.80	
63	87.542	Slab	1x1.2	10.00	
64	87.878	Slab	1x1.5	9.80	
65	88.807	Pipe Culvert	2x1	14.80	
66	89.025	Pipe Culvert	2x1	15.20	
67	89.211	Slab	1x1.6	15.00	
68	89.325	Pipe Culvert	2x0.9	15.00	
69	90.104	Slab	1x2	12.20	
70	94.167	Slab	2x2	9.13	

S. No.	Existing Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width(m)	Remarks
71	94.725	Slab	2x2	10.30	
72	95.291	Slab	2x1.6	10.40	
73	96.052	Slab	2x2.8	9.80	
74	96.250	Slab	1x1	10.04	
75	96.800	Pipe Culvert	1x0.9	9.80	

11 BUS BAYS

The details of Bus Bays on the site are as follows:

S. No.	Chainage (km)	Length (m)	Left Hand Side	Right Hand Side
1	58.850	3.64	Left	-
2	59.445	4.261	-	Right
3	60.815	3.64	-	Right
4	61.820	3.17	Left	-
5	64.820	5.26	Left	-
6	70.260	5.31	Left	-
7	73.000	7.6	-	Right
8	75.115	7.24	Left	-
9	77.255	12.27	Left	-
10	77.275	10.4	-	Right
11	77.300	12.06	-	Right
12	80.293	3.75	-	Right
13	90.513	11.01	Left	-
14	94.450	8.15	Left	-
15	94.860	31.59	-	Right

S. No.	Chainage (km)	Length (m)	Left Hand Side	Right Hand Side
16	95.060	10.28	Left	-
17	99.275	10.47	Left	-
18	96.930	12.58	-	Right

12 TRUCK LAY-BYES

The details of Truck Lay-Byes are as follows:

Sr. No	Existing Chainage (Km)	Length (m)	Left Hand Side	Right Hand Side
Nil				

13 ROAD SIDE DRAINS

The details of road side drains are as follows:

S. No.	Location		Type	
	From (km)	To (km)	Masonry/cc (Pucca)	Earthen (Kutchra)
Nil				

14 MAJOR JUNCTIONS

The details of major junctions are as follows:

S. No.	Location	At grade	Type of Junction	Category of Cross Road			
	Chainage Km to km			NH	SH	MDR	Others
1	64.380	Yes	T		SH-65		
2	64.800	Yes	Y			MDR-203	

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

15 MINOR JUNCTIONS

The details of the minor junctions are as follows:

S. No.	Location	Type of Junction	Leading to
	Existing Chainage (km)		
1	59.300	Y	Bandakindapalle

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

S. No.	Location	Type of Junction	Leading to
	Existing Chainage (km)		
2	61.730	T	Bandakindapalle
3	66.330	T	Rangannagari Gadda
4	69.000	+	Chinnagottigallu, Kummara Palle
5	70.210	Y	Kummara Palle
6	70.600	T	Pujaripalli
7	72.140	T	Cheruvumundara Palli
8	72.700	Y	Yerravaripalem
9	72.900	+	Badhala Vari Palle Baddalavaari Palli Village
10	75.040	+	Buddareddy Gari Palli Diguvuru
11	77.120	+	Bhakarapeta Pujaripalli

16 ELECTRICAL UTILITIES

The site includes the following electrical utilities:

a) Extra High Voltage Line (EHT Lines)

S.No	Chainage	Crossings				
		400KV	220KV	132KV	66KV	
1	57+019	1 (DC)	0	0	0	Overhead Crossing (Pylon is Outside of PROW)
2	59+933	0	0	1 (SC)	0	

*SC-Single Circuit, DC- Double Circuit

b) High Tension Lines (HT Lines) & LT Lines

Design Chainage (Km)		Length of Conductor (m)					Crossings					Transformer	
From	To	33 KV LINE	11 KV LINE	LT LINE	AB CABLE	6.3 KV LINE	33 KV LINE	11 KV LINE	LT LINE	AB CABLE	6.3 KV LINE	No.	Capacity
55+900	57+000	0	2175	1100	0	0	0	2	3	0	1	3	25 KVA, 16 KVA, 15 KVA
57+000	58+000	0	675	240	0	0	0	1	1	0	0	0	0
58+000	59+000	0	870	608	0	50	0	4	1	0	1	4	25 KVA X 2, 15 KVA, 5 KVA
59+000	60+000	225	0	0	0	0	1	0	0	0	0	0	0
60+000	61+000	1770	1155	480	0	0	2	2	1	0	0	1	25 KVA
61+000	62+000	2550	1725	2420	0	0	0	2	4	0	0	5	100 KVA, 25 KVA X 3, 16 KVA
62+000	63+000	2535	360	840	0	0	1	2	2	0	0	1	100 KVA
63+000	64+000	1830	1140	220	58	0	1	3	0	1	0	2	25 KVA X 2
64+000	65+000	1185	2205	460	0	0	0	4	1	0	0	3	25 KVA X 2, 16 KVA
65+000	66+000	2385	4074	420	50	0	1	5	1	1	0	2	25 KVA X 2
66+000	67+000	1425	810	2132	0	0	1	2	4	0	0	2	25 KVA, 15 KVA
67+000	68+000	1335	1560	3396	0	0	0	2	6	0	0	2	16 KVA, 15 KVA

Construction of Four-Laning of Pileru-Kaluru (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

Design Chainage (Km)		Length of Conductor (m)					Crossings					Transformer	
From	To	33 KV LINE	11 KV LINE	LT LINE	AB CABLE	6.3 KV LINE	33 KV LINE	11 KV LINE	LT LINE	AB CABLE	6.3 KV LINE	No.	Capacity
68+000	69+000	0	180	300	0	0	0	1	1	0	0	0	0
69+000	70+000	0	1020	1340	0	0	0	2	4	0	0	3	25 KVA X 2, 16 KVA
70+000	71+000	0	720	700	0	0	0	2	1	0	0	2	25 KVA, 16 KVA
71+000	72+000	1830	6195	1240	0	0	1	5	2	0	0	4	25 KVA X 2, 16 KVA X 2
72+000	73+000	1485	5055	80	0	0	1	2	0	0	0	1	25 KVA
73+000	74+000	0	1275	260	55	0	0	2	1	1	0	0	0
74+000	75+000	0	4890	160	0	0	0	2	0	0	0	2	16 KVA X 2
75+000	76+000	0	2256	128	0	0	0	2	0	0	0	1	16 KVA
76+000	77+000	0	0	0	0	0	0	0	0	0	0	0	0
77+000	78+000	0	0	0	0	0	0	0	0	0	0	0	0
78+000	79+000	0	0	0	0	0	0	0	0	0	0	0	0
79+000	80+000	0	0	0	0	0	0	0	0	0	0	0	0
80+000	81+000	0	0	0	0	0	0	0	0	0	0	0	0
81+000	82+000	0	0	0	0	0	0	0	0	0	0	0	0
82+000	83+000	0	0	0	0	0	0	0	0	0	0	0	0
83+000	84+000	0	0	0	0	0	0	0	0	0	0	0	0
84+000	85+000	0	0	0	0	0	0	0	0	0	0	0	0
85+000	86+000	0	0	0	0	0	0	0	0	0	0	0	0
86+000	87+000	0	0	0	0	0	0	0	0	0	0	0	0
87+000	88+000	0	795	300	0	0	0	4	1	0	0	0	0
88+000	89+000	0	675	240	0	0	0	2	1	0	0	0	0
89+000	90+000	1725	0	0	0	0	1	0	0	0	0	0	0
90+000	91+000	585	0	0	0	0	1	0	0	0	0	0	0
91+000	92+000	0	0	0	0	0	0	0	0	0	0	0	0
92+000	92+800	846	1647	1620	0	0	1	2	1	0	0	2	25 KVA, 15 KVA

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

Design Chainage (Km)		Length of Conductor (m)					Crossings					Transformer	
From	To	33 KV LINE	11 KV LINE	LT LINE	AB CABLE	6.3 KV LINE	33 KV LINE	11 KV LINE	LT LINE	AB CABLE	6.3 KV LINE	No.	Capacity
94+800	95+717	0	495	2508	440	35	0	1	2	3	1	3	100 KVA X 2, 15 KVA
TOTAL		21711	41952	21192	603	85	12	56	38	6	3	43	DTR

17 WATER PIPELINE UTILITIES

The site includes the following water pipe line utilities:

Sr. No	Design Chainage (Km)		Length (in Km)	Material & pipe line specification
	From	To		
1	59+550	62+700	150	75mm Dia Pvc pipe
2	66+590	68+450	500	75mm Dia Pvc pipe
3	69+150	72+700	70	75mm Dia Pvc pipe
4	89+900	92+500	2600	1000mm Dia GI pipe

ANNEX-II
(Schedule-A)

1 DATES FOR PROVIDING RIGHT OF WAY OF CONSTRUCTION ZONE

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

The Right of Way is being acquired and shall be provided to the Concessionaire on different stretches presented below:

Sr. No	Design Chainage (Km)		Length (km)	Width (m)
	From (km)	To (km)		
1	55+900	76+030	20.130	60
2	76+030	78+700	2.670	30
3	78+700	79+000	0.300	40
4	79+000	86+850	7.850	30
5	86+850	89+500	2.650	60
6	89+500	92+800	3.300	45
7	94+800	95+717	0.917	45

Note:

The Authority shall provide the Right of Way on no less than 80% (Eighty percent) of the total length of Project Highway on Appointed date for construction of approved design cross section in compliance to clause 10.3 of Agreement.

ANNEX-III
(Schedule-A)

1 ALIGNMENT PLAN:

The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be minimum requirement and treated as an approximate assessment.

2 TRAFFIC SIGNAGE PLAN:

Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed, which is minimum requirement. The Concessionaire shall, however, improve/upgrade upon the traffic signage plan as indicated in Annexure-III based on site/design requirement as per IRC: SP: 84-2019 & IRC: 67-2012.

3 UTILITY RELOCATION PLAN:

Utility relocation plan: The details of existing utilities to be shifted indicated in utility relocation plan enclosed.

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

ANNEX -IV

(Schedule-A)

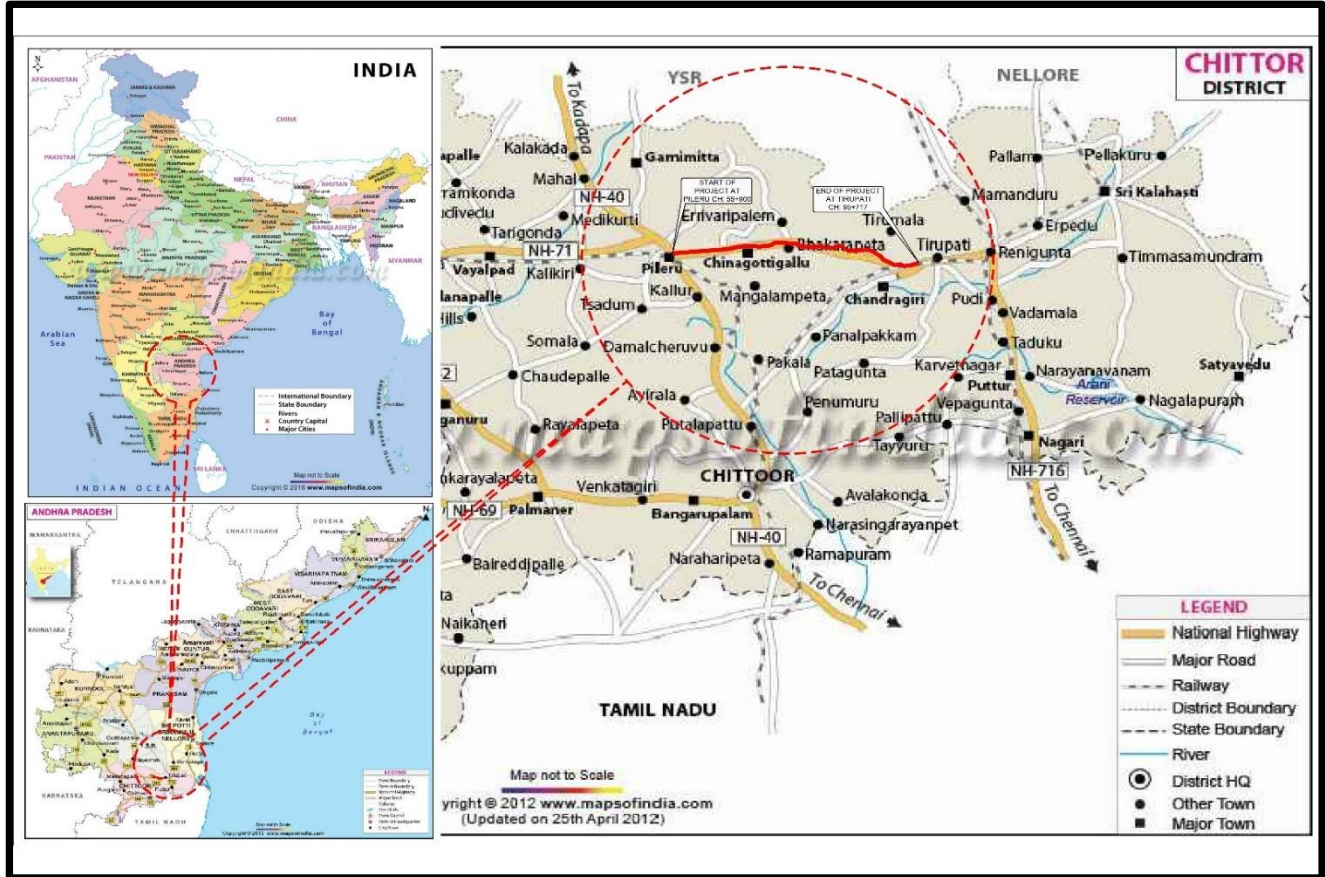
ENVIRONMENTAL CLEARANCES

Environmental Clearance is not required.

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

APPENDIX – A1

(Schedule-A) Index Map



SCHEDULE - B

(See Clause 2.1)

DEVELOPMENT OF PROJECT HIGHWAY

1 DEVELOPMENT OF THE PROJECT HIGHWAY

Development of the Project Highway shall include detailed design, including plan & profile within available proposed ROW and construction of the Project Highway as described in Schedule-B and Schedule-C. The alignment plans of the Project Highway are given in Annex-III of Schedule A which is minimum requirement and are for guidance only. The proposed plan & profile, locations of different structures/drains/service & slip road/RE walls, chainages of different structures/drains/service & slip road/RE walls, length of different structures/drains/service & slip road/RE walls etc. of the project highway as indicated in the Schedule A, Schedule B, Schedule C and their Annexures, shall be treated as an approximate assessment and as minimum requirement. Based on site/design requirement, the Concessionaire shall finalise Detailed Project Report (DPR) including plan & profile of the project highway and submit the same to Authority & its Engineer for acceptance, before the start of the execution of project.

Based on accepted DPR including Plan & profile prepared by the Concessionaire, the detailed work program prepared with Network Method (PERT/CPM) shall be prepared along with commensurate deployment of all resources and got approved from Engineer before start of civil work. Any required changes in scope of work given in Schedule B and Schedule C, including any variation in standard, shall be finalized by both the parties before start of actual civil work.

Requirement specifically mentioned in Schedule B & C shall prevail over general requirements given in Manual mentioned in Schedule D.

2 REHABILITATION AND AUGMENTATION

Rehabilitation and augmentation shall include Four Lane with Paved shoulders configuration as described in Annex-I of this Schedule-B and in Schedule-C.

3 SPECIFICATIONS AND STANDARDS

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

ANNEX - I

(Schedule - B)

DESCRIPTION OF THE PROJECT

1 DEVELOPMENT OF THE PROJECT HIGHWAY

The Project Highway shall generally follow the horizontal alignment shown in the plan specified in Annex III of Schedule-A, unless otherwise specified by the Authority. Notwithstanding anything to the contrary contained in this Agreement or IRC:SP:84-2019, the proposed plan & profile, locations of different structures/drainage/service & slip road/RE walls, chainages of different structures/drainage/service & slip road/RE walls, length of different structures/drainage/service & slip road/RE walls etc. of the project highway as indicated in the Schedule A, Schedule B, Schedule C and their Annexures shall be treated as an approximate assessment and as minimum requirement. Based on site/design requirement, the Concessionaire shall finalize Detailed Project Report (DPR) including plan & profile of the project highway and submit the same to Authority & its Engineer for acceptance, before the start of the execution of project. Any changes in the finally accepted DPR in respect of the proposed provision in Schedule B and Schedule C 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 provision of Article 16.

1.1 Width of Carriageway

1.1.1 The width of the Paved Carriageway shall be provided as in paragraph 2.11 of Annex-I of Schedule-B and Annex -I of Schedule-D.

1.1.2 The built-up areas along the alignment is mentioned below:

S. No.	Design Chainage (Km)	
	From	To
1	55+900	56+300
2	89+500	92+800
3	94+800	95+717

- 1.1.3 Except as otherwise provided in this Agreement, the width shall be adjusted to fit into appropriate plans and cross sections developed in accordance with TCS enclosed.
- 1.1.4 Except as otherwise provided in this Agreement, but subject to provisions of Annex -I of this Schedule-B, the width of the paved carriageway shall conform to Section 1.1.1 of Schedule B.
- 1.1.5 The entire cross-sectional elements shall be accommodated in the available/proposed ROW. If required, suitable retaining structures shall be provided to accommodate the highway cross section within the available/ proposed ROW and 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 GEOMETRIC DESIGN AND GENERAL FEATURES

- 2.1 **General:** Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the manual.
- 2.2 **Design Speed:** The project road shall be designed for the following speed.

Sr. No.	Design Chainage		Terrain	Speed (Kmph)
	From km	To km		
1	55+900	77+500	Plain & Rolling	100
2	77+500	85+800	Mountainous	Minimum 50
3	85+800	92+800	Plain & Rolling	100
4	94+800	95+717	Plain & Rolling	100

2.3 Improvement of the existing road geometrics

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

Sr. No.	Design Chainage)		Type of deficiency	Remarks
	From km	To km		
NIL				

- 2.3.2 The entire cross sectional elements shall be accommodated in the available/proposed ROW. If required, suitable retaining structures shall be provided to accommodate the highway cross section within the available/ proposed ROW and 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.
- 2.3.2.1 **Realignments:** The existing road shall be realigned to the standards as specified in the manual at the following locations:

Sr. No.	Existing Chainage		Design Chainage		Length (km)
	From km	To km	From km	To km	
1	61+525	64+100	58+175	60+600	2.425

Sr. No.	Existing Chainage		Design Chainage		Length (km)
	From km	To km	From km	To km	
2	66+250	67+000	62+745	63+440	0.695
3	72+350	73+500	68+660	69+745	1.085
Total					4.205

2.3.3 Bypasses: The existing road shall be bypassed to the standards as specified in the manual at the following locations:

Sr. No.	Name of Bypass	Existing Chainage		Design Chainage		Length (km)
		From km	To km	From km	To km	
1	Chinna Gottigallu	67+875	70+475	64+315	66+810	2.495
2	Bhakarpetta	76+000	77+900	72+242	73+815	1.573
3	Rangampet	89+858	95+500	85+700	90+000	4.300
Total						8.368

2.4 Right of Way

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

2.5 Type of shoulders

2.5.1 The Design Specification of paved shoulder shall conform to the requirements specified in paragraph 5.10 of the manual.

2.5.2 In Built-up sections, footpaths/fully paved shoulder shall be provided as per Clause 2.11 of Annex. -I of Schedule-B

2.5.3 In open country, paved shoulders and earthen shoulder shall be provided as per Clause 2.11 of Annex. - I of Schedule-B

2.5.4 The compositions and specification of the paved shoulder and median edge strip shall be as that of the main carriageway.

2.5.5 The earthen shoulder shall be provided with 150mm thick layer of granular material for protection against erosion.

2.6 Lateral and Vertical Clearance at Underpasses

2.6.1 Underpasses shall be provided at the locations given at para-2.9 of this Annex-I of Schedule-B.

2.6.2 Lateral and vertical clearances for underpasses/ Flyover shall be specified in as per paragraph 2.9 of Annex-I of Schedule-B and provision of guardrails/crash barriers shall be as per Paragraph 2.10 of the Manual.

2.7 Lateral and vertical clearances at Overpasses

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

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

Sr. No.	Location Chainage (Km)	Span/opening (m)	Remarks
Nil			

(MCW - Main carriageway, LHS - Left Hand Side and RHS - Right Hand Side)

2.8 Service roads/Slip roads/Connecting Roads:

2.8.1 Service Road/Slip Road: Service roads/Slip Road shall be constructed at the locations and for the lengths indicated below:

Sr. No.	Design Chainage (km)		Length (m)		Width (m)	Remarks
	From	To	LHS	RHS		
1	55+900	56+300	400	400	7	
2	58+275	58+690	415	415	7	
3	60+478	60+913	435	435	7	
4	60+936	61+300	364	364	7	
5	63+400	64+183	783	783	7	
6	64+206	65+000	794	794	7	
7	66+400	66+700	300	-	7	
8	66+700	67+030	330	330	7	
9	67+052	67+660	608	608	7	
10	68+260	68+529	269	269	7	
11	68+541	68+700	159	159	7	
12	68+700	69+113	413	-	7	
13	70+700	71+339	639	639	7	
14	71+351	71+538	187	187	7	
15	71+538	72+360	822	822	7	
16	73+260	73+779	519	519	7	
17	73+809	74+148	339	339	7	
18	87+000	87+264	264	264	7	
19	89+900	90+776	876	876	7	
20	90+788	92+800	2012	2012	7	
21	94+800	95+250	450	-	7	
22	95+250	95+600	350	350	7	
Total (Km)			11.728	10.565		

Note:

1. Above length of the service/slip/connecting roads is indicative and minimum specified. The actual length of the service/slip/connecting roads shall be determined by the Concessionaire in accordance with the approved plan & profile and design approved from the Independent Engineer. Any increase in the length specified in this Clause 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. The realignment of existing track to the VUP/LVUP/SVUP outside the PROW and connecting roads between consecutive underpasses wherever required as per plan & profile uploaded with bid document and specified in Annex III of schedule A is to be constructed by the Concessionaire as per site requirement in consultation with Independent Engineer and the same would not constitute any change of scope.
 3. Length of service/slip/connecting roads given in above table excludes length across the project highway for proper connectivity of cross roads on either side of project highway which shall be deemed to be included in the scope of work.
 4. The Acceleration lane, deceleration lane and transition lane shall be constructed in addition to length given in above table.
 5. Entry/Exit Ramp shall also be constructed at all Grade Separated structures provided with Service/Slip Road, as well as Start & End of Service Road at all locations so as to give access of Slip/Service Road to Main Carriageway.
 6. Retaining wall shall be provided as per actual site condition to accommodate the Typical Cross Section within available ROW & same shall be deemed to be included in the scope of work.
- 2.9 Grade Separated Structures:** Grade separated structures shall be constructed as per paragraph 2.13 of the Manual. Proposed levels at structure locations as shown in plan & profile specified in Annex III of schedule A are minimum requirement and only for guidance and any increase in levels shall not constitute any change of scope. The requisite particulars are given below:

2.9.1 Vehicle Underpasses (VUP)

Sr. No.	Design Chainage (km)	Clear Span/ Opening (m)	Vertical Clearance	Remarks	Type of Cross Road/Habitation
1	60+924	1X20.0m	5.5	-	SH-924
2	64+194	1X20.0m	5.5	-	Bypass Start
3	67+040	1X20.0m	5.5	-	Bypass End
4	73+794	1X30.0m	5.5	-	Bypass End

2.9.2 Light Vehicle Underpasses (LVUP)

Sr. No.	Design Chainage (km)	Clear Span/ Opening (m)	Vertical Clearance	Remarks
1	58+456	1x12.0	4.0	-
2	59+723	1X12.0	4.0	-
3	68+535	1X12.0	4.0	-
4	71+345	1X12.0	4.0	-
5	90+782	1x12.0	4.0	-

2.9.3 Small Vehicle Underpasses (SVUP)

Sr. No.	Design Chainage (km)	Clear Span/ Opening (m)	Vertical Clearance	Remarks
NIL				

2.9.4 Flyover

Sr. No.	Design Chainage (km)	Span Arrangement (m)	Total Width (m)	Typical Cross Section	Remarks
NIL					

2.9.5 Animal Underpasses (AUP)

Sr. No.	Design Chainage (km)	Total Width (m)	Span (m)	Vertical Clearance	Remarks
1	84+790	2x12.5	1X50.0	6.0	Elephant Underpass
2	86+675	2x12.5	6X50.0	6.0	Animal Underpass Cum Major Bridge

2.9.6 Animal Overpasses (AOP)

Sr. No.	Design Chainage (km)	Total Width (m)	Clear Span/ Opening (m)	Vertical Clearance	Remarks
1	78+850	1x50.0	2x16.5	5.5	Elephant Overpass

2.10 Cattle and Pedestrian underpasses

Cattle and pedestrian underpass shall be widened as follows:

Sr. No.	Design Chainage (km)	Total Width (m)	Clear Span/Opening (m)	Vertical Clearance	Type of Structure	Remarks
Nil						

2.11 Typical Cross Section (TCS) schedule of the Project Highway

The Project Highway shall be constructed to four lane configuration. Typical cross sections required to be developed in different sections of the Project Highway are given below

S. no.	Design Chainage (km)		TCS	Length(m)	Remarks
	From	To			
Section-1					
1	55+900	56+153	TCS Fig-2.5(B)	253	
2	56+153	56+203	TCS Fig-7.2 (d)	50	Minor Bridge (Left Carriageway + Left Service Road)
3	56+203	56+300	TCS Fig-2.5(B)	97	
4	56+300	58+275	TCS Fig-2.4(A)	1975	
5	58+275	58+450	TCS Fig-7.8(A)	175	
6	58+450	58+462	TCS Fig-7.8 (a)	12	LVUP
7	58+462	58+690	TCS Fig-7.8(A)	228	
8	58+690	58+963	TCS Fig-2.4(A)	273	
9	58+963	59+363	TCS Fig-7.2 (a)	400	Major Bridge (MCW)
10	59+363	59+717	TCS Fig-2.4(B)	354	
11	59+717	59+729	TCS Fig-7.8 (a)	12	LVUP
12	59+729	60+024	TCS Fig-2.4(B)	295	
13	60+024	60+060	TCS Fig-7.2 (a)	36	Minor Bridge (MCW)
14	60+060	60+478	TCS Fig-2.4(A)	418	
15	60+478	60+913	TCS Fig-7.8(A)	435	
16	60+913	60+936	TCS Fig-7.8 (a)	23	VUP
17	60+936	61+300	TCS Fig-7.8(A)	364	
18	61+300	63+400	TCS Fig-2.4(A)	2100	

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

S. no.	Design Chainage (km)		TCS	Length(m)	Remarks
	From	To			
19	63+400	63+558	TCS Fig-2.5(A)	158	
20	63+558	64+182	TCS Fig-7.8(A)	624	
21	64+182	64+205	TCS Fig-7.8 (a)	23	VUP
22	64+205	64+500	TCS Fig-7.8(A)	296	
23	64+500	65+000	TCS Fig-2.5(A)	500	
24	65+000	66+400	TCS Fig-2.4(A)	1400	
25	66+400	66+539	TCS Fig-7.8(B)	139	
26	66+539	66+554	TCS Fig-7.2 (c)	15	Minor Bridge (MCW+LSR)
27	66+554	66+600	TCS Fig-7.8(B)	46	
28	66+600	67+029	TCS Fig-7.8(A)	429	
29	67+029	67+052	TCS Fig-7.8 (a)	23	VUP
30	67+052	67+600	TCS Fig-7.8(A)	548	
31	67+600	68+260	TCS Fig-2.4(D)	660	
32	68+260	68+529	TCS Fig-7.8(A)	269	
33	68+529	68+541	TCS Fig-7.8 (a)	12	LVUP
34	68+541	68+700	TCS Fig-7.8(A)	159	
35	68+700	69+113	TCS Fig-2.5(A)	413	
36	69+113	69+443	TCS Fig-7.2 (a)	330	Major Bridge (MCW)
37	69+443	70+700	TCS Fig-2.4(A)	1257	
38	70+700	71+339	TCS Fig-7.8(A)	639	
39	71+339	71+351	TCS Fig-7.8 (a)	12	LVUP
40	71+351	71+538	TCS Fig-7.8(A)	187	
41	71+538	72+360	TCS Fig-2.5(B)	822	
42	72+360	73+260	TCS Fig-2.4(D)	900	
43	73+260	73+779	TCS Fig-7.8(A)	519	
44	73+779	73+809	TCS Fig-7.8 (a)	30	VUP
45	73+809	74+148	TCS Fig-7.8(A)	339	
46	74+148	74+711	TCS Fig-2.4(A)	563	

S. no.	Design Chainage (km)		TCS	Length(m)	Remarks
	From	To			
47	74+711	74+980	Toll Plaza	269	
48	74+980	75+268	TCS Fig-2.4(A)	288	
49	75+268	75+368	TCS Fig-7.2 (a)	100	Major Bridge (MCW)
50	75+368	76+100	TCS Fig-2.4(A)	732	
51	76+100	76+500	TCS Fig-2.4(C)	400	
52	76+500	76+850	TCS Fig-2.9(A)	350	
53	76+850	77+260	TCS Fig-2.4(E)	410	
54	77+260	77+480	TCS Fig-2.4(F)	220	
55	77+480	77+750	TCS Fig-2.4(E)	270	
56	77+750	77+960	TCS Fig-2.4(C)	210	
57	77+960	78+380	TCS Fig-2.4(E)	420	
58	78+380	78+610	TCS Fig-2.4(C)	230	
59	78+610	78+702	TCS Fig-2.4(F)	92	
60	78+702	78+825	TCS Fig-2.4(G)	123	
61	78+825	78+875		50	Animal Overpass
62	78+875	79+000	TCS Fig-2.4(G)	125	
63	79+000	79+280	TCS Fig-2.4(C)	280	
64	79+280	79+380	TCS Fig-2.4(E)	100	
65	79+380	79+510	TCS Fig-2.9(B)	130	
66	79+510	79+660	TCS Fig-2.4(E)	150	
67	79+660	79+830	TCS Fig-2.4(C)	170	
68	79+830	80+010	TCS Fig-2.4(E)	180	
69	80+010	80+600	TCS Fig-2.4(F)	590	
70	80+600	80+860	TCS Fig-2.4(E)	260	
71	80+860	81+090	TCS Fig-2.4(C)	230	
72	81+090	81+300	TCS Fig-2.9(A)	210	
73	81+300	81+680	TCS Fig-2.4(E)	380	
74	81+680	81+915	TCS Fig-2.4(C)	235	

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S. no.	Design Chainage (km)		TCS	Length(m)	Remarks
	From	To			
75	81+915	82+045	TCS Fig-2.9(C)	130	
76	82+045	82+770	TCS Fig-2.4(C)	725	
77	82+770	83+125	TCS Fig-2.9(C)	355	
78	83+125	83+249	TCS Fig-2.4(C)	124	
79	83+249	83+259	TCS Fig-7.2 (b)	10	Minor Bridge (MCW)
80	83+259	83+600	TCS Fig-2.4(C)	341	
81	83+600	83+890	TCS Fig-2.9(B)	290	
82	83+890	84+765	TCS Fig-2.4(C)	875	
83	84+765	84+815	TCS Fig-7.2 (b)	50	Animal Underpass
84	84+815	85+925	TCS Fig-2.4(C)	1110	
85	85+925	86+250	TCS Fig-2.4(F)	325	
86	86+250	86+525	TCS Fig-2.4(C)	275	
87	86+525	86+825	TCS Fig-7.2 (b)	300	Animal Underpass cum Major Bridge
88	86+825	87+000	TCS Fig-2.4(B)	175	
89	87+000	87+264	TCS Fig-7.8(A)	264	
90	87+264	87+704	TCS Fig-7.8 (a)	440	Major Bridge cum Underpass
93	87+704	88+260	TCS Fig-2.4(B)	556	
94	88+260	89+900	TCS Fig-2.4(A)	1640	
95	89+900	90+400	TCS Fig-2.6(A)	500	
96	90+400	90+776	TCS Fig-7.8(A)	376	
97	90+776	90+788	TCS Fig-7.8 (a)	12	LVUP
98	90+788	91+250	TCS Fig-7.8(A)	462	
99	91+250	92+800	TCS Fig-2.6(A)	1550	
Section-2					
100	94+800	95+600	TCS Fig-2.6(A)	800	
101	95+600	95+717	TCS Fig-2.4(A)	117	

For Typical cross section figures refer Annex-II of Schedule-B.

Note:

1. Any variations in the lengths specified in the above table 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. Retaining wall/ Toe wall to be provided where ROW is restricted which is deemed to be included in the scope.
3. Chainages may be adjusted according to location of structures as per drawings.
4. The requirement of kerb in the median for surface drainage at super elevated portions and approaches to structures shall be finalized in consultation with Independent Engineer/NHAI.
5. Carriageway width tapering shall be provided as per IRC-SP-84-2019 Clause no 2.5.4.
6. Cross sections mentioned above is indicative and shall be decided as per project requirement and availability of ROW. No COS shall be admissible on this account.

3 INTERSECTIONS AND GRADE SEPARATORS

All intersections and grade separators shall be as per Section 3 of the IRC: SP:84-2019. Existing at grade intersections which are deficient shall be improved to the prescribed standards.

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

3.1 At-grade intersections:

(a) Major Junctions:

S.No.	Chainage	Junction Type	Category of Cross Road
1	64+450	Y (With Service Road)	NH-71
2	72+360	Y (With Service Road)	NH-71
3	94+820	Y (With Service Road)	Village Road
4	95+637	Rotary	End Point

(b) Minor Intersections:

S.No.	Chainage	Junction Type	Category of Cross Road
1	56+080	T	Village road
2	56+700	Y	Village road
3	57+450	T	Village road

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S.No.	Chainage	Junction Type	Category of Cross Road
4	58+120	T	Village road
5	60+550	Y	NH-71
6	61+290	T	Village road
7	61+310	Z	Village road
8	61+725	T	Village road
9	62+750	Y	NH-71
10	62+880	T	Village road
11	65+400	T	Village road
12	65+410	T	Village road
13	68+062	T	Village road
14	69+070	Y	Village road
15	69+630	Y	NH-71
16	71+650	T	Village road
17	73+263	T	MDR
18	73+270	Y	MDR
19	77+990	Y	Forest Road
20	89+910	Y	NH-71
21	91+450	Y	NH-71
22	91+900	Y	NH-71
23	92+300	T	Village Road
24	92+500	Y	NH-71

3.2 **Grade Separated Intersections:** These shall be provided as given at para-2.9 of this Annex-I of the Schedule B.

(a) **Major Junctions:**

S.No.	Design Chainage (Km)	Type of Cross Road	Type of Structure Proposed
1	58+456	Village road/Realign. Start	LVUP
2	60+924	SH-65	VUP

S.No.	Design Chainage (Km)	Type of Cross Road	Type of Structure Proposed
3	64+194	Village road/Bypass Start	VUP
4	67+040	MDR	VUP
5	71+345	NH/MDR	LVUP
6	73+794	NH-71	VUP
7	87+287	NH-71	VUP

(b) **Minor Junctions:**

S.No.	Design Chainage (Km)	Type of Cross Road	Type of Structure Proposed
1	59+723	Village road	LVUP
2	68+535	Village road	LVUP
3	90+782	MDR	LVUP

Note:

- Any other junction not mentioned above but observed during the construction of the project shall be improved as per IRC: SP:84-2019 requirements. 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.
- The Concessionaire shall take up 'Detailed Engineering study' to ascertain further details of all intersections and treatment of the intersections shall be designed in accordance with the latest guidelines mentioned out in section-3 of IRC: SP:84-2019. 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.
- Junction improvement under grade separators shall be carried out as per IRC: SP:84-2019 with proper entry/exit to cross roads and slip/service roads.
- Location and span arrangement of grade-separated structures are indicative. Exact location may be decided in consultation with Independent Engineer. Any Change in span arrangement shall not be treated as 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.
- Junction shall be developed on cross road up to 75m beyond PROW unless otherwise specified individually.

4 ALIGNMENT PLAN & ROAD SECTION

4.1 Alignment Plan & Longitudinal Section

The alignment plan and vertical profile of complete project Highway is given at Annex-III of Schedule-A.

The Plan and profile of project highway is tentative and cannot be considered as design plan & profile. The actual design of plan and profile shall be carried out by concessionaire following IRC-SP 84-2019 and adopted vertical profile shall be designed for ISD except for locations with land constraints and with the approval of Independent Engineer. Horizontal geometry shall be within the land (ROW) provided by the authority as per approval of IE. There shall not be any COS/variation due to addition in length of approaches, earthwork, its RE wall, drain, slip road, accelerating/decelerating lane, foot path, separator etc. while adopting ISD as design standard throughout the project length. Further, bottom of the Sub-grade for embankment/fill portion shall be higher of the following:

- (a) 1.00 m above HFL data (100 years or available) from CWC, irrigation department, local enquiry.
- (b) 1.50m above existing GL.
- (c) The Concessionaire should match the levels & TCS of ongoing construction of four lane ROB with approaches by R&B (NH Division) Road (i.e. Design Km.92+800 to Km.94+800) which is not in the scope of this contract.

4.2 Road embankment & Cut Section

Construction of new Road embankment/cutting shall conform to the Specification and Standard given in section 4 of the manual and the specified cross sectional details.

5 PAVEMENT DESIGN

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

5.2 Type of Pavement

The pavement shall be flexible type for entire length of project highway except for toll plaza locations.

5.3 Design Requirements

The pavement shall be flexible type for entire length of project highway except for toll plaza locations. Rigid Pavement shall be provided for Toll Plaza locations.

5.3.1 Design Period and Strategy

Flexible pavement shall be constructed for the entire length of Project Highway including paved shoulders. Flexible pavement shall be designed for a minimum design period of 20 years whereas rigid pavement shall be designed for a minimum design period of 30 years.

Stage construction shall not be permitted.

5.3.2 Recommended Pavement Design

Notwithstanding anything to the contrary contained in this Agreement or the IRC: SP:84-2019, the Concessionaire shall design the pavement of main carriageway as flexible pavement for design traffic of minimum 50 MSA and maximum CBR of 12% (maximum CBR of 12% shall be adhered unless specialized soil stabilization techniques is adopted by the Concessionaire during construction in consultation with Independent Engineer). For truck lay bye the pavement composition shall be same as for main carriageway.

Pavement for connecting/cross/service/slip road shall be designed for design traffic of minimum 10 MSA and Maximum CBR of 12%. Bus bays are provided on service road hence the pavement composition shall be similar to service road pavement.

The rigid pavement crust at Toll Plaza/Toll Booth shall be designed as per minimum axle load spectrum analysis for the design traffic expected to travel on the project Road. In order to meet the intended functional requirement, the minimum thickness of the rigid pavement however in no case be less than as given below:

Main carriageway (Rigid) -For Toll Plaza location.

Pavement Composition	Minimum Crust Thickness (mm)
PQC	280
DLC	150
GSB	150

Note:

1. The Pavement crust composition shall be designed in accordance with latest guidelines of IRC 37-2018. The type of pavement crust may be decided in consultant with Independent Engineer.
2. The concessionaire shall use waste plastic in the bituminous layers of Service/Slip Road in accordance with latest guidelines of IRC SP 98.

5.4 Reconstruction of Stretches

Entire existing stretch shall be reconstructed as new flexible pavement.

6 ROADSIDE DRAINAGE

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per section 6 of the IRC: SP:84-2019. Unlined Drains (except at ROB location) shall be provided in the entire project length which gets terminated at all cross road

locations.

RCC Drain cum footpaths shall conform to the cross- sectional features and other details specified as per section 2.11 in this schedule.

6.1 Unlined Drain

Unlined drain shall be provided as per Annex-II Schedule-B Typical Cross Sections.

6.2 Lined Drain

(a) Lined Covered Drain/Footpath cum Drain

Lined covered drain/Footpath cum drain shall be provided at following Locations.

Sr. No.	Design Chainage (km)		Length (km)	Side
	From	To		
1	55+900	56+153	253.00	Both Side
2	56+153	56+203	50.00	Right Side
3	56+203	56+300	97.00	Both Side
4	58+275	58+450	175.00	Both Side
5	58+462	58+690	228.00	Both Side
6	60+478	60+913	435.00	Both Side
7	60+936	61+300	364.00	Both Side
8	63+400	63+558	158.00	Both Side
9	63+558	64+183	625.00	Both Side
10	64+206	65+000	794.00	Both Side
11	66+400	66+539	139.00	Left Side
12	66+554	67+029	475.50	Both Side
13	67+052	67+660	608.00	Both Side
14	68+260	68+529	269.00	Both Side
15	68+541	68+700	159.00	Both Side
16	68+700	69+113	413.00	Both Side
17	70+700	71+339	639.00	Both Side
18	71+351	71+538	187.00	Both Side
19	71+538	72+360	822.00	Both Side

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Sr. No.	Design Chainage (km)		Length (km)	Side
	From	To		
20	73+260	73+779	519.00	Both Side
21	73+809	74+148	339.00	Both Side
22	78+825	78+875	50.00	Both Side
23	86+825	87+272	447.00	Both Side
24	89+900	90+500	600.00	Both Side
25	90+500	90+776	276.00	Both Side
26	90+788	91+098	310.00	Both Side
27	91+098	92+800	1702.00	Both Side
28	94+900	95+200	300.00	Left Side
29	95+200	95+717	515.00	Both Side

(b) Lined Open Drain

Sr. No.	Design Chainage (km)		Length (km)	Side
	From	To		
1	67+750	68+260	510.00	Both Side
2	72+360	73+260	900.00	Both Side
3	76+500	76+850	350.00	Left Side
4	76+850	77+260	410.00	Both Side
5	77+260	77+480	220.00	Both Side
6	77+480	77+750	270.00	Both Side
7	77+960	78+380	420.00	Both Side
8	78+610	78+702	92.00	Both Side
9	79+280	79+380	100.00	Both Side
10	79+380	79+510	130.00	Right Side
11	79+510	79+660	150.00	Both Side
12	79+830	80+010	180.00	Both Side
13	80+010	80+600	590.00	Both Side
14	80+600	80+860	260.00	Both Side

Sr. No.	Design Chainage (km)		Length (km)	Side
	From	To		
15	81+090	81+300	210.00	Left Side
16	81+300	81+680	380.00	Both Side
17	81+915	82+045	130.00	Left Side
18	82+770	83+125	355.00	Left Side
19	83+600	83+890	290.00	Right Side
20	85+925	86+250	325.00	Both Side

Unlined & lined drains of minimum linear length 38.142 Km & 34.487 Km respectively, shall conform to the cross-sectional features and other details specified as per section 2.11 in this schedule.

Note: Contractor shall shift any existing irrigation canal within RoW for construction of project Highway. The actual cross section of canal to be shifted and length shall be as per the site requirement and approval of concerned irrigation authority which is deemed to be included in the scope of work.

7 DESIGN OF STRUCTURES

7.1 General

Project Highway is proposed to be constructed to four-lane configuration. Special vehicle loading is to be considered in design of super-structure of all bridges, culverts and structures.

7.1.1 All bridges, culverts and structures shall be designed and construction for IRC class Special vehicle (SV) loading as per IRC: 6 - 2017 in accordance with section-7 of the IRC: SP:84-2019 and shall conform to the cross-sectional features and other details specified therein.

7.1.2 Width of the carriageway of new bridges and structures shall be as given in para 7.3 of Annex-I of Schedule-B.

7.1.3 The following structures shall be provided with footpaths:

S. No.	Design Chainage (Km)	Remarks
1	56+168	Minor Bridge (SR Side only)
2	59+163	Major Bridge
3	60+042	Minor Bridge
4	66+546	Minor Bridge (SR Side only)

S. No.	Design Chainage (Km)	Remarks
5	69+278	Major Bridge
6	75+318	Major Bridge
7	83+254	Minor Bridge
8	84+790	Animal Underpass
9	86+675	AUP Cum Major Bridge

7.1.4 All bridges shall be high level bridges.

7.1.5 All structures shall be designed to carry utility services as per site requirement.

7.1.6 Cross section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross sections given in 2.11 of the Schedule-B.

7.2 Culverts

7.2.1 Overall width of all culverts shall be equal to the roadway width of the approaches. All culverts shall also be provided in median gap and also in gap between main carriageway and service road and continue across service road, in case there is any service road.

7.2.2 Widening of existing culverts

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

S. No	Culvert location	Type	Span/Opening (m)	Width of Existing Culvert (m)	Repair to be carried out
1	62+446	Pipe Culvert	1x1	15.15	30m
2	70+392	Slab	1x2.1	12.85	30m

7.2.3 New Construction of Culverts:

New culverts (given in table below) shall be constructed for width equal to the roadway width of the Project Highway & as per typical cross-section given in the TCS specified in Para 2.11 and alignment plan. The details are given as under:

S. No	Design Chainage (km)	Span Arrangement (m)	Type of Structure Proposed
1	58+444	1X2.0X2.0	RCC Box
2	59+551	1X5.0X3.0	RCC Box

S. No	Design Chainage (km)	Span Arrangement (m)	Type of Structure Proposed
3	64+561	1X2.0X2.0	RCC Box
4	64+735	1X2.0X2.0	RCC Box
5	65+006	1X3.0X3.0	RCC Box
6	65+972	1X3.0X3.0	RCC Box
7	66+086	1X5.0X3.0	RCC Box
8	66+636	1x4.0X3.0	RCC Box
9	73+448	1X3.0x3.0	RCC Box
10	74+138	1X2.0X2.0	RCC Box
11	77+878	1X3.0X3.0	RCC Box
12	78+422	1X2.0X2.0	RCC Box
13	82+208	1X2.0X2.0	RCC Box
14	86+138	1X4.0X4.0	RCC Box
15	86+318	1X4.0X4.0	RCC Box
16	88+158	1X2.0X2.0	RCC Box
17	89+768	2X2.0X2.0	RCC Box
18	91+700	1X2.0X2.0	RCC Box
19	92+757	1X1.2	Pipe Culvert

Note: The overall width of the above culverts is including width of main roadway and Service road/slip roads/ramps, in case there is any Service road/slip roads/ramps.

7.2.4 Reconstruction of Culverts:

S. No	Design Chainage (km)	Span Arrangement (m)	Type of Structure Proposed
1	55+908	1x1.2	Pipe Culvert
2	55+996	1x1.2	Pipe Culvert
3	56+073	1X2.0X2.0	RCC Box
4	56+758	1X3.0X3.0	RCC Box
5	57+849	1X3.0X3.0	RCC Box
6	60+736	1X3.0X3.0	RCC Box

S. No	Design Chainage (km)	Span Arrangement (m)	Type of Structure Proposed
7	61+131	1X2.0X2.0	RCC Box
8	61+976	1X2.0X2.0	RCC Box
9	63+529	1X2.0X2.0	RCC Box
10	63+709	1X2.0X2.0	RCC Box
11	63+822	1x3.0x2.0	RCC Box
12	64+063	1X2.0X2.0	RCC Box
13	64+176	1X1.5X1.5	RCC Box
14	64+470	1X2.0X2.0	RCC Box
15	67+575	1X5.0X3.0	RCC Box
16	68+032	1x1.2	Pipe Culvert
17	68+231	1x2.0x2.0	RCC Box
18	68+432	1x2.0x2.0	RCC Box
19	69+770	1X2.0X2.0	RCC Box
20	70+014	1X2.0X2.0	RCC Box
21	70+342	1X2.0X2.0	RCC Box
22	70+938	1X2.0X2.0	RCC Box
23	71+614	1X2.0X2.0	RCC Box
24	71+917	1X4.0X4.0	RCC Box
25	73+847	1X2.0X2.0	RCC Box
26	74+630	1X2.0X2.0	RCC Box
27	74+725	1X2.0X2.0	RCC Box
28	74+966	1X2.0X2.0	RCC Box
29	75+486	1x1.2	Pipe Culvert
30	75+858	1X2.0X2.0	RCC Box
31	76+017	1x1.2	Pipe Culvert
32	76+147	2X3.0X3.0	RCC Box
33	76+427	1x2.5x2.0	RCC Box

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S. No	Design Chainage (km)	Span Arrangement (m)	Type of Structure Proposed
34	76+762	1x1.2	Pipe Culvert
35	78+387	1X2.0X2.0	RCC Box
36	78+580	1X2.0X2.0	RCC Box
37	79+144	2x1.2	Pipe Culvert
38	79+472	1X2.0X2.0	RCC Box
39	79+806	1x3.0x3.0	RCC Box
40	80+936	1X5.0X3.0	RCC Box
41	81+070	2x1.2	Pipe Culvert
42	81+267	1X2.0X2.0	RCC Box
43	82+808	1X2.0X2.0	RCC Box
44	83+404	1X2.0X2.0	RCC Box
45	83+739	1X2.0X2.0	RCC Box
46	84+651	1X4.0X4.0	RCC Box
47	84+868	1X4.0X4.0	RCC Box
48	85+056	1X4.0X4.0	RCC Box
49	85+168	1X3.0X3.0	RCC Box
50	90+549	2X3.0X3.0	RCC Box
51	90+747	1X1.5X1.5	RCC Box
52	91+300	1X1.5X1.5	RCC Box

Note: The overall width of the above culverts is including width of main roadway and Service road/slip roads/ramps, in case there is any Service road/slip roads/ramps.

7.2.5 Cross Road Culverts

S.no	Exiting chainage (Km)	Design Chainage (km)	Existing Arrangement	Existing Type	Total Width	Type of Structure Proposed	Proposed Arrangement	Proposal Type
1	-	59+723A	-	-	7	RCC Box	1X2.0X2.0	RCC Box
2	-	71+345A	-	-	12	RCC Box	1X2.0X2.0	RCC Box
3	-	71+660A	-	-	8	RCC Box	1X2.0X2.0	RCC Box

NOTE: Drains for field channel as per site condition and modification to the irrigation requirement shall be part of scope.

1. The overall width of the above culverts shall be equal to Roadway width including median & slip roads/ramps, in case there is any slip roads/ramps. Any additional Barrel length required as per site conditions shall not constitute a Change of Scope.
2. Locations of the above culverts are indicative and span arrangement is minimum requirement. Exact location of these culverts shall be decided in consultation with Independent Engineer. The actual vent way/span arrangements of culverts shall be determined on the basis of detailed investigations by the Concessionaire in accordance with the Specifications and Standards. Any variations in vent way/span arrangements specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 16.

Sr. No	Design Chainage (km)	Type of repair required
Nil		

Note:

1. Any existing culverts falling within in PRow as per Schedule-A shall be undertaken for repairs, if required as per site conditions in consultation with Independent Engineer/NHAI and shall not constitute a Change of Scope.
2. Floor protection works shall be carried out as specified in the relevant IRC codes and specifications.
3. In case of culverts proposed for widening/repair as per details in Clause 7.2.3 above, the same shall be re-constructed if the design shows that these are unsafe for design loads. No change of scope shall be considered in such cases.

7.3 Bridges

7.3.1 Existing bridges to be re-constructed/widened:

Existing bridges at the following locations shall be reconstructed as new structures:

Sr. No	Design Chainage (Km)	Minimum Waterway (m)	Proposed width (m)	Remarks
1	83+254	10	2X12.5	Reconstruction

Existing narrow bridges at the following locations shall be retained and widened:

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Sr. No	Design Chainage (Km)	Proposed Span (m)	Proposed length (m)	Total Proposed width (m)	Type of Structure Proposed	Remarks
Nil						

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

Major Bridges

Sr. No	Design Chainage (Km)	Minimum Waterway (m)	Proposed width (m)
1	59+163	400	2X12.5
2	69+278	330	2X12.5
3	75+318	100	2X12.5
4	87+484	440	2X11.0 (MCW)

Minor Bridge

Sr. No	Design Chainage (Km)	Minimum Waterway (m)	Total Proposed width (m)
1	56+178	50	1x11.0 (LSR)+1x10.5(LMCW)
2	60+042	36	2x12.5
3	66+546	17.2	2x11.0(MCW)+1x11.0(LSR)

7.3.3 Repair/replacements of railing/parapets of the existing bridges shall be undertaken as follows:

Sr. No.	Location of Bridges (km)	Nature of extent of repairs/ strengthening to be carried out
Nil		

7.3.4 Drainage system for bridge decks

An effective drainage system for bridge decks shall be provided as specified in paragraph 7.20 of the IRC: SP:84-2019

7.3.5 Structures in marine environment: NIL

7.4 Road Over Bridges (ROB)

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified in Section 7 of the IRC: SP:84-2019.

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

Sr. No.	Design Chainage (km)	Proposed Span Arrangement (m)	Total Width (m)	Condition	Remarks
Nil					

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

Sr. No.	Design Chainage (km)	Proposed Span Arrangement (m)	Name of crossing	Total Width (m)	Remarks
Nil					

7.5 Grade separated structures

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2.9, 2.10 and 3 of Annex-I of Schedule-B.

7.6 Repairs and strengthening of Bridge/Structures

The existing structures to be repaired/ strengthened, and the nature and extent of repairs strengthening required: Nil

8 TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

8.1 Traffic control devices and road safety works shall be provided in accordance with Section 9 of the IRC: SP:84-2019.

8.2 Traffic Signs:

Traffic signs include roadside signs, overhead signs and curb mounted signs along the entire

Project Highway.

8.3 Pavement Marking:

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

8.4 Safety Barrier:

W - beam crash barrier for a minimum length of 9.3 Km & THRIE-Beam crash barrier for a minimum length of 29.5 Km along the project highway shall be provided. The location shall be finalized as per site requirement in consultation with the Independent Engineer.

Sheeting shall be provided in accordance with Section 9 of the IRC: SP: 84-2019.

Noise Barrier & RCC precast Panel shall be provided in approach of Animal Overpass.

9 COMPULSORY AFFORESTATION

Minimum 4838 Nos. of trees are required to be planted by the Concessionaire as compensatory afforestation in accordance with IRC: SP:84-2019, keeping in view IRC: SP:21-2009. Any increase in No. of trees shall not be treated as 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.

10 HAZARDOUS LOCATIONS

The safety barriers shall be provided at the following hazardous location in consultation with the NHAI/Independent Engineer:

Sr. No.	Location Stretch		LHS/RHS
	From (Km)	To (Km)	
	Nil		

11 SPECIAL REQUIREMENT:

RE/Retaining walls/Breast Wall and other protection works shall be provided as shown in TCS (ANNEX-II Schedule-B). Location of the retaining wall/Breast wall is given below and shall be considered as minimum requirement.

11.1 Retaining Wall:

S. No.	Start Chainage	End Chainage
1	55+900	56160
2	56+200	56+420
3	64+720	65+000

S. No.	Start Chainage	End Chainage
4	66+480	66+540
5	66+560	66+900
6	67+500	67+700
7	68+240	68+480
8	69+240	69+360
9	71+500	71+760
10	71+840	72+340
11	78+580	78+820
12	78+875	79+020
13	80+860	81+070
14	81+660	82+460
15	82+560	83+240
16	84+260	84+760
17	84+820	85+240
18	86+100	86+520
19	87+740	87+940

11.2 Breast Wall:

S. No.	Start Chainage	End Chainage
1	77040	77740
2	77960	78360
3	79830	80860
4	81080	81200
5	81440	81660
6	82920	83140
7	85925	86080

In addition to Retaining Wall & Breast Wall, PCC Toe wall of minimum length of 1.680 Km shall also be provided to accommodate TCS within PROW.

1. The exact location and type of retaining structures shall be finalized in consultation with the IE and any change in location shall not be construed as change in the scope of work.
2. The above list is indicative. RE wall/Retaining/any other wall shall be provided wherever required in order to restrict the embankment slope within the proposed Right of Way. The

actual length as required on the basis of detailed investigations shall be determined in accordance with the Specification and Standards. The change in the length shall not be construed as change of work.

11.3 Stream Diversion

Concessionaire shall shift the Irrigation canal/stream at the locations detailed below for the construction of project highway. The typical cross-section of the proposed canal/Stream is enclosed at Annexure-II (Schedule B) for reference.

S. No.	Start Design Chainage (km)	End Design Chainage (km)	Side	Length (Km)	Section	Remarks
1	59+606	59+720	RHS	0.114	2x2	
2	85+638	85+760	LHS	0.122	6x3	

(LHS-Left Hand Side, RHS-Right Hand Side)

Note:

1. At the location of stream diversion parallel to the Road embankment, the road embankment slope shall be protected by providing boulder pitching which is deemed to be included in scope of work.
2. The actual cross-Section of canal/stream to be shifted and extent of such shifting(length) shall be determined by the Concessionaire as per site/design requirement with approval of concerned irrigation authority & Independent Engineer. Any variation in the cross-section and length specified in this Clause 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.

12 RAINWATER HARVESTING

As per Ministry of Environment and Forests Notification, New Delhi dated 14.01.1997 (as amended on 13.01.1998, 05.01.1999 & 6.11.2000), the construction of rain water harvesting structure is mandatory in and around Water Crisis area, notified by the Central Ground Water Board. The provision of rain water harvesting shall be provided at every 500m in the entire project length and shall be executed as per requirement of IRC SP: 42-2014 and IRC SP: 50-2013.

13 CHANGE OF SCOPE:

The length of Structures and bridges specified herein above shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Concessionaire in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 16.

14 Utilization of Fly Ash

Utilization of Fly ash shall be as per notification under Environment Protection Act, 1986. Ministry of Environment & Forest, Govt. of India have brought out Fly Ash Notification S. O. 763(E) dated 14 Sept 1999, its amendment notification on S. O. 979(E) dated 27 Aug 2003 and notification S.O. 2804(E) dated 3 Nov 2009 and 25-01-2016 and Ministry of Power OM dated 22.10.2021 and as and when amended.

15 SHIFTING OF UTILITIES

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

Note I: -

1. The type/spacing/size/specifications of poles/towers/line/cables to be used in shifting work are as per the guidelines of utility owning department and it is to be agreed solely between the Concessionaire and the Utility owning department. No change of scope shall be admissible and no cost shall be paid for using different type/spacing/size/specifications in shifted work in comparison to those in the existing work or for making any overhead crossings to underground as per requirement of utility owning department and/or construction of project highway. The Concessionaire shall carry out joint inspection with utility owning department and get the estimates from utility owning department. The assistance of the Authority is limited to giving forwarding letter on the proposal of Concessionaire to utility owning department whenever asked by the Concessionaire. The decision/approval of utility owning department shall be binding on the Concessionaire.
2. 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 Concessionaire furnishes demand of Utility Owing Department along with a copy of estimated cost given by the latter.
3. The dismantled material/scrap of existing Utility to be shifted/dismantled shall belong to the Concessionaire who would be free to dispose-off the dismantled material as deemed fit by them unless the Concessionaire is required to deposit the dismantled material to Utility owning department as per the norms and practice and, in that case the amount of credit for dismantled material may be availed by the concessionaire as per the estimate agreed between them.
4. The utilities shall be handed over after shifting work is completed to Utility Owing Department to their entire satisfaction. The maintenance liability shall rest with the Utility Owing Department after handing over process is complete as far as utility shifting works are concerned.

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Note II: - It is obligation of successful bidder to keep all public utilities functional all time without any cost to Authority beyond quoted amount. Copy of Utility shifting plans enclosed as Annexure-III to Schedule A

Construction of Four-Laning of Pileru-Kaluru (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

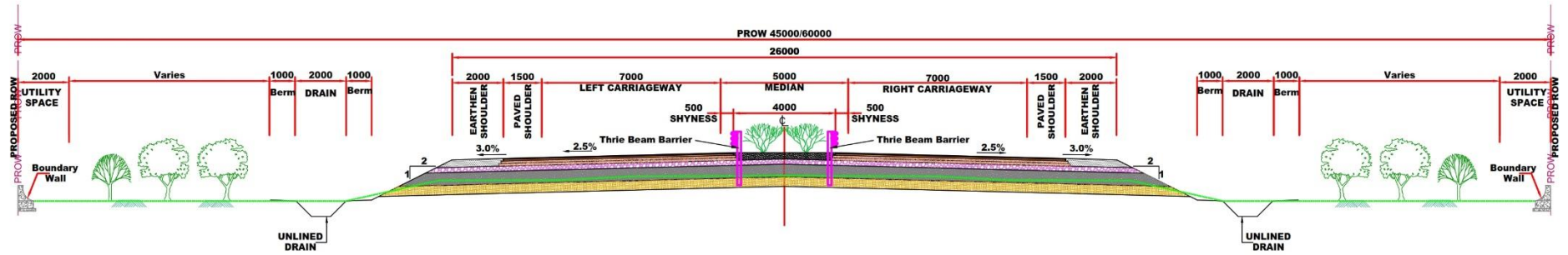


Fig. 2.4(A)
4-Lane Divided Highway Without Service Road New Construction/Reconstruction
(Open Country Plain/Rolling Terrain)

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

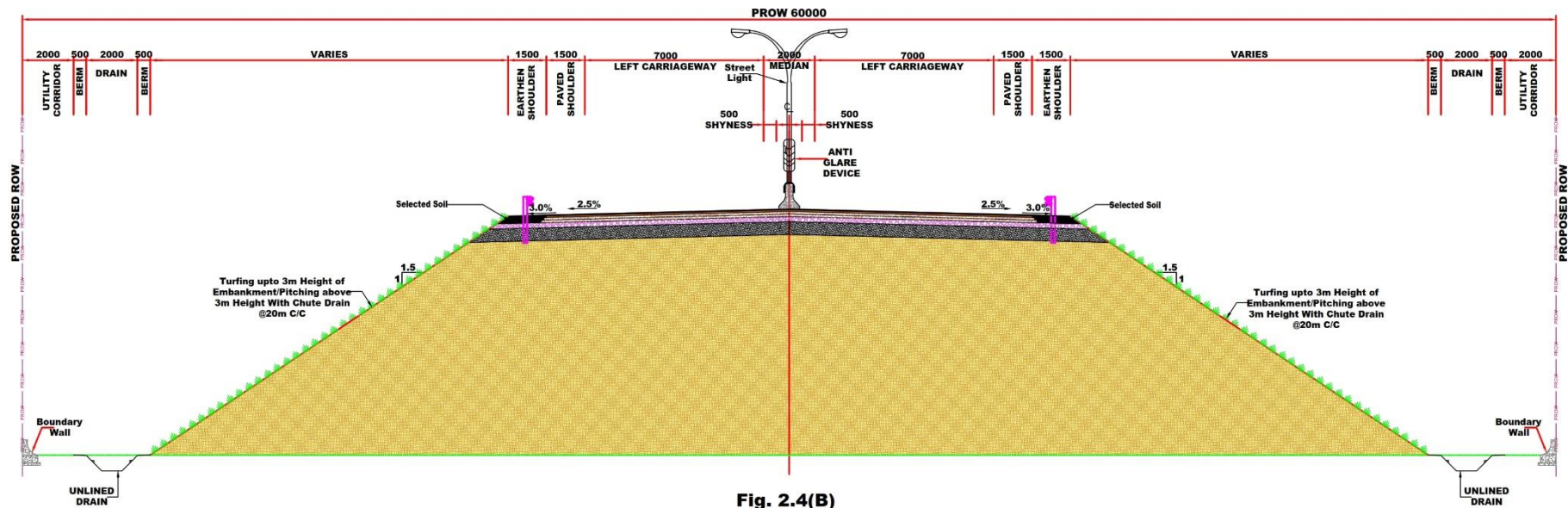


Fig. 2.4(B)
4-Lane Divided Highway for Approach to Underpass/Bridges at Embankment Location
(Open Country in Plain/ Rolling Terrain)

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

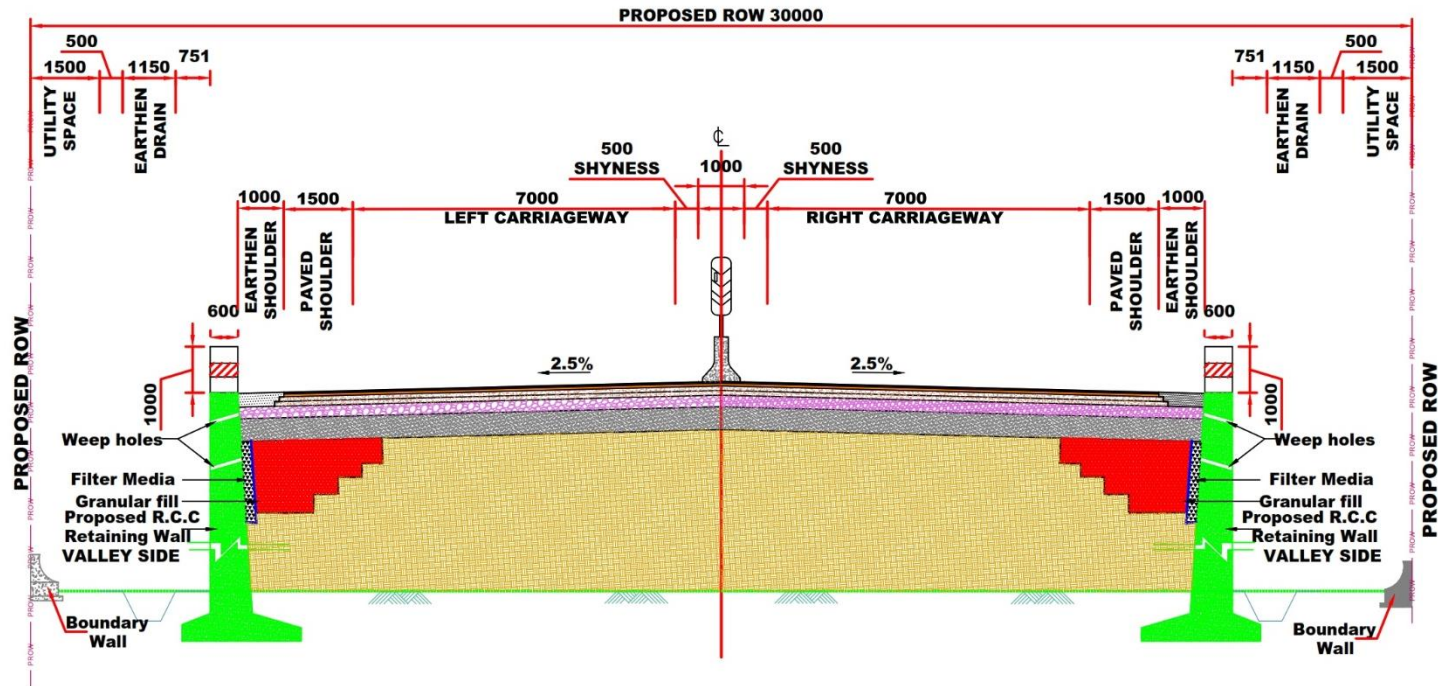
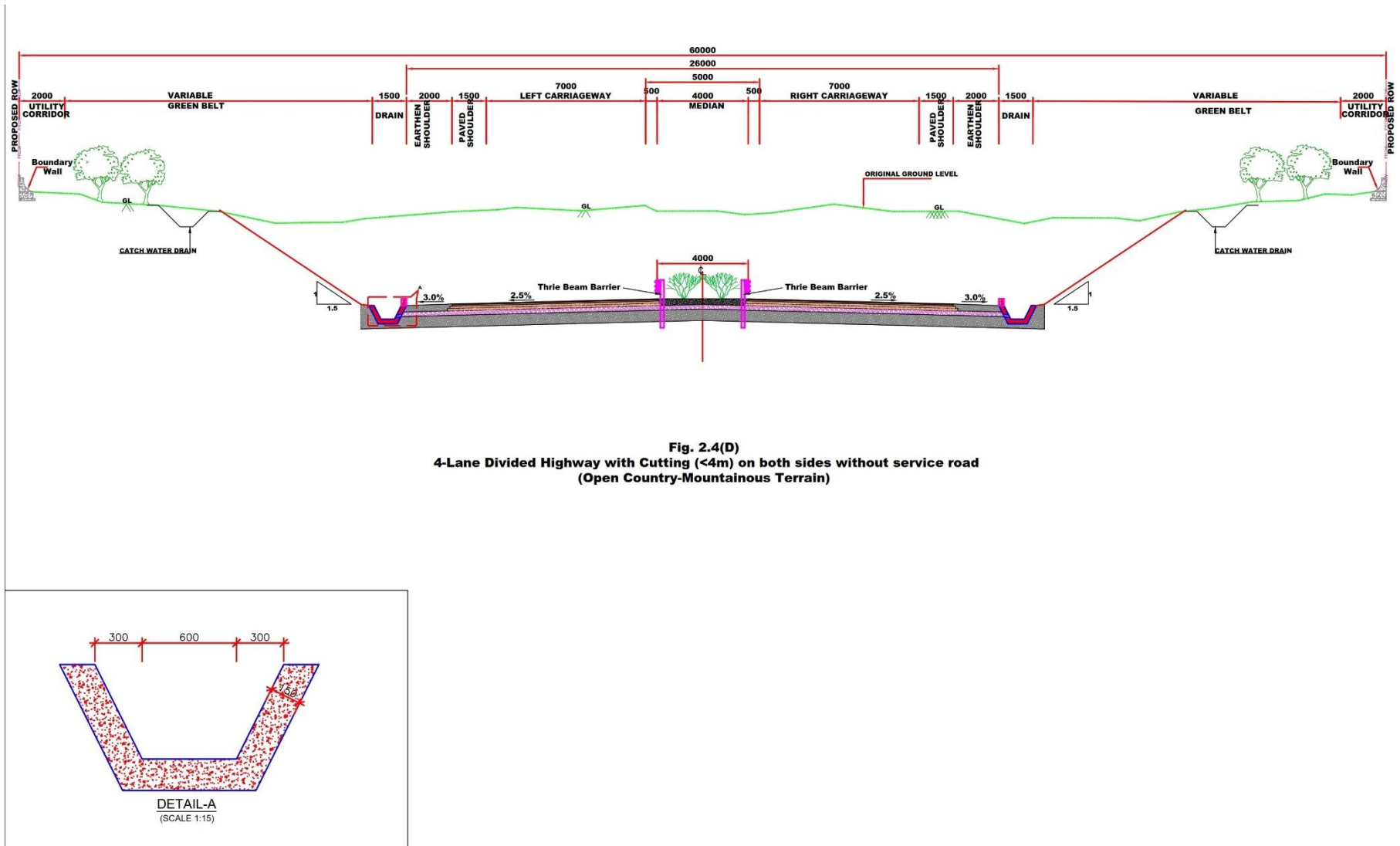


Fig. 2.4(C)
4- Lane Divided Highway with Filling in Reserve Forest- 30m PROW

Construction of Four-Laning of Pileru-Kaluru (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana



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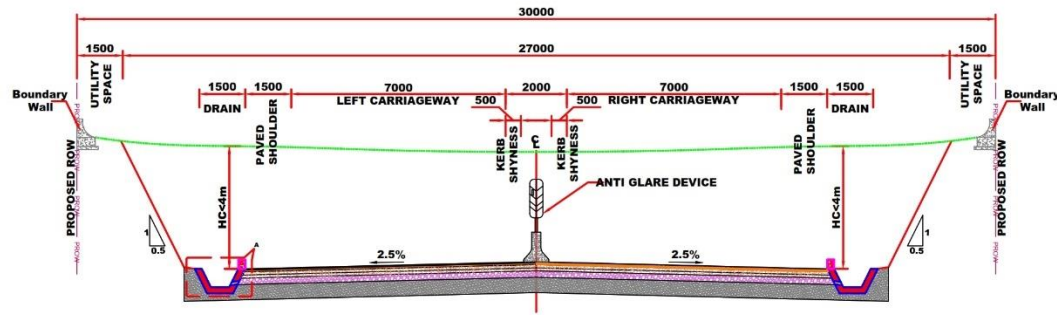
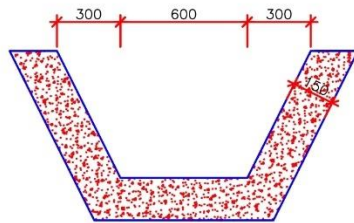


Fig. 2.4(E)
4- Lane Divided Highway with Cutting (<4m) on Both Side in Open Country-Mountainous Terrain
(Reserve Forest- 30m PROW)



DETAIL-A
 (SCALE 1:15)

Construction of Four-Laning of Pileru-Kaluru (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

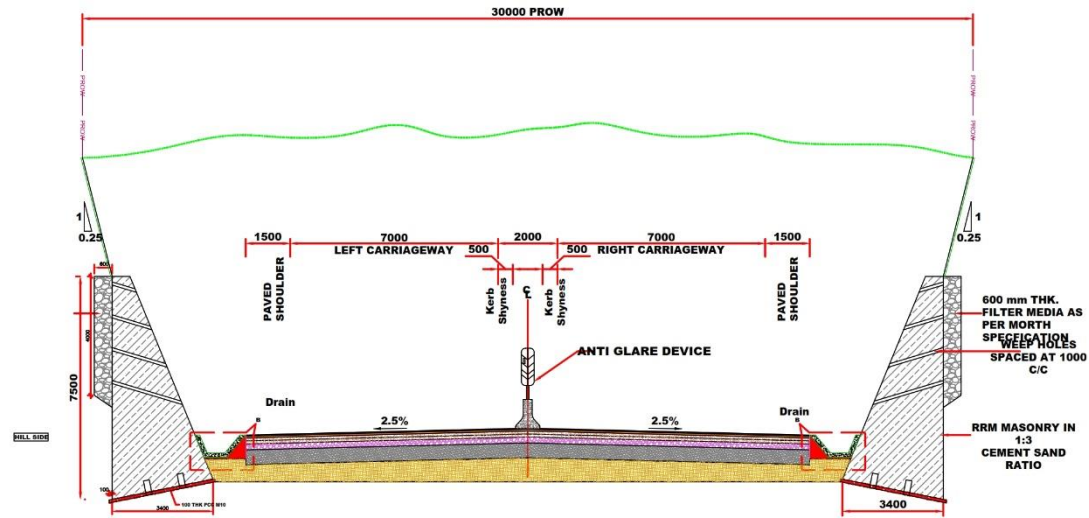
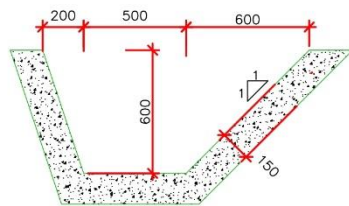


Fig. 2.4(F)
4-Lane Divided Highway with Cutting (>4m) on Both Side in Mountainous Terrain (Reserve forest)



DETAIL-B
 (SCALE 1:15)

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

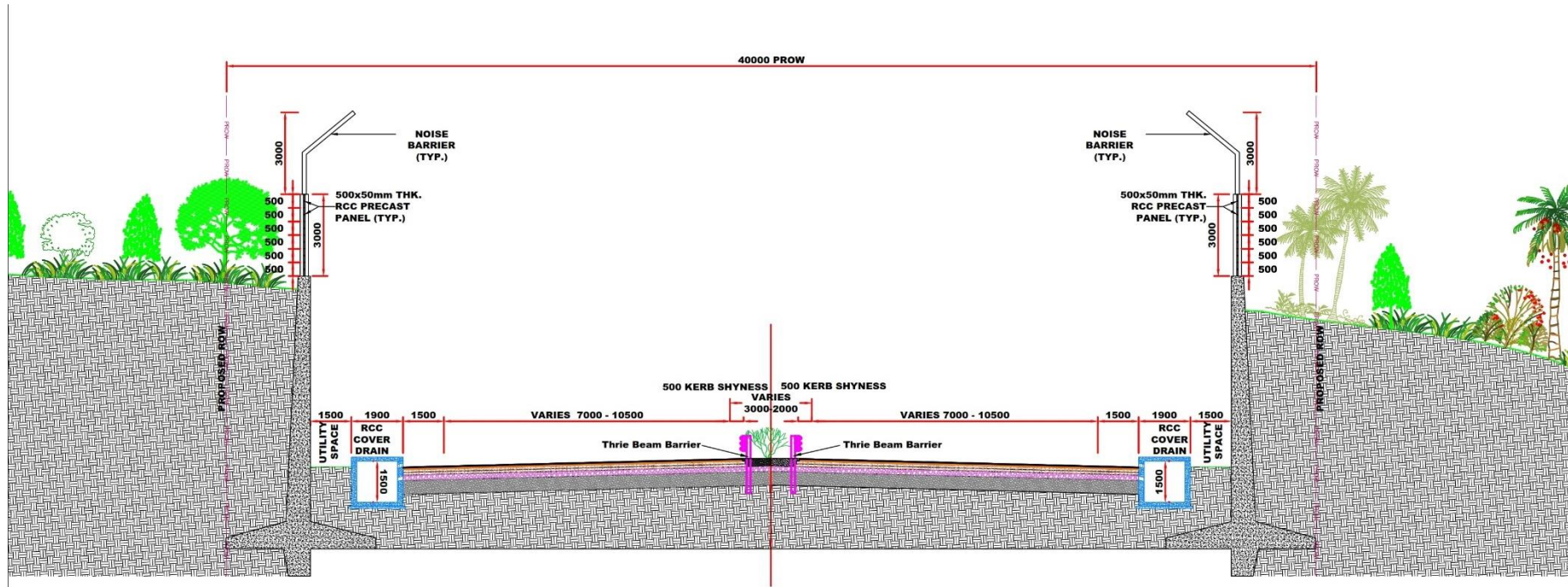


Fig. 2.4(G)
Approaches to Animal Overpass For Mountainous Terrain
(Reserve Forest- 40m PROW)

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

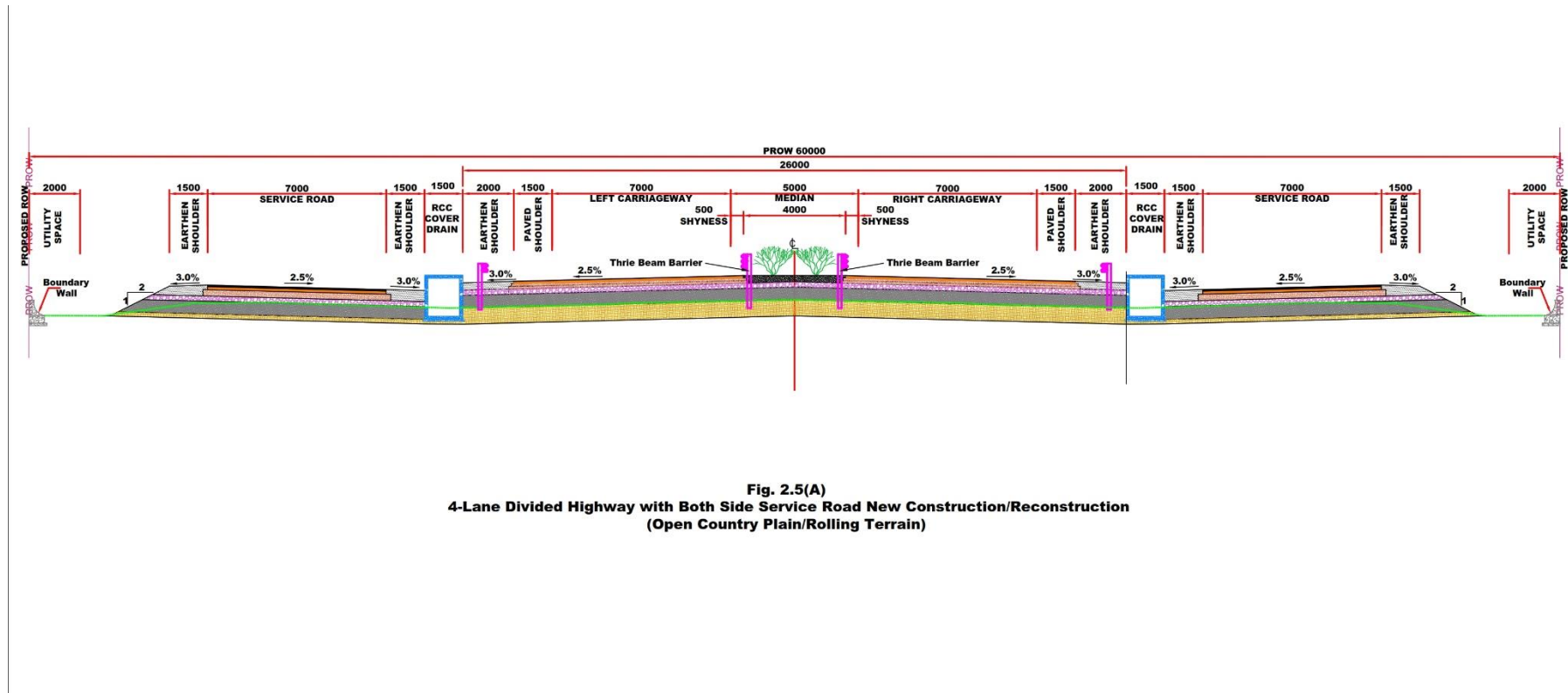
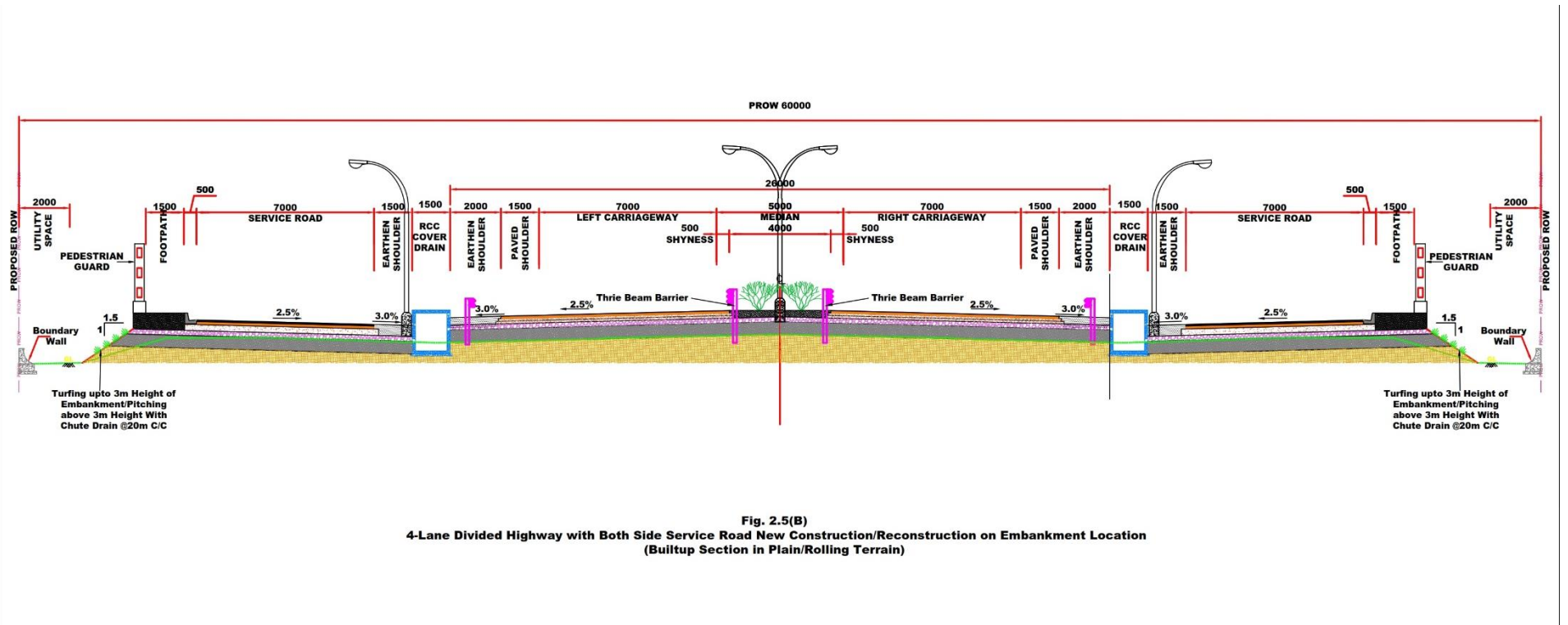


Fig. 2.5(A)
4-Lane Divided Highway with Both Side Service Road New Construction/Reconstruction
(Open Country Plain/Rolling Terrain)

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana



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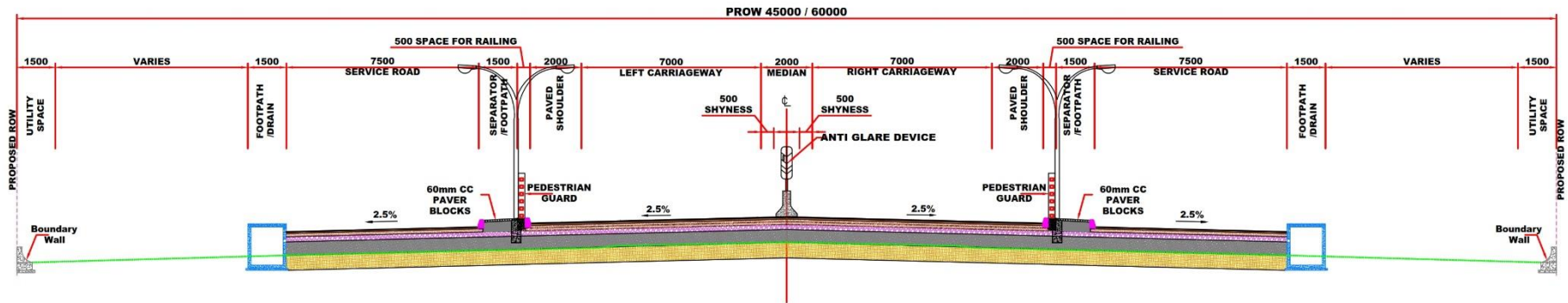


Fig. 2.6(A)
4-Lane Divided Highway with Service Road and With Flush Median
(BUILT-UP SECTION IN PLAIN/ROLLING TERRAIN)

Construction of Four-Laning of Pileru-Kaluru (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

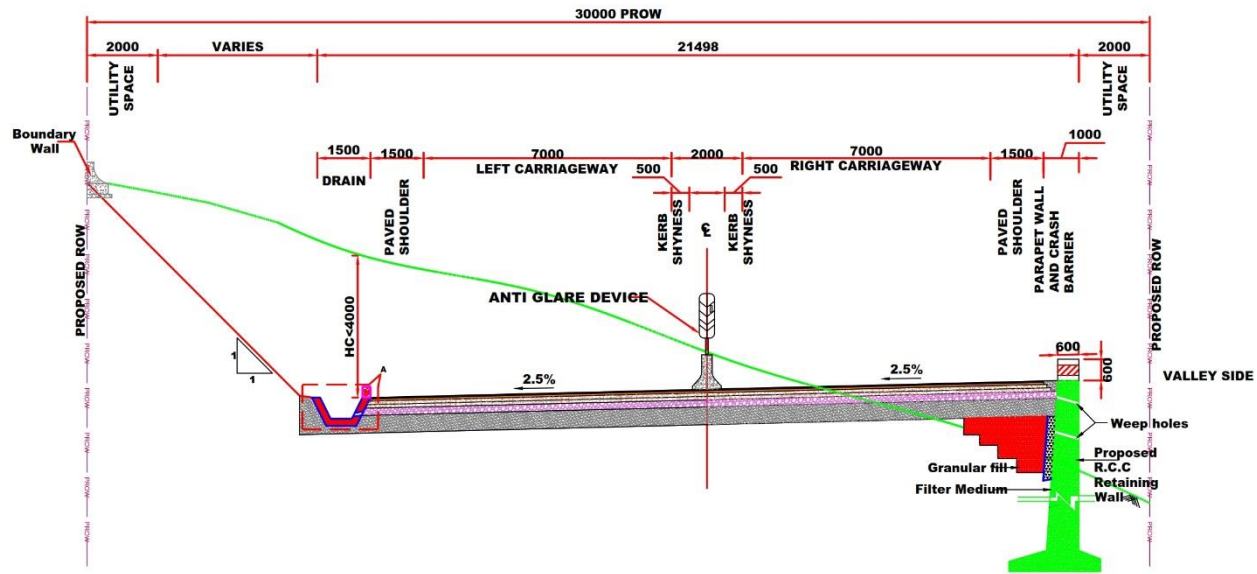
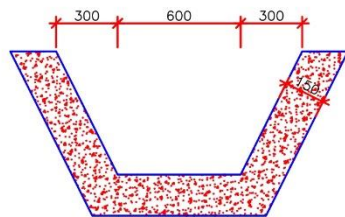


Fig. 2.9(A)
4- Lane Divided Highway with Cutting (<4m) on LHS and filling on RHS in Mountainous Terrain (Reserve Forest- 30m PROW)



Construction of Four-Laning of Pileru-Kaluru (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

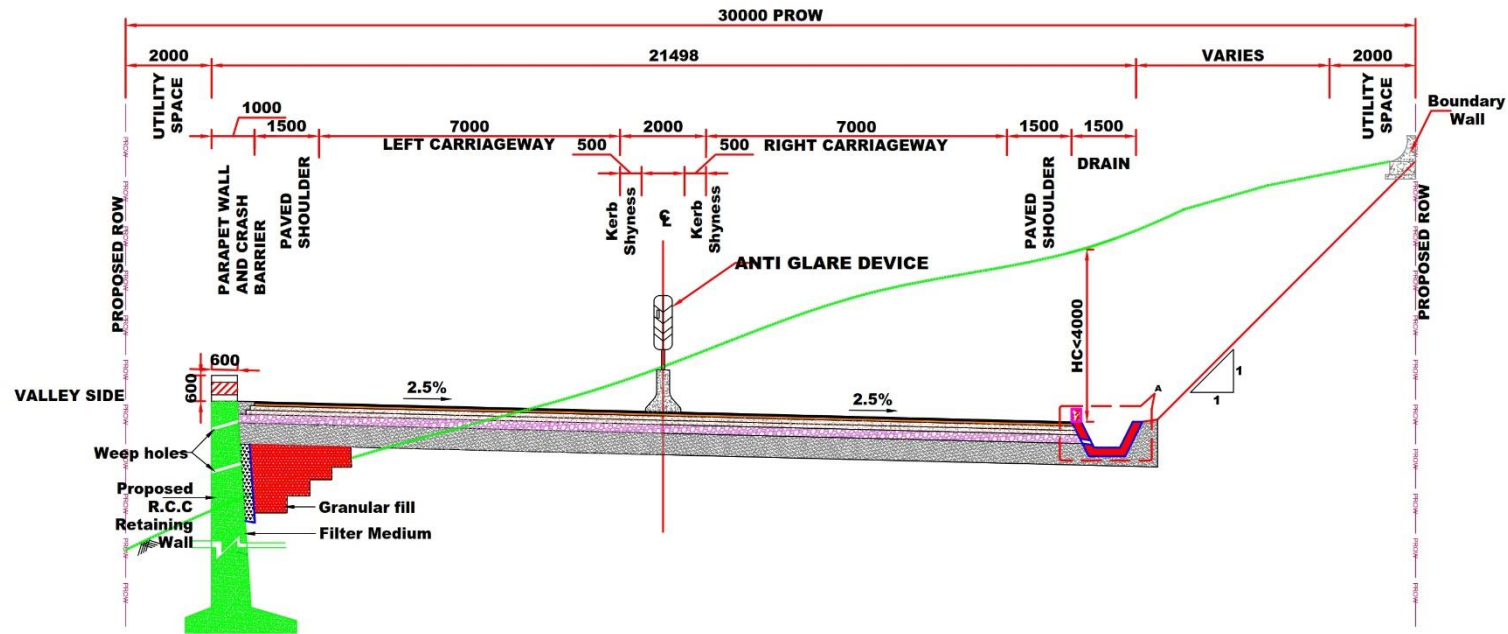
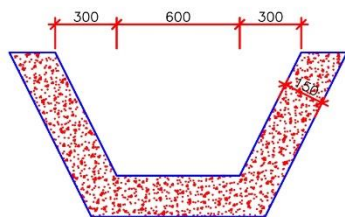


Fig. 2.9(B)
4- Lane Divided Highway with Cutting (<4m) on RHS and Filling on LHS in Mountainous Terrain (Reserve Forest- 30m PROW)



DETAIL-A
 (SCALE 1:15)

Construction of Four-Laning of Pileru-Kaluru (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

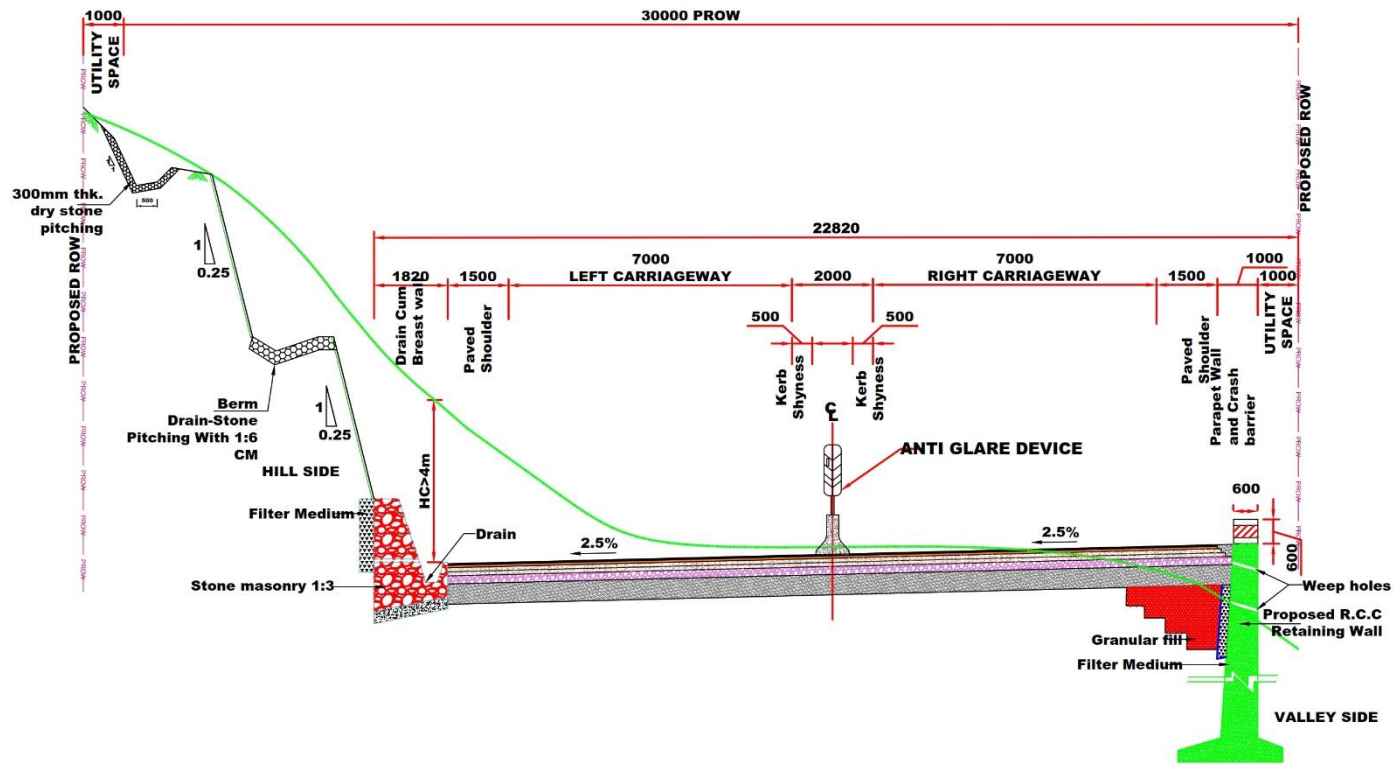


Fig. 2.9(C)
4-Lane Divided Highway with Cutting (>4 m) on LHS and filling on RHS in Mountainous Terrain in Reserve Forest Section (30 m PROW)

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

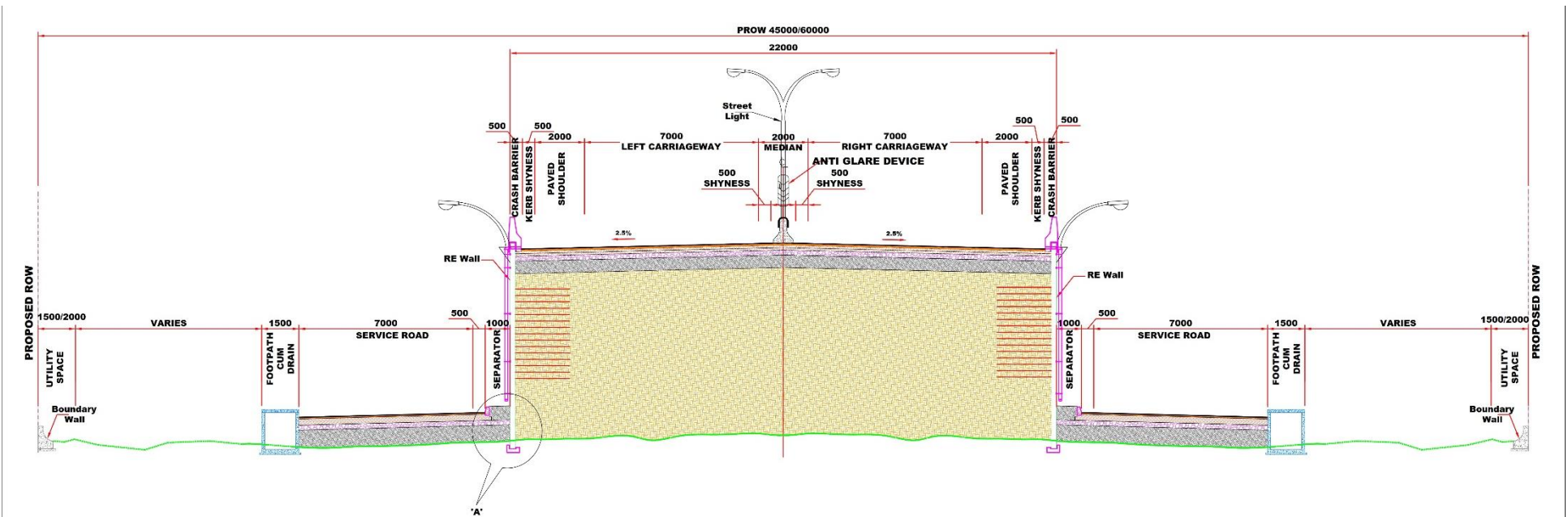
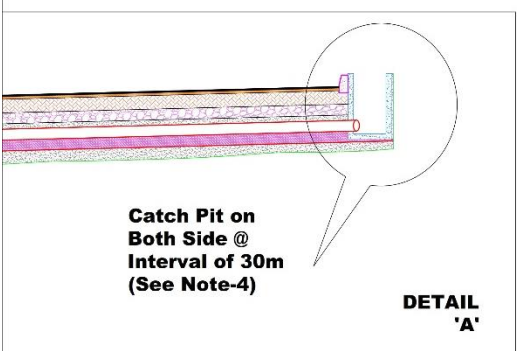
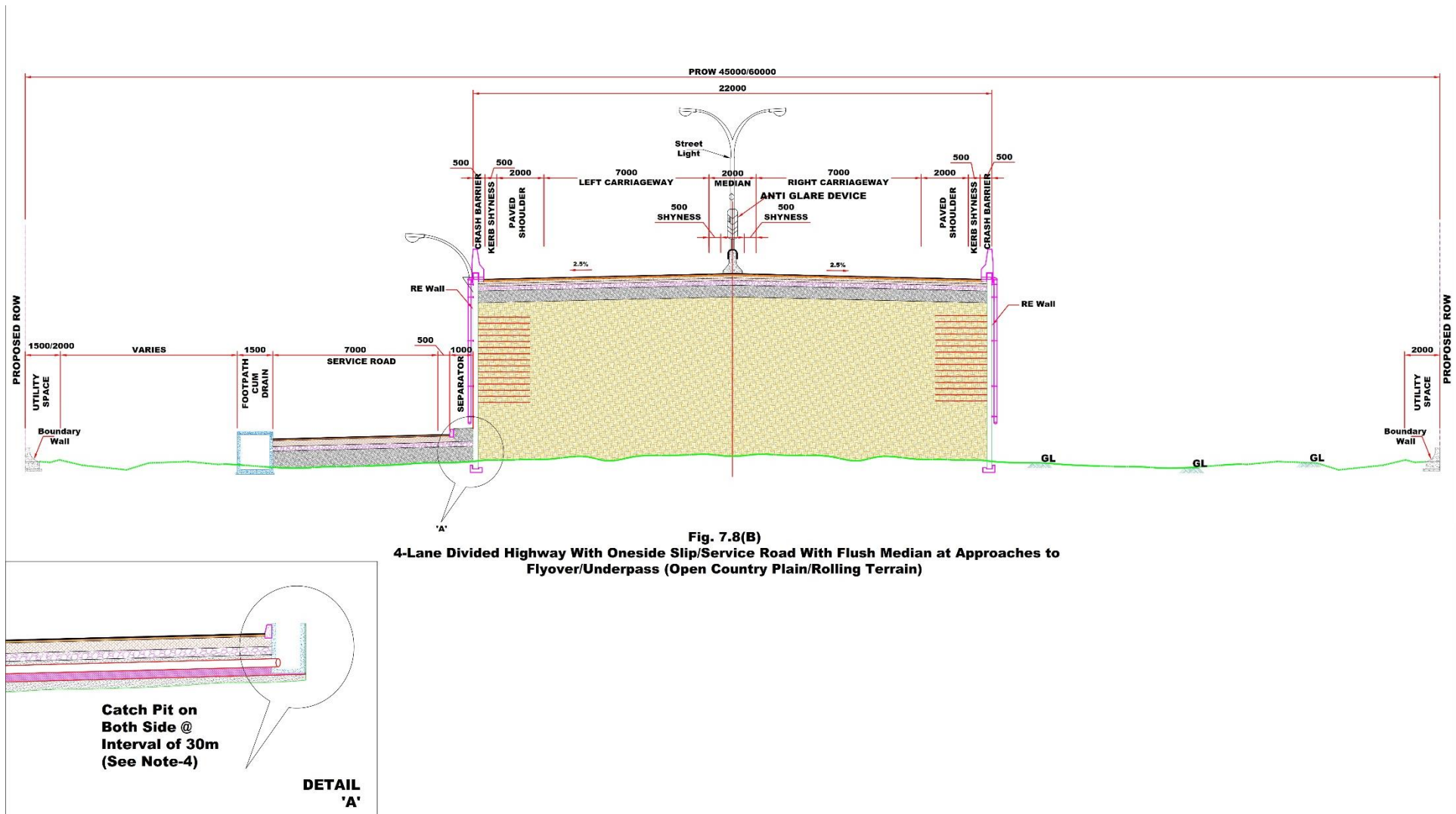


Fig. 7.8(A)
4-Lane Divided Highway With Both Side Service Road and With Flush Median at Approaches to Flyover/Underpass (Plain/Rolling Terrain)



Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana



Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

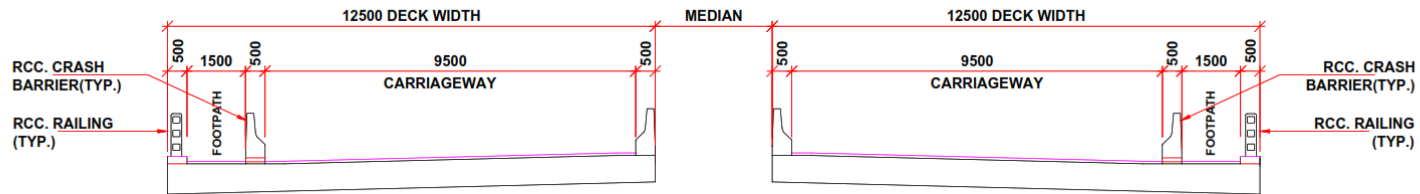


FIG. 7.2 (a): CROSS SECTION OF BRIDGE AT DECK LEVEL - WITH FOOTPATH 4 LANE DIVIDED HIGHWAY
(SCALE-1:125)

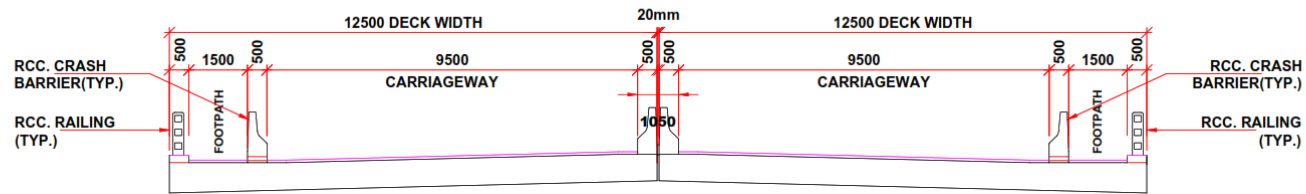


FIG. 7.2 (b): CROSS SECTION OF BRIDGE/AUP
(SCALE-1:125)

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

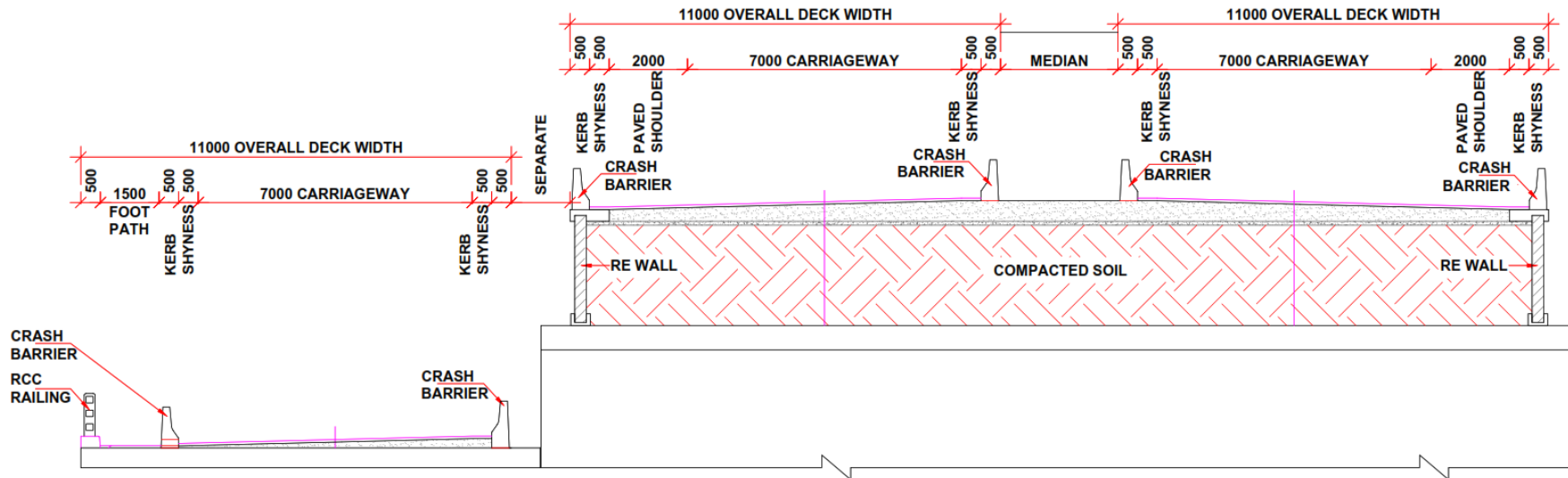


FIG. 7.2 (c): CROSS SECTION OF BRIDGE AT CH.-66+546
(SCALE-1:125)

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana

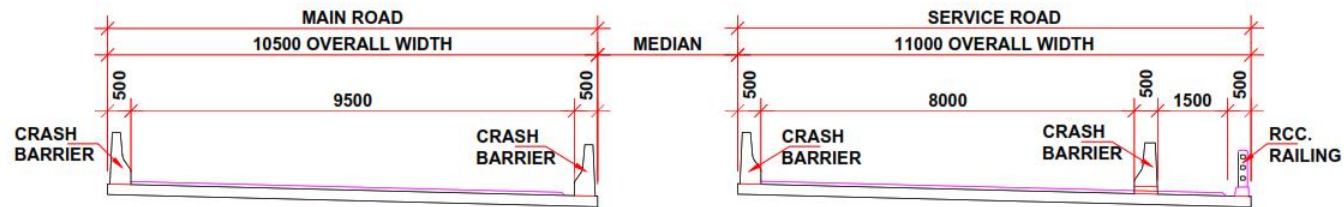
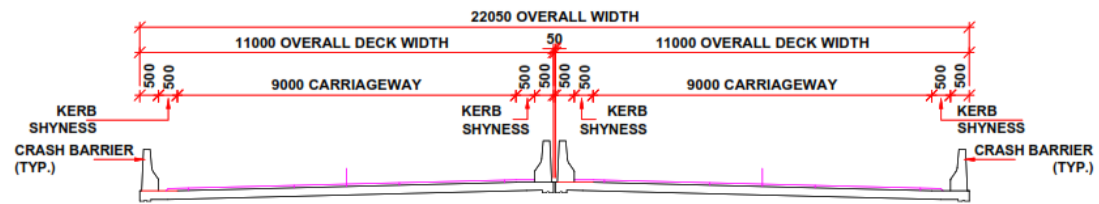
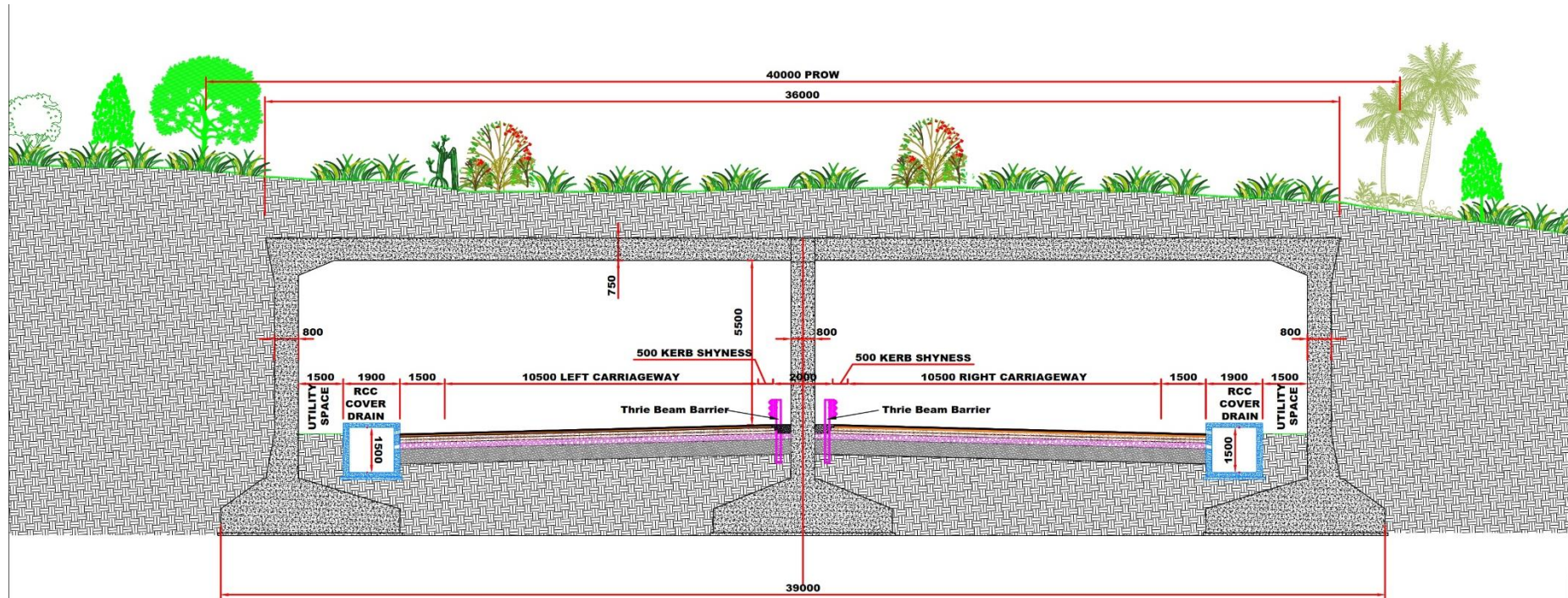


FIG. 7.2 (d): CROSS SECTION OF BRIDGE AT CH.-56+178
(SCALE-1:125)



**FIG. 7.8 (a): CROSS SECTION OF GRADE SEPERATED
STRUCTURE VEHICULAR UNDERPASS: ELEVATED
SECTION 4-LANE DIVIDED HIGHWAY**
(SCALE-1:125)

Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana



**6- Lane Divided Highway Animal Overpass For 6 Lane in Mountainous Terrain
(Reserve Forest- 40m PROW)**

SCHEDULE -C

(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

1.1 The Concessionaire shall construct the project facilities in accordance with the provisions of this agreement. Such Project facilities shall include:

- (a) Toll Plaza**
- (b) Road side furniture**
- (c) Operation and Maintenance Centers**
- (d) Way side amenities / Rest Areas**
- (e) Smaller Parking Places with Toilet Facilities Service Area**
- (f) Truck Parking Areas**
- (g) Pedestrian Facilities/ Cattle Crossings**
- (h) Lighting**
- (i) Environmental Management Plan**
- (j) Landscaping and Tree Plantation**
- (k) Advanced Traffic Management System (ATMS)**
- (l) Rain water harvesting**
- (m) Utilities**
- (n) Traffic aid posts**
- (o) Medical aid posts**
- (p) Vehicle rescue posts**
- (q) Provision of Vehicle**
- (r) Others**

2 Project Facilities to be completed on or before project completion date have been described in Annex-I of this Schedule-C.

ANNEX - I
(Schedule-C)
PROJECT FACILITIES

1 Project Facilities

1.1 The Concessionaire shall construct the Project Facilities described in this Annex-I to form part of the Project Highway. The Project Facilities shall include:

- (a) Toll Plaza
- (b) Road side furniture
- (c) Operation and Maintenance Centres
- (d) Way side amenities / Rest Areas
- (e) Smaller Parking Places with Toilet Facilities Service Area
- (f) Truck Parking Areas
- (g) Lighting
- (h) Environmental Management Plan
- (i) Landscaping and Tree Plantation
- (j) Advanced Traffic Management System (ATMS)
- (k) Rain water harvesting
- (l) Utilities
- (m) Traffic aid posts
- (n) Medical aid posts
- (o) Vehicle rescue posts
- (p) Provision of Vehicle
- (q) Others

2 Description of Project Facilities

2.1 Toll Plaza

The Toll Plaza shall be provided on main carriageway as per Schedule D and minimum lane requirement in the opening year are as follows.

Toll Plaza location and Minimum Lane Requirement in the Opening Year

Sr. No.	Toll Plaza	Location	Direction (Entry: to highway, Exit: from Highway)	No. of toll lanes (ETC + Extra Wide)
1	Toll Plaza	74+874	Pileru to Tirupati	3+1
			Tirupati to Pileru	3+1

Note:

1. The Toll Plaza shall be constructed as per IRC: SP 84-2019 considering the modification as per NHA Circular NHA/Policy Guidelines/Management of Toll Plaza/2021 Policy Circular No. 17.5.82 dated 24th May, 2021.
2. Based on the minimum toll lane requirement as given above, toll booths, toll Booth complex, weigh bridges, electrical systems, and all other facilities required/mentioned in manual shall be provided as per Schedule D with approval from IE and NHA. All the structures shall be RCC framed structure as per schedule D.
3. RE wall/Retaining wall shall be provided at toll Booth locations to restrict the embankment slope within the right of way.
4. No. of toll lane specified above are minimum indicative. The Concessionaire shall design and provide toll lane as per IRC: SP: 84:2019 & NHA Circular NHA/Policy Guidelines/Management of Toll Plaza/2021 Policy Circular No. 17.5.82 dated 24th May, 2021. subject to minimum specified above. Any increase in no. of toll lane shall not be treated as 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.
5. All Toll Lanes to be equipped with Hybrid ETC equipment's as per NHA/Policy Guidelines/Management of Toll Plaza/2021 Policy Circular No. 17.5.82 dated 24th May, 2021.
6. A separate toilet facility for road users shall be provided near toll plaza location along with parking facility. One toilet block on each direction shall be provided as per drawing at Annex-I of Schedule-C. These toilet facilities shall follow CPWD specifications for sanitary ware items and fittings such as EWC, wash basin, Wash basin-Under counter, Urinal flat back, PVC Cistern, IWC Orissa Pan, Flush Value -CP, Wash Basin pillar cock-CP, Bib Cock-CP, Health Faucet, W/c Bib cock, Wash Basin angle cock.
7. Point of Sale (POS) with card swapping machines shall be provided.
8. Overhead signs shall be provided as per Schedule-D.

2.2 Road side furniture

2.2.1 Kilometre and Hectometre Stones

Kilometre and Hectometre stones shall be provided in accordance with Schedule - D.

2.2.2 Road Signs

The Road Signs on Highway shall be provided in accordance with Schedule - D.

2.2.3 Road Marking

The Road Marking on Highway shall be provided in accordance with Schedule - D.

2.2.4 Road Delineators

The Road Delineators on Highway shall be provided in accordance with Schedule - D.

2.2.5 Reflective Pavement Markers & Solar Studs

The Reflective Pavement Markers & Solar Studs on Highway shall be provided in accordance with Schedule - D.

2.2.6 Traffic Impact Attenuators

The Traffic Impact Attenuators on Highway shall be provided in accordance with Schedule - D.

2.2.7 Crash Barriers

Crash Barrier and Median Barrier shall be provided as indicated in Typical Cross Section which is bare minimum requirement. In addition to that Crash barrier shall be provided in accordance with Schedule-D.

2.3 Operation and Maintenance centres

Dedicated operation and maintenance center shall be provided in accordance to Schedule D.

2.4 Way side Amenities / Rest Areas

Land for construction of rest area/WSA is at following location. Construction of way side amenities/Rest Area is not in the scope of the Concessionaire. Concessionaire shall however, provide the connectivity of Service Road to Way side amenities (refer Alignment Plan Annex-III Schedule-A) & has to be demarcated by fencing of the land acquired.

Sl. No.	Chainage (km)	Side	Length (m)	Width (m)	Area (m2)
1	71+050	Left	100	50	5000
2	71+750	Right	100	50	5000

2.5 Truck lay-byes:

The truck lay-bye shall be provided at below given location.

Sr. No.	Design Chainage (km)	Side	Remarks
1	63+110	RHS	
2	62+210	LHS	

2.6 Bus-bays:

The Bus-bays with Shelters shall be provided at the following location.

Sr. No.	Design Chainage	Side	Remarks
1	58+318	LHS	BUS BAY
2	58+318	RHS	BUS BAY

Sr. No.	Design Chainage	Side	Remarks
3	61+100	LHS	BUS BAY
4	60+800	RHS	BUS BAY
5	64+010	LHS	BUS BAY
6	64+330	RHS	BUS BAY
7	66+900	LHS	BUS BAY
8	67+170	RHS	BUS BAY
9	73+950	LHS	BUS BAY
10	73+650	RHS	BUS BAY
11	87+170	LHS	BUS BAY
12	87+065	RHS	BUS BAY
13	90+640	LHS	BUS BAY
14	90+940	RHS	BUS BAY

2.7 Pedestrian Facilities

Pedestrian Facilities shall be provided in accordance with the Manual of Specifications and Standards as referred in Schedule D.

Pedestrian Facilities include the provision of:

1. Pedestrian Guard Rail:

Pedestrian guard rails shall be provided at each bus bay, bus shelter location, built-up sections and intersections as specified in the manual.

2. Pedestrian crossings:

Pedestrian crossing shall be provided on service roads, built-up sections and intersections as specified in the manual

The additional pedestrian facilities in the form of guard rails, footpath, lighting etc. shall be provided wherever required in accordance with Section 12.2 of the Manual of Specifications and Standards.

2.8 Lighting

The Concessionaire shall provide lighting as per Schedule - D at following locations of the Project Highway.

1. Toll Plaza area
2. Operation and maintenance centers
3. Bus Bays and Truck lay-byes
4. Underpass and at Intersections
5. Flyovers & ROB
6. Traffic aid posts, vehicle rescue posts, medical aid posts and all other facility & service buildings.

In addition to the above locations the following locations shall have continuous Highway Lighting.

Sr. No.	Locations	Stretches	Remarks
1	Urban Areas & High Filling Embankment	As per Typical Cross Section	--
2	Stretches along highway from start to end of approaches of all Service Area.	Location as Given in Schedule C	--

Minimum level of illumination on locations of the Project Highway where exterior lighting is provided shall be 40 lux. In general, 'code of practice for lighting of public thoroughfare IS:1944 shall be followed. All facility buildings shall be illuminated adequately.

The electrical connection with all its infrastructures shall be done by the Concessionaire/ Concessionaire. Additional battery backup shall be provided.

2.9 Environmental Management Plan

The Concessionaire shall implement the Environmental Management plan & action Plan for undertaking possible mitigation measures in accordance with guidelines for Highway Projects of the Ministry of Environment and Forests and Wild Life Department. The conditions & directions stipulated by the MOEF shall be make available by the Authority.

2.10 Landscaping and Tree Plantation

The Concessionaire shall plant trees and shrubs of required numbers and types at the appropriate locations within Right of Way and in the land earmarked by the Authority for afforestation as per Schedule D at the following areas.

Sl. No.	Types of Plantation	Location (Km)	Remarks
1	Shrubs	In median (except Structures)	Ornamental type plantation shall be provided
2	Landscaping	Service Areas / Toll Booths / O & M Centres	Ornamental type plantation shall be provided

Drip irrigation system for median plantation by gravity/pressure sources with all necessary components / systems and emitting devices at plants shall be provided.

The Concessionaire shall maintain the trees and shrubs in good condition during maintenance period as per the maintenance schedule.

2.11 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) shall be provided as per Schedule D and NHAI policy circular technical 214/2016 Dt. 15.09.2016. The Concessionaire is required to design, install, operate and maintain Highway Traffic Management System (HTMS) / Advanced Traffic Management System (ATMS) as part of the project facilities. Advanced Traffic Management System shall be provided as specified the manual.

Briefly, the ATMS components to be deployed shall inter alia include. The minimum quantities shall be as specified under. However, the location may be finalised in consultation with Independent Engineer:

S. No.	ATMS Components	Location
(a)	Video Surveillance System (CCTV PTZ Dome / Fixed Camera)	Shall be installed at every 1Km Distance
(b)	Video Incident Detection System	Every 5 Km, Exact location to be decided as per site requirement.
(c)	Vehicle Actuated Radar Speed Displays	Every 5 Km, Exact location to be decided as per site requirement.
(d)	Emergency Roadside Telephone	Shall be installed at every 2Km Distance
(e)	Fixed /Portable Variable Message Sign	Fixed-One at start and One at End of the project Road. Portable-1 Unit shall be kept at control centre in working condition and used as per requirement.
(f)	Meteorological System	Installed at Control centre
(g)	Automatic Traffic Counter cum Classifier	2 Nos.
(h)	Travel Time Estimation System	2 Nos.
(i)	The ATMS Control Centre including the equipment (hardware, Software, and local networking)	Installed at Control centre
(j)	Communication System utilizing Optic fiber, point-to-point wireless links, GSM/GPRS and Wi-Fi Communications linked to ATMS Control Centre	Installed at Control centre
(k)	Power Supplies for Field equipment: working on mains power supported with backup (Largely on renewable energy) to facilitate 24X7 operation and for the ATMS Control centre working on Mains power supported by UPS and Diesel	Power supplies shall be provided at Control centre & at Field Equipment as per Requirements.

	generator set of adequate capacities, to facilitate 24X7 operation	
(l)	Disaster Management Support System.	To be kept at Control centre

2.12 Rain Water Harvesting

As per Ministry of Environment and Forests Notification, New Delhi dated 14.01.1997 (as amended on 13.01.1998, 05.01.1999 & 6.11.2000), the construction of rain water harvesting structure is mandatory in and around Water Crisis area, notified by the Central Ground Water Board. The provision of rain water harvesting shall be provided at every 500m in the entire project length and shall be executed as per requirement of IRC SP: 42-2014 and IRC SP: 50-2013.

2.13 Utilities

Provision of accommodating utilities shall be made within utility corridor on either side of Project Highway. Provision for crossing of Utility duct shall be provided as per manual.

2.14 Medical aid posts

The Concessionaire shall, at its cost and in accordance with the type designs prescribed for such buildings by the State Medical Department (or a substitute thereof to be designated by the Authority), construct an aid post building at toll plaza location and hand it over to the Authority, no later than 30 (thirty) days prior to COD. The Medical Aid Post(s) shall be deemed to be part of the Site and shall vest in the Authority. Medical Aid Post shall be set up at Administrative Block with 2 nos of Ambulance with round-the-clock services for victims of accidents on the Project Highway. Such Post and two residential quarters shall be constructed in accordance with the type designs prescribed by the State Medical Department and shall be maintained throughout the contract period. Ambulance shall be provided as per Annexure-I of NHAI/policy guidelines/strengthening the Incident Management services/2018, Policy No.12.19 dated the 20th March 2018, along with all necessary manpower (including paramedic staff) and shall be maintained throughout the contract period.

2.15 Crane Service

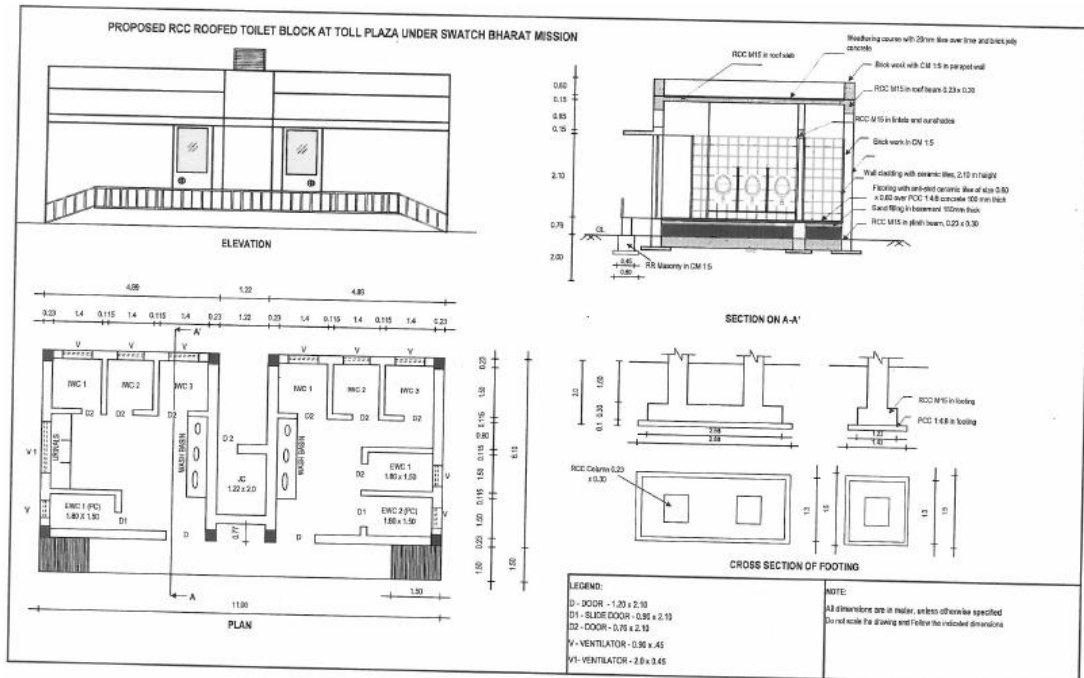
Vehicle Rescue post (Crane Service) shall be constructed at the toll plaza in consultation with the Independent Engineer/ NHAI and 2 nos of crane services to tow away the disabled vehicles to be provided at these locations along with necessary man power/ driver/ operator. Specification and requirements shall be strictly as per concession agreement and schedule "D"

- 2.16 Road Boundary Wall:** Road Boundary wall shall be provided on both side of Right of Way available under control of Authority, except at ingress and egress points as per Clause 12.2 of IRC: SP 84-2019.
- 2.17 Highway Patrol Unit:** 2 nos. of Highway Patrol unit shall be provided as specified in the section 12.10 of the manual.

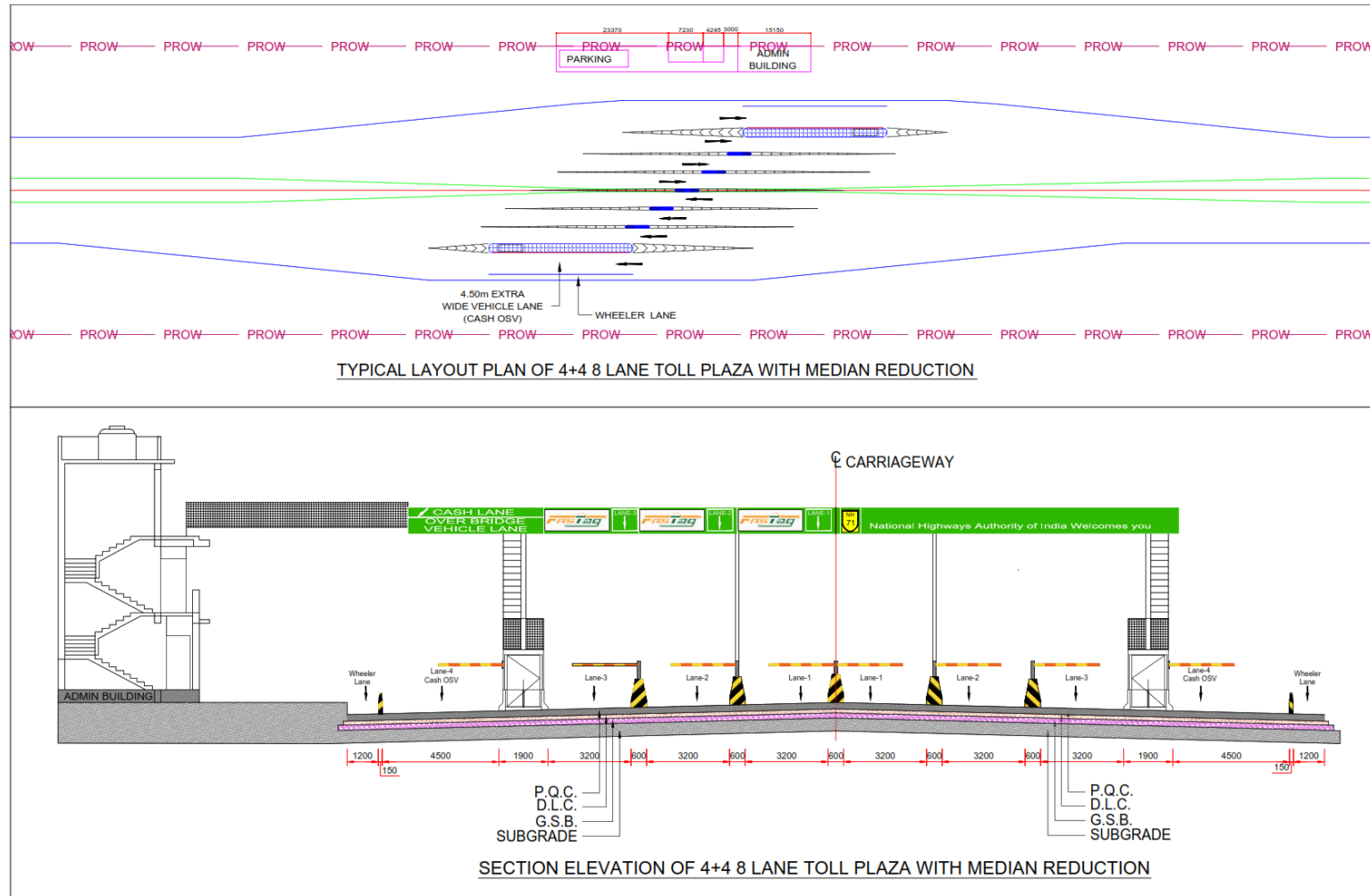
Annex-II

(Schedule-C)

Standard Drawing for Toilet



Construction of Four-Laning of Pileru-Kalur (Tirupati Rural) Section of NH-71. [Section-1] from Design Km 55+900/Existing Km 59.250 of NH-71 to Design Km. 92+800/Existing Km 98.325 of NH-71 and [Section-2] from Design Km 94+800/Existing Km. 274.231 of Old NH-205 to Design Km 95+717/Existing Km. 275.148 of Old NH-205 (Design Length = 37.817 Km) on Hybrid Annuity Mode in the State of Andhra Pradesh under Bharatmala Pariyojana



SCHEDULE - D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1 CONSTRUCTION

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

2 DESIGN STANDARDS

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

Manual of Specifications and Standards for four laning of Highways through IRC SP: 84-2019, referred to herein as the manual.

As regards to work of utility shifting, the relevant specifications, relevant rules, regulations and acts of Utility owning Department/Agencies shall be applicable.

ANNEX - I

(Schedule - D)

SPECIFICATIONS AND STANDARDS FOR THE PROJECT

1 MANUAL OF SPECIFICATIONS AND STANDARDS TO APPLY

Four-laning of the Project Highway shall conform to the ‘Manual of Specifications and Standards for Four Laning of Highways’ published as IRC: SP:84-2019 with all amendments and additions till date. (Referred to as “Manuals” in this Schedule) and MORTH Specifications for Road & Bridge Works (5th revision). Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Independent Engineer.

2 DEVIATIONS FROM THE MANUAL OF SPECIFICATIONS AND STANDARDS

Not with standing anything to the contrary contained in the aforesaid Manual, the following Specifications and Standards shall apply to the construction of the Project Highway, and for purposes of this agreement, the aforesaid manual shall be deemed to be amended to the extent set forth below:

Sr. No.	Clause/Section as per Manual	Description	Provision as per Manual	Deviation/ Modified Provision
1.	2.17	4-Lane Divided Highway without Service Road and with Raised Median (Open country Plain/Rolling Terrain)	Fig 2.4	TCS-Fig 2.4(A) TCS-Fig 2.4(B) TCS-Fig 2.4(C) TCS-Fig 2.4(D) TCS-Fig 2.4(E) TCS-Fig 2.4(F) TCS-Fig 2.4(G) of Annex-II Schedule-B Typical Cross Section.
2.	2.17	4-Lane Divided Highway with Service Road and with Raised Median (Open country Plain/Rolling Terrain)	Fig 2.5	TCS-Fig 2.5(A) TCS-Fig 2.5(B) of Annex-II Schedule-B Typical Cross Section.
3.	2.17	4-Lane Divided Highway with Service Road and with Raised Median (Built-up section Plain/Rolling Terrain)	Fig 2.6	TCS-Fig 2.6(A) of Annex-II Schedule-B Typical Cross Section.

Sr. No.	Clause/Section as per Manual	Description	Provision as per Manual	Deviation/ Modified Provision
4.	2.17	4-Lane Divided Highway at same Level with Raised Median.	Fig 2.9	TCS-Fig 2.9(A) TCS-Fig 2.9(B) TCS-Fig 2.9(C) of Annex-II Schedule-B Typical Cross Section.
5.	7.19	Cross section of grade separated structure Vehicular/ Pedestrian/ Cattle Underpass and Elevated Section (6-LANE DIVIDED HIGHWAY)	Fig 7.8	TCS-Fig 7.8(A) TCS-Fig 7.8(B) of Annex-II Schedule-B Typical Cross Section.
6.	4.2.3.2	Embankment Slope	1V: 2H	TCS-Fig 2.4(B) TCS-Fig 2.5(B) In fill section the embankment side slope shall be 1(V) :1.5(H).
7.	NA	Manufactures Aggregates	NA	Ministry Circular No. RW/NH-34066/09/2017-S&R(B) dated 21.07.2020 regarding use of manufactures aggregate shall be allowed.
8.	10	Toll Plaza	Layout of Toll Plaza	The Layout of Toll plaza shall be as given in Schedule-C.