Schedules

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1. The Site

1.1 2-lane/2-lane with paved Shoulder shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

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

1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.

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

1.5 The status of the environment clearances obtained or awaited is given in Annex - IV.

Annexure - I

(Schedule-A)

Site

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

1. Site

The Site of the Two-Lane with paved shoulder Project Highway comprises the section of National Highway-07 (Old NH-58) from Karanprayag to chamoli at Km 399.000 to km. 430.000 (Excluding Km 420.250 to Km 420.500 and Km 423.300 to km 423.650) in the state of Uttarakhand. The land, carriageway and structures comprises the Site are described below.

2. Land

The Site of the Project Highway comprises the land (existing right of way) as described below:

Sl. No.	Existing Chainage (km)		ROW (m)
	From	To	
1	399+000	400+000	6 to 12
2	400+000	401+000	6 to 12
3	401+000	402+000	6 to 8
4	402+000	403+000	6 to 8
5	403+000	404+000	6 to 8
6	404+000	405+000	6 to 8
7	405+000	406+000	6 to 8
8	406+000	407+000	6 to 8
9	407+000	408+000	6 to 8
10	408+000	409+000	6 to 8
11	409+000	410+000	6 to 8
12	410+000	411+000	6 to 8
13	411+000	412+000	6 to 8
14	412+000	413+000	6 to 8
15	413+000	414+000	6 to 8

Sl. No.	Existing Chainage (km)		ROW (m)
	From	To	
16	414+000	415+000	6 to 8
17	415+000	416+000	6 to 8
18	416+000	417+000	6 to 8
19	417+000	418+000	6 to 8
20	418+000	419+000	6 to 8
21	419+000	420+000	6 to 8
22	420+000	421+000	6 to 8
23	421+000	422+000	6 to 8
24	422+000	423+000	6 to 8
25	423+000	424+000	6 to 8
26	424+000	425+000	6 to 8
27	425+000	426+000	6 to 8
28	426+000	427+000	6 to 8
29	427+000	428+000	6 to 8
30	428+000	429+000	6 to 8
31	429+000	430+000	6 to 8

3. Carriageway

The present carriageway of the Project Highway is of. Single Lane/Intermediate lane/two lane. The type of the existing pavement is flexible as per following details;

S.N	Chainage (km)		Carriageway width (m)
	From	To	
1	399+000	399+050	8.00
2	399+050	399+100	3.00
3	399+100	399+150	3.00
4	399+150	399+200	3.00
5	399+200	399+250	5.20
6	399+250	399+300	5.50
7	399+300	399+350	6.00
8	399+350	399+400	6.00
9	399+400	399+450	6.20
10	399+450	399+500	5.00

S.N	Chainage (km)		Carriageway width (m)
	From	To	
11	399+500	399+550	5.50
12	399+550	399+600	9.00
13	399+600	399+650	7.00
14	399+650	399+700	7.00
15	399+700	399+750	4.00
16	399+750	399+800	6.00
17	399+800	399+850	4.00
18	399+850	399+900	4.00
19	399+900	399+950	4.00
20	400+000	400+050	6.20
21	400+050	400+100	6.00
22	400+100	400+150	3.50
23	400+150	400+200	6.50
24	400+200	400+250	5.00
25	400+250	400+300	5.50
26	400+300	400+350	4.80
27	400+350	400+400	4.20
28	400+400	400+450	4.20
29	400+450	400+500	4.60
30	400+500	400+550	5.20
31	400+550	400+600	4.20
32	400+600	400+650	4.50
33	400+650	400+700	4.50
34	400+700	400+750	5.60
35	400+750	400+800	4.20
36	400+800	400+850	5.00
37	400+850	400+900	4.50
38	400+900	400+950	4.50
39	400+950	401+000	4.50
40	401+000	401+050	3.30
41	401+050	401+100	4.30
42	401+100	401+150	5.30
43	401+150	401+200	4.50
44	401+200	401+250	5.00
45	401+250	401+300	3.50
46	401+300	401+350	4.00
47	401+350	401+400	5.50
48	401+400	401+450	6.80
49	401+450	401+500	5.50
50	401+500	401+550	5.70
51	401+550	401+600	5.00
52	401+600	401+650	5.00
53	401+650	401+700	5.00
54	401+700	401+750	5.20

S.N	Chainage (km)		Carriageway width (m)
	From	To	
55	401+750	401+800	6.80
56	401+800	401+850	6.70
57	401+850	401+900	5.20
58	401+900	401+950	5.30
59	401+950	402+000	6.00
60	402+000	402+050	5.00
61	402+050	402+100	5.00
62	402+100	402+150	4.50
63	402+150	402+200	5.50
64	402+200	402+250	4.50
65	402+250	402+300	5.50
66	402+300	402+350	4.50
67	402+350	402+400	5.00
68	402+400	402+450	4.40
69	402+450	402+500	4.00
70	402+500	402+550	4.70
71	402+550	402+600	5.00
72	402+600	402+650	4.71
73	402+650	402+700	4.74
74	402+700	402+750	4.74
75	402+750	402+800	3.40
76	402+800	402+850	5.00
77	402+850	402+900	4.50
78	402+900	402+950	5.00
79	402+950	402+975	5.30
80	403+000	403+050	4.80
81	403+050	403+100	4.30
82	403+100	403+150	5.20
83	403+150	403+200	5.00
84	403+200	403+250	5.00
85	403+250	403+300	3.80
86	403+300	403+350	5.00
87	403+350	403+400	5.40
88	403+400	403+450	5.40
89	403+450	403+500	5.30
90	403+500	403+550	4.00
91	403+550	403+600	5.00
92	403+600	403+650	5.00
93	403+650	403+700	4.40
94	403+700	403+750	5.50
95	403+750	403+800	5.00
96	403+800	403+850	4.30
97	403+850	403+900	4.30
98	403+900	403+950	5.00

S.N	Chainage (km)		Carriageway width (m)
	From	To	
99	403+950	404+000	5.10
100	404+000	404+050	4.60
101	404+050	404+100	4.50
102	404+100	404+150	4.50
103	404+150	404+200	5.20
104	404+200	404+250	4.80
105	404+250	404+300	5.50
106	404+300	404+350	4.80
107	404+350	404+400	3.60
108	404+400	404+450	5.00
109	404+450	404+500	3.50
110	404+500	404+550	3.20
111	404+550	404+600	4.00
112	404+600	404+650	5.00
113	404+650	404+700	4.50
114	404+700	404+750	5.00
115	404+750	404+800	6.00
116	404+800	404+850	5.00
117	404+850	404+900	5.50
118	404+900	404+925	6.00
119	405+000	405+050	4.80
120	405+050	405+100	5.00
121	405+100	405+150	5.20
122	405+150	405+200	5.00
123	405+200	405+250	6.00
124	405+250	405+300	4.00
125	405+300	405+350	4.80
126	405+350	405+400	4.70
127	405+400	405+450	4.40
128	405+450	405+500	4.50
129	405+500	405+550	4.00
130	405+550	405+600	4.00
131	405+600	405+650	6.00
132	405+650	405+700	5.20
133	405+700	405+750	5.00
134	405+750	405+800	5.10
135	405+800	405+850	5.00
136	405+850	405+900	5.20
137	405+900	405+950	4.00
138	406+000	406+050	4.00
139	406+050	406+100	5.00
140	406+100	406+150	4.00
141	406+150	406+200	5.00
142	406+200	406+250	4.50

S.N	Chainage (km)		Carriageway width (m)
	From	To	
143	406+250	406+300	4.00
144	406+300	406+350	5.00
145	406+350	406+400	5.00
146	406+400	406+450	5.20
147	406+450	406+500	5.50
148	406+500	406+550	5.00
149	406+550	406+600	5.50
150	406+600	406+650	5.00
151	406+650	406+700	5.00
152	406+700	406+750	5.00
153	406+750	406+800	5.00
154	406+800	406+850	4.40
155	406+850	406+900	5.20
156	406+900	406+950	7.00
157	406+950	407+000	7.00
158	407+000	407+050	7.00
159	407+050	407+100	5.00
160	407+100	407+150	5.00
161	407+150	407+200	4.00
162	407+200	407+250	4.80
163	407+250	407+300	4.50
164	407+300	407+350	5.00
165	407+350	407+400	5.00
166	407+400	407+450	4.00
167	407+450	407+500	5.00
168	407+500	407+550	5.50
169	407+550	407+600	5.00
170	407+600	407+650	4.00
171	407+650	407+700	5.50
172	407+700	407+750	5.50
173	407+750	407+800	5.00
174	407+800	407+850	5.20
175	407+850	407+900	4.50
176	407+900	407+950	4.50
177	407+950	407+970	5.00
178	408+000	408+050	4.50
179	408+050	408+100	7.00
180	408+100	408+150	4.80
181	408+150	408+200	5.00
182	408+200	408+250	4.80
183	408+250	408+300	5.00
184	408+300	408+350	5.20
185	408+350	408+400	4.80
186	408+400	408+450	5.20

S.N	Chainage (km)		Carriageway width (m)
	From	To	
187	408+450	408+500	5.00
188	408+500	408+550	3.60
189	408+550	408+600	4.80
190	408+600	408+650	5.00
191	408+650	408+700	4.80
192	408+700	408+750	4.50
193	408+750	408+800	4.00
194	408+800	408+850	5.00
195	408+850	408+900	4.50
196	408+900	408+950	5.00
197	409+000	409+050	5.00
198	409+050	409+100	5.00
199	409+100	409+150	5.60
200	409+150	409+200	5.50
201	409+200	409+250	6.50
202	409+250	409+300	4.80
203	409+300	409+350	5.00
204	409+350	409+400	5.50
205	409+400	409+450	5.00
206	409+450	409+500	5.20
207	409+500	409+550	5.00
208	409+550	409+600	4.80
209	409+600	409+650	6.00
210	409+650	409+700	4.80
211	409+700	409+750	5.00
212	409+750	409+800	5.00
213	409+800	409+850	5.30
214	409+850	409+900	5.60
215	409+900	409+950	5.90
216	409+950	409+975	5.60
217	410+000	410+050	5.60
218	410+050	410+100	5.50
219	410+100	410+150	5.70
220	410+150	410+200	5.00
221	410+200	410+250	5.40
222	410+250	410+300	6.00
223	410+300	410+350	4.50
224	410+350	410+400	4.50
225	410+400	410+450	5.50
226	410+450	410+500	5.40
227	410+500	410+550	5.60
228	410+550	410+600	3.00
229	410+600	410+650	3.00
230	410+650	410+700	4.60

S.N	Chainage (km)		Carriageway width (m)
	From	To	
231	410+700	410+750	5.50
232	410+750	410+800	3.00
233	410+800	410+850	5.00
234	410+850	410+900	4.50
235	410+900	410+950	4.50
236	410+950	410+975	4.80
237	411+000	411+050	4.80
238	411+050	411+100	4.70
239	411+100	411+150	4.50
240	411+150	411+200	4.60
241	411+200	411+250	8.20
242	411+250	411+300	4.50
243	411+300	411+350	4.00
244	411+350	411+400	3.80
245	411+400	411+450	4.00
246	411+450	411+500	4.00
247	411+500	411+550	4.00
248	411+550	411+600	3.50
249	411+600	411+650	4.20
250	411+650	411+700	4.40
251	411+700	411+750	4.00
252	411+750	411+800	3.00
253	411+800	411+850	4.00
254	411+850	411+900	4.00
255	411+900	411+950	4.50
256	411+950	412+000	4.20
257	412+000	412+050	5.50
258	412+050	412+100	5.40
259	412+100	412+150	5.70
260	412+150	412+200	4.50
261	412+200	412+250	4.50
262	412+250	412+300	5.00
263	412+300	412+350	4.20
264	412+350	412+400	4.00
265	412+400	412+450	4.20
266	412+450	412+500	3.50
267	412+500	412+550	4.00
268	412+550	412+600	4.00
269	412+600	412+650	4.00
270	412+650	412+700	6.00
271	412+700	412+750	4.50
272	412+750	412+800	5.50
273	412+800	412+850	5.20
274	412+850	412+900	5.20

S.N	Chainage (km)		Carriageway width (m)
	From	To	
275	412+900	412+950	4.80
276	412+950	413+000	4.20
277	413+000	413+050	4.00
278	413+050	413+100	4.20
279	413+100	413+150	5.00
280	413+150	413+200	4.50
281	413+200	413+250	5.50
282	413+250	413+300	4.50
283	413+300	413+350	4.30
284	413+350	413+400	4.80
285	413+400	413+450	5.00
286	413+450	413+500	5.00
287	413+500	413+550	5.10
288	413+550	413+600	5.00
289	413+600	413+650	5.00
290	413+650	413+700	4.60
291	413+700	413+750	4.60
292	413+750	413+800	5.00
293	413+800	413+850	5.00
294	413+850	413+900	6.00
295	414+000	414+050	5.00
296	414+050	414+100	4.50
297	414+100	414+150	4.20
298	414+150	414+200	6.00
299	414+200	414+250	5.20
300	414+250	414+300	5.20
301	414+300	414+350	5.60
302	414+350	414+400	7.00
303	414+400	414+450	5.30
304	414+450	414+500	5.50
305	414+500	414+550	5.50
306	414+550	414+600	5.30
307	414+600	414+650	5.20
308	414+650	414+700	5.50
309	414+700	414+750	5.50
310	414+750	414+800	5.50
311	414+800	414+850	5.50
312	414+850	414+900	5.50
313	414+900	414+925	5.50
314	415+000	415+050	5.20
315	415+050	415+100	5.20
316	415+100	415+150	5.20
317	415+150	415+200	4.70
318	415+200	415+250	5.50

S.N	Chainage (km)		Carriageway width (m)
	From	To	
319	415+250	415+300	5.00
320	415+300	415+350	5.20
321	415+350	415+400	5.20
322	415+400	415+450	5.00
323	415+450	415+500	5.00
324	415+500	415+550	4.60
325	415+550	415+600	5.00
326	415+600	415+650	5.50
327	415+650	415+700	4.80
328	415+700	415+750	4.80
329	415+750	415+800	5.00
330	415+800	415+850	5.00
331	415+850	415+900	5.00
332	415+900	415+950	5.00
333	415+950	415+975	4.80
334	416+000	416+050	5.00
335	416+050	416+100	5.00
336	416+100	416+150	5.50
337	416+150	416+200	5.50
338	416+200	416+250	5.40
339	416+250	416+300	5.50
340	416+300	416+350	5.00
341	416+350	416+400	5.00
342	416+400	416+450	4.40
343	416+450	416+500	4.80
344	416+500	416+550	5.20
345	416+550	416+600	5.00
346	416+600	416+650	5.30
347	416+650	416+700	5.20
348	416+700	416+750	5.00
349	416+750	416+800	4.70
350	416+800	416+850	4.60
351	416+850	416+900	4.20
352	416+900	416+925	6.30
353	417+000	417+050	4.50
354	417+050	417+100	4.60
355	417+100	417+150	4.60
356	417+150	417+200	4.10
357	417+200	417+250	4.50
358	417+250	417+300	5.00
359	417+300	417+350	5.50
360	417+350	417+400	5.00
361	417+400	417+450	6.20
362	417+450	417+500	5.20

S.N	Chainage (km)		Carriageway width (m)
	From	To	
363	417+500	417+550	5.50
364	417+550	417+600	5.50
365	417+600	417+650	6.60
366	417+650	417+700	5.20
367	417+700	417+750	5.10
368	417+750	417+800	5.00
369	417+800	417+850	5.00
370	417+850	417+900	5.50
371	417+900	417+950	5.50
372	417+950	417+975	5.50
373	418+000	418+050	5.50
374	418+050	418+100	5.00
375	418+100	418+150	5.00
376	418+150	418+200	5.00
377	418+200	418+250	4.80
378	418+250	418+300	4.30
379	418+300	418+350	5.00
380	418+350	418+400	4.80
381	418+400	418+450	4.80
382	418+450	418+500	4.84
383	418+500	418+550	4.60
384	418+550	418+600	4.50
385	418+600	418+650	5.00
386	418+650	418+700	4.80
387	418+700	418+750	5.00
388	418+750	418+800	6.00
389	418+800	418+850	6.20
390	418+850	418+900	6.30
391	418+900	418+950	6.50
392	418+950	419+000	6.50
393	419+000	419+050	6.50
394	419+050	419+100	5.80
395	419+100	419+150	5.50
396	419+150	419+200	4.60
397	419+200	419+250	4.90
398	419+250	419+300	4.60
399	419+300	419+350	4.20
400	419+350	419+400	5.00
401	419+400	419+450	5.00
402	419+450	419+500	6.30
403	419+500	419+550	7.20
404	419+550	419+600	7.20
405	419+600	419+650	5.30
406	419+650	419+700	5.60

S.N	Chainage (km)		Carriageway width (m)
	From	To	
407	419+700	419+750	5.40
408	419+750	419+800	5.60
409	419+800	419+850	5.60
410	419+850	419+900	4.50
411	420+000	420+050	5.40
412	420+050	420+100	5.00
413	420+100	420+150	4.00
414	420+150	420+200	5.60
415	420+200	420+250	5.60
416	420+250	420+300	4.50
417	420+300	420+350	4.50
418	420+350	420+400	4.50
419	420+400	420+450	4.60
420	420+450	420+500	4.30
421	420+500	420+550	5.00
422	420+550	420+600	5.10
423	420+600	420+650	5.20
424	420+650	420+700	4.90
425	420+700	420+750	4.80
426	420+750	420+800	4.70
427	420+800	420+850	4.50
428	420+850	420+900	4.40
429	420+900	420+950	5.40
430	420+950	421+000	5.50
431	421+000	421+050	4.60
432	421+050	421+100	4.00
433	421+100	421+150	4.40
434	421+150	421+200	4.30
435	421+200	421+250	5.30
436	421+250	421+300	4.30
437	421+300	421+350	4.20
438	421+350	421+400	5.60
439	421+400	421+450	4.50
440	421+450	421+500	3.80
441	421+500	421+550	0.50
442	421+550	421+600	0.20
443	421+600	421+650	0.50
444	421+650	421+700	0.40
445	421+700	421+750	1.20
446	421+750	421+800	0.50
447	421+800	421+850	1.00
448	421+850	421+900	1.00
449	421+900	421+920	0.50
450	422+000	422+050	5.20

S.N	Chainage (km)		Carriageway width (m)
	From	To	
451	422+050	422+100	5.00
452	422+100	422+150	4.20
453	422+150	422+200	4.00
454	422+200	422+250	5.50
455	422+250	422+300	4.20
456	422+300	422+350	8.00
457	422+350	422+400	5.60
458	422+400	422+450	5.00
459	422+450	422+500	5.10
460	422+500	422+550	5.60
461	422+550	422+600	4.80
462	422+600	422+650	4.00
463	422+650	422+700	4.20
464	422+700	422+750	4.50
465	422+750	422+800	5.20
466	422+800	422+850	4.00
467	422+850	422+900	4.50
468	422+900	422+950	4.50
469	423+000	423+050	4.80
470	423+050	423+100	4.00
471	423+100	423+150	5.20
472	423+150	423+200	5.00
473	423+200	423+250	4.90
474	423+250	423+300	5.00
475	423+300	423+350	4.00
476	423+350	423+400	5.60
477	423+400	423+450	5.60
478	423+450	423+500	5.60
479	423+500	423+550	5.60
480	423+550	423+600	5.60
481	423+600	423+650	4.20
482	423+650	423+700	4.00
483	423+700	423+750	4.50
484	423+750	423+800	4.00
485	423+800	423+850	4.30
486	423+850	423+900	4.60
487	423+900	423+950	4.00
488	423+950	424+000	4.50
489	424+000	424+050	4.40
490	424+050	424+100	5.00
491	424+100	424+150	4.80
492	424+150	424+200	5.40
493	424+200	424+250	4.80
494	424+250	424+300	3.90

S.N	Chainage (km)		Carriageway width (m)
	From	To	
495	424+300	424+350	3.80
496	424+350	424+400	4.20
497	424+400	424+450	4.50
498	424+450	424+500	4.20
499	424+500	424+550	4.20
500	424+550	424+600	4.50
501	424+600	424+650	4.20
502	424+650	424+700	4.20
503	424+700	424+750	4.20
504	424+750	424+800	4.50
505	424+800	424+850	4.70
506	424+850	424+900	4.70
507	424+900	424+950	4.60
508	425+000	425+050	4.70
509	425+050	425+100	4.70
510	425+100	425+150	4.70
511	425+150	425+200	4.70
512	425+200	425+250	5.00
513	425+250	425+300	4.60
514	425+300	425+350	4.50
515	425+350	425+400	4.50
516	425+400	425+450	4.60
517	425+450	425+500	4.60
518	425+500	425+550	4.50
519	425+550	425+600	4.50
520	425+600	425+650	4.70
521	425+650	425+700	4.60
522	425+700	425+750	4.60
523	425+750	425+800	4.70
524	425+800	425+850	4.70
525	425+850	425+900	4.70
526	425+900	425+960	4.20
527	426+000	426+050	4.20
528	426+050	426+100	4.20
529	426+100	426+150	4.60
530	426+150	426+200	4.50
531	426+200	426+250	6.30
532	426+250	426+300	4.50
533	426+300	426+350	4.70
534	426+350	426+400	5.00
535	426+400	426+450	4.70
536	426+450	426+500	5.20
537	426+500	426+550	4.60
538	426+550	426+600	4.60

S.N	Chainage (km)		Carriageway width (m)
	From	To	
539	426+600	426+650	5.00
540	426+650	426+700	5.00
541	426+700	426+750	5.00
542	426+750	426+800	5.00
543	426+800	426+850	5.00
544	426+850	426+900	5.20
545	426+900	426+950	5.20
546	426+950	427+000	5.00
547	427+000	427+050	5.00
548	427+050	427+100	5.00
549	427+100	427+150	5.20
550	427+150	427+200	5.60
551	427+200	427+250	5.60
552	427+250	427+300	5.00
553	427+300	427+350	5.20
554	427+350	427+400	5.00
555	427+400	427+450	5.20
556	427+450	427+500	5.00
557	427+500	427+550	4.50
558	427+550	427+600	5.00
559	427+600	427+650	5.60
560	427+650	427+700	5.00
561	427+700	427+750	4.80
562	427+750	427+800	3.20
563	427+800	427+850	5.00
564	427+850	427+900	4.50
565	427+900	427+950	5.00
566	428+000	428+050	5.00
567	428+050	428+100	5.00
568	428+100	428+150	5.00
569	428+150	428+200	4.80
570	428+200	428+250	5.00
571	428+250	428+300	5.00
572	428+300	428+350	5.00
573	428+350	428+400	5.00
574	428+400	428+450	5.00
575	428+450	428+500	5.00
576	428+500	428+550	5.00
577	428+550	428+600	4.50
578	428+600	428+650	4.50
579	428+650	428+700	4.30
580	428+700	428+750	54.00
581	429+000	429+050	5.00
582	429+050	429+100	4.80

S.N	Chainage (km)		Carriageway width (m)
	From	To	
583	429+100	429+150	4.80
584	429+150	429+200	4.80
585	429+200	429+250	4.80
586	429+250	429+300	4.50
587	429+300	429+350	4.60
588	429+350	429+400	4.50
589	429+400	429+450	4.50
590	429+450	429+500	4.50
591	429+500	429+550	5.00
592	429+550	429+600	5.00
593	429+600	429+650	5.00
594	429+650	429+700	5.00
595	429+700	429+750	5.60
596	429+750	429+800	4.20
597	429+800	429+850	5.00
598	429+850	429+900	4.80
599	429+900	429+950	4.70
600	429+950	430+000	5.60

4. Major Bridges

The Site includes the following Major Bridges:

S. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Super-Structure		
NIL						

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

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

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

6. Grade separators

The Site includes the following grade separators:

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

7. Minor Bridges

The Site includes the following minor bridges

S. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (c/c of exp gap)	Total Width (m)
		Foundation	Sub-Structure	Super-Structure		
1	402+805	Open	Brick Masonry	RCC Girder	1 x 9.0	6.0
2	403+475	Open	Brick Masonry	RCC Girder	1 x 9.0	7.5
3	405+505	Open	Brick Masonry	RCC Girder	1 x 9.0	6.0
4	408+085	Open	PCC	CC Arch	1 x 12.0	5.5
5	411+57	Open	PCC	CC Arch	1 x 12.0	4.5
6	412+61	Open	RCC	RCC Girder	1 X 21.0	12.0
7	418+97	Open	RCC	PSC Girder	1 X 38.0	8.5
8	419+120	Open	RCC	RCC Girder	1 X 28.0	8.5
9	421+460	Open	RCC	RCC Girder	1 x 12.0	6.0
10	422+420	Open	RCC	PSC Girder	1 X 42.0	8.5
11	427+225	Open	PCC	CC Arch	1 x 12.0	5.0
12	427+675	Open	PCC	CC Arch	1 x 12.0	5.0

8. Railway level crossings

The Site includes the following level crossing:

S. No.	Existing Chainage (km)	Remarks
NIL		

9. Underpasses (Vehicular, Non Vehicular)

The Site includes the following underpasses:

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

10. Culverts

The Site has the following culverts:

Sl. No.	Existing Chainage (km)	Structure No.	Type of Culvert	Span / Opening with Span Length (m)
1	399+225	400/1	Slab	1.5
2	399+425	400/2	Scooper	0.9
3	400+100	401/1	Scooper	0.6
4	400+650	401/2	Slab	1.6
5	400+750	401/3	Scooper	0.8
6	400+900	401/4	Slab	1.4
7	400+975	401/5	Pipe	0.6
8	401+050	402/1	Pipe	0.6
9	401+325	402/2	Scooper	0.8
10	403+075	403/1	Slab	5.5
11	403+175	404/1	Slab	2.6
12	403+810	404/2	Slab	1.3
13	404+150	404/3	Box	2.9
14	404+300	405/1	Slab	1.2
15	404+525	405/2	Slab	2.7
16	405+050	405/3	Slab	1.3
17	406+375	406/1	Slab	2.3
18	406+600	407/1	Slab	1.3
19	407+075	407/2	Slab	2.3
20	407+425	408/1	Arch	3.4
21	408+210	408/2	Slab	1.2
22	408+300	409/2	Scooper	0.6
23	408+350	409/3	Stone	0.7
24	408+500	409/4	Stone	0.7
25	409+000	409/5	Stone	0.6
26	409+060	410/1	Slab	2.2
27	409+070	410/2	Pipe	0.6

Sl. No.	Existing Chainage (km)	Structure No.	Type of Culvert	Span / Opening with Span Length (m)
28	409+125	410/3	Pipe	1
29	409+550	410/4	Slab	2.3
30	409+750	410/5	Slab	2.1
31	409+800	410/6	Slab	1.4
32	410+230	410/7	Slab	2.8
33	410+780	411/1	Slab	1.5
34	410+850	411/2	Pipe	0.6
35	411+160	411/3	Slab	1
36	411+750	412/1	Slab	1.1
37	412+025	412/3	Slab	1.4
38	412+380	413/1	Pipe	0.6
39	413+700	413/2	Slab	1.2
40	414+020	414/1	Slab	1
41	414+160	415/1	Slab	1.2
42	414+200	415/2	Slab	1.2
43	414+325	415/3	Slab	1.2
44	414+425	415/4	Pipe	0.6
45	414+500	415/5	Slab	1.6
46	415+150	415/6	Slab	5.5
47	415+350	416/1	Slab	1
48	415+625	416/2	Slab	2.3
49	415+760	416/3	Slab	1
50	416+470	416/4	Scooper	0.8
51	416+725	417/1	Slab	1.5
52	417+010	417/2	Slab	1.4
53	417+360	418/1	Slab	1.2
54	417+550	418/2	Pipe	0.6
55	417+800	418/3	Slab	1.7

Sl. No.	Existing Chainage (km)	Structure No.	Type of Culvert	Span / Opening with Span Length (m)
56	418+090	418/4	Slab	1.5
57	418+720	419/1	Stone	1.4
58	418+750	419/2	Slab	1
59	419+500	419/3	Stone	1.4
60	420+025	420/1	Slab	1.3
61	421+000	421/1	Slab	1.3
62	421+350	422/1	Stone	1
63	421+925	422/2	Slab	1.3
64	422+025	422/3	Pipe	0.4
65	422+125	423/1	Slab	2
66	422+925	423/2	Slab	1.7
67	423+270	423/3	Scooper	0.8
68	423+440	424/1	Slab	3
69	424+000	424/2	Scooper	0.6
70	424+325	425/1	Slab	1.6
71	424+780	425/2	Scooper	0.6
72	424+810	425/3	Slab	1.7
73	425+150	425/4	Slab	1
74	425+210	426/1	Slab	1.4
75	425+310	426/2	Slab	1.1
76	425+640	426/3	Scooper	0.8
77	425+760	426/4	Slab	1.4
78	425+950	426/5	Slab	1.7
79	425+990	426/6	Slab	1.7
80	426+160	426/7	Slab	1.8
81	426+350	427/1	Slab	1.4
82	426+450	427/2	Slab	2
83	426+460	427/3	Slab	1.4

Sl. No.	Existing Chainage (km)	Structure No.	Type of Culvert	Span / Opening with Span Length (m)
84	426+950	427/4	Slab	1.2
85	427+330	427/5	Slab	1.9
86	428+125	428/1	Arch Bridge	0.8
87	428+700	428/1	Stone	1
88	429+080	428/2	Arch Bridge	0.9
89	429+130	429/1	Stone	3
90	429+230	429/2	Slab	2.5
91	429+350	430/1	Scooper	0.5
92	429+550	430/2	Scooper	0.9

11. Bus bays/Bus Shelters

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

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

12. Truck Lay byes

The details of truck lay byes are as follows:

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

13. Road side drains

The details of the roadside drains are as follows:

S. No.	Location		Type	
	From km	To km	Masonry/cc (Pucca)	Earthen (Kutcha)
NIL				

14. Major junctions

The details of major junctions are as follows:

S.No	Existing Chainage (km)	At Grade	Grade Separated	Category of Cross Road+			
				NH	SH	MDR	Others
NIL							

+ NH= National Highway, SH= State Highway, MDR= Major District Road.

15. Minor junctions

The details of the minor junctions are as follows:

SI. No.	Existing Chainage (km)	Type	
		Junction	Cross Road
1	400+000	T	Village Road
2	412+700	Y	Village Road
3	418+850	Y	Village Road
4	418+950	T	Village Road
5	423+600	Y	Village Road
6	424+150	Y	MDR

16. Bypasses

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

S. No	Name of bypass (Town)	Existing Chainage (Km)		Length (Km)
		From	To	
NIL				

17. Other Structures : **Nil**

18. Existing Chainages corresponding to Design Chainage

The relationship between the "Existing Chainage" and the "Design Chainage" as per field surveys is given below in Table-

Existing Chainge (km)	Design Chainage (km)
399+000	398+300

Existing Chainge (km)	Design Chainage (km)
400+000	399+300
401+000	400+370
402+000	401+250
403+000	402+205
404+000	403+175
405+000	404+150
406+000	405+085
407+000	406+050
408+000	407+005
409+000	407+940
410+000	408+910
411+000	409+820
412+000	410+765
413+000	411+73
414+000	412+615
415+000	413+540
416+000	414+540
417+000	415+455
418+000	416+350
419+000	417+370
420+000	418+250
421+000	419+230
422+000	420+110
423+000	420+990
424+000	422+030
425+000	422+955
426+000	423+935
427+000	424+950
428+000	425+940

Existing Chainge (km)	Design Chainage (km)
429+000	426+665
430+000	427+650

Annex - II

(Schedule-A)

Dates for providing Right of Way

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

S.no	Existing Chainage (km)		Design Chainage (km)		Length (m)	PROW	Date of providing ROW*
	From	To	From	To			
(i)	**Full Right of Way (Full Width)**						
	399+000	400+760	399+300	400+050	750.00	12	90% land will be available at the time of appointed date and balance 10% land after 150 (one hundred and fifty) days from Appointed Date.
	400+760	403+800	400+050	402+955	2905.00	18	
	403+800	404+430	402+955	403+600	645.00	15	
	404+430	407+480	403+600	406+470	2870.00	18	
	407+480	408+610	406+470	407+570	1100.00	15	
	408+610	410+670	407+570	409+515	1945.00	18	
	410+670	411+015	409+515	409+770	255.00	15	
	411+015	417+995	409+770	416+380	6610.00	18	
	418+000	419+250	416+340	417+555	1215.00	18	
	419+830	419+830	417+555	418+180	625.00	12	
	419+830	424+050	418+180	422+025	3845.00	18	
	424+050	424+425	422+025	422+450	425.00	15	
	424+425	430+000	422+450	427+650	5200.00	18	

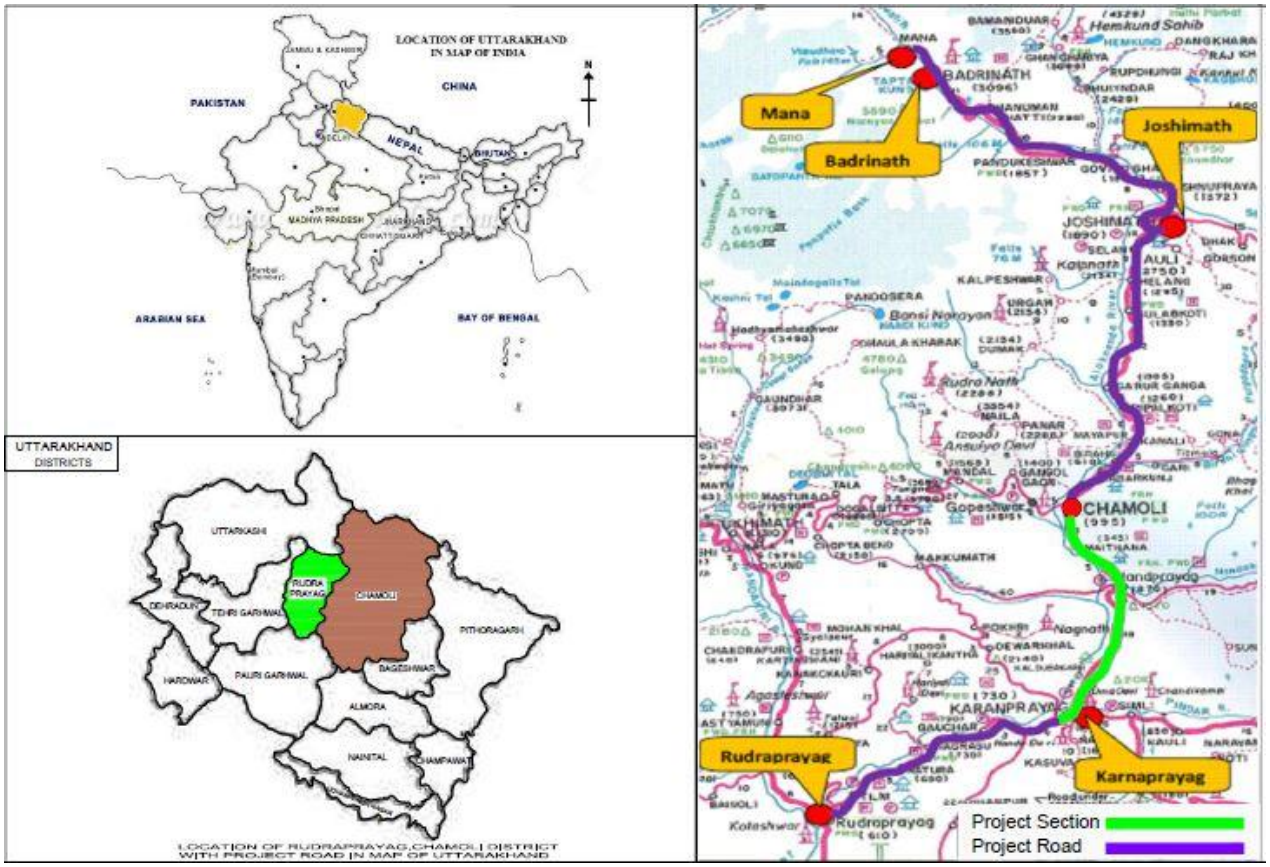
* The dates specified herein shall in no case be beyond 150 (one hundred and fifty) days after the appointed date.

Annex-III

(Schedule-A)

Alignment Plans

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



The alignment plan of the Project Highway is available on e-Portal.

Annex - IV

(Schedule-A)

Environment Clearances

Not Applicable for this section.

SCHEDULE - B

(See Clause 2.1)

Development of the Project Highway

1. Development of the Project Highway

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

2. Rehabilitation and Upgradation

Rehabilitation and Upgradation shall include Two-Laning with paved shoulder of the Project Highway as described in Annex-I of this Schedule-B and in Schedule-C.

3. Specifications and Standards

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

Annex - I

(Schedule-B)

Description of Two-Laning

1. WIDENING OF THE EXISTING HIGHWAY

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

1.2 WIDTH OF CARRIAGEWAY

Two-Laning [with] paved shoulders shall be undertaken. The paved carriageway shall be [10(Ten) m] wide in (Type-I to Type-IV-B) and 9 m wide in (Type-V to Type-V-D) accordance with the typical cross sections drawings in the Manual.

Provided that in the built-up areas [The typical cross section approved by ministry for Chardham project] : the width of the carriageway shall be as specified in the following table:

S. No.	Built-up section	Design Chainage (km)		Length (m)	Width of Carriage way (m)	TCS Type
		From	To			
1	Karanprayag	398+300	400+050	1750	9	TYPE-V, V-A, V-B, V-C,V-D
2	Shivai	402+375	402+600	225	9	TYPE-V, V-A, V-B, V-C,V-D
3	Kalarswar	402+950	403+600	650	9	TYPE-V, V-A, V-B, V-C,V-D
4	Langasu	406+450	407+550	1100	9	TYPE-V, V-A, V-B, V-C,V-D
5	Bhakunda	409+550	409+775	225	9	TYPE-V, V-A, V-B, V-C,V-D
6	Sonla	413+675	413+800	125	9	TYPE-V, V-A, V-B, V-C,V-D
7	Nandprayag	417+600	418+175	575	9	TYPE-V, V-A, V-B, V-C,V-D
8	Maithana	422+025	422+450	425	9	TYPE-V, V-A, V-B, V-C,V-D

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

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 as per IRC: SP: 73-2015 and IRC: SP: 48-1998.

2.2 Design Speed

The design speed 20-40 km as per IRC: SP: 73-2015 and IRC: SP: 48-1998 for

Mountainous/Steep terrain shall be adopted.

2.3 Improvement of the existing road geometry

[Refer to paragraph 2.1(vi) of the Manual IRC: SP 73:2015 and provide details]

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:

Deficient Curves:-

S. No.	Design Chainage(km)		Design radius	Existing Radius (m)	Grade In	Grade Out	Remarks
	From	To					
1	398+326	398+331	20	20	2.8%	2.8%	Approach of retained bridge in habitation of Karanparyag
2	398+906	398+944	17.5	17	3.4%	3.4%	Dense Habitation
3	410+068	410+102	20	20	-4.0%	-4.0%	Hair Pin Bend, deep valley on both side
4	410+794	410+820	20	16	2.0%	2.0%	Deep Valley on left side and huge SMB cutting in right side
5	410+906	410+945	20	16	2.0%	2.0%	Both side Valley
6	411+358	411+393	17.5	16	4.0%	4.0%	Hair Pin Bend, deep valley on both side
7	411+435	411+475	20	20	4.0%	4.0%	Bridge Approach, vertical hill, huge cutting involve,
8	418+180	418+182	20	16	5.0%	0.0%	
9	418+233	418+256	20	16	0.0%	6.5%	Bridge Approach, vertical hill, huge cutting and Habitation involve

2.4 Right of Way

The Site of the Project Highway comprises the land as described in Annexure-II of Schedule-A.

2.5 Type of Shoulders

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

S. No.	Built-up section	Design Chainage (km)		Length (m)	Fully Paved shoulder / Footpath	TCS Type
		From	To			
1	Karanprayag	398+300	400+050	1750	Footpath cum drainage	TYPE-V, V-A, V-B, V-C,V-D
2	Shivai	402+375	402+600	225	Footpath cum drainage	TYPE-V, V-A, V-B, V-C,V-D
3	Kalarswar	402+950	403+600	650	Footpath cum drainage	TYPE-V, V-A, V-B, V-C,V-D
4	Langasu	406+450	407+550	1100	Footpath cum drainage	TYPE-V, V-A, V-B, V-C,V-D
5	Bhakunda	409+550	409+775	225	Footpath cum drainage	TYPE-V, V-A, V-B, V-C,V-D
6	Sonla	413+675	413+800	125	Footpath cum drainage	TYPE-V, V-A, V-B, V-C,V-D
7	Nandprayag	417+600	418+175	575	Footpath cum drainage	TYPE-V, V-A, V-B, V-C,V-D
8	Maithana	422+025	422+450	425	Footpath cum drainage	TYPE-V, V-A, V-B, V-C,V-D

(b) In open country, [paved shoulders of 1.5 m width shall be provided and balance 1.0m width shall be covered with 150 mm thick compacted layer of granular / hard material].

(c) Design and specifications of paved shoulders and granular material shall conform to the requirements specified in paragraphs 5.9.8 and 5.9.9 of the Manual IRC: SP 73:2015.

2.6 Lateral and vertical clearances at underpasses

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

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

S. No.	Design Chainage (Km)	Span/opening (m)	Remarks
NIL			

2.7 Lateral and vertical clearances at overpasses

2.7.1 Lateral and vertical clearances at overpasses and provision of guardrails/crash barriers 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:

S. No.	Design Chainage (Km)	Span/opening (m)	Remarks
NIL			

2.8 Service roads

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

S. No	Design Chainage (Km)	RHS/LHS	Length of the Service Road (m)
NIL			

2.9 Grade separated structures

2.9.1 Grade separated structures shall be provided as per paragraph 2.14 of the Manual. The requisite particulars are given below:

S. No.	Design Chainage (Km)	Length (m)	Number and length of spans	Approach gradient	Remarks, if any
NIL					

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

S. No.	Design Chainage (Km)	Type of structure Length (m)	Cross road at		
			Existing level	Raised Level	Lowered Level
NIL					

2.10 Cattle and pedestrian under pass / over pass

Cattle and pedestrian underpass shall be constructed as follows:

S. No.	Design Chainage (Km)	Type of Crossing
NIL		

2.11 Typical cross-sections of the Project Highway

The typical cross section has been developed as Type-I to Type-V-D (Total 22) as

included in Appendix-I, Annex-I of this Schedule-B of this Schedule confirming to the Manual.

3. INTERSECTIONS AND GRADE SEPARATORS

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

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

(a) At-grade intersections

S. No.	Location of Intersection	Type of Intersection	Leading to
NIL			

(b) Grade separated intersection with/without ramps

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

4. ROAD EMBANKMENT AND CUT SECTION

4.1 Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/ cuttings shall conform to the Specifications and Standards given in section 4 of the Manual IRC: SP 73:2015 and the specified cross sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

4.2 Raising of the existing road

The existing road shall be raised at the required locations as per proposed plan and profile including the following sections:

S. No	Design Chainage (Km)		Length (Km)	Extent of raising (Top of finished road level)
	From	To		
As per profile attached in Annexure-III of Schedule A				

5. PAVEMENT DESIGN

5.1 Pavement design shall be carried out in accordance with IRC: 37-2012.

5.2 Type of pavement

The project highway is proposed to provide flexible pavement in built-up section. The composition of proposed pavement and their corresponding minimum thickness is given in the table below confirming with IRC: 37-2012 of the manual:

S No	Pavement composition	Min. Thickness (mm)
1	Bituminous Concrete	40
2	Treated RAP/BSM	100
3	CT Sub Base	200
	Total	**340**

5.3 Design Requirements

As per typical cross section attached in Annex-I of this Schedule-B.

5.3.1 Design Period and strategy

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

5.3.2 Design Traffic

The pavement has been designed for design traffic of 20 million standard axles as per IRC: 37-2012.

5.4 Reconstruction of stretches

Reconstruction of stretches for matching the proposed plan & profile shall be taken up as per actual requirements.

Sl. No.	Design Chainage (Km)		Remarks
	From	To	
1	398+300	427+650	Reconstruction and widening

6. Roadside Drainage

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per IRC: SP: 48-1998.

S. No	Design Chainage (km)		Length (m)	Side	Lined
	from	to			
1	398+300	400+050	1750	Both Side	(KC) Kerb and Channel Drain
2	400+050	402+375	2325	One side	(KC) Kerb and Channel Drain

S. No	Design Chainage (km)		Length (m)	Side	Lined
3	402+375	407+575	5200	Both Side	U Shaped Drain
4	407+575	409+550	1975	One side	(KC) Kerb and Channel Drain
5	409+550	409+775	225	Both Side	U Shaped Drain
6	409+775	413+675	3900	One side	(KC) Kerb and Channel Drain
7	413+675	413+800	125	Both Side	U Shaped Drain
8	413+800	417+600	3800	One side	(KC) Kerb and Channel Drain
9	417+600	418+175	575	Both Side	U Shaped Drain
10	418+175	422+025	3850	One side	(KC) Kerb and Channel Drain
11	422+025	422+450	425	Both Side	U Shaped Drain
12	422+450	427+650	5200	One side	(KC) Kerb and Channel Drain

7. DESIGN OF STRUCTURES

7.1 General

7.1.1 All bridges, culverts and structures shall be designed and constructed in accordance with the standards codes specifications and manual guidelines shall conform to the cross-sectional features and other details specified therein.

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

Sl. No.	Bridge at km	Width of carriageway and cross section features@
As per GAD		

7.1.3 The following structures shall be provided with footpaths:

S. No.	Design Chainage (Km)	Remarks
NIL		

7.1.4 All bridges shall be high-level bridges.
[Refer to paragraph 7.1 (iii) of the Manual IRC: SP: 73-2015 and state if there is any exception]

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

S. No.	Design Chainage (Km)	Utility service to be carried	Remarks
1	As per list attached in 7.3.1 and 7.3.2	Water pipeline, OFC Cable, Electric Cable, etc.	This may vary as per site condition and location identified with Authority Engineer during execution.

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 for the Project Highway.

7.2 Culverts

7.2.1 The Culverts overall width shall be equal to the roadway width of the approaches.

7.2.2 ***Reconstruction of existing culverts***:

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

S. No.	Design Chainage (km)	Culvert No.	Proposal	Span Arrangement (m)	Type of Culvert
1	398+500	400/1	Reconstruction	4	Box
2	398+700	400/2	Reconstruction	4	Box
3	399+390	401/1	Reconstruction	4	Box
4	399+940	401/2	Reconstruction	4	Box
5	400+050	401/3	Reconstruction	4	Box
6	400+165	401/4	Reconstruction	4	Box
7	400+265	401/5	Reconstruction	4	Box
8	400+345	402/1	Reconstruction	4	Box
9	400+610	402/2	Reconstruction	4	Box
10	402+265	404/1	Reconstruction	4	Box
11	402+355	404/2	Reconstruction	4	Box
12	402+965	404/3	Reconstruction	4	Box
13	403+315	405/1	Reconstruction	4	Box
14	403+475	405/2	Reconstruction	4	Box

S. No.	Design Chainage (km)	Culvert No.	Proposal	Span Arrangement (m)	Type of Culvert
15	403+695	405/3	Reconstruction	4	Box
16	404+205	406/1	Reconstruction	4	Box
17	405+475	407/1	Reconstruction	4	Box
18	405+700	407/2	Reconstruction	4	Box
19	406+410	408/2	Reconstruction	4	Box
20	407+160	409/1	Reconstruction	2	Box
21	407+255	409/2	Reconstruction	2	Box
22	407+290	409/3	Reconstruction	2	Box
23	407+460	409/4	Reconstruction	2	Box
24	407+940	410/1	Reconstruction	4	Box
25	408+005	410/3	Reconstruction	6	Box
26	408+070	410/4	Reconstruction	4	Box
27	408+470	410/5	Reconstruction	4	Box
28	408+665	410/6	Reconstruction	4	Box
29	408+705	410/7	Reconstruction	4	Box
30	409+625	411/2	Reconstruction	2	Box
31	409+675	411/3	Reconstruction	2	Box
32	409+925	412/1	Reconstruction	2	Box
33	410+435	412/2	Reconstruction	2	Box
34	410+680	413/1	Reconstruction	2	Box
35	411+135	413/2	Reconstruction	4	Box
36	412+425	414/1	Reconstruction	2	Box
37	412+560	414/2	Reconstruction	2	Box
38	412+705	415/1	Reconstruction	2	Box
39	412+750	415/2	Reconstruction	2	Box
40	412+860	415/3	Reconstruction	2	Box
41	412+945	415/4	Reconstruction	4	Box
42	413+020	415/5	Reconstruction	6	Box

S. No.	Design Chainage (km)	Culvert No.	Proposal	Span Arrangement (m)	Type of Culvert
43	413+660	416/1	Reconstruction	6	Box
44	413+855	416/2	Reconstruction	4	Box
45	414+145	416/3	Reconstruction	2	Box
46	414+280	416/4	Reconstruction	2	Box
47	415+005	417/1	Reconstruction	2	Box
48	415+260	417/2	Reconstruction	4	Box
49	415+485	418/1	Reconstruction	2	Box
50	415+805	418/2	Reconstruction	2	Box
51	415+990	418/3	Reconstruction	4	Box
52	416+175	418/4	Reconstruction	2	Box
53	416+430	419/1	Reconstruction	4	Box
54	417+050	419/2	Reconstruction	2	Box
55	417+090	419/3	Reconstruction	2	Box
56	417+845	420/1	Reconstruction	2	Box
57	419+229	422/1	Reconstruction	2	Box
58	419+523	422/2	Reconstruction	2	Box
59	420+005	422/3	Reconstruction	2	Box
60	420+130	423/1	Reconstruction	6	Box
61	420+219	423/2	Reconstruction	4	Box
62	420+975	423/3	Reconstruction	4	Box
63	421+252	424/1	Reconstruction	4	Box
64	422+022	425/1	Reconstruction	4	Box
65	422+342	425/2	Reconstruction	2	Box
66	422+805	425/3	Reconstruction	4	Box
67	422+840	425/4	Reconstruction	2	Box
68	423+096	426/1	Reconstruction	2	Box
69	423+160	426/2	Reconstruction	2	Box
70	423+260	426/3	Reconstruction	2	Box

S. No.	Design Chainage (km)	Culvert No.	Proposal	Span Arrangement (m)	Type of Culvert
71	423+573	426/4	Reconstruction	2	Box
72	423+700	426/5	Reconstruction	4	Box
73	423+890	426/6	Reconstruction	4	Box
74	423+925	426/7	Reconstruction	4	Box
75	424+095	427/1	Reconstruction	2	Box
76	424+290	427/2	Reconstruction	4	Box
77	424+390	427/4	Reconstruction	6	Box
78	424+895	427/5	Reconstruction	4	Box
79	425+258	428/1	Reconstruction	2	Box
80	426+035	429/1	Reconstruction	6	Box
81	426+615	429/2	Reconstruction	4	Box
82	426+745	430/1	Reconstruction	2	Box
83	426+795	430/2	Reconstruction	2	Box
84	426+890	430/3	Reconstruction	4	Box
85	427+005	430/4	Reconstruction	2	Box

*[Specify modifications, if any, required in the road level, etc.]

7.2.3 ***Widening of Existing Culverts***

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

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

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

S. No.	Design Chainage (km)	Span Arrangement (m)	Width (m)	Type of Culvert
1	399+170	4	12	Box

S. No.	Design Chainage (km)	Span Arrangement (m)	Width (m)	Type of Culvert
2	400+545	4	12	Box
3	400+865	4	12	Box
4	401+105	4	12	Box
5	401+525	4	12	Box
6	401+750	4	12	Box
7	402+500	2	12	Box
8	403+850	4	12	Box
9	404+450	4	12	Box
10	404+800	4	12	Box
11	405+050	4	12	Box
12	405+325	4	12	Box
13	405+545	4	12	Box
14	405+615	4	12	Box
15	405+800	4	12	Box
16	406+520	4	12	Box
17	406+590	4	12	Box
18	407+700	4	12	Box
19	408+165	4	12	Box
20	408+300	4	12	Box
21	408+800	4	12	Box
22	409+000	4	12	Box
23	409+480	4	12	Box
24	410+165	2	12	Box
25	410+850	2	12	Box
26	411+000	2	12	Box
27	411+550	4	12	Box
28	411+750	2	12	Box
29	411+975	2	12	Box
30	412+225	4	12	Box

S. No.	Design Chainage (km)	Span Arrangement (m)	Width (m)	Type of Culvert
31	412+505	2	12	Box
32	413+295	6	12	Box
33	413+500	4	12	Box
34	414+655	4	12	Box
35	414+850	4	12	Box
36	415+390	4	12	Box
37	415+740	2	12	Box
38	415+850	2	12	Box
39	416+115	4	12	Box
40	416+675	4	12	Box
41	417+655	2	12	Box
42	418+345	2	12	Box
43	418+815	4	12	Box
44	419+400	4	12	Box
45	419+750	2	12	Box
46	420+320	4	12	Box
47	420+750	4	12	Box
48	421+100	2	12	Box
49	421+685	2	12	Box
50	421+800	4	12	Box
51	422+075	4	12	Box
52	422+170	4	12	Box
53	422+600	4	12	Box
54	423+400	4	12	Box
55	424+195	4	12	Box
56	424+590	6	12	Box
57	424+725	4	12	Box
58	425+425	4	12	Box
59	426+250	4	12	Box

S. No.	Design Chainage (km)	Span Arrangement (m)	Width (m)	Type of Culvert
60	426+475	4	12	Box
61	427+500	4	12	Box

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

S. No.	Design Chainage (Km)	Type of repair required
NIL		

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

7.3 Bridges

7.3.1 Existing bridges to be re-constructed/widened:

(i) The Existing bridges at the following locations shall be reconstructed:

Sr. No.	Design Chainage (km)	Name of Bridge	Existing Span Arrangement	Reason of proposal	Proposed span	Proposed type
1	425+600	Bajipur Bridge	1 x 12.0	Inadequate cross drainage structure & curve improvement	20	RCC T

(ii) The following narrow bridges shall be widened:

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

@ Attach cross-section

7.3.2 *Additional new bridges*

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

S. No.	Design Chainage (km)	Proposed span	Type of Bridge
1	401+975	1X10	Solid Slab

S. No.	Design Chainage (km)	Proposed span	Type of Bridge
2	402+640	1X10	Solid Slab
3	404+660	1X30	PSC
4	406+100	1x 30	PSC
5	407+060	1X30	PSC
6	409+125	1x 20	RCC T Beam
7	410+390	1X30	PSC
8	418+220	1x 30	PSC
9	419+600	1X30	PSC
10	425+175	1X30	PSC
11	427+220	1x 30	PSC

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

S. No.	Design Chainage (Km)	Total length (m)	Remarks
NIL			

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

S. No.	Design Chainage (Km)	Existing span arrangement (m)	Remarks
NIL			

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

7.3.6 *Structures in marine environment*
The Project Alignment does not lie in Marine Alignment.

7.4 Rail-road bridges

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified as per standard specifications and manuals.

7.4.2 **Road over-bridges**
Road over-bridges (road over rail) shall be provided at the following level crossings,

as per GAD drawings attached:

7.4.3 **Road under-bridges**

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

S. No	Design Chainage (Km)	Number and length of span (m)
NIL		

7.5 Grade separated structures

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

7.6 Repairs and strengthening of bridges and structures

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

A. Bridges

S. No.	Design Chainage (Km)	Nature and extent of repairs /strengthening to be carried out
Nil		

B. ROB / RUB

S. No.	Design Chainage (Km)	Nature and extent of repairs /strengthening to be carried out
NIL		

C. Overpasses/Underpasses and other structures

S. No.	Design Chainage (Km)	Nature and extent of repairs /strengthening to be carried out
NIL		

7.7 List of Major Bridges and Structures

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

S. No.	Type of Structure	Design Chainage (Km)	Remark
NIL			

7.8 W-Metal Beam Crash Barrier:

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
1	400+050	400+075	TYPE-I-A	25
2	400+075	400+100	TYPE-I-A	25
3	400+100	400+125	TYPE-I-A	25
4	400+125	400+150	TYPE-I-A	25
5	400+150	400+175	TYPE-I-B	14
6	400+175	400+200	TYPE-I-B	25
7	400+200	400+225	TYPE-I-A	25
8	400+225	400+250	TYPE-I-A	25
9	400+250	400+275	TYPE-I-B	14
10	400+275	400+300	TYPE-I-B	25
11	400+300	400+325	TYPE-I-A	25
12	400+325	400+350	TYPE-I-A	25
13	400+350	400+375	TYPE-I-B	14
14	400+375	400+400	TYPE-II-B	25
15	400+400	400+425	TYPE-II	25
16	400+425	400+450	TYPE-II-B	25
17	400+450	400+475	TYPE-II-B	25
18	400+475	400+500	TYPE-II-B	25
19	400+500	400+525	TYPE-II-B	25
20	400+525	400+550	TYPE-II-B	14
21	400+550	400+575	TYPE-II-B	25
22	400+575	400+600	TYPE-II-B	25
23	400+600	400+625	TYPE-II-B	14
24	400+625	400+650	TYPE-II-B	25
25	400+650	400+675	TYPE-II-C	25
26	400+675	400+700	TYPE-II-C	25
27	400+700	400+725	TYPE-II-C	25
28	400+725	400+750	TYPE-II	25
29	400+750	400+775	TYPE-II	25
30	400+775	400+800	TYPE-II-B	25
31	400+800	400+825	TYPE-II	25
32	400+825	400+850	TYPE-II-B	25
33	400+850	400+875	TYPE-II	14
34	400+875	400+900	TYPE-II	25
35	400+900	400+925	TYPE-II	25
36	400+925	400+950	TYPE-II	25
37	400+950	400+975	TYPE-II	25
38	400+975	401+000	TYPE-II	25
39	401+000	401+025	TYPE-II	14

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
40	401+025	401+050	TYPE-II-B	25
41	401+050	401+075	TYPE-I-B	25
42	401+075	401+100	TYPE-III-A	25
43	401+100	401+125	TYPE-III-A	25
44	401+125	401+150	TYPE-I-B	25
45	401+150	401+175	TYPE-I-B	25
46	401+175	401+200	TYPE-I-B	25
47	401+200	401+225	TYPE-I-A	25
48	401+225	401+250	TYPE-I-A	25
49	401+250	401+275	TYPE-I-A	25
50	401+275	401+300	TYPE-I-A	25
51	401+300	401+325	TYPE-I-A	25
52	401+325	401+350	TYPE-I-A	25
53	401+350	401+375	TYPE-I-A	25
54	401+375	401+400	TYPE-I-B	25
55	401+400	401+425	TYPE-I-B	25
56	401+425	401+450	TYPE-I-A	25
57	401+450	401+475	TYPE-I-A	25
58	401+475	401+500	TYPE-I-A	25
59	401+500	401+525	TYPE-I-A	14
60	401+525	401+550	TYPE-I-A	25
61	401+550	401+575	TYPE-I-A	25
62	401+575	401+600	TYPE-I-A	25
63	401+600	401+625	TYPE-I-A	25
64	401+625	401+650	TYPE-I-A	25
65	401+650	401+675	TYPE-I-A	25
66	401+675	401+700	TYPE-I-A	25
67	401+700	401+725	TYPE-I-A	25
68	401+725	401+750	TYPE-I-A	14
69	401+750	401+775	TYPE-I-A	25
70	401+775	401+800	TYPE-I-A	25
71	401+800	401+825	TYPE-I-A	25
72	401+825	401+850	TYPE-I-B	25
73	401+850	401+875	TYPE-I-D	25
74	401+875	401+900	TYPE-I-D	25
75	401+900	401+925	TYPE-I-A	25
76	401+925	401+950	TYPE-I-A	25
77	402+000	402+025	TYPE-II-B	25
78	402+025	402+050	TYPE-II-B	25
79	402+050	402+075	TYPE-I-C	25
80	402+075	402+100	TYPE-I-A	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
81	402+100	402+125	TYPE-I-A	25
82	402+125	402+150	TYPE-I-A	25
83	402+150	402+175	TYPE-II	25
84	402+175	402+200	TYPE-I-C	25
85	402+200	402+225	TYPE-I-C	25
86	402+225	402+250	TYPE-I-C	25
87	402+250	402+275	TYPE-I-C	14
88	402+275	402+300	TYPE-I-C	25
89	402+300	402+325	TYPE-I-C	25
90	402+325	402+350	TYPE-I-A	25
91	402+350	402+375	TYPE-I-A	14
92	402+600	402+625	TYPE-I-C	25
93	402+650	402+675	TYPE-I-C	25
94	402+675	402+700	TYPE-I	25
95	402+700	402+725	TYPE-I	25
96	402+725	402+750	TYPE-I	25
97	402+750	402+775	TYPE-I	25
98	402+775	402+800	TYPE-I	25
99	402+800	402+825	TYPE-I	25
100	402+825	402+850	TYPE-I	25
101	402+850	402+875	TYPE-I	25
102	402+875	402+900	TYPE-I	25
103	402+900	402+925	TYPE-I	25
104	402+925	402+950	TYPE-I-C	25
105	403+600	403+625	TYPE-I-A	25
106	403+625	403+650	TYPE-I-A	25
107	403+650	403+675	TYPE-I-A	25
108	403+675	403+700	TYPE-I-A	14
109	403+700	403+725	TYPE-I-A	25
110	403+725	403+750	TYPE-I-A	25
111	403+750	403+775	TYPE-I-A	25
112	403+775	403+800	TYPE-I-A	25
113	403+800	403+825	TYPE-I-A	25
114	403+825	403+850	TYPE-I-A	14
115	403+850	403+875	TYPE-II	25
116	403+875	403+900	TYPE-II	25
117	403+900	403+925	TYPE-II	25
118	403+925	403+950	TYPE-II	25
119	403+950	403+975	TYPE-II	25
120	403+975	404+000	TYPE-II-B	25
121	404+000	404+025	TYPE-II	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
122	404+025	404+050	TYPE-II	25
123	404+050	404+075	TYPE-II	25
124	404+075	404+100	TYPE-II	25
125	404+100	404+125	TYPE-II	25
126	404+125	404+150	TYPE-II	25
127	404+150	404+175	TYPE-II	25
128	404+175	404+200	TYPE-II-B	25
129	404+200	404+225	TYPE-II-B	14
130	404+225	404+250	TYPE-II-B	25
131	404+250	404+275	TYPE-II-B	25
132	404+275	404+300	TYPE-II	25
133	404+300	404+325	TYPE-II	25
134	404+325	404+350	TYPE-II-B	25
135	404+350	404+375	TYPE-II	25
136	404+375	404+400	TYPE-II	25
137	404+400	404+425	TYPE-II	25
138	404+425	404+450	TYPE-II	14
139	404+450	404+475	TYPE-I-A	25
140	404+475	404+500	TYPE-I-A	25
141	404+500	404+525	TYPE-I-A	25
142	404+525	404+550	TYPE-I-A	25
143	404+550	404+575	TYPE-I-B	25
144	404+575	404+600	TYPE-I-B	25
145	404+600	404+625	TYPE-IV	25
146	404+675	404+700	TYPE-IV-B	25
147	404+700	404+725	TYPE-IV	25
148	404+725	404+750	TYPE-IV	25
149	404+750	404+775	TYPE-II	25
150	404+775	404+800	TYPE-I-B	14
151	404+800	404+825	TYPE-I-A	25
152	404+825	404+850	TYPE-I-B	25
153	404+850	404+875	TYPE-I-B	25
154	404+875	404+900	TYPE-I-B	25
155	404+900	404+925	TYPE-II-B	25
156	404+925	404+950	TYPE-II	25
157	404+950	404+975	TYPE-II	25
158	404+975	405+000	TYPE-II	25
159	405+000	405+025	TYPE-I-A	25
160	405+025	405+050	TYPE-I-A	14
161	405+050	405+075	TYPE-I-A	25
162	405+075	405+100	TYPE-I-A	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
163	405+100	405+125	TYPE-I-A	25
164	405+125	405+150	TYPE-I-A	25
165	405+150	405+175	TYPE-I-A	25
166	405+175	405+200	TYPE-I-A	25
167	405+200	405+225	TYPE-I-A	25
168	405+225	405+250	TYPE-I-B	25
169	405+250	405+275	TYPE-I-B	25
170	405+275	405+300	TYPE-I-A	25
171	405+300	405+325	TYPE-I-A	14
172	405+325	405+350	TYPE-I-A	25
173	405+350	405+375	TYPE-I-A	25
174	405+375	405+400	TYPE-I-A	25
175	405+400	405+425	TYPE-I-A	25
176	405+425	405+450	TYPE-I-B	25
177	405+450	405+475	TYPE-I-B	14
178	405+475	405+500	TYPE-II	25
179	405+500	405+525	TYPE-II	25
180	405+525	405+550	TYPE-II-B	14
181	405+550	405+575	TYPE-II	25
182	405+575	405+600	TYPE-II	25
183	405+600	405+625	TYPE-II-B	14
184	405+625	405+650	TYPE-II	25
185	405+650	405+675	TYPE-II	25
186	405+675	405+700	TYPE-II	14
187	405+700	405+725	TYPE-II-B	25
188	405+725	405+750	TYPE-II	25
189	405+750	405+775	TYPE-II	25
190	405+775	405+800	TYPE-II-B	14
191	405+800	405+825	TYPE-I	25
192	405+825	405+850	TYPE-I	25
193	405+850	405+875	TYPE-I	25
194	405+875	405+900	TYPE-I	25
195	405+900	405+925	TYPE-I	25
196	405+925	405+950	TYPE-I	25
197	405+950	405+975	TYPE-I	25
198	405+975	406+000	TYPE-I	25
199	406+000	406+025	TYPE-I	25
200	406+025	406+050	TYPE-III	25
201	406+050	406+075	TYPE-III	25
202	406+125	406+150	TYPE-III	25
203	406+150	406+175	TYPE-III-B	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
204	406+175	406+200	TYPE-I-A	25
205	406+200	406+225	TYPE-I-A	25
206	406+225	406+250	TYPE-I-B	25
207	406+250	406+275	TYPE-II-B	25
208	406+275	406+300	TYPE-II	25
209	406+300	406+325	TYPE-II-B	25
210	406+325	406+350	TYPE-I-B	25
211	406+350	406+375	TYPE-I-A	25
212	406+375	406+400	TYPE-I-A	25
213	406+400	406+425	TYPE-I-A	14
214	406+425	406+450	TYPE-I-A	25
215	407+575	407+600	TYPE-I-A	25
216	407+600	407+625	TYPE-I-A	25
217	407+625	407+650	TYPE-I-A	25
218	407+650	407+675	TYPE-I-A	25
219	407+675	407+700	TYPE-I-A	14
220	407+700	407+725	TYPE-I-A	25
221	407+725	407+750	TYPE-I-B	25
222	407+750	407+775	TYPE-I-B	25
223	407+775	407+800	TYPE-I-A	25
224	407+800	407+825	TYPE-I-A	25
225	407+825	407+850	TYPE-II	25
226	407+850	407+875	TYPE-II	25
227	407+875	407+900	TYPE-II	25
228	407+900	407+925	TYPE-II	25
229	407+925	407+950	TYPE-I	14
230	407+950	407+975	TYPE-I-A	25
231	407+975	408+000	TYPE-I-A	25
232	408+000	408+025	TYPE-I-C	12
233	408+025	408+050	TYPE-I-C	25
234	408+050	408+075	TYPE-I	14
235	408+075	408+100	TYPE-I-A	25
236	408+100	408+125	TYPE-I-A	25
237	408+125	408+150	TYPE-I-A	25
238	408+150	408+175	TYPE-I	14
239	408+175	408+200	TYPE-I	25
240	408+200	408+225	TYPE-II-A	25
241	408+225	408+250	TYPE-II-A	25
242	408+250	408+275	TYPE-II	25
243	408+275	408+300	TYPE-II	14
244	408+300	408+325	TYPE-II-A	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
245	408+325	408+350	TYPE-II-A	25
246	408+350	408+375	TYPE-I-A	25
247	408+375	408+400	TYPE-I-A	25
248	408+400	408+425	TYPE-I-A	25
249	408+425	408+450	TYPE-I-A	25
250	408+450	408+475	TYPE-I-A	14
251	408+475	408+500	TYPE-I-A	25
252	408+500	408+525	TYPE-I-A	25
253	408+525	408+550	TYPE-I	25
254	408+550	408+575	TYPE-I	25
255	408+575	408+600	TYPE-I-A	25
256	408+600	408+625	TYPE-I-A	25
257	408+625	408+650	TYPE-I-A	25
258	408+650	408+675	TYPE-I-A	14
259	408+675	408+700	TYPE-I-A	25
260	408+700	408+725	TYPE-I-A	14
261	408+725	408+750	TYPE-I-A	25
262	408+750	408+775	TYPE-I-A	25
263	408+775	408+800	TYPE-I-A	14
264	408+800	408+825	TYPE-I-A	25
265	408+825	408+850	TYPE-I-A	25
266	408+850	408+875	TYPE-I-A	25
267	408+875	408+900	TYPE-I-A	25
268	408+900	408+925	TYPE-I-A	25
269	408+925	408+950	TYPE-I-A	25
270	408+950	408+975	TYPE-I-C	25
271	408+975	409+000	TYPE-I-C	14
272	409+000	409+025	TYPE-I-C	25
273	409+025	409+050	TYPE-I-C	25
274	409+050	409+075	TYPE-II-B	25
275	409+075	409+100	TYPE-IV-A	25
276	409+150	409+175	TYPE-I	25
277	409+175	409+200	TYPE-I	25
278	409+200	409+225	TYPE-I	25
279	409+225	409+250	TYPE-I	25
280	409+250	409+275	TYPE-I	25
281	409+275	409+300	TYPE-I	25
282	409+300	409+325	TYPE-I	25
283	409+325	409+350	TYPE-I-A	25
284	409+350	409+375	TYPE-I-A	25
285	409+375	409+400	TYPE-I-A	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
286	409+400	409+425	TYPE-I-B	25
287	409+425	409+450	TYPE-I-A	25
288	409+450	409+475	TYPE-I-A	25
289	409+475	409+500	TYPE-I-B	14
290	409+500	409+525	TYPE-I-B	25
291	409+525	409+550	TYPE-I-B	25
292	409+775	409+800	TYPE-III-A	25
293	409+800	409+825	TYPE-III-A	25
294	409+825	409+850	TYPE-III-A	25
295	409+850	409+875	TYPE-I-C	25
296	409+875	409+900	TYPE-I-B	25
297	409+900	409+925	TYPE-I-A	25
298	409+925	409+950	TYPE-I-A	16
299	409+950	409+975	TYPE-III-C	25
300	409+975	410+000	TYPE-III-B	25
301	410+000	410+025	TYPE-III-C	25
302	410+025	410+050	TYPE-I-A	25
303	410+050	410+075	TYPE-I-C	25
304	410+075	410+100	TYPE-I-C	25
305	410+100	410+125	TYPE-I-C	25
306	410+125	410+150	TYPE-I-B	25
307	410+150	410+175	TYPE-I-B	16
308	410+175	410+200	TYPE-I-B	25
309	410+200	410+225	TYPE-I-B	25
310	410+225	410+250	TYPE-I-B	25
311	410+250	410+275	TYPE-I-B	25
312	410+275	410+300	TYPE-I-B	25
313	410+300	410+325	TYPE-III-B	25
314	410+325	410+350	TYPE-III-B	25
315	410+425	410+450	TYPE-I-C	16
316	410+450	410+475	TYPE-I-C	25
317	410+475	410+500	TYPE-I-C	25
318	410+500	410+525	TYPE-I-C	25
319	410+525	410+550	TYPE-I-C	25
320	410+550	410+575	TYPE-I-C	25
321	410+575	410+600	TYPE-I	25
322	410+600	410+625	TYPE-I	25
323	410+625	410+650	TYPE-I	25
324	410+650	410+675	TYPE-I-B	25
325	410+675	410+700	TYPE-I-B	16
326	410+700	410+725	TYPE-I-A	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
327	410+725	410+750	TYPE-I	25
328	410+750	410+775	TYPE-I	25
329	410+775	410+800	TYPE-I-C	25
330	410+800	410+825	TYPE-I-C	25
331	410+825	410+850	TYPE-I-C	16
332	410+850	410+875	TYPE-I-C	25
333	410+875	410+900	TYPE-I-C	25
334	410+900	410+925	TYPE-I	25
335	410+925	410+950	TYPE-III	25
336	410+950	410+975	TYPE-III-B	25
337	410+975	411+000	TYPE-III-B	16
338	411+000	411+025	TYPE-III-D	25
339	411+025	411+050	TYPE-III-B	25
340	411+050	411+075	TYPE-III-A	25
341	411+075	411+100	TYPE-III-A	25
342	411+100	411+125	TYPE-I-C	25
343	411+125	411+150	TYPE-I	14
344	411+150	411+175	TYPE-III-A	25
345	411+175	411+200	TYPE-III-A	25
346	411+200	411+225	TYPE-III-B	25
347	411+225	411+250	TYPE-III-D	25
348	411+250	411+275	TYPE-III-D	25
349	411+275	411+300	TYPE-III-B	25
350	411+300	411+325	TYPE-I	25
351	411+375	411+400	TYPE-II-B	25
352	411+400	411+425	TYPE-II-B	25
353	411+425	411+450	TYPE-II-B	25
354	411+450	411+475	TYPE-II	25
355	411+475	411+500	TYPE-II	25
356	411+500	411+525	TYPE-II	25
357	411+525	411+550	TYPE-II-B	14
358	411+550	411+575	TYPE-II-B	25
359	411+575	411+600	TYPE-II	25
360	411+600	411+625	TYPE-II	25
361	411+625	411+650	TYPE-II	25
362	411+650	411+675	TYPE-I-A	25
363	411+675	411+700	TYPE-I-A	25
364	411+700	411+725	TYPE-I	25
365	411+725	411+750	TYPE-I-C	16
366	411+750	411+775	TYPE-I-C	25
367	411+775	411+800	TYPE-I	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
368	411+800	411+825	TYPE-I	25
369	411+825	411+850	TYPE-I-B	25
370	411+850	411+875	TYPE-I-B	25
371	411+875	411+900	TYPE-I-B	25
372	411+900	411+925	TYPE-I-B	25
373	411+925	411+950	TYPE-I-C	25
374	411+950	411+975	TYPE-I	16
375	411+975	412+000	TYPE-I	25
376	412+000	412+025	TYPE-I	25
377	412+025	412+050	TYPE-I	25
378	412+050	412+075	TYPE-I	25
379	412+075	412+100	TYPE-I-C	25
380	412+100	412+125	TYPE-I-C	25
381	412+125	412+150	TYPE-I-C	25
382	412+150	412+175	TYPE-I-C	25
383	412+175	412+200	TYPE-I	25
384	412+200	412+225	TYPE-I	14
385	412+225	412+250	TYPE-I	25
386	412+250	412+275	TYPE-I	25
387	412+275	412+300	TYPE-I	25
388	412+300	412+325	TYPE-I	25
389	412+325	412+350	TYPE-I-A	25
390	412+350	412+375	TYPE-I	25
391	412+375	412+400	TYPE-I	25
392	412+400	412+425	TYPE-I-C	16
393	412+425	412+450	TYPE-I-C	25
394	412+450	412+475	TYPE-I-C	25
395	412+475	412+500	TYPE-I-B	25
396	412+500	412+525	TYPE-I-B	16
397	412+525	412+550	TYPE-I-B	25
398	412+550	412+575	TYPE-I-A	16
399	412+575	412+600	TYPE-I-A	25
400	412+600	412+625	TYPE-I-A	25
401	412+625	412+650	TYPE-I-A	25
402	412+650	412+675	TYPE-I	25
403	412+675	412+700	TYPE-I	25
404	412+700	412+725	TYPE-I	16
405	412+725	412+750	TYPE-I	16
406	412+750	412+775	TYPE-I	25
407	412+775	412+800	TYPE-I	25
408	412+800	412+825	TYPE-I	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
409	412+825	412+850	TYPE-I	25
410	412+850	412+875	TYPE-I	16
411	412+875	412+900	TYPE-I	25
412	412+900	412+925	TYPE-I	25
413	412+925	412+950	TYPE-I	14
414	412+950	412+975	TYPE-I	25
415	412+975	413+000	TYPE-III-B	25
416	413+000	413+025	TYPE-III-D	12
417	413+025	413+050	TYPE-III-D	25
418	413+050	413+075	TYPE-I	25
419	413+075	413+100	TYPE-I-A	25
420	413+100	413+125	TYPE-I-A	25
421	413+125	413+150	TYPE-I-A	25
422	413+150	413+175	TYPE-I-A	25
423	413+175	413+200	TYPE-I-A	25
424	413+200	413+225	TYPE-I-A	25
425	413+225	413+250	TYPE-I-A	25
426	413+250	413+275	TYPE-I-A	25
427	413+275	413+300	TYPE-I-A	12
428	413+300	413+325	TYPE-I-A	25
429	413+325	413+350	TYPE-I-B	25
430	413+350	413+375	TYPE-I-A	25
431	413+375	413+400	TYPE-I-A	25
432	413+400	413+425	TYPE-I-A	25
433	413+425	413+450	TYPE-I-A	25
434	413+450	413+475	TYPE-I-A	25
435	413+475	413+500	TYPE-II	14
436	413+500	413+525	TYPE-II	25
437	413+525	413+550	TYPE-II	25
438	413+550	413+575	TYPE-II	25
439	413+575	413+600	TYPE-II	25
440	413+600	413+625	TYPE-II	25
441	413+625	413+650	TYPE-III-B	25
442	413+650	413+675	TYPE-III-C	12
443	413+800	413+825	TYPE-I	25
444	413+825	413+850	TYPE-I	25
445	413+850	413+875	TYPE-I	14
446	413+875	413+900	TYPE-I	25
447	413+900	413+925	TYPE-I-C	25
448	413+925	413+950	TYPE-I-C	25
449	413+950	413+975	TYPE-I	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
450	413+975	414+000	TYPE-I-A	25
451	414+000	414+025	TYPE-I-A	25
452	414+025	414+050	TYPE-I	25
453	414+050	414+075	TYPE-I	25
454	414+075	414+100	TYPE-I	25
455	414+100	414+125	TYPE-I	25
456	414+125	414+150	TYPE-I	16
457	414+150	414+175	TYPE-I	25
458	414+175	414+200	TYPE-I	25
459	414+200	414+225	TYPE-I	25
460	414+225	414+250	TYPE-I	25
461	414+250	414+275	TYPE-I	25
462	414+275	414+300	TYPE-I	16
463	414+300	414+325	TYPE-I	25
464	414+325	414+350	TYPE-I	25
465	414+350	414+375	TYPE-I	25
466	414+375	414+400	TYPE-I	25
467	414+400	414+425	TYPE-I	25
468	414+425	414+450	TYPE-I	25
469	414+450	414+475	TYPE-I	25
470	414+475	414+500	TYPE-I	25
471	414+500	414+525	TYPE-I	25
472	414+525	414+550	TYPE-I	25
473	414+550	414+575	TYPE-I	25
474	414+575	414+600	TYPE-I	25
475	414+600	414+625	TYPE-I	25
476	414+625	414+650	TYPE-I	25
477	414+650	414+675	TYPE-I	14
478	414+675	414+700	TYPE-I	25
479	414+700	414+725	TYPE-I	25
480	414+725	414+750	TYPE-I	25
481	414+750	414+775	TYPE-I	25
482	414+775	414+800	TYPE-I	25
483	414+800	414+825	TYPE-I	25
484	414+825	414+850	TYPE-I	14
485	414+850	414+875	TYPE-I	25
486	414+875	414+900	TYPE-I	25
487	414+900	414+925	TYPE-I	25
488	414+925	414+950	TYPE-I	25
489	414+950	414+975	TYPE-I	25
490	414+975	415+000	TYPE-I	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
491	415+000	415+025	TYPE-I	16
492	415+025	415+050	TYPE-I	25
493	415+050	415+075	TYPE-I	25
494	415+075	415+100	TYPE-I	25
495	415+100	415+125	TYPE-I	25
496	415+125	415+150	TYPE-I	25
497	415+150	415+175	TYPE-I	25
498	415+175	415+200	TYPE-I	25
499	415+200	415+225	TYPE-I	25
500	415+225	415+250	TYPE-III-B	25
501	415+250	415+275	TYPE-III-B	14
502	415+275	415+300	TYPE-II	25
503	415+300	415+325	TYPE-II	25
504	415+325	415+350	TYPE-II	25
505	415+350	415+375	TYPE-IV-A	25
506	415+375	415+400	TYPE-IV-A	14
507	415+400	415+425	TYPE-IV-A	25
508	415+425	415+450	TYPE-IV	25
509	415+450	415+475	TYPE-IV	25
510	415+475	415+500	TYPE-IV	16
511	415+500	415+525	TYPE-IV	25
512	415+525	415+550	TYPE-IV-A	25
513	415+550	415+575	TYPE-II-B	25
514	415+575	415+600	TYPE-II-B	25
515	415+600	415+625	TYPE-II-B	25
516	415+625	415+650	TYPE-II-A	25
517	415+650	415+675	TYPE-II-A	25
518	415+675	415+700	TYPE-II-A	25
519	415+700	415+725	TYPE-II-A	25
520	415+725	415+750	TYPE-II-B	16
521	415+750	415+775	TYPE-II-B	25
522	415+775	415+800	TYPE-II	25
523	415+800	415+825	TYPE-I-C	16
524	415+825	415+850	TYPE-I-D	16
525	415+850	415+875	TYPE-I-C	25
526	415+875	415+900	TYPE-I	25
527	415+900	415+925	TYPE-II	25
528	415+925	415+950	TYPE-II	25
529	415+950	415+975	TYPE-II	25
530	415+975	416+000	TYPE-I	14
531	416+000	416+025	TYPE-III-A	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
532	416+025	416+050	TYPE-III-A	25
533	416+050	416+075	TYPE-III-A	25
534	416+075	416+100	TYPE-III-B	25
535	416+100	416+125	TYPE-III-B	14
536	416+125	416+150	TYPE-III-C	25
537	416+150	416+175	TYPE-III-A	16
538	416+175	416+200	TYPE-III-A	25
539	416+200	416+225	TYPE-I-A	25
540	416+225	416+250	TYPE-I-B	25
541	416+250	416+275	TYPE-II-B	25
542	416+275	416+300	TYPE-II	25
543	416+300	416+325	TYPE-II-B	25
544	416+325	416+350	TYPE-II-B	25
545	416+350	416+375	TYPE-II	25
546	416+375	416+400	TYPE-II	25
547	416+400	416+425	TYPE-II	25
548	416+425	416+450	TYPE-II-B	14
549	416+450	416+475	TYPE-II-B	25
550	416+475	416+500	TYPE-II-B	25
551	416+500	416+525	TYPE-II	25
552	416+525	416+550	TYPE-II	25
553	416+550	416+575	TYPE-II-B	25
554	416+575	416+600	TYPE-II	25
555	416+600	416+625	TYPE-II	25
556	416+625	416+650	TYPE-II	25
557	416+650	416+675	TYPE-II	14
558	416+675	416+700	TYPE-II	25
559	416+700	416+725	TYPE-II	25
560	416+725	416+750	TYPE-II	25
561	416+750	416+775	TYPE-II	25
562	416+775	416+800	TYPE-II	25
563	416+800	416+825	TYPE-II	25
564	416+825	416+850	TYPE-II	25
565	416+850	416+875	TYPE-II	25
566	416+875	416+900	TYPE-II	25
567	416+900	416+925	TYPE-II	25
568	416+925	416+950	TYPE-II	25
569	416+950	416+975	TYPE-II	25
570	416+975	417+000	TYPE-II	25
571	417+000	417+025	TYPE-II	25
572	417+025	417+050	TYPE-II	16

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
573	417+050	417+075	TYPE-II	25
574	417+075	417+100	TYPE-II	16
575	417+100	417+125	TYPE-II	25
576	417+125	417+150	TYPE-II	25
577	417+150	417+175	TYPE-II	25
578	417+175	417+200	TYPE-II-B	25
579	417+200	417+225	TYPE-IV-A	25
580	417+225	417+250	TYPE-IV	25
581	417+250	417+275	TYPE-IV	25
582	417+350	417+375	TYPE-I-A	25
583	417+375	417+400	TYPE-I-A	25
584	417+400	417+425	TYPE-I-A	25
585	417+475	417+500	TYPE-I-D	25
586	417+500	417+525	TYPE-I-D	25
587	417+525	417+550	TYPE-I-D	25
588	417+550	417+575	TYPE-I-D	25
589	417+575	417+600	TYPE-I-D	25
590	418+250	418+275	TYPE-I-A	25
591	418+275	418+300	TYPE-I-A	25
592	418+300	418+325	TYPE-I-A	25
593	418+325	418+350	TYPE-I-B	16
594	418+350	418+375	TYPE-I-A	25
595	418+375	418+400	TYPE-I-A	25
596	418+400	418+425	TYPE-I-A	25
597	418+425	418+450	TYPE-I-A	25
598	418+650	418+675	TYPE-I-A	25
599	418+675	418+700	TYPE-I-A	25
600	418+700	418+725	TYPE-I-A	25
601	418+725	418+750	TYPE-I-A	25
602	418+750	418+775	TYPE-I-A	25
603	418+775	418+800	TYPE-I-A	25
604	418+800	418+825	TYPE-I-A	14
605	418+825	418+850	TYPE-I-A	25
606	418+850	418+875	TYPE-I-B	25
607	418+875	418+900	TYPE-I-B	25
608	418+900	418+925	TYPE-I-B	25
609	418+925	418+950	TYPE-I-A	25
610	418+950	418+975	TYPE-I-A	25
611	418+975	419+000	TYPE-I-A	25
612	419+000	419+025	TYPE-I-A	25
613	419+025	419+050	TYPE-I-C	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
614	419+050	419+075	TYPE-I-C	25
615	419+075	419+100	TYPE-II-A	25
616	419+100	419+125	TYPE-II-A	25
617	419+125	419+150	TYPE-I-A	25
618	419+150	419+175	TYPE-I-A	25
619	419+175	419+200	TYPE-I-A	25
620	419+200	419+225	TYPE-I-A	25
621	419+225	419+250	TYPE-I-A	16
622	419+250	419+275	TYPE-I-A	25
623	419+275	419+300	TYPE-I-B	25
624	419+300	419+325	TYPE-I-B	25
625	419+325	419+350	TYPE-I-B	25
626	419+350	419+375	TYPE-I-A	25
627	419+375	419+400	TYPE-I-A	14
628	419+400	419+425	TYPE-I-B	25
629	419+425	419+450	TYPE-I-B	25
630	419+450	419+475	TYPE-I-B	25
631	419+475	419+500	TYPE-I-A	25
632	419+500	419+525	TYPE-I-A	16
633	419+525	419+550	TYPE-I-B	25
634	419+550	419+575	TYPE-III-D	25
635	419+625	419+650	TYPE-II-B	25
636	419+650	419+675	TYPE-II	25
637	419+675	419+700	TYPE-II	25
638	419+700	419+725	TYPE-II	25
639	419+725	419+750	TYPE-II	16
640	419+750	419+775	TYPE-II-B	25
641	419+775	419+800	TYPE-II-B	25
642	419+800	419+825	TYPE-II	25
643	419+825	419+850	TYPE-II	25
644	419+850	419+875	TYPE-II	25
645	419+875	419+900	TYPE-II	25
646	419+900	419+925	TYPE-II	25
647	419+925	419+950	TYPE-II	25
648	419+950	419+975	TYPE-II	25
649	419+975	420+000	TYPE-II-B	25
650	420+000	420+025	TYPE-II-B	16
651	420+025	420+050	TYPE-II-B	25
652	420+050	420+075	TYPE-II	25
653	420+075	420+100	TYPE-II	25
654	420+100	420+125	TYPE-I-B	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
655	420+125	420+150	TYPE-I-C	12
656	420+150	420+175	TYPE-I-A	25
657	420+175	420+200	TYPE-I-B	25
658	420+200	420+225	TYPE-I-B	14
659	420+225	420+250	TYPE-I-A	25
660	420+250	420+275	TYPE-I-A	25
661	420+275	420+300	TYPE-I-A	25
662	420+300	420+325	TYPE-I-A	14
663	420+325	420+350	TYPE-I-A	25
664	420+350	420+375	TYPE-I-A	25
665	420+375	420+400	TYPE-I-B	25
666	420+400	420+425	TYPE-I-B	25
667	420+425	420+450	TYPE-I-B	25
668	420+450	420+475	TYPE-I-A	25
669	420+525	420+550	TYPE-I	25
670	420+550	420+575	TYPE-I-B	25
671	420+575	420+600	TYPE-I-B	25
672	420+600	420+625	TYPE-I-A	25
673	420+625	420+650	TYPE-I-A	25
674	420+650	420+675	TYPE-I-A	25
675	420+675	420+700	TYPE-I-A	25
676	420+700	420+725	TYPE-I-A	25
677	420+725	420+750	TYPE-I-A	14
678	420+750	420+775	TYPE-II	25
679	420+775	420+800	TYPE-II	25
680	420+800	420+825	TYPE-II	25
681	420+825	420+850	TYPE-II-A	25
682	420+850	420+875	TYPE-II-A	25
683	420+875	420+900	TYPE-I-A	25
684	420+900	420+925	TYPE-I-A	25
685	420+925	420+950	TYPE-I-A	25
686	420+950	420+975	TYPE-I-B	14
687	420+975	421+000	TYPE-I-B	25
688	421+000	421+025	TYPE-I-A	25
689	421+025	421+050	TYPE-I-A	25
690	421+050	421+075	TYPE-I	25
691	421+075	421+100	TYPE-I	16
692	421+100	421+125	TYPE-I-A	25
693	421+125	421+150	TYPE-I-A	25
694	421+150	421+175	TYPE-I	25
695	421+175	421+200	TYPE-I	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
696	421+200	421+225	TYPE-I-C	25
697	421+225	421+250	TYPE-I-D	25
698	421+250	421+275	TYPE-I-B	14
699	421+625	421+650	TYPE-I-C	25
700	421+650	421+675	TYPE-I-B	25
701	421+675	421+700	TYPE-I-B	16
702	421+700	421+725	TYPE-I-B	25
703	421+725	421+750	TYPE-I-B	25
704	421+750	421+775	TYPE-I-A	25
705	421+775	421+800	TYPE-I-A	14
706	421+800	421+825	TYPE-I-A	25
707	421+825	421+850	TYPE-I-A	25
708	421+850	421+875	TYPE-I-A	25
709	421+875	421+900	TYPE-I-A	25
710	421+900	421+925	TYPE-I-A	25
711	421+925	421+950	TYPE-I-B	25
712	421+950	421+975	TYPE-I-A	25
713	421+975	422+000	TYPE-I-A	25
714	422+000	422+025	TYPE-I	14
715	422+450	422+475	TYPE-I-A	25
716	422+475	422+500	TYPE-I-A	25
717	422+500	422+525	TYPE-I-A	25
718	422+525	422+550	TYPE-I-A	25
719	422+550	422+575	TYPE-I-A	25
720	422+575	422+600	TYPE-I-A	14
721	422+600	422+625	TYPE-I-A	25
722	422+625	422+650	TYPE-I-A	25
723	422+650	422+675	TYPE-I-A	25
724	422+675	422+700	TYPE-I-A	25
725	422+700	422+725	TYPE-I-A	25
726	422+725	422+750	TYPE-I-A	25
727	422+750	422+775	TYPE-I-B	25
728	422+775	422+800	TYPE-I-A	25
729	422+800	422+825	TYPE-I-A	14
730	422+825	422+850	TYPE-I-A	16
731	422+850	422+875	TYPE-I-A	25
732	422+875	422+900	TYPE-I-A	25
733	422+900	422+925	TYPE-I-A	25
734	422+925	422+950	TYPE-I-A	25
735	422+950	422+975	TYPE-I-A	25
736	422+975	423+000	TYPE-I-A	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
737	423+000	423+025	TYPE-I-A	25
738	423+025	423+050	TYPE-I-A	25
739	423+050	423+075	TYPE-I-A	25
740	423+075	423+100	TYPE-I-A	16
741	423+100	423+125	TYPE-I-A	25
742	423+125	423+150	TYPE-I-A	25
743	423+150	423+175	TYPE-I-A	16
744	423+175	423+200	TYPE-I-A	25
745	423+200	423+225	TYPE-I-A	25
746	423+225	423+250	TYPE-I-A	25
747	423+250	423+275	TYPE-I-A	16
748	423+275	423+300	TYPE-II	25
749	423+300	423+325	TYPE-II	25
750	423+325	423+350	TYPE-II	25
751	423+350	423+375	TYPE-II	25
752	423+375	423+400	TYPE-II	14
753	423+400	423+425	TYPE-II	25
754	423+425	423+450	TYPE-II	25
755	423+450	423+475	TYPE-II	25
756	423+475	423+500	TYPE-II	25
757	423+500	423+525	TYPE-I-A	25
758	423+525	423+550	TYPE-I-A	25
759	423+550	423+575	TYPE-I-A	16
760	423+575	423+600	TYPE-I-B	25
761	423+600	423+625	TYPE-I-B	25
762	423+625	423+650	TYPE-I-A	25
763	423+650	423+675	TYPE-I-A	25
764	423+675	423+700	TYPE-I-A	14
765	423+700	423+725	TYPE-I-A	25
766	423+725	423+750	TYPE-I-A	25
767	423+750	423+775	TYPE-I-C	25
768	423+775	423+800	TYPE-I-D	25
769	423+800	423+825	TYPE-I-D	25
770	423+825	423+850	TYPE-I-B	25
771	423+850	423+875	TYPE-I-C	25
772	423+875	423+900	TYPE-I-C	14
773	423+900	423+925	TYPE-I-C	25
774	423+925	423+950	TYPE-I-C	14
775	423+950	423+975	TYPE-I-C	25
776	423+975	424+000	TYPE-I-C	25
777	424+000	424+025	TYPE-I	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
778	424+025	424+050	TYPE-I	25
779	424+050	424+075	TYPE-I-C	25
780	424+075	424+100	TYPE-I-C	16
781	424+100	424+125	TYPE-I-C	25
782	424+125	424+150	TYPE-I	25
783	424+150	424+175	TYPE-I-A	25
784	424+175	424+200	TYPE-I-A	14
785	424+200	424+225	TYPE-I-A	25
786	424+225	424+250	TYPE-I-A	25
787	424+250	424+275	TYPE-I	25
788	424+275	424+300	TYPE-I-C	14
789	424+300	424+325	TYPE-I-C	25
790	424+325	424+350	TYPE-I-C	25
791	424+350	424+375	TYPE-I-C	25
792	424+375	424+400	TYPE-I-C	12
793	424+400	424+425	TYPE-I-C	25
794	424+425	424+450	TYPE-I-C	25
795	424+450	424+475	TYPE-II-B	25
796	424+475	424+500	TYPE-II-B	25
797	424+500	424+525	TYPE-II-B	25
798	424+525	424+550	TYPE-II	25
799	424+550	424+575	TYPE-II	25
800	424+575	424+600	TYPE-I-B	12
801	424+600	424+625	TYPE-I-B	25
802	424+625	424+650	TYPE-I-A	25
803	424+650	424+675	TYPE-I-A	25
804	424+675	424+700	TYPE-I-B	25
805	424+700	424+725	TYPE-I-B	14
806	424+725	424+750	TYPE-I-B	25
807	424+750	424+775	TYPE-I-B	25
808	424+775	424+800	TYPE-I-A	25
809	424+800	424+825	TYPE-I-A	25
810	424+825	424+850	TYPE-I-A	25
811	424+850	424+875	TYPE-I-A	25
812	424+875	424+900	TYPE-I-A	14
813	424+900	424+925	TYPE-I	25
814	424+925	424+950	TYPE-I	25
815	424+950	424+975	TYPE-I-C	25
816	424+975	425+000	TYPE-I	25
817	425+000	425+025	TYPE-I	25
818	425+025	425+050	TYPE-I	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
819	425+050	425+075	TYPE-I-C	25
820	425+075	425+100	TYPE-I-C	25
821	425+100	425+125	TYPE-I-C	25
822	425+200	425+225	TYPE-III-B	25
823	425+225	425+250	TYPE-I	25
824	425+250	425+275	TYPE-I-C	16
825	425+275	425+300	TYPE-I-C	25
826	425+300	425+325	TYPE-I	25
827	425+325	425+350	TYPE-I-C	25
828	425+350	425+375	TYPE-I-C	25
829	425+375	425+400	TYPE-I	25
830	425+400	425+425	TYPE-I-C	14
831	425+425	425+450	TYPE-I-C	25
832	425+450	425+475	TYPE-I-C	25
833	425+475	425+500	TYPE-I-C	25
834	425+500	425+525	TYPE-I-C	25
835	425+525	425+550	TYPE-I-C	25
836	425+550	425+575	TYPE-I-B	25
837	425+625	425+650	TYPE-II-B	25
838	425+650	425+675	TYPE-II-B	25
839	425+675	425+700	TYPE-II-B	25
840	425+700	425+725	TYPE-II-B	25
841	425+725	425+750	TYPE-II-B	25
842	425+750	425+775	TYPE-II-C	25
843	425+775	425+800	TYPE-II-C	25
844	425+800	425+825	TYPE-II-C	25
845	425+825	425+850	TYPE-II-B	25
846	425+850	425+875	TYPE-II-B	25
847	425+875	425+900	TYPE-II-B	25
848	425+900	425+925	TYPE-II-B	25
849	425+925	425+950	TYPE-II	25
850	425+950	425+975	TYPE-II	25
851	425+975	426+000	TYPE-II	25
852	426+000	426+025	TYPE-IV-A	25
853	426+025	426+050	TYPE-IV-A	12
854	426+050	426+075	TYPE-III-B	25
855	426+075	426+100	TYPE-I-C	25
856	426+100	426+125	TYPE-I-C	25
857	426+125	426+150	TYPE-I	25
858	426+150	426+175	TYPE-I	25
859	426+175	426+200	TYPE-I	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
860	426+200	426+225	TYPE-I-C	25
861	426+225	426+250	TYPE-I-C	14
862	426+250	426+275	TYPE-I-C	25
863	426+275	426+300	TYPE-I-C	25
864	426+300	426+325	TYPE-II-B	25
865	426+325	426+350	TYPE-II	25
866	426+350	426+375	TYPE-I-A	25
867	426+375	426+400	TYPE-I-A	25
868	426+400	426+425	TYPE-I-A	25
869	426+425	426+450	TYPE-I-A	25
870	426+450	426+475	TYPE-I-A	14
871	426+475	426+500	TYPE-I-A	25
872	426+500	426+525	TYPE-I-A	25
873	426+525	426+550	TYPE-II-B	25
874	426+550	426+575	TYPE-II	25
875	426+575	426+600	TYPE-I-A	25
876	426+600	426+625	TYPE-I-A	14
877	426+625	426+650	TYPE-I-A	25
878	426+650	426+675	TYPE-I-A	25
879	426+675	426+700	TYPE-I-B	25
880	426+700	426+725	TYPE-I-B	25
881	426+725	426+750	TYPE-I-B	16
882	426+750	426+775	TYPE-I-A	25
883	426+775	426+800	TYPE-I-A	16
884	426+800	426+825	TYPE-I-A	25
885	426+825	426+850	TYPE-I-B	25
886	426+850	426+875	TYPE-I-B	25
887	426+875	426+900	TYPE-I-A	14
888	426+900	426+925	TYPE-I-B	25
889	426+925	426+950	TYPE-I-B	25
890	426+950	426+975	TYPE-I-B	25
891	426+975	427+000	TYPE-I-B	25
892	427+000	427+025	TYPE-I-B	16
893	427+025	427+050	TYPE-I-A	25
894	427+050	427+075	TYPE-I-A	25
895	427+075	427+100	TYPE-I-A	25
896	427+100	427+125	TYPE-I-B	25
897	427+125	427+150	TYPE-I-B	25
898	427+150	427+175	TYPE-I-B	25
899	427+175	427+200	TYPE-III-C	25
900	427+250	427+275	TYPE-II-B	25

S. No.	Design Chainage (m)		TCS Type	Length (m)
	From	To		
901	427+275	427+300	TYPE-II	25
902	427+300	427+325	TYPE-II	25
903	427+325	427+350	TYPE-II	25
904	427+350	427+375	TYPE-II	25
905	427+375	427+400	TYPE-II-B	25
906	427+400	427+425	TYPE-II-B	25
907	427+425	427+450	TYPE-II-B	25
908	427+450	427+475	TYPE-II-B	25
909	427+475	427+500	TYPE-II-B	14
910	427+500	427+525	TYPE-II-B	25
911	427+525	427+550	TYPE-II-B	25
912	427+550	427+575	TYPE-II	25
913	427+575	427+600	TYPE-II	25
914	427+600	427+625	TYPE-II	25
915	427+625	427+650	TYPE-II	25

7.9 Protection Work

Breast Wall have been proposed along the roadway edge on the hilly side of the section of project road where cutting is required or cutting is more than available ROW. In hilly sections, breast Wall of RCC/RE shall be provided.

Breast wall and Retaining wall shall be provided in accordance with the Manual of Specifications and Standards as referred in Schedule-D.

Retaining wall shall be proposed to be installed in sections of the project road having filling embankment. RCC retaining wall shall be proposed for filling upto 4m and for filling requiring more than 4m of heights RE wall shall be proposed.

(a) Retaining Wall

S. No.	Design Chainage (km)		TCS Type	Height Protection Work (m)	Length Protection Work (m)
	From	To			
1	398300	398325	TYPE-V-C	1	25
2	398325	398350	TYPE-V-A	1	25
3	398350	398375	TYPE-V-D	1	25
4	398375	398400	TYPE-V-D	2	25
5	398400	398425	TYPE-V-D	2	25
6	398425	398450	TYPE-V-D	2	25
7	398450	398475	TYPE-V-C	2	25
8	398475	398500	TYPE-V-C	2	14
9	398500	398525	TYPE-V-C	2	25
10	398525	398550	TYPE-V-C	2	25
11	398550	398575	TYPE-V-C	2	25

S. No.	Design Chainage (km)		TCS Type	Height Protection Work (m)	Length Protection Work (m)
	From	To			
12	398575	398600	TYPE-V-C	2	25
13	398600	398625	TYPE-V-C	2	25
14	398625	398650	TYPE-V-C	2	25
15	398650	398675	TYPE-V-C	2	25
16	398675	398700	TYPE-V-C	2	14
17	398700	398725	TYPE-V-C	1	25
18	398725	398750	TYPE-V-C	1	25
19	398750	398775	TYPE-V-C	1	25
20	398775	398800	TYPE-V-C	1	25
21	399050	399075	TYPE-V-C	2	25
22	399075	399100	TYPE-V-C	4	25
23	399100	399125	TYPE-V-C	2	25
24	399125	399150	TYPE-V-C	2	25
25	399200	399225	TYPE-V-C	2	25
26	399225	399250	TYPE-V-C	2	25
27	399275	399300	TYPE-V-B	2	25
28	399300	399325	TYPE-V-C	2	25
29	399325	399350	TYPE-V-C	2	25
30	399350	399375	TYPE-V-C	2	25
31	399375	399400	TYPE-V-C	2	14
32	399400	399425	TYPE-V-C	2	25
33	399425	399450	TYPE-V-C	2	25
34	399475	399500	TYPE-V-C	1	25
35	399500	399525	TYPE-V-C	1	25
36	399525	399550	TYPE-V-C	1	25
37	399550	399575	TYPE-V-C	1	25
38	399575	399600	TYPE-V-C	2	25
39	399800	399825	TYPE-V-A	2	25
40	399825	399850	TYPE-V-A	2	25
41	399850	399875	TYPE-V-A	2	25
42	399875	399900	TYPE-V-A	2	25
43	399900	399925	TYPE-V-A	2	25
44	399925	399950	TYPE-V-A	2	14
45	399950	399975	TYPE-V-A	2	25
46	399975	400000	TYPE-V-C	2	25
47	400000	400025	TYPE-V-A	2	25
48	400025	400050	TYPE-V-A	2	14
49	400050	400075	TYPE-I-A	2	25
50	400075	400100	TYPE-I-A	1	25
51	400100	400125	TYPE-I-A	1	25
52	400125	400150	TYPE-I-A	1	25
53	400150	400175	TYPE-I-B	2	14

S. No.	Design Chainage (km)		TCS Type	Height Protection Work (m)	Length Protection Work (m)
	From	To			
54	400175	400200	TYPE-I-B	1	25
55	400200	400225	TYPE-I-A	1	25
56	400225	400250	TYPE-I-A	1	25
57	400250	400275	TYPE-I-B	2	14
58	400275	400300	TYPE-I-B	1	25
59	400300	400325	TYPE-I-A	1	25
60	400350	400375	TYPE-I-B	2	14
61	400375	400400	TYPE-II-B	2	25
62	400425	400450	TYPE-II-B	3	25
63	400450	400475	TYPE-II-B	2	25
64	400475	400500	TYPE-II-B	1	25
65	400500	400525	TYPE-II-B	3	25
66	400525	400550	TYPE-II-B	3	14
67	400550	400575	TYPE-II-B	4	25
68	400575	400600	TYPE-II-B	4	25
69	400600	400625	TYPE-II-B	3	14
70	400625	400650	TYPE-II-B	2	25
71	400775	400800	TYPE-II-B	2	25
72	400825	400850	TYPE-II-B	3	25
73	401025	401050	TYPE-II-B	4	25
74	401050	401075	TYPE-I-B	3	25
75	401125	401150	TYPE-I-B	3	25
76	401150	401175	TYPE-I-B	3	25
77	401175	401200	TYPE-I-B	3	25
78	401375	401400	TYPE-I-B	4	25
79	401400	401425	TYPE-I-B	4	25
80	401825	401850	TYPE-I-B	4	25
81	402000	402025	TYPE-II-B	3	25
82	402025	402050	TYPE-II-B	3	25
83	402050	402075	TYPE-I-C	3	25
84	402175	402200	TYPE-I-C	3	25
85	402200	402225	TYPE-I-C	3	25
86	402225	402250	TYPE-I-C	3	25
87	402250	402275	TYPE-I-C	4	14
88	402275	402300	TYPE-I-C	4	25
89	402300	402325	TYPE-I-C	3	25
90	402325	402350	TYPE-I-A	2	25
91	402350	402375	TYPE-I-A	2	14
92	402375	402400	TYPE-V-A	2	25
93	402400	402425	TYPE-V-A	2	25
94	402425	402450	TYPE-V-A	2	25
95	402450	402475	TYPE-V-A	2	25

S. No.	Design Chainage (km)		TCS Type	Height Protection Work (m)	Length Protection Work (m)
	From	To			
96	402475	402500	TYPE-V-A	2	16
97	402500	402525	TYPE-V-A	2	25
98	402525	402550	TYPE-V-A	2	25
99	402550	402575	TYPE-V-A	2	25
100	402600	402625	TYPE-I-C	3	25
101	402650	402675	TYPE-I-C	3	25
102	402925	402950	TYPE-I-C	3	25
103	402950	402975	TYPE-V-B	3	14
104	402975	403000	TYPE-V-B	3	25
105	403000	403025	TYPE-V	1	25
106	403025	403050	TYPE-V	1	25
107	403050	403075	TYPE-V-A	1	25
108	403075	403100	TYPE-V-A	1	25
109	403100	403125	TYPE-V-A	1	25
110	403125	403150	TYPE-V-A	1	25
111	403150	403175	TYPE-V-A	1	25
112	403175	403200	TYPE-V-A	1	25
113	403200	403225	TYPE-V-A	1	25
114	403225	403250	TYPE-V-A	1	25
115	403250	403275	TYPE-V-A	1	25
116	403275	403300	TYPE-V-A	1	25
117	403300	403325	TYPE-V-A	1	14
118	403325	403350	TYPE-V-A	1	25
119	403350	403375	TYPE-V-A	1	25
120	403375	403400	TYPE-V-A	1	25
121	403400	403425	TYPE-V-A	1	25
122	403425	403450	TYPE-V-A	1	25
123	403450	403475	TYPE-V-A	1	14
124	403475	403500	TYPE-V-A	1	25
125	403500	403525	TYPE-V-A	1	25
126	403525	403550	TYPE-V	1	25
127	403550	403575	TYPE-V	1	25
128	403575	403600	TYPE-V	1	25
129	403600	403625	TYPE-I-A	1	25
130	403625	403650	TYPE-I-A	1	25
131	403650	403675	TYPE-I-A	1	25
132	403675	403700	TYPE-I-A	1	14
133	403700	403725	TYPE-I-A	1	25
134	403725	403750	TYPE-I-A	1	25
135	403750	403775	TYPE-I-A	1	25
136	403775	403800	TYPE-I-A	1	25
137	403800	403825	TYPE-I-A	1	25

S. No.	Design Chainage (km)		TCS Type	Height Protection Work (m)	Length Protection Work (m)
	From	To			
138	403825	403850	TYPE-I-A	1	14
139	403850	403875	TYPE-II	1	25
140	403875	403900	TYPE-II	1	25
141	403900	403925	TYPE-II	1	25
142	403925	403950	TYPE-II	1	25
143	403950	403975	TYPE-II	1	25
144	403975	404000	TYPE-II-B	1	25
145	404000	404025	TYPE-II	1	25
146	404025	404050	TYPE-II	1	25
147	404050	404075	TYPE-II	1	25
148	404075	404100	TYPE-II	1	25
149	404100	404125	TYPE-II	1	25
150	404125	404150	TYPE-II	1	25
151	404150	404175	TYPE-II	1	25
152	404175	404200	TYPE-II-B	3	25
153	404200	404225	TYPE-II-B	3	14
154	404225	404250	TYPE-II-B	3	25
155	404250	404275	TYPE-II-B	3	25
156	404275	404300	TYPE-II	1	25
157	404300	404325	TYPE-II	1	25
158	404325	404350	TYPE-II-B	3	25
159	404350	404375	TYPE-II	1	25
160	404375	404400	TYPE-II	1	25
161	404400	404425	TYPE-II	1	25
162	404425	404450	TYPE-II	1	14
163	404450	404475	TYPE-I-A	1	25
164	404475	404500	TYPE-I-A	1	25
165	404500	404525	TYPE-I-A	1	25
166	404525	404550	TYPE-I-A	1	25
167	404550	404575	TYPE-I-B	3	25
168	404575	404600	TYPE-I-B	1	25
169	404600	404625	TYPE-IV	1	25
170	404625	404650	New Bridge	1	25
171	404650	404675	New Bridge	1	25
172	404700	404725	TYPE-IV	1	25
173	404725	404750	TYPE-IV	1	25
174	404750	404775	TYPE-II	1	25
175	404775	404800	TYPE-I-B	1	14
176	404800	404825	TYPE-I-A	1	25
177	404825	404850	TYPE-I-B	1	25
178	404850	404875	TYPE-I-B	1	25
179	404875	404900	TYPE-I-B	1	25

S. No.	Design Chainage (km)		TCS Type	Height Protection Work (m)	Length Protection Work (m)
	From	To			
180	404900	404925	TYPE-II-B	1	25
181	404925	404950	TYPE-II	1	25
182	404950	404975	TYPE-II	1	25
183	404975	405000	TYPE-II	1	25
184	405000	405025	TYPE-I-A	1	25
185	405025	405050	TYPE-I-A	1	14
186	405050	405075	TYPE-I-A	1	25
187	405075	405100	TYPE-I-A	1	25
188	405100	405125	TYPE-I-A	1	25
189	405125	405150	TYPE-I-A	1	25
190	405150	405175	TYPE-I-A	1	25
191	405175	405200	TYPE-I-A	1	25
192	405200	405225	TYPE-I-A	1	25
193	405225	405250	TYPE-I-B	1	25
194	405250	405275	TYPE-I-B	1	25
195	405275	405300	TYPE-I-A	2	25
196	405300	405325	TYPE-I-A	2	14
197	405325	405350	TYPE-I-A	1	25
198	405350	405375	TYPE-I-A	1	25
199	405375	405400	TYPE-I-A	1	25
200	405400	405425	TYPE-I-A	1	25
201	405425	405450	TYPE-I-B	1	25
202	405450	405475	TYPE-I-B	1	14
203	405475	405500	TYPE-II	1	25
204	405500	405525	TYPE-II	1	25
205	405525	405550	TYPE-II-B	1	14
206	405550	405575	TYPE-II	1	25
207	405575	405600	TYPE-II	1	25
208	405600	405625	TYPE-II-B	1	14
209	405625	405650	TYPE-II	1	25
210	405650	405675	TYPE-II	1	25
211	405675	405700	TYPE-II	1	14
212	405700	405725	TYPE-II-B	1	25
213	405725	405750	TYPE-II	1	25
214	405750	405775	TYPE-II	1	25
215	405775	405800	TYPE-II-B	1	14
216	406150	406175	TYPE-III-B	1	25
217	406225	406250	TYPE-I-B	1	25
218	406250	406275	TYPE-II-B	1	25
219	406300	406325	TYPE-II-B	1	25
220	406325	406350	TYPE-I-B	1	25
221	406450	406475	TYPE-V-C	1	25

S. No.	Design Chainage (km)		TCS Type	Height Protection Work (m)	Length Protection Work (m)
	From	To			
222	406475	406500	TYPE-V-C	1	25
223	406500	406525	TYPE-V-C	1	14
224	406925	406950	TYPE-V-C	1	25
225	406950	406975	TYPE-V-C	1	25
226	407225	407250	TYPE-V-B	1	25
227	407250	407275	TYPE-V-B	1	16
228	407275	407300	TYPE-V-B	1	16
229	407300	407325	TYPE-V-B	1	25
230	407375	407400	TYPE-V-B	1	25
231	407450	407475	TYPE-V-B	4	16
232	407475	407500	TYPE-V-C	4	25
233	409000	409025	TYPE-I-C	4	25
234	409025	409050	TYPE-I-C	4	25
235	409050	409075	TYPE-II-B	4	25
236	409600	409625	TYPE-V-C	1	16
237	409850	409875	TYPE-I-C	4	25
238	409875	409900	TYPE-I-B	4	25
239	410100	410125	TYPE-I-C	4	25
240	410250	410275	TYPE-I-B	4	25
241	410775	410800	TYPE-I-C	1	25
242	410800	410825	TYPE-I-C	1	25
243	410825	410850	TYPE-I-C	4	16
244	410850	410875	TYPE-I-C	4	25
245	410950	410975	TYPE-III-B	4	25
246	410975	411000	TYPE-III-B	4	16
247	411100	411125	TYPE-I-C	1	25
248	411200	411225	TYPE-III-B	4	25
249	411275	411300	TYPE-III-B	4	25
250	411375	411400	TYPE-II-B	1	25
251	411400	411425	TYPE-II-B	4	25
252	411425	411450	TYPE-II-B	1	25
253	411525	411550	TYPE-II-B	1	14
254	411550	411575	TYPE-II-B	1	25
255	411725	411750	TYPE-I-C	1	16
256	411750	411775	TYPE-I-C	1	25
257	411825	411850	TYPE-I-B	3	25
258	411850	411875	TYPE-I-B	3	25
259	411875	411900	TYPE-I-B	3	25
260	411900	411925	TYPE-I-B	3	25
261	411925	411950	TYPE-I-C	3	25
262	412075	412100	TYPE-I-C	3	25
263	412100	412125	TYPE-I-C	3	25

S. No.	Design Chainage (km)		TCS Type	Height Protection Work (m)	Length Protection Work (m)
	From	To			
264	412125	412150	TYPE-I-C	3	25
265	412150	412175	TYPE-I-C	3	25
266	412425	412450	TYPE-I-C	3	25
267	412450	412475	TYPE-I-C	1	25
268	412475	412500	TYPE-I-B	3	25
269	412525	412550	TYPE-I-B	3	25
270	412975	413000	TYPE-III-B	3	25
271	413325	413350	TYPE-I-B	3	25
272	413625	413650	TYPE-III-B	3	25
273	413650	413675	TYPE-III-C	4	12
274	413900	413925	TYPE-I-C	3	25
275	413925	413950	TYPE-I-C	3	25
276	415225	415250	TYPE-III-B	3	25
277	415250	415275	TYPE-III-B	4	14
278	415350	415375	TYPE-IV-A	3	25
279	415375	415400	TYPE-IV-A	4	14
280	415400	415425	TYPE-IV-A	3	25
281	415550	415575	TYPE-II-B	3	25
282	415575	415600	TYPE-II-B	3	25
283	415725	415750	TYPE-II-B	4	16
284	415800	415825	TYPE-I-C	3	16
285	416100	416125	TYPE-III-B	4	14
286	416250	416275	TYPE-II-B	1	25
287	416300	416325	TYPE-II-B	4	25
288	416425	416450	TYPE-II-B	3	14
289	417650	417675	TYPE-V-B	4	16
290	417675	417700	TYPE-V-B	4	25
291	417700	417725	TYPE-V-B	3	25
292	418875	418900	TYPE-I-B	3	25
293	419300	419325	TYPE-I-B	4	25
294	419325	419350	TYPE-I-B	4	25
295	419425	419450	TYPE-I-B	3	25
296	419450	419475	TYPE-I-B	3	25
297	419525	419550	TYPE-I-B	3	25
298	419625	419650	TYPE-II-B	3	25
299	419750	419775	TYPE-II-B	3	25
300	419775	419800	TYPE-II-B	3	25
301	419975	420000	TYPE-II-B	3	25
302	420000	420025	TYPE-II-B	3	16
303	420025	420050	TYPE-II-B	3	25
304	420100	420125	TYPE-I-B	4	25
305	420125	420150	TYPE-I-C	4	12

S. No.	Design Chainage (km)		TCS Type	Height Protection Work (m)	Length Protection Work (m)
	From	To			
306	420175	420200	TYPE-I-B	3	25
307	420200	420225	TYPE-I-B	3	14
308	420375	420400	TYPE-I-B	3	25
309	420400	420425	TYPE-I-B	3	25
310	420425	420450	TYPE-I-B	3	25
311	420550	420575	TYPE-I-B	3	25
312	420575	420600	TYPE-I-B	3	25
313	420950	420975	TYPE-I-B	3	14
314	420975	421000	TYPE-I-B	3	25
315	421200	421225	TYPE-I-C	4	25
316	421625	421650	TYPE-I-C	3	25
317	421700	421725	TYPE-I-B	3	25
318	423750	423775	TYPE-I-C	4	25
319	423825	423850	TYPE-I-B	4	25
320	423900	423925	TYPE-I-C	4	25
321	423950	423975	TYPE-I-C	4	25
322	424300	424325	TYPE-I-C	4	25
323	424325	424350	TYPE-I-C	4	25
324	424575	424600	TYPE-I-B	4	12
325	424600	424625	TYPE-I-B	4	25
326	425200	425225	TYPE-III-B	4	25
327	425400	425425	TYPE-I-C	4	14
328	425425	425450	TYPE-I-C	4	25
329	425475	425500	TYPE-I-C	4	25
330	425500	425525	TYPE-I-C	4	25
331	425525	425550	TYPE-I-C	4	25
332	425550	425575	TYPE-I-B	4	25
333	425675	425700	TYPE-II-B	4	25
334	425700	425725	TYPE-II-B	4	25
335	425725	425750	TYPE-II-B	4	25
336	425825	425850	TYPE-II-B	4	25
337	426025	426050	TYPE-IV-A	4	12
338	426050	426075	TYPE-III-B	4	25
339	426275	426300	TYPE-I-C	4	25
340	427100	427125	TYPE-I-B	4	25
341	427125	427150	TYPE-I-B	4	25
342	427175	427200	TYPE-III-C	4	25
343	427500	427525	TYPE-II-B	4	25

(b) Breast Wall

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
1	398300	398325	TYPE-V-C	3	25
2	398450	398475	TYPE-V-C	4	25
3	398475	398500	TYPE-V-C	3	14
4	398500	398525	TYPE-V-C	3	25
5	398525	398550	TYPE-V-C	3	25
6	398550	398575	TYPE-V-C	3	25
7	398575	398600	TYPE-V-C	3	25
8	398600	398625	TYPE-V-C	3	25
9	398625	398650	TYPE-V-C	3	25
10	398650	398675	TYPE-V-C	3	25
11	398675	398700	TYPE-V-C	3	14
12	398700	398725	TYPE-V-C	3	25
13	398725	398750	TYPE-V-C	3	25
14	398750	398775	TYPE-V-C	3	25
15	398775	398800	TYPE-V-C	3	25
16	398950	398975	TYPE-V-A	1	25
17	398975	399000	TYPE-V-A	1	25
18	399000	399025	TYPE-V-A	1	14
19	399025	399050	TYPE-V-A	1	25
20	399050	399075	TYPE-V-C	1	25
21	399075	399100	TYPE-V-C	1	25
22	399100	399125	TYPE-V-C	1	25
23	399125	399150	TYPE-V-C	1	25
24	399150	399175	TYPE-V-A	1	25
25	399175	399200	TYPE-V-A	1	25
26	399200	399225	TYPE-V-C	2	25
27	399225	399250	TYPE-V-C	2	25
28	399250	399275	TYPE-V-A	2	25
29	399300	399325	TYPE-V-C	2	25
30	399325	399350	TYPE-V-C	2	25
31	399350	399375	TYPE-V-C	2	25
32	399375	399400	TYPE-V-C	2	14
33	399400	399425	TYPE-V-C	2	25
34	399425	399450	TYPE-V-C	2	25
35	399450	399475	TYPE-V-A	3	25
36	399475	399500	TYPE-V-C	3	25
37	399500	399525	TYPE-V-C	3	25
38	399525	399550	TYPE-V-C	3	25
39	399550	399575	TYPE-V-C	3	25
40	399575	399600	TYPE-V-C	3	25
41	399600	399625	TYPE-V-A	3	25

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
42	399625	399650	TYPE-V-A	3	25
43	399650	399675	TYPE-V-A	3	25
44	399675	399700	TYPE-V-A	3	25
45	399700	399725	TYPE-V-A	2	25
46	399725	399750	TYPE-V-A	2	25
47	399750	399775	TYPE-V-A	2	25
48	399775	399800	TYPE-V-A	2	25
49	399800	399825	TYPE-V-A	2	25
50	399825	399850	TYPE-V-A	2	25
51	399850	399875	TYPE-V-A	2	25
52	399875	399900	TYPE-V-A	2	25
53	399900	399925	TYPE-V-A	2	25
54	399925	399950	TYPE-V-A	2	14
55	399950	399975	TYPE-V-A	2	25
56	399975	400000	TYPE-V-C	2	25
57	400000	400025	TYPE-V-A	2	25
58	400025	400050	TYPE-V-A	2	14
59	400050	400075	TYPE-I-A	2	25
60	400075	400100	TYPE-I-A	2	25
61	400100	400125	TYPE-I-A	2	25
62	400125	400150	TYPE-I-A	2	25
63	400150	400175	TYPE-I-B	2	14
64	400175	400200	TYPE-I-B	2	25
65	400200	400225	TYPE-I-A	2	25
66	400225	400250	TYPE-I-A	2	25
67	400250	400275	TYPE-I-B	2	14
68	400275	400300	TYPE-I-B	2	25
69	400300	400325	TYPE-I-A	2	25
70	400325	400350	TYPE-I-A	2	25
71	400350	400375	TYPE-I-B	2	14
72	400425	400450	TYPE-II-B	2	25
73	400450	400475	TYPE-II-B	2	25
74	400475	400500	TYPE-II-B	2	25
75	400500	400525	TYPE-II-B	2	25
76	400525	400550	TYPE-II-B	2	14
77	400550	400575	TYPE-II-B	2	25
78	401125	401150	TYPE-I-B	3	25
79	401150	401175	TYPE-I-B	3	25
80	401175	401200	TYPE-I-B	3	25
81	401200	401225	TYPE-I-A	3	25
82	402150	402175	TYPE-II	2	25
83	402175	402200	TYPE-I-C	2	25

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
84	402200	402225	TYPE-I-C	2	25
85	402225	402250	TYPE-I-C	2	25
86	402675	402700	TYPE-I	2	25
87	402700	402725	TYPE-I	2	25
88	402725	402750	TYPE-I	2	25
89	402750	402775	TYPE-I	2	25
90	402775	402800	TYPE-I	2	25
91	402800	402825	TYPE-I	2	25
92	402825	402850	TYPE-I	2	25
93	403150	403175	TYPE-V-A	3	25
94	403175	403200	TYPE-V-A	3	25
95	403200	403225	TYPE-V-A	3	25
96	403225	403250	TYPE-V-A	3	25
97	403250	403275	TYPE-V-A	3	25
98	403275	403300	TYPE-V-A	3	25
99	403300	403325	TYPE-V-A	3	14
100	403325	403350	TYPE-V-A	3	25
101	403350	403375	TYPE-V-A	3	25
102	403375	403400	TYPE-V-A	3	25
103	403400	403425	TYPE-V-A	3	25
104	403425	403450	TYPE-V-A	4	25
105	403450	403475	TYPE-V-A	2	14
106	403475	403500	TYPE-V-A	2	25
107	403500	403525	TYPE-V-A	2	25
108	403600	403625	TYPE-I-A	2	25
109	403625	403650	TYPE-I-A	4	25
110	403650	403675	TYPE-I-A	4	25
111	403675	403700	TYPE-I-A	4	14
112	403700	403725	TYPE-I-A	4	25
113	403725	403750	TYPE-I-A	4	25
114	403750	403775	TYPE-I-A	4	25
115	403775	403800	TYPE-I-A	4	25
116	403800	403825	TYPE-I-A	4	25
117	403825	403850	TYPE-I-A	4	14
118	404450	404475	TYPE-I-A	4	25
119	404475	404500	TYPE-I-A	4	25
120	404500	404525	TYPE-I-A	3	25
121	404525	404550	TYPE-I-A	3	25
122	404550	404575	TYPE-I-B	3	25
123	404575	404600	TYPE-I-B	3	25
124	404775	404800	TYPE-I-B	3	14
125	404800	404825	TYPE-I-A	3	25

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
126	404825	404850	TYPE-I-B	3	25
127	404850	404875	TYPE-I-B	3	25
128	404875	404900	TYPE-I-B	3	25
129	405000	405025	TYPE-I-A	3	25
130	405025	405050	TYPE-I-A	3	14
131	405050	405075	TYPE-I-A	2	25
132	405075	405100	TYPE-I-A	2	25
133	405100	405125	TYPE-I-A	2	25
134	405125	405150	TYPE-I-A	2	25
135	405150	405175	TYPE-I-A	2	25
136	405175	405200	TYPE-I-A	2	25
137	405200	405225	TYPE-I-A	2	25
138	405225	405250	TYPE-I-B	2	25
139	405250	405275	TYPE-I-B	2	25
140	405275	405300	TYPE-I-A	2	25
141	405300	405325	TYPE-I-A	2	14
142	405325	405350	TYPE-I-A	2	25
143	405350	405375	TYPE-I-A	2	25
144	405375	405400	TYPE-I-A	2	25
145	405400	405425	TYPE-I-A	2	25
146	405425	405450	TYPE-I-B	2	25
147	405450	405475	TYPE-I-B	2	14
148	406175	406200	TYPE-I-A	2	25
149	406200	406225	TYPE-I-A	2	25
150	406225	406250	TYPE-I-B	2	25
151	406325	406350	TYPE-I-B	2	25
152	406350	406375	TYPE-I-A	2	25
153	406375	406400	TYPE-I-A	2	25
154	406400	406425	TYPE-I-A	2	14
155	406425	406450	TYPE-I-A	2	25
156	406450	406475	TYPE-V-C	2	25
157	406475	406500	TYPE-V-C	2	25
158	406500	406525	TYPE-V-C	2	14
159	406525	406550	TYPE-V-A	2	25
160	406550	406575	TYPE-V-A	2	25
161	406575	406600	TYPE-V-A	1	14
162	406600	406625	TYPE-V-A	1	25
163	406625	406650	TYPE-V-A	1	25
164	406800	406825	TYPE-V-A	2	25
165	406825	406850	TYPE-V-A	2	25
166	406850	406875	TYPE-V-A	2	25
167	406925	406950	TYPE-V-C	2	25

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
168	406950	406975	TYPE-V-C	2	25
169	406975	407000	TYPE-V-A	2	25
170	407000	407025	TYPE-V-A	2	25
171	407475	407500	TYPE-V-C	2	25
172	407500	407525	TYPE-V-C	2	25
173	407525	407550	TYPE-V-C	2	25
174	407550	407575	TYPE-V-A	2	25
175	407575	407600	TYPE-I-A	3	25
176	407600	407625	TYPE-I-A	3	25
177	407625	407650	TYPE-I-A	3	25
178	407650	407675	TYPE-I-A	2	25
179	407675	407700	TYPE-I-A	2	14
180	407700	407725	TYPE-I-A	2	25
181	407725	407750	TYPE-I-B	2	25
182	407750	407775	TYPE-I-B	2	25
183	407775	407800	TYPE-I-A	2	25
184	407800	407825	TYPE-I-A	2	25
185	407950	407975	TYPE-I-A	1	25
186	407975	408000	TYPE-I-A	1	25
187	408075	408100	TYPE-I-A	1	25
188	408100	408125	TYPE-I-A	1	25
189	408125	408150	TYPE-I-A	1	25
190	408200	408225	TYPE-II-A	1	25
191	408225	408250	TYPE-II-A	1	25
192	408300	408325	TYPE-II-A	1	25
193	408325	408350	TYPE-II-A	1	25
194	408350	408375	TYPE-I-A	1	25
195	408375	408400	TYPE-I-A	1	25
196	408400	408425	TYPE-I-A	1	25
197	408425	408450	TYPE-I-A	1	25
198	408450	408475	TYPE-I-A	1	14
199	408475	408500	TYPE-I-A	1	25
200	408500	408525	TYPE-I-A	1	25
201	408575	408600	TYPE-I-A	1	25
202	408600	408625	TYPE-I-A	1	25
203	408625	408650	TYPE-I-A	1	25
204	408650	408675	TYPE-I-A	1	14
205	408675	408700	TYPE-I-A	1	25
206	408700	408725	TYPE-I-A	3	14
207	408725	408750	TYPE-I-A	3	25
208	408750	408775	TYPE-I-A	3	25
209	408775	408800	TYPE-I-A	3	14

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
210	408800	408825	TYPE-I-A	3	25
211	408825	408850	TYPE-I-A	3	25
212	408850	408875	TYPE-I-A	3	25
213	408875	408900	TYPE-I-A	3	25
214	408900	408925	TYPE-I-A	3	25
215	408925	408950	TYPE-I-A	3	25
216	409325	409350	TYPE-I-A	3	25
217	409350	409375	TYPE-I-A	3	25
218	409375	409400	TYPE-I-A	3	25
219	409400	409425	TYPE-I-B	3	25
220	409425	409450	TYPE-I-A	3	25
221	409450	409475	TYPE-I-A	3	25
222	409475	409500	TYPE-I-B	3	14
223	409500	409525	TYPE-I-B	3	25
224	409525	409550	TYPE-I-B	4	25
225	409550	409575	TYPE-V-A	4	25
226	409575	409600	TYPE-V-A	4	25
227	409600	409625	TYPE-V-C	4	16
228	409625	409650	TYPE-V-C	4	25
229	409650	409675	TYPE-V-C	4	16
230	409675	409700	TYPE-V-C	4	25
231	409700	409725	TYPE-V-A	4	25
232	409725	409750	TYPE-V-A	4	25
233	409750	409775	TYPE-V-C	4	25
234	409775	409800	TYPE-III-A	3	25
235	409800	409825	TYPE-III-A	3	25
236	409825	409850	TYPE-III-A	3	25
237	409875	409900	TYPE-I-B	3	25
238	409900	409925	TYPE-I-A	3	25
239	409925	409950	TYPE-I-A	4	16
240	409950	409975	TYPE-III-C	4	25
241	410000	410025	TYPE-III-C	4	25
242	410025	410050	TYPE-I-A	4	25
243	410125	410150	TYPE-I-B	4	25
244	410150	410175	TYPE-I-B	4	16
245	410175	410200	TYPE-I-B	4	25
246	410200	410225	TYPE-I-B	4	25
247	410225	410250	TYPE-I-B	4	25
248	410250	410275	TYPE-I-B	4	25
249	410275	410300	TYPE-I-B	4	25
250	410650	410675	TYPE-I-B	4	25
251	410675	410700	TYPE-I-B	4	16

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
252	410700	410725	TYPE-I-A	4	25
253	411050	411075	TYPE-III-A	4	25
254	411075	411100	TYPE-III-A	4	25
255	411150	411175	TYPE-III-A	4	25
256	411175	411200	TYPE-III-A	4	25
257	411650	411675	TYPE-I-A	4	25
258	411675	411700	TYPE-I-A	4	25
259	411825	411850	TYPE-I-B	4	25
260	411850	411875	TYPE-I-B	4	25
261	411875	411900	TYPE-I-B	4	25
262	411900	411925	TYPE-I-B	3	25
263	412325	412350	TYPE-I-A	3	25
264	412475	412500	TYPE-I-B	3	25
265	412500	412525	TYPE-I-B	3	16
266	412525	412550	TYPE-I-B	3	25
267	412550	412575	TYPE-I-A	3	16
268	412575	412600	TYPE-I-A	3	25
269	412600	412625	TYPE-I-A	3	25
270	412625	412650	TYPE-I-A	3	25
271	413075	413100	TYPE-I-A	3	25
272	413100	413125	TYPE-I-A	3	25
273	413125	413150	TYPE-I-A	3	25
274	413150	413175	TYPE-I-A	3	25
275	413175	413200	TYPE-I-A	3	25
276	413200	413225	TYPE-I-A	3	25
277	413225	413250	TYPE-I-A	3	25
278	413250	413275	TYPE-I-A	3	25
279	413275	413300	TYPE-I-A	3	12
280	413300	413325	TYPE-I-A	3	25
281	413325	413350	TYPE-I-B	3	25
282	413350	413375	TYPE-I-A	3	25
283	413375	413400	TYPE-I-A	3	25
284	413400	413425	TYPE-I-A	3	25
285	413425	413450	TYPE-I-A	3	25
286	413450	413475	TYPE-I-A	3	25
287	413650	413675	TYPE-III-C	3	12
288	413675	413700	TYPE-V-A	3	25
289	415625	415650	TYPE-II-A	3	25
290	415650	415675	TYPE-II-A	3	25
291	415675	415700	TYPE-II-A	3	25
292	415700	415725	TYPE-II-A	3	25
293	416000	416025	TYPE-III-A	1	25

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
294	416025	416050	TYPE-III-A	1	25
295	416050	416075	TYPE-III-A	1	25
296	417775	417800	TYPE-V-A	1	25
297	420675	420700	TYPE-I-A	1	25
298	420700	420725	TYPE-I-A	1	25
299	420725	420750	TYPE-I-A	1	14
300	420975	421000	TYPE-I-B	1	25
301	422300	422325	TYPE-V-A	1	25
302	422325	422350	TYPE-V-A	1	16
303	422350	422375	TYPE-V-A	1	25
304	422375	422400	TYPE-V-A	1	25
305	422400	422425	TYPE-V-A	1	25
306	422425	422450	TYPE-V-A	1	25
307	422450	422475	TYPE-I-A	1	25
308	422475	422500	TYPE-I-A	1	25
309	422500	422525	TYPE-I-A	1	25
310	422525	422550	TYPE-I-A	1	25
311	422550	422575	TYPE-I-A	1	25
312	422575	422600	TYPE-I-A	1	14
313	422600	422625	TYPE-I-A	1	25
314	422625	422650	TYPE-I-A	1	25
315	422650	422675	TYPE-I-A	1	25
316	422675	422700	TYPE-I-A	1	25
317	422700	422725	TYPE-I-A	1	25
318	422725	422750	TYPE-I-A	1	25
319	422750	422775	TYPE-I-B	1	25
320	422775	422800	TYPE-I-A	1	25
321	422800	422825	TYPE-I-A	1	14
322	422825	422850	TYPE-I-A	1	16
323	422850	422875	TYPE-I-A	1	25
324	422875	422900	TYPE-I-A	1	25
325	422900	422925	TYPE-I-A	1	25
326	422925	422950	TYPE-I-A	1	25
327	422950	422975	TYPE-I-A	1	25
328	422975	423000	TYPE-I-A	1	25
329	423000	423025	TYPE-I-A	1	25
330	423025	423050	TYPE-I-A	1	25
331	423050	423075	TYPE-I-A	1	25
332	423075	423100	TYPE-I-A	1	16
333	423100	423125	TYPE-I-A	1	25
334	423125	423150	TYPE-I-A	1	25
335	423150	423175	TYPE-I-A	1	16

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
336	423175	423200	TYPE-I-A	1	25
337	423200	423225	TYPE-I-A	1	25
338	423225	423250	TYPE-I-A	1	25
339	423250	423275	TYPE-I-A	1	16
340	423500	423525	TYPE-I-A	1	25
341	423525	423550	TYPE-I-A	1	25
342	423550	423575	TYPE-I-A	1	16
343	423575	423600	TYPE-I-B	1	25
344	423600	423625	TYPE-I-B	1	25
345	423625	423650	TYPE-I-A	1	25
346	423650	423675	TYPE-I-A	1	25
347	423675	423700	TYPE-I-A	1	14
348	423700	423725	TYPE-I-A	1	25
349	423725	423750	TYPE-I-A	1	25
350	424150	424175	TYPE-I-A	3	25
351	424175	424200	TYPE-I-A	3	14
352	424200	424225	TYPE-I-A	3	25
353	424225	424250	TYPE-I-A	3	25
354	424575	424600	TYPE-I-B	1	12
355	424600	424625	TYPE-I-B	1	25
356	424625	424650	TYPE-I-A	1	25
357	424650	424675	TYPE-I-A	1	25
358	424675	424700	TYPE-I-B	1	25
359	424700	424725	TYPE-I-B	1	14
360	424725	424750	TYPE-I-B	3	25
361	424750	424775	TYPE-I-B	3	25
362	424775	424800	TYPE-I-A	3	25
363	424800	424825	TYPE-I-A	3	25
364	424825	424850	TYPE-I-A	3	25
365	424850	424875	TYPE-I-A	3	25
366	424875	424900	TYPE-I-A	3	14
367	425550	425575	TYPE-I-B	1	25
368	426350	426375	TYPE-I-A	1	25
369	426375	426400	TYPE-I-A	1	25
370	426400	426425	TYPE-I-A	1	25
371	426425	426450	TYPE-I-A	1	25
372	426450	426475	TYPE-I-A	1	14
373	426475	426500	TYPE-I-A	1	25
374	426500	426525	TYPE-I-A	1	25
375	426575	426600	TYPE-I-A	1	25
376	426600	426625	TYPE-I-A	1	14
377	426625	426650	TYPE-I-A	1	25

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
378	426650	426675	TYPE-I-A	1	25
379	426675	426700	TYPE-I-B	1	25
380	426700	426725	TYPE-I-B	1	25
381	426725	426750	TYPE-I-B	3	16
382	426750	426775	TYPE-I-A	3	25
383	426775	426800	TYPE-I-A	3	16
384	426800	426825	TYPE-I-A	3	25
385	426825	426850	TYPE-I-B	3	25
386	426850	426875	TYPE-I-B	3	25
387	426875	426900	TYPE-I-A	3	14
388	426900	426925	TYPE-I-B	3	25
389	426925	426950	TYPE-I-B	3	25
390	426950	426975	TYPE-I-B	3	25
391	426975	427000	TYPE-I-B	3	25
392	427000	427025	TYPE-I-B	3	16
393	427025	427050	TYPE-I-A	3	25
394	427050	427075	TYPE-I-A	3	25
395	427075	427100	TYPE-I-A	3	25
396	427100	427125	TYPE-I-B	3	25
397	427125	427150	TYPE-I-B	3	25
398	427150	427175	TYPE-I-B	3	25
399	427175	427200	TYPE-III-C	3	25

(c) Reinforced Earth Wall (valley Side)

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
1	400650	400675	TYPE-II-C	6	25
2	400675	400700	TYPE-II-C	6	25
3	400700	400725	TYPE-II-C	8	25
4	401850	401875	TYPE-I-D	6	25
5	401875	401900	TYPE-I-D	6	25
6	404675	404700	TYPE-IV-B	6	25
7	410125	410150	TYPE-I-B	8	25
8	410150	410175	TYPE-I-B	5	16
9	410175	410200	TYPE-I-B	6	25
10	410200	410225	TYPE-I-B	5	25
11	410225	410250	TYPE-I-B	5	25
12	411000	411025	TYPE-III-D	6	25
13	411225	411250	TYPE-III-D	10	25
14	411250	411275	TYPE-III-D	10	25
15	413000	413025	TYPE-III-D	8	12

S. No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
16	413025	413050	TYPE-III-D	5	25
17	415825	415850	TYPE-I-D	5	16
18	417475	417500	TYPE-I-D	8	25
19	417500	417525	TYPE-I-D	8	25
20	417525	417550	TYPE-I-D	8	25
21	417550	417575	TYPE-I-D	10	25
22	417575	417600	TYPE-I-D	10	25
23	417600	417625	TYPE-V-D	6	25
24	417625	417650	TYPE-V-D	6	25
25	419550	419575	TYPE-III-D	5	25
26	421225	421250	TYPE-I-D	5	25
27	423775	423800	TYPE-I-D	8	25
28	423800	423825	TYPE-I-D	8	25
29	425750	425775	TYPE-II-C	5	25
30	425775	425800	TYPE-II-C	6	25
31	425800	425825	TYPE-II-C	5	25

(d) Reinforced Earth Wall (Hill Side)

S.No.	Design Chainage (km)		TCS Type	Height Protection work (m)	Length Protection work (m)
	From	To			
1	398350	398375	TYPE-V-D	6	25
2	398375	398400	TYPE-V-D	6	25
3	398400	398425	TYPE-V-D	6	25
4	398425	398450	TYPE-V-D	6	25

Note:

- The contractor shall be responsible for accurate assessment of the actual requirement as per site situation and prepare design for slope protection and stabilization as per specification and standards stipulated in schedule-D and submit the same to the Authority's Engineer/Authority for review through the Proof Consultant and implement it accordingly thereafter

- Any increase in quantity over and above the tentative quantity as mentioned in above table or through change in specifications will not be considered as change of scope. Therefore, Contractor shall make through investigation at site and assess the requirement of slope protection and slide prone zone and other safety feature at his own before submission of bid.

- For executing any of the above type of slope protection works, the contractor should have the experience of having executed, in last 5 (five) financial years from the date of signing of Agreement, atleast 40% quantity of that type of slope protection works and provide requisite certificates/documents to verify the same to the Authority/ Authority

engineer.

- If the Contractor does not have requisite experience for any/some of the above type of slope protection works, then he has to engage specialized firm(s) as sub-contractor(s) who has/have successfully completed in last 5(five) financial years atleast 40% quantity of such works. The contractor shall submit the credentials and the qualifying experience of the specialized sub-contractor(s) for approval of Authority before the commencement of such slope protection works.

7.9 The unused/un-disposed excavated material can be dumped along the road by using crate wall to create extra width for passing place/ parking place. Contractor has to ensure that no debris should spill beyond ROW handed over to contractor. In case of any violation the whole responsibility will be the contractor. For excess excavated material over and above the fill requirement the contractor will ensure safe disposal as per the law in extent.

8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORK.

8.1 Traffic control devices and road safety works shall be provided in accordance with Section 9 of the IRC: SP: 73-2015 and IRC: SP: 48-1998.

8.2 Specifications of the reflective sheeting shall be as per the Manual of Specifications (IRC: SP: 73-2015) & (IRC: SP: 48-1998).

9. ROAD SIDE FURNITURE

9.1 Road side furniture shall be provided in accordance with the provisions of Section 9 and 12 of the Manual and as well given in Schedule-C.

9.2 Overhead traffic signs: location and size

Overhead traffic signs are provided as per site requirement according to paragraph 9.2.5 of the Manual and as given in Schedule-C.

10. COMPULSORY AFFORESTATION

Nil

11. HAZARDOUS LOCATIONS

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

Sl. No.	Location stretch from (km) to (km)	LHS/RHS
Nil		

12. SPECIAL REQUIREMENTS FOR HILL ROAD

In accordance with the section 13 of the manual (IRC: SP 73:2015 & IRC: SP 48:1998) and recommended practices for the treatment of embankment and road side slopes erosion control and relevant IRC.

13. CHANGE OF SCOPE

The length of Structures, bridges and slope protection works whatsoever in terms of retaining wall, breast wall and reinforced earth wall or under special requirement of hill slope specified herein above shall be treated as an approximate assessment. The actual lengths and height as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the specification and standards. Any variations in the lengths and specifications given in the schedule–B shall not constitute a change of Scope.

Appendix-I

Annex-I

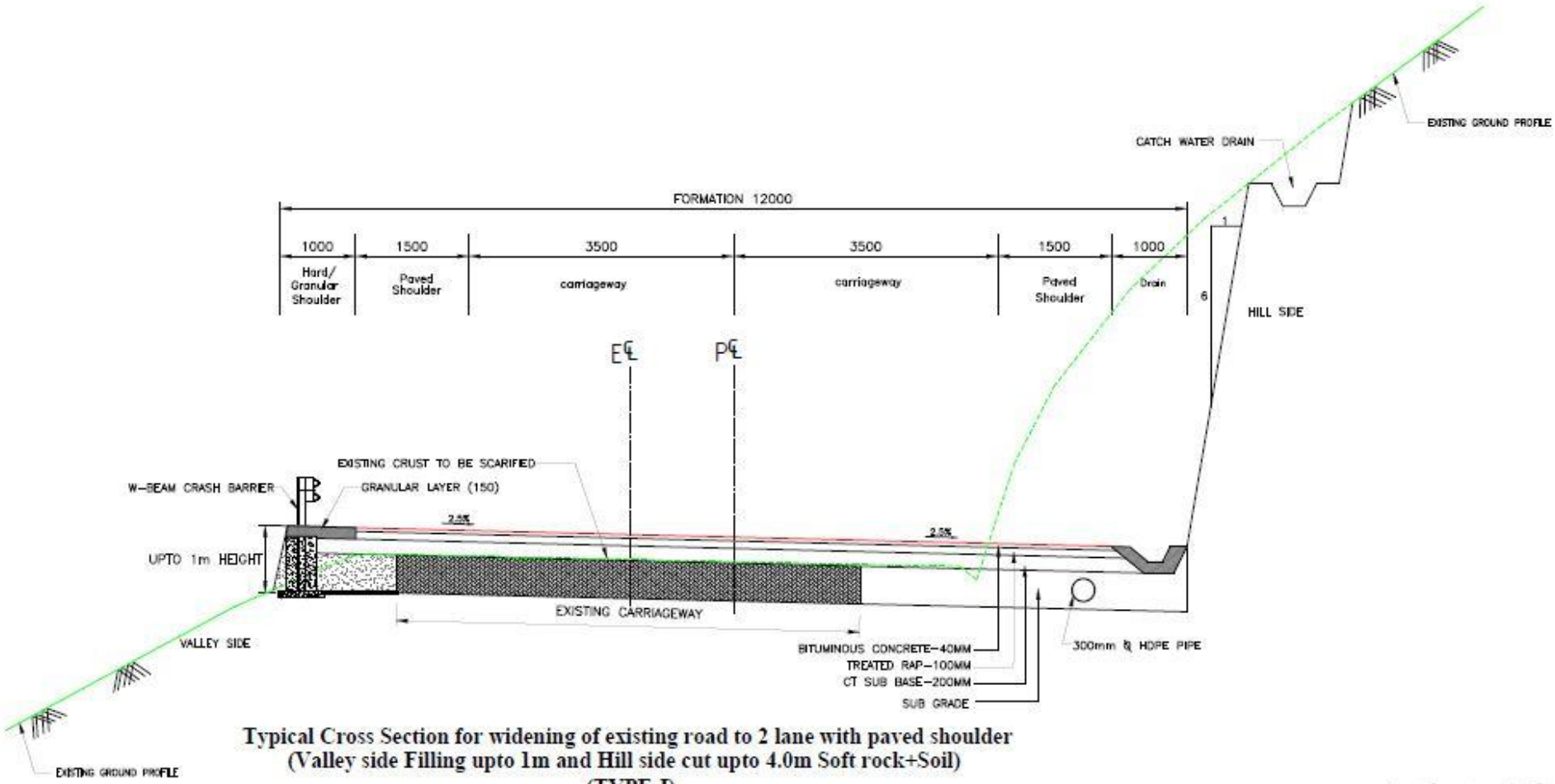
(Schedule B)

TYPICAL CROSS-SECTIONS

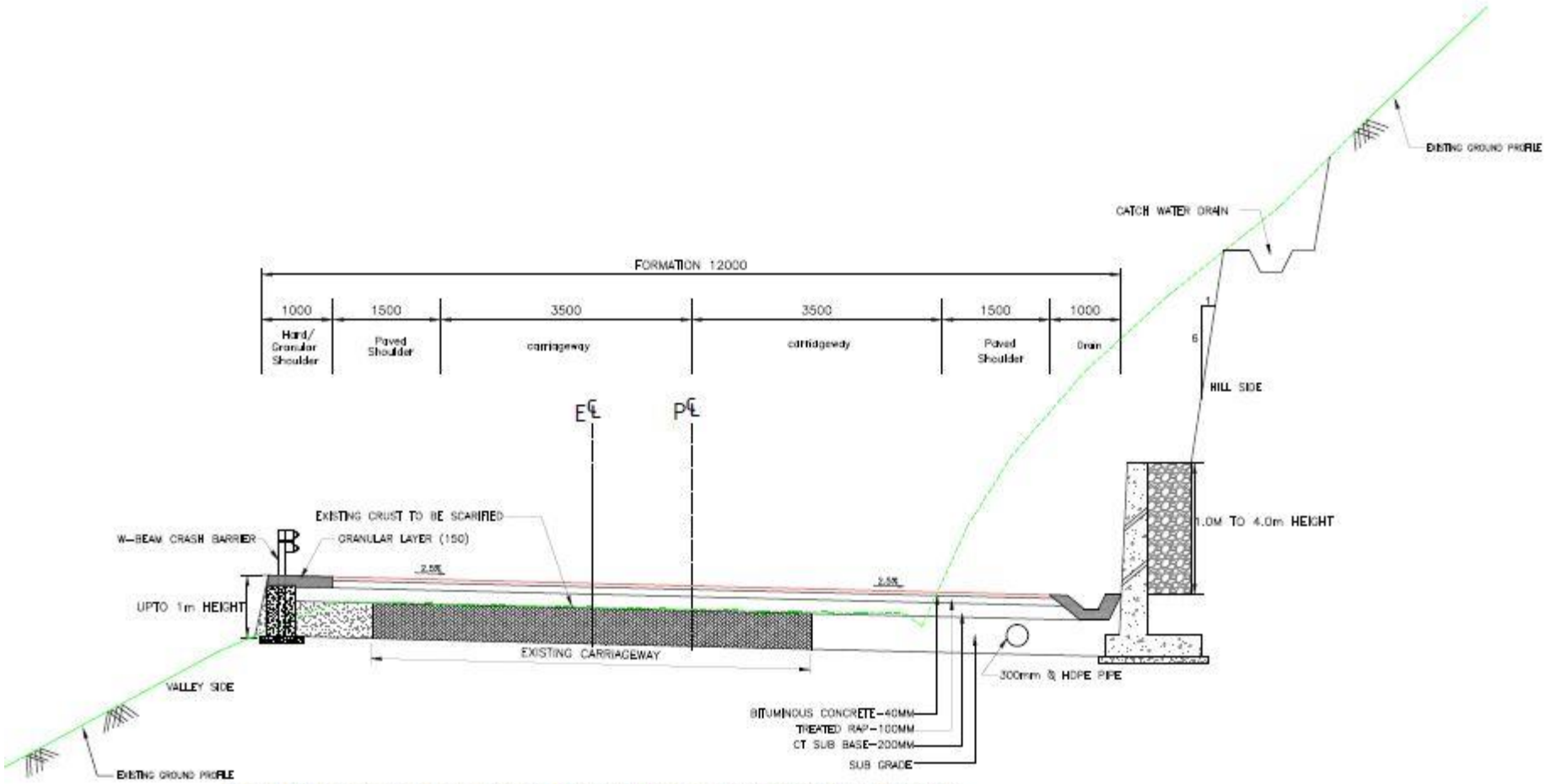
Summary of Typical Cross Sections*

S No	Type	Description
1	I	Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling upto 1m and Hill side cut upto 4.0m (Soft rock+Soil)
2	IA	Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling upto 1m and Hill side upto 4.0m (Soft rock+Soil)
3	IB	Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling upto 4 m and Hill side upto 4.0m protection (Soft rock+Soil)
4	IC	Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling upto 4 m protection (Soft rock+Soil)
5	ID	Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling >4 m protection (Soft rock+Soil)
6	II	Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling upto 1m and Hill side cut in hard rock
7	IIA	Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling upto 1m and Hill side upto 4m protection hard rock
8	IIB	Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side upto 4m protection and hill side cut in hard rock
9	IIC	Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side filling>4m protection in hard rock
10	III	Typical Cross Section for realignment and bypass (Valley side filling upto 1m and hill side cut upto 4m (Soft rock+ Soil)
11	IIIA	Typical Cross Section for realignment and bypass (Valley side filling upto 1m and hill side upto 4m protection (Soft rock+ Soil)
12	IIIB	Typical Cross Section for realignment and bypass (Valley side filling upto 4m and hill side upto 4m cutting (Soft rock+ Soil)
13	IIIC	Typical Cross Section for realignment and bypass (Valley side filling upto 4m and hill side upto 4m protection (Soft rock+ Soil)
14	IIID	Typical Cross Section for realignment and bypass (Valley side

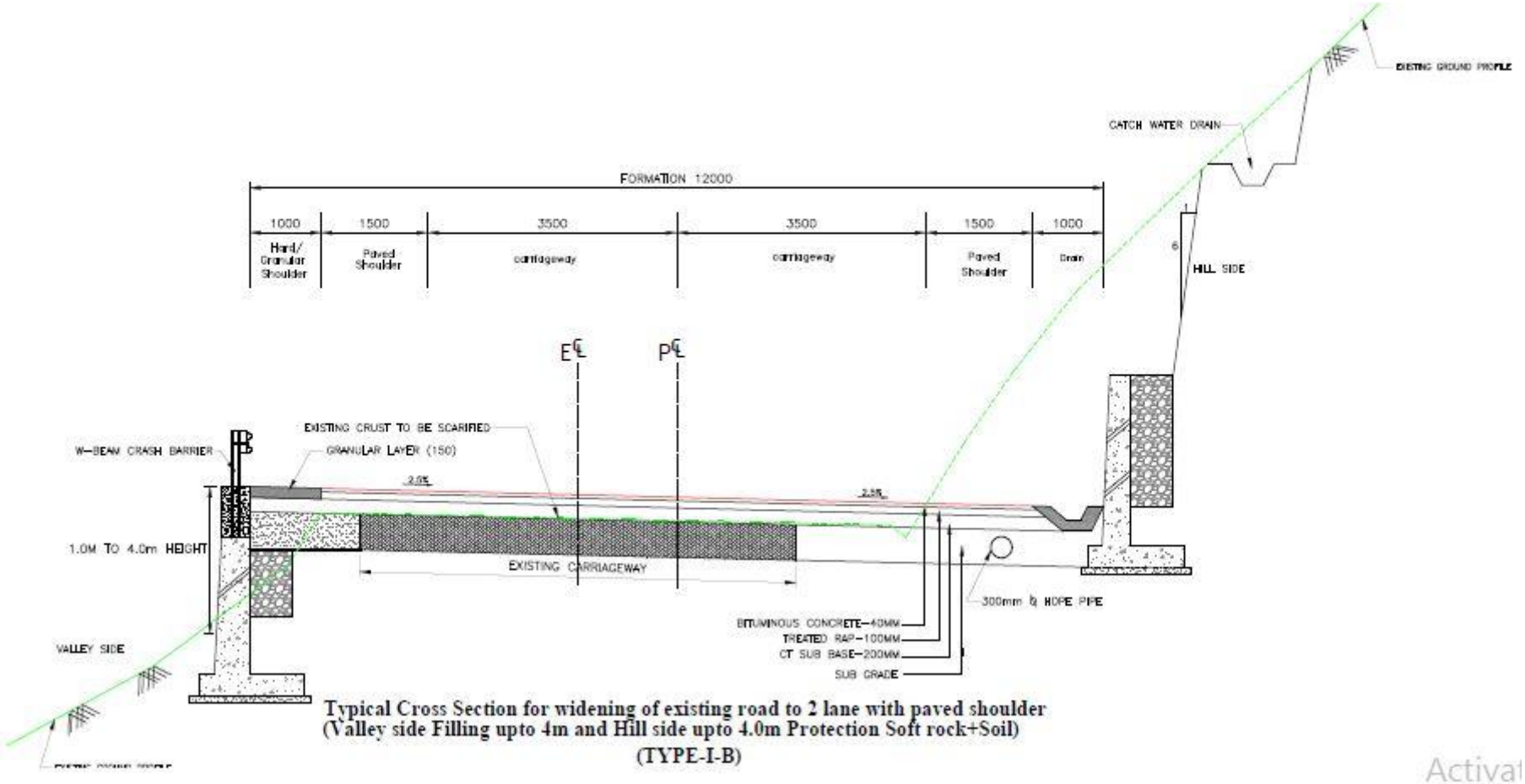
S No	Type	Description
		filling >4m in soft rock)
15	IV	Typical Cross Section for realignment and bypass Valley side Filling upto 1m and hill side cut hard rock)
16	IVA	Typical Cross Section for realignment and bypass (Valley side filling upto 4m and hill side cut in hard rock)
17	IVB	Typical Cross Section for realignment and bypass (Valley side filling >4m in soft rock)
18	V	Typical Cross Section for 2 lane with paved shoulder & Raised Footpath cum drain in built-up area) (12.0m formation width)
19	VA	Typical Cross Section for 2 lane with paved shoulder & Raised Footpath cum drain in built-up area) (hill side upto 4m protection) (12.0m formation width)
20	VB	Typical Cross Section for 2 lane with paved shoulder & Raised Footpath cum drain in built-up area) (valley side upto 4m protection and hill side no protection) (12.0m formation width)
21	VC	Typical Cross Section for 2 lane with paved shoulder & Raised Footpath cum drain in built-up area) (both side protection upto 4m) (12.0m formation width)
22	VD	Typical Cross Section for 2 lane with paved shoulder & Raised Footpath cum drain in built-up area) (vally side protection> 4.0m) (12.0m formation width)



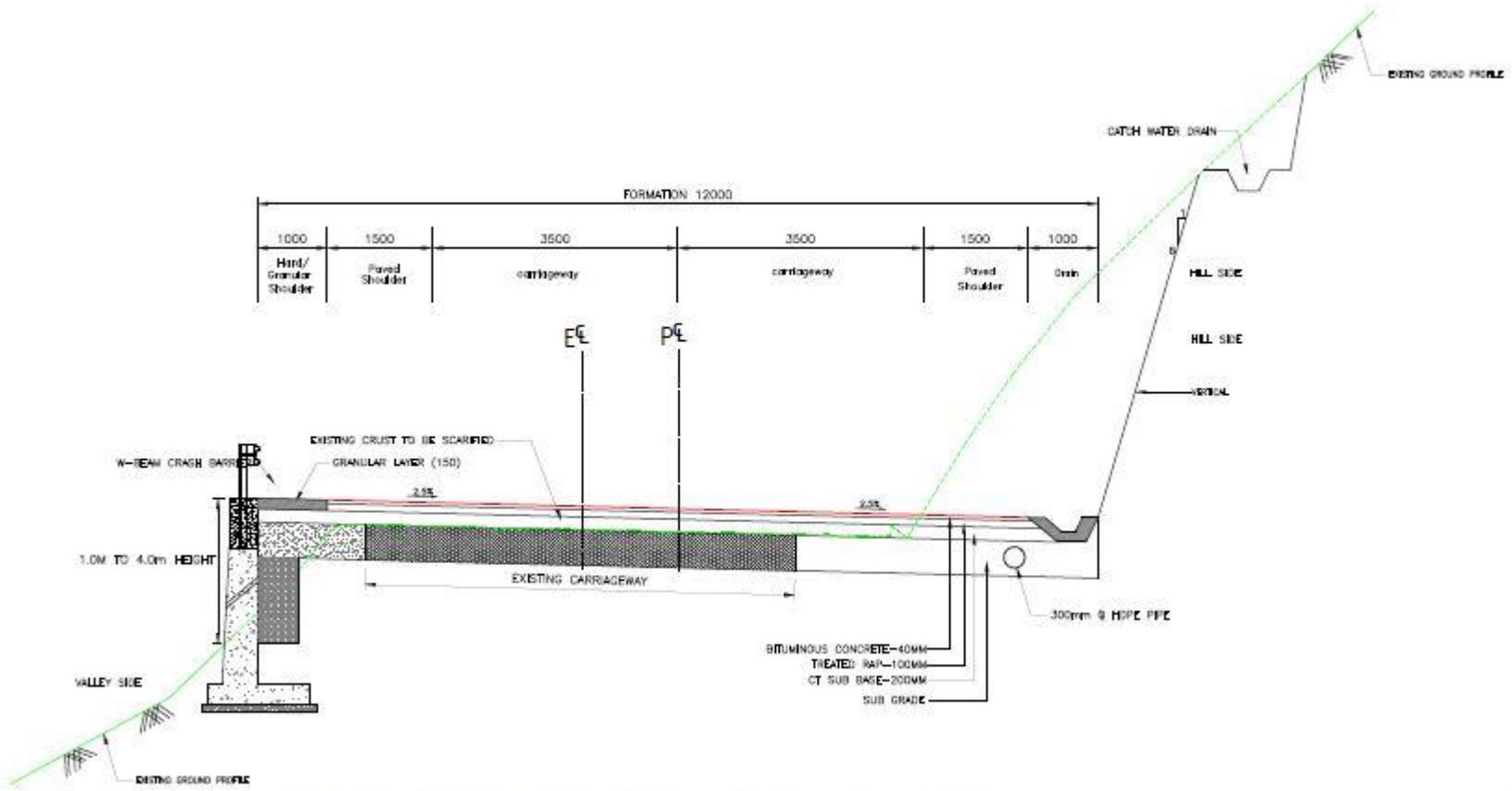
Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling upto 1m and Hill side cut upto 4.0m Soft rock+Soil) (TYPE-I)



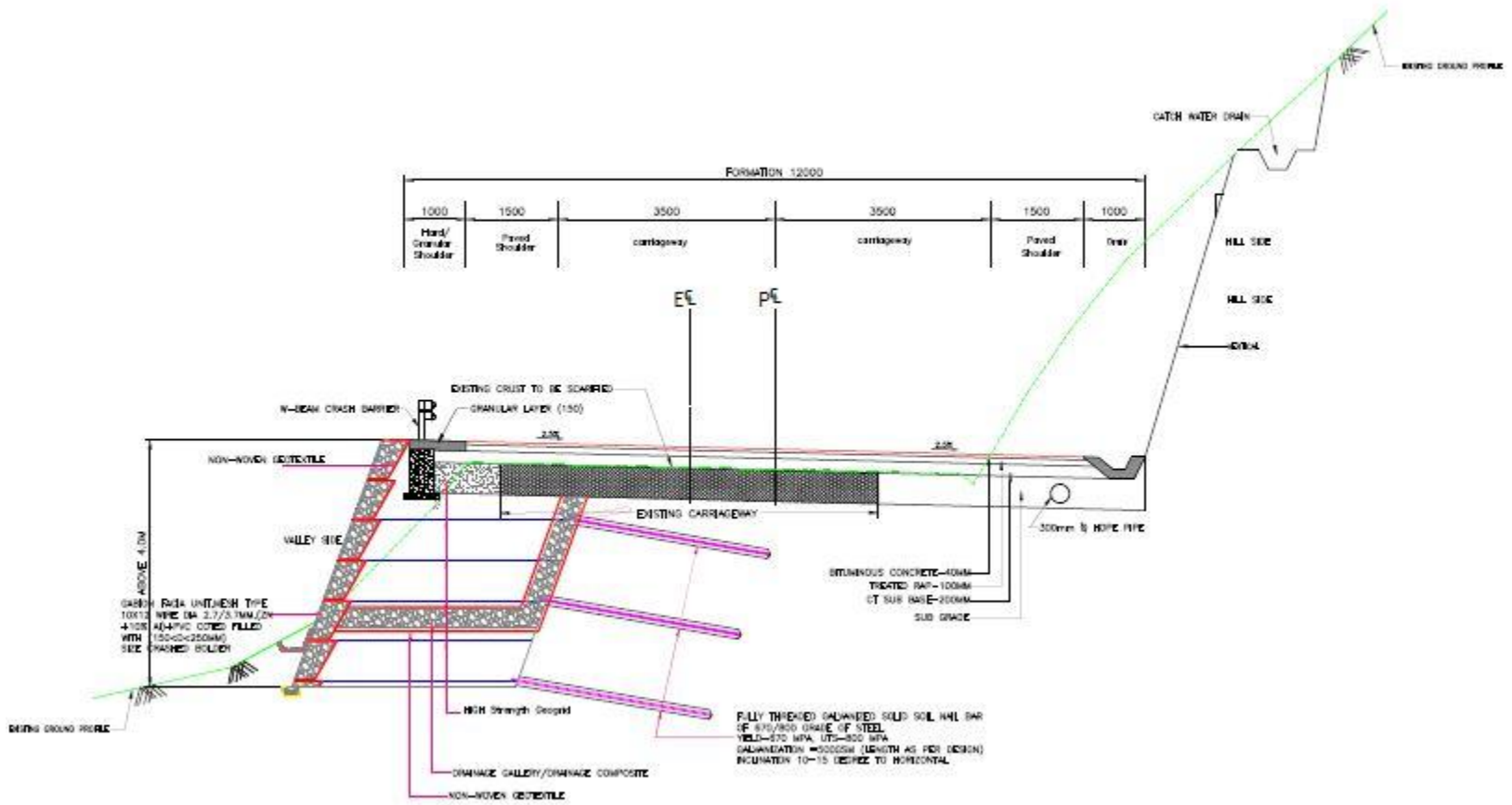
Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling upto 1m and Hill side upto 4.0m Protection Soft rock+Soil) (TYPE-I-A)



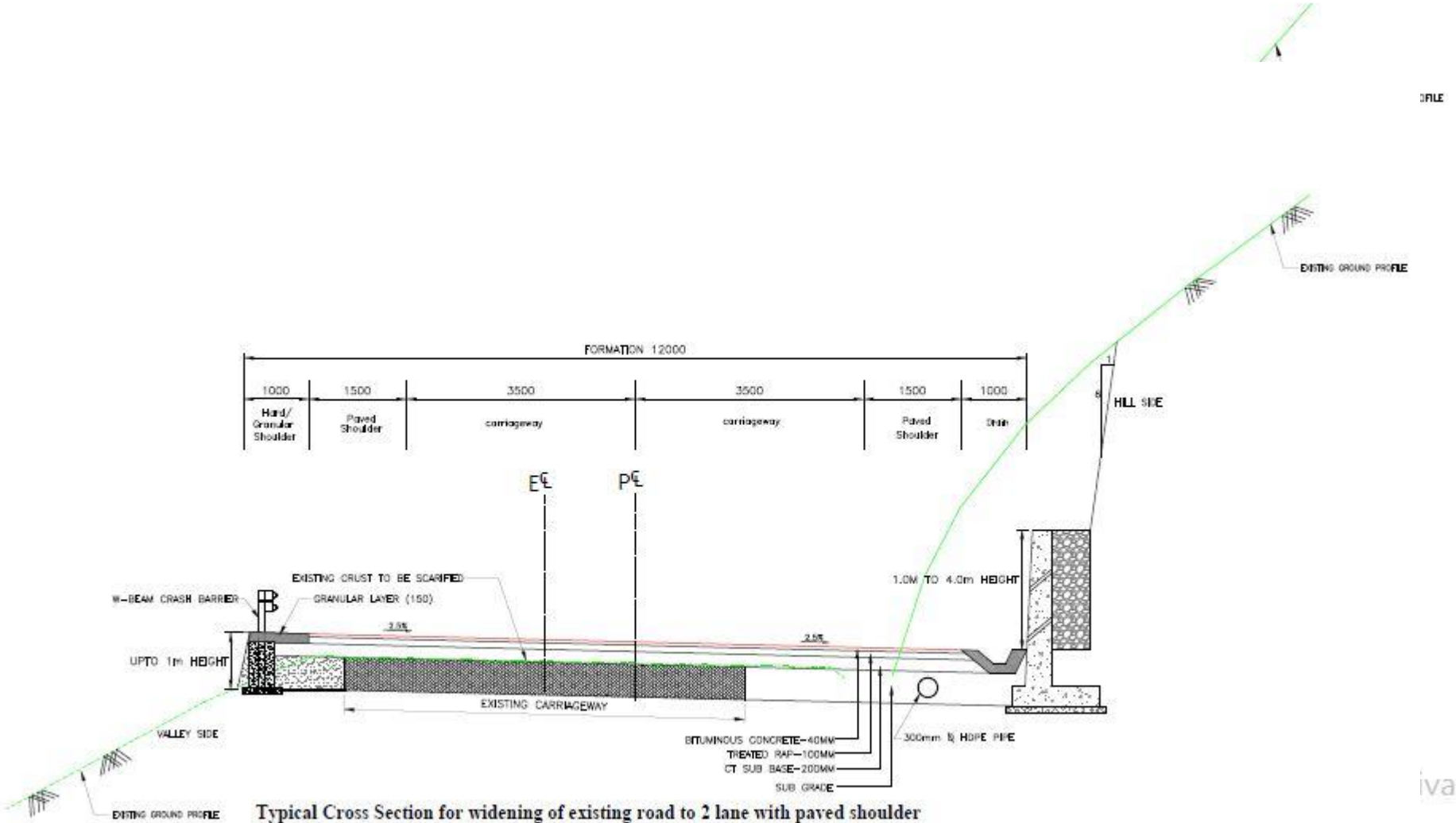
Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling upto 4m and Hill side upto 4.0m Protection Soft rock+Soil) (TYPE-I-B)



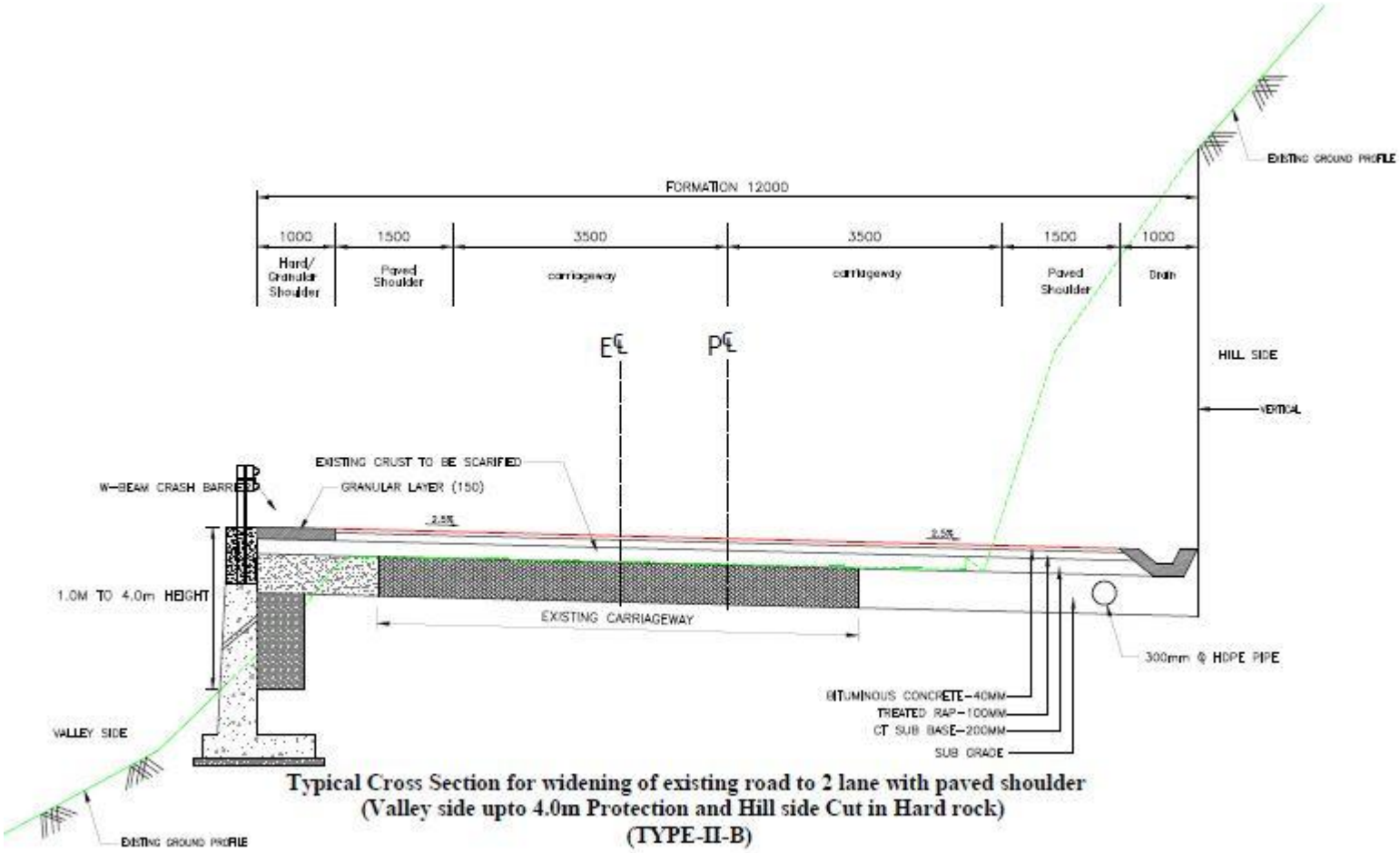
Typical Cross Section for widening of existing road to 2 lane with paved shoulder
(Valley side Filling upto 4m Protection Soft rock+Soil)
(TYPE-I-C)



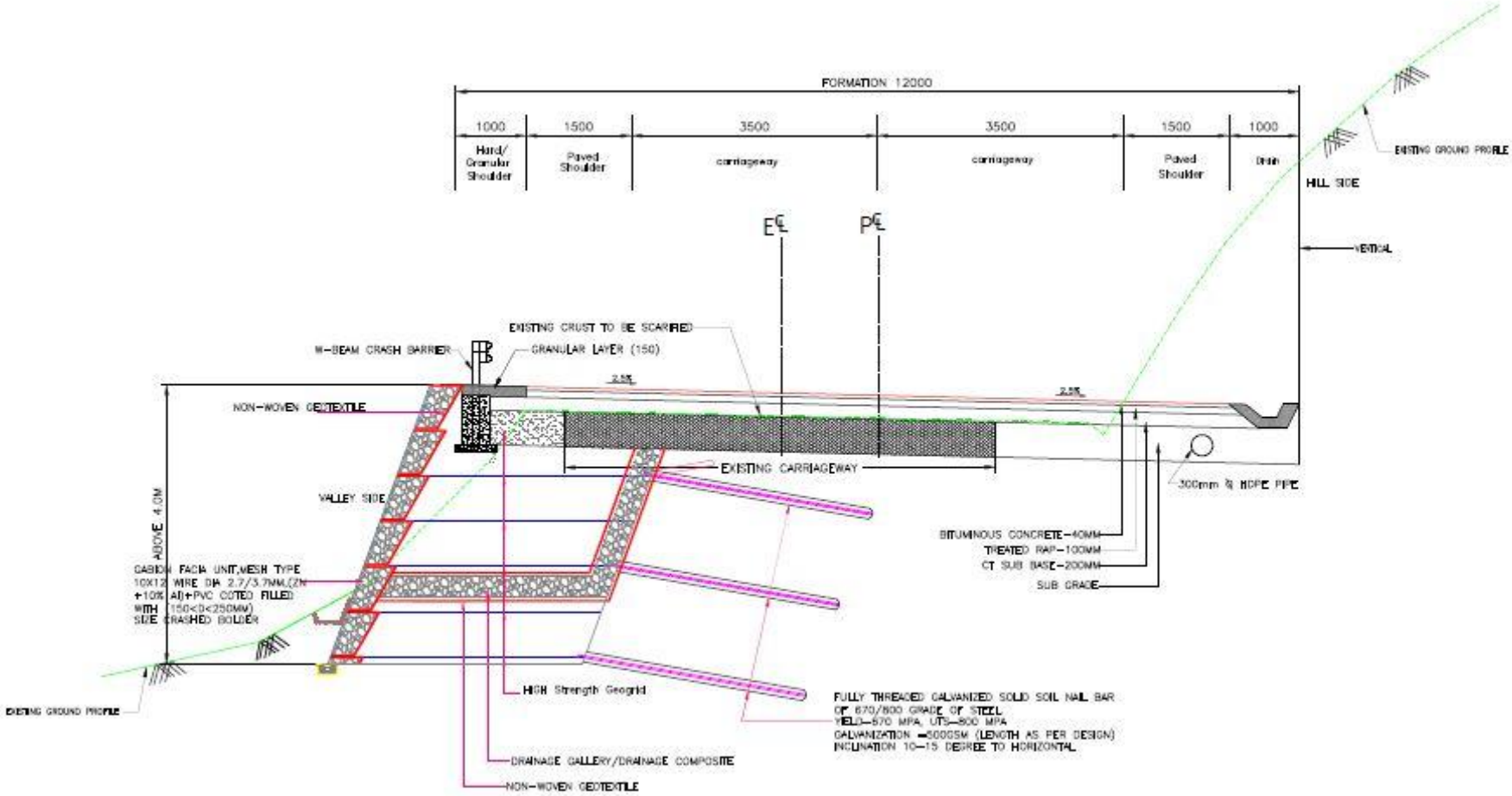
Typical Cross Section for widening of existing road to 2 lane with paved shoulder
(Valley side Filling >4.0m Protection in Soft rock + Soil)
(TYPE-I-D)



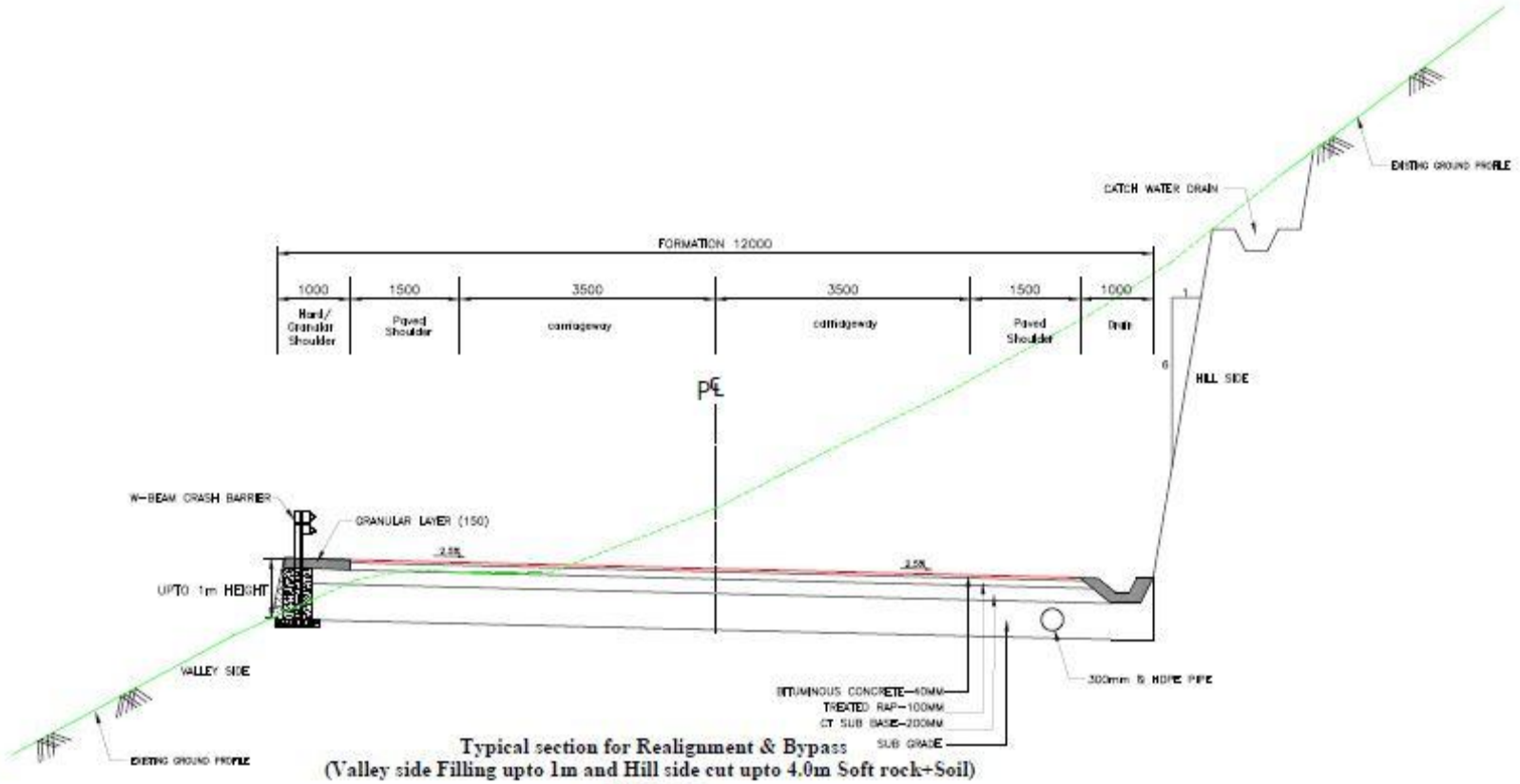
Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling upto 1m and Hill side upto 4.0m Protection Hard rock) (TYPE-II-A)



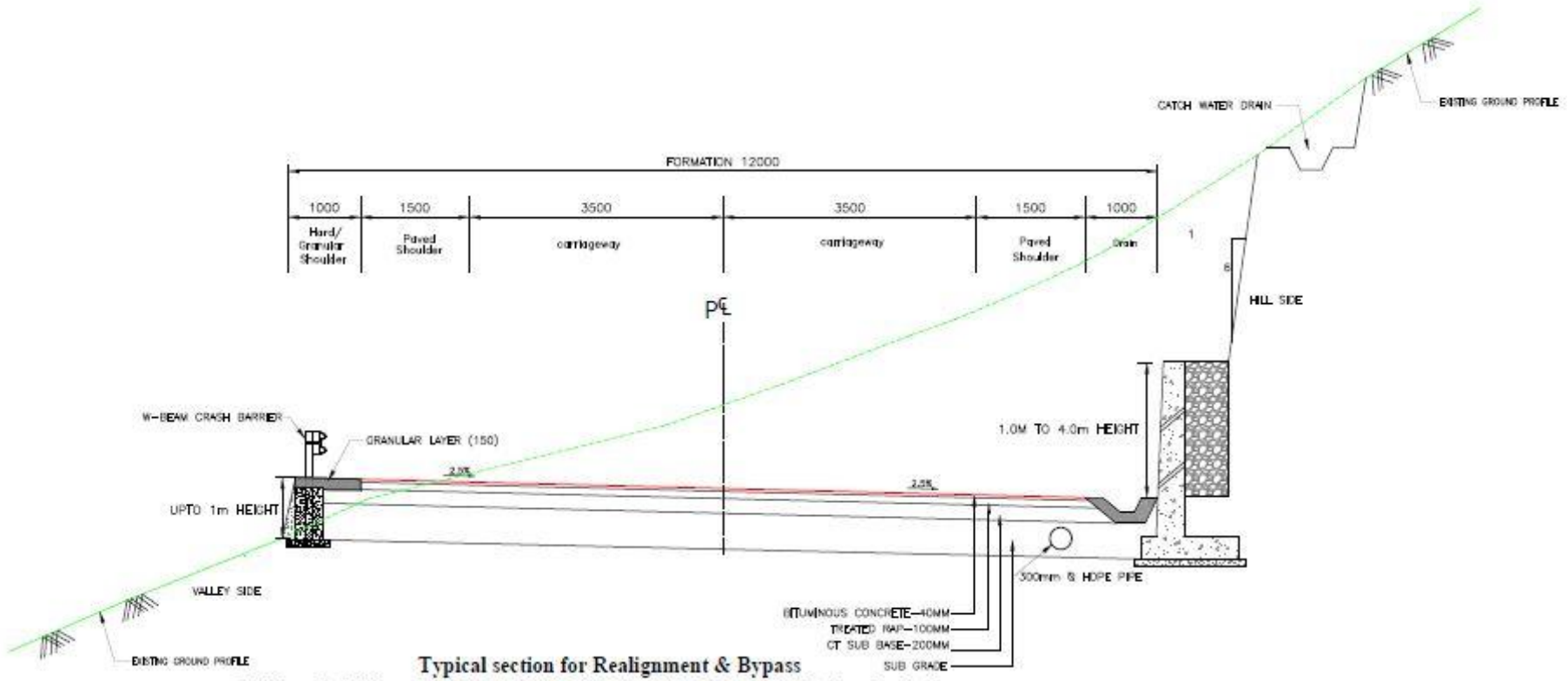
Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side upto 4.0m Protection and Hill side Cut in Hard rock) (TYPE-II-B)



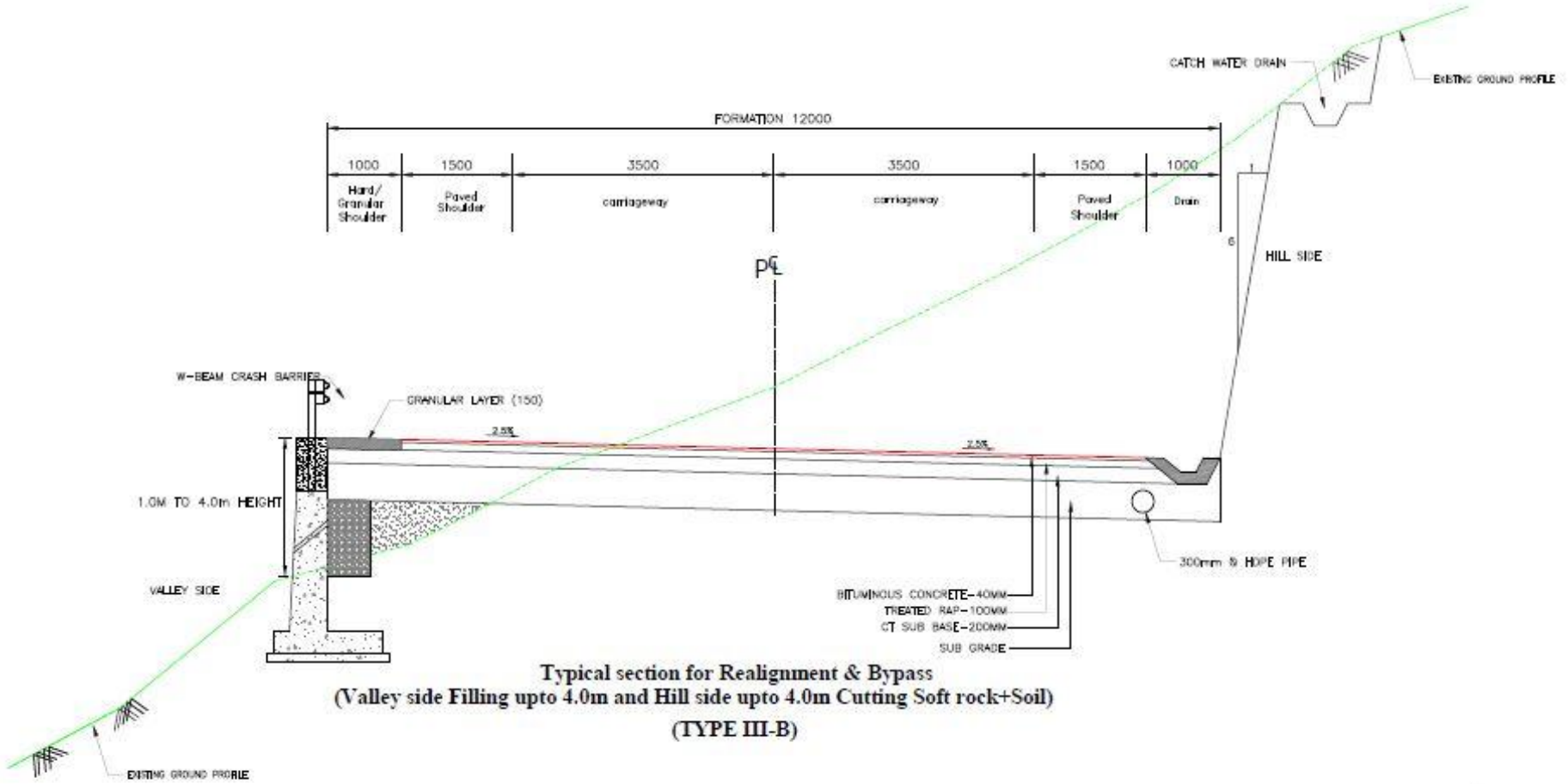
Typical Cross Section for widening of existing road to 2 lane with paved shoulder (Valley side Filling >4.0m Protection in Hard rock) (TYPE-II-C)



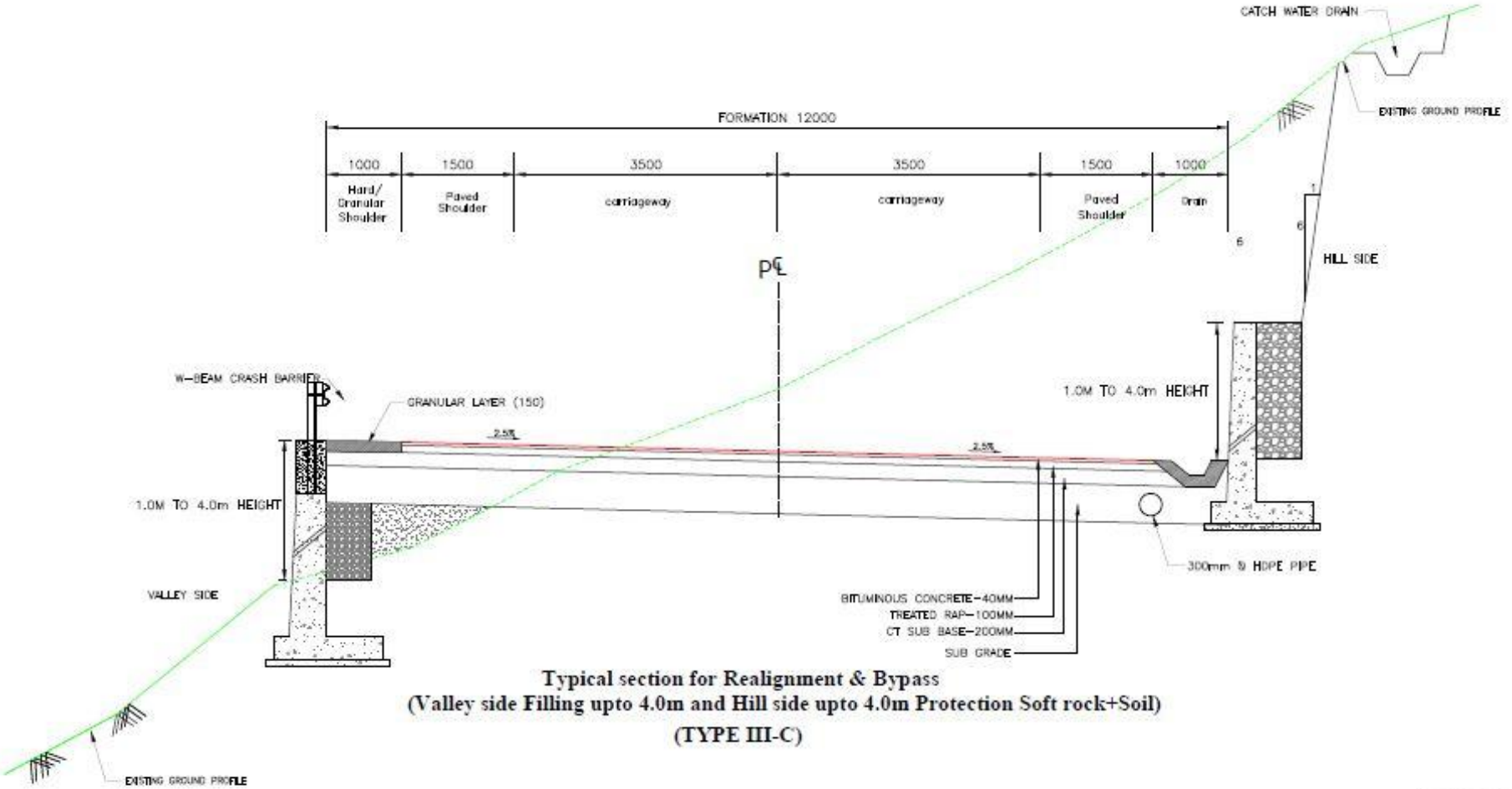
Typical section for Realignment & Bypass
(Valley side Filling upto 1m and Hill side cut upto 4.0m Soft rock+Soil)
(TYPE-III)



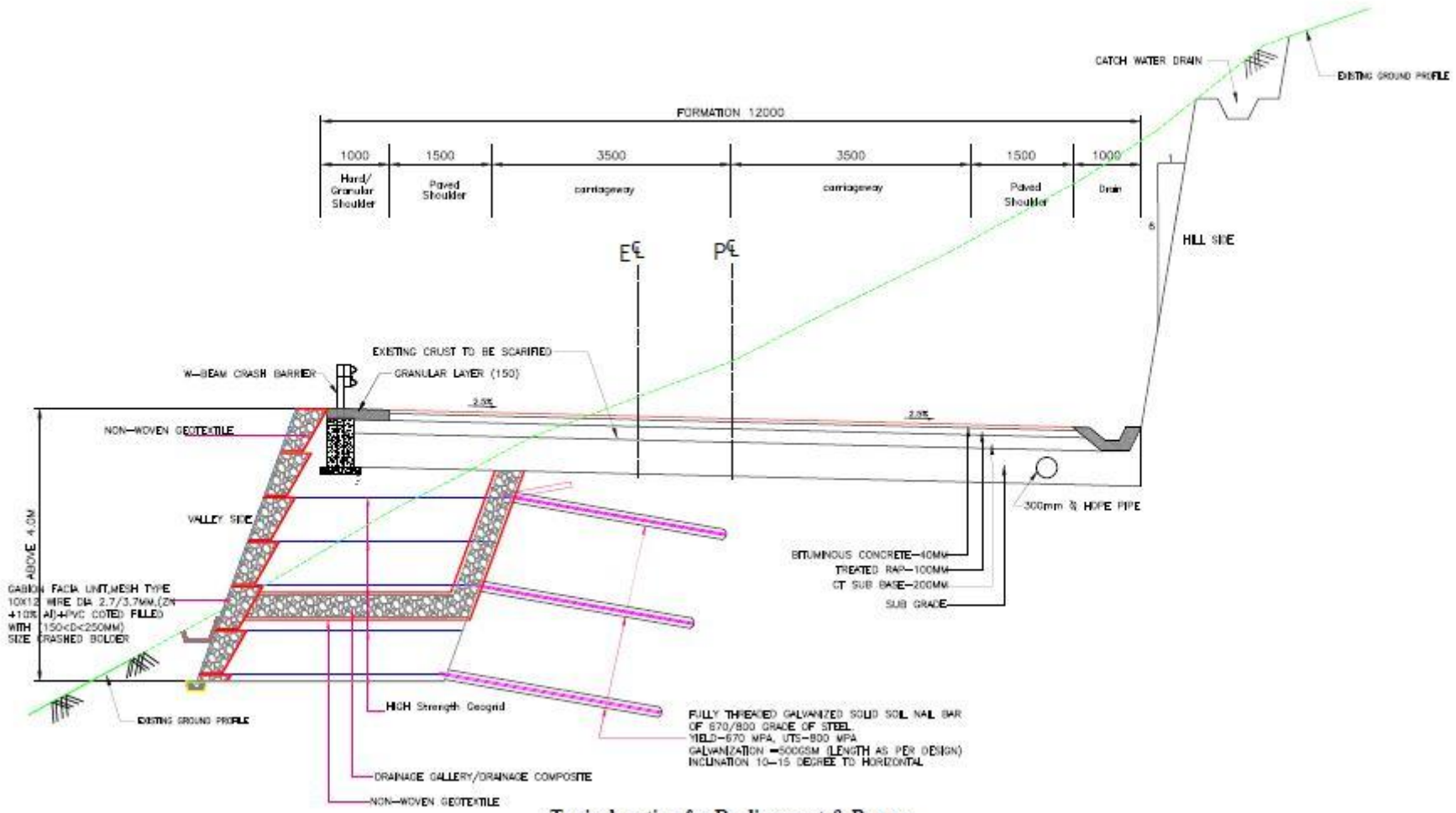
Typical section for Realignment & Bypass
(Valley side Filling upto 1m and Hill side upto 4.0m Protection Soft rock+Soil)
(TYPE-III-A)



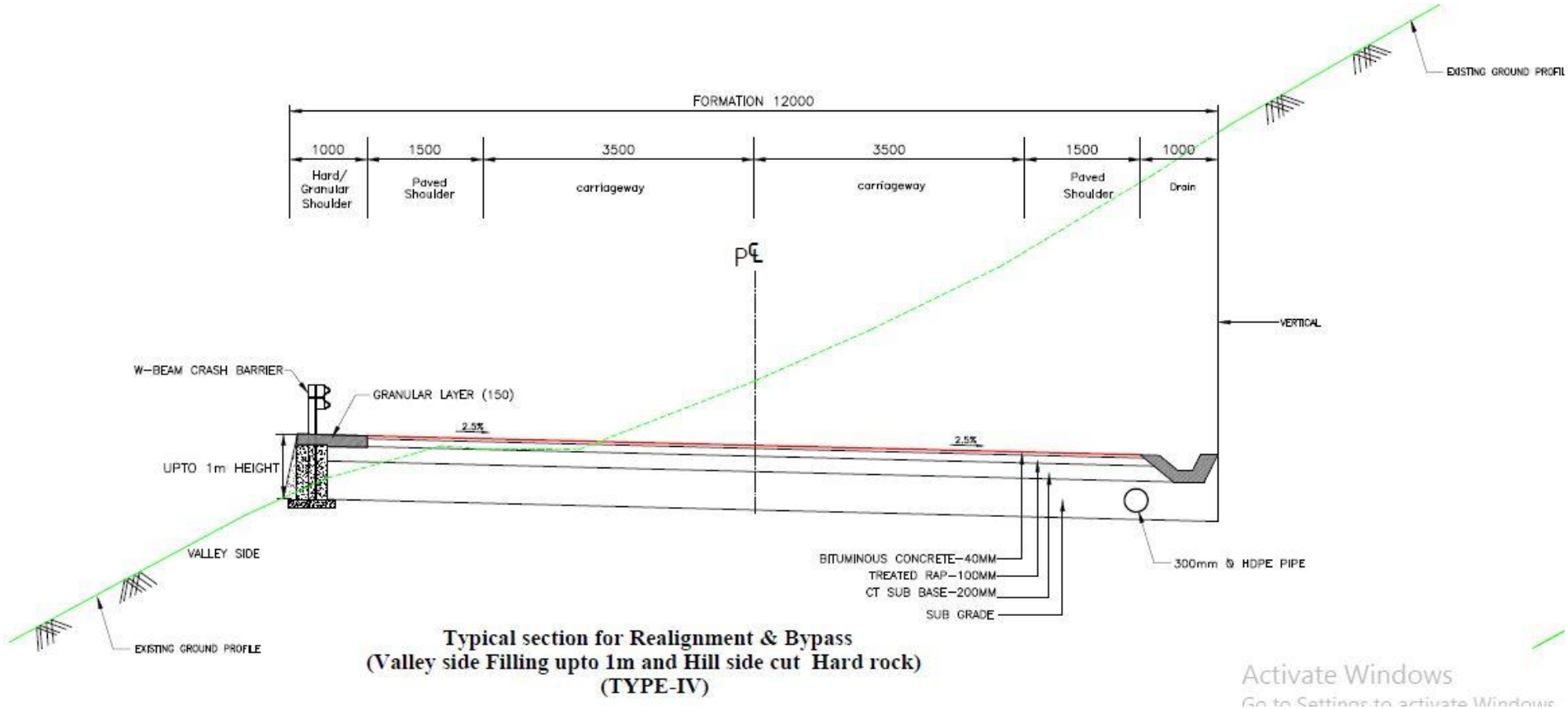
Typical section for Realignment & Bypass
(Valley side Filling upto 4.0m and Hill side upto 4.0m Cutting Soft rock+Soil)
(TYPE III-B)



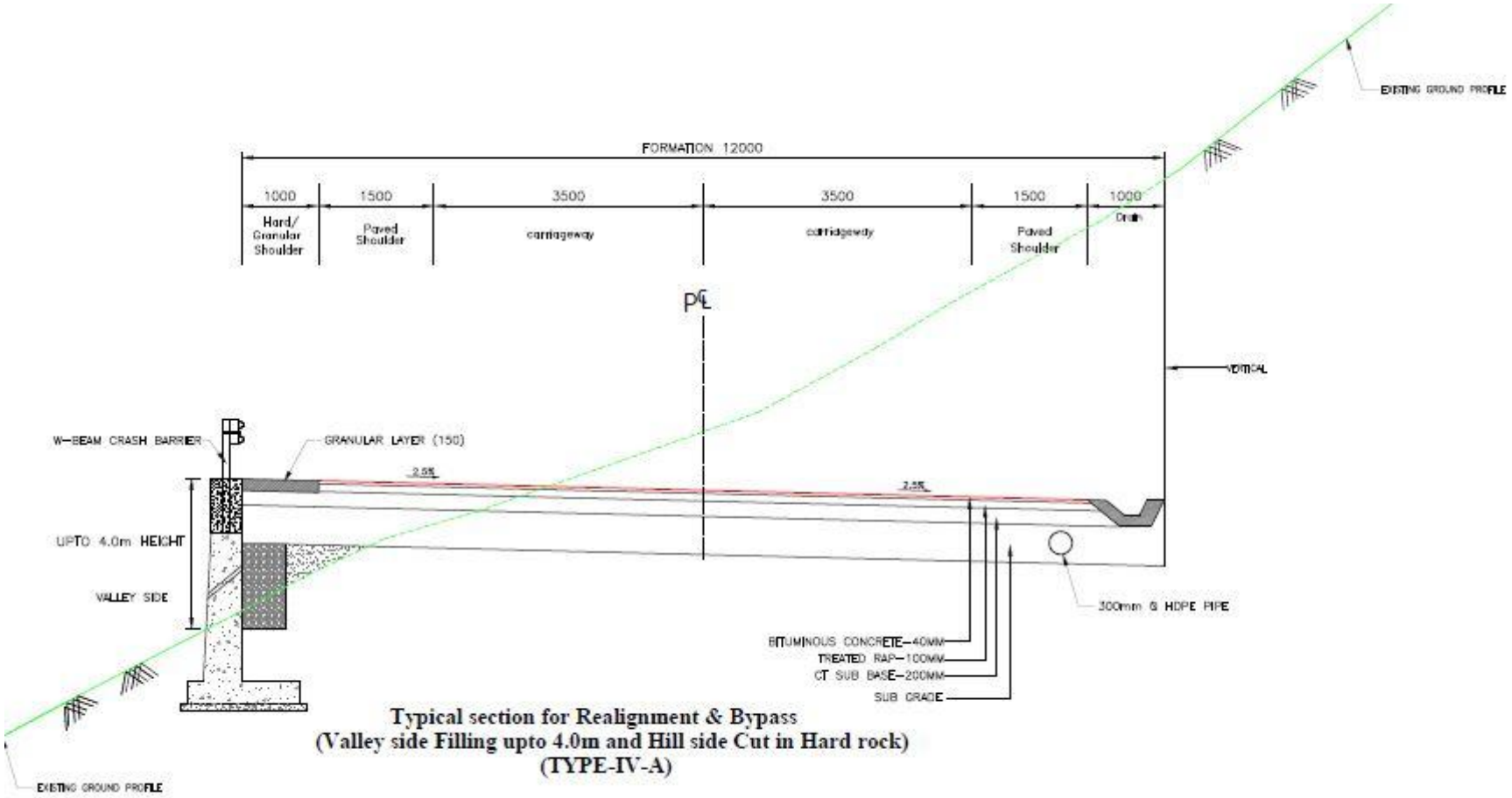
Typical section for Realignment & Bypass
(Valley side Filling upto 4.0m and Hill side upto 4.0m Protection Soft rock+Soil)
(TYPE III-C)



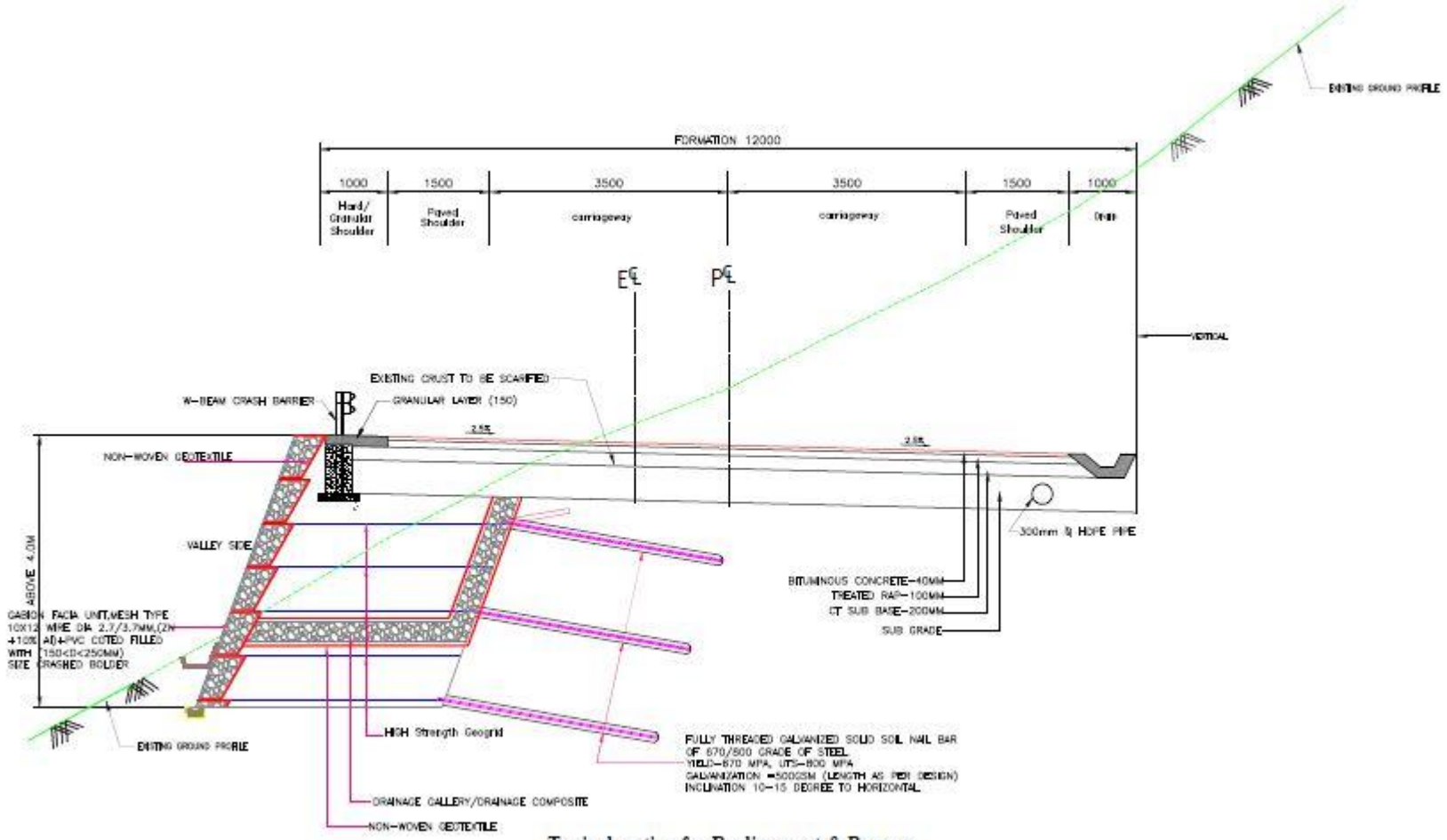
Typical section for Realignment & Bypass
(Valley side Filling >4.0m in soft rock)
(TYPE III-D)



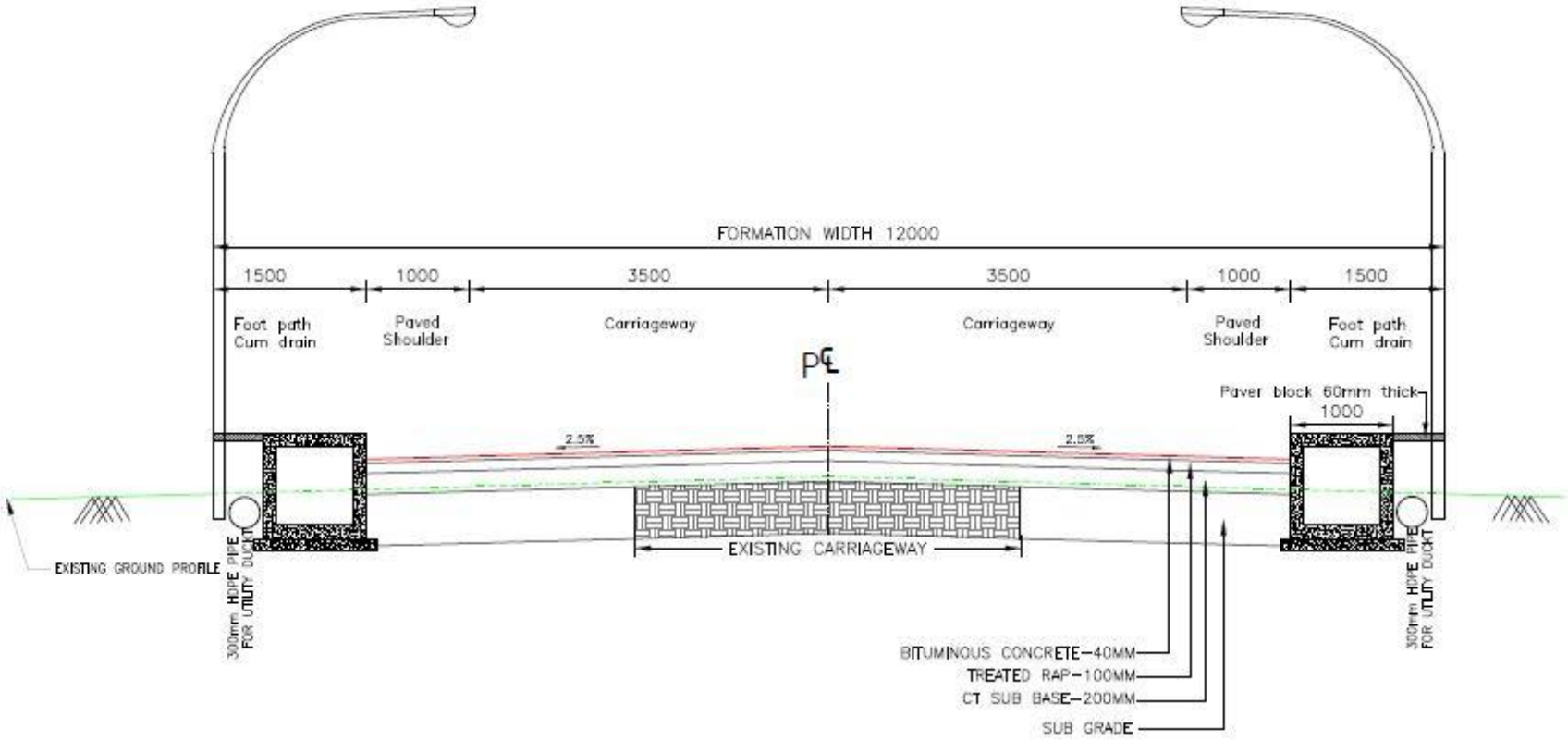
Typical section for Realignment & Bypass
(Valley side Filling upto 1m and Hill side cut Hard rock)
(TYPE-IV)



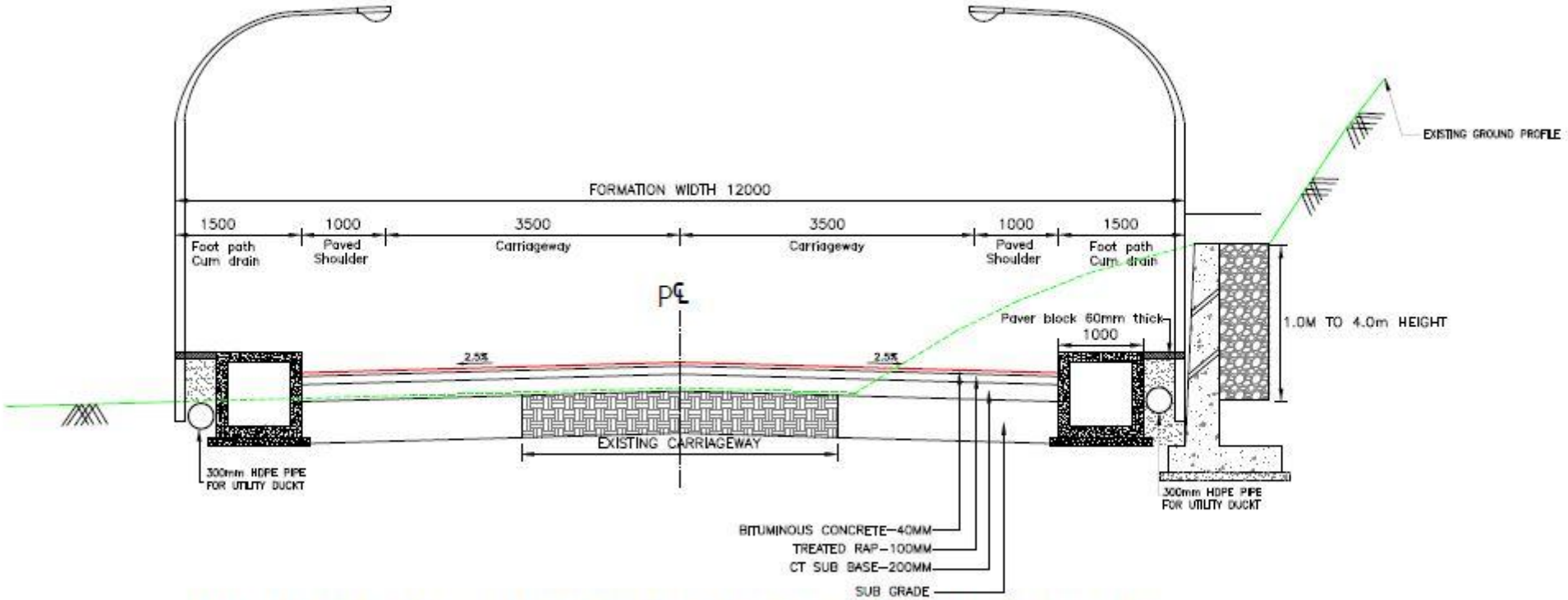
Typical section for Realignment & Bypass
(Valley side Filling upto 4.0m and Hill side Cut in Hard rock)
(TYPE-IV-A)



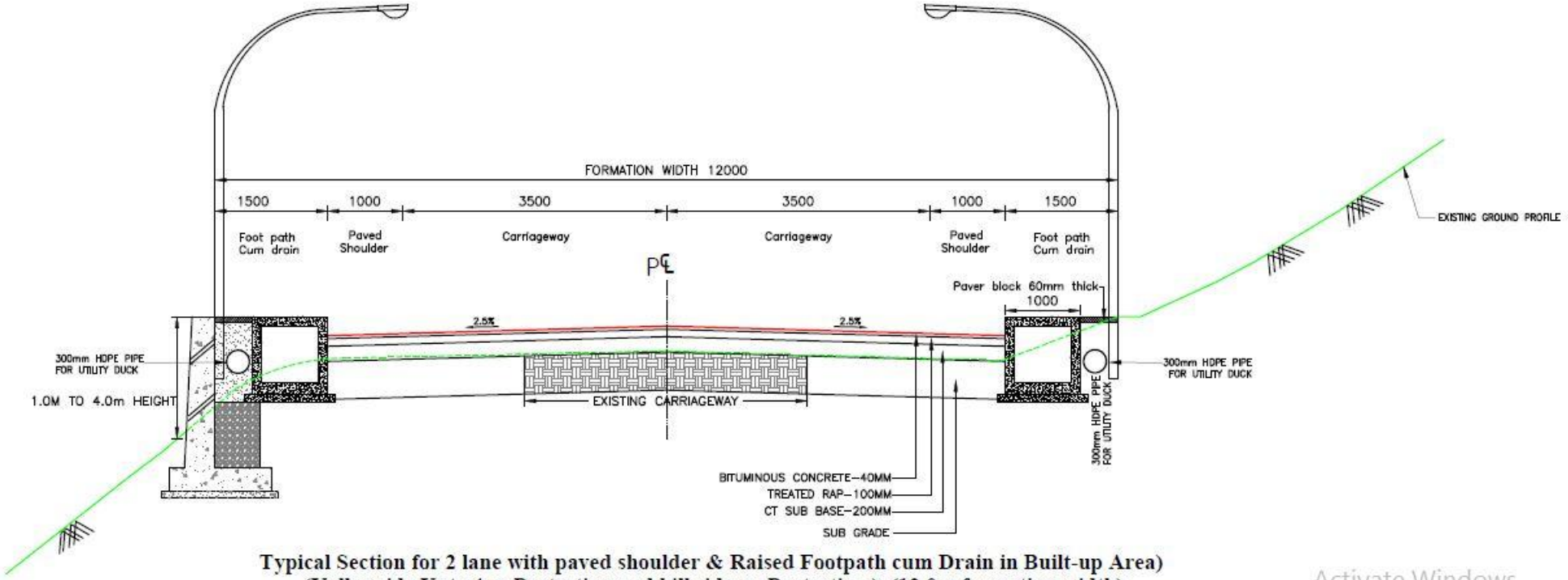
Typical section for Realignment & Bypass
(Valley side Filling >4.0m in soft rock)
(TYPE IV-B)



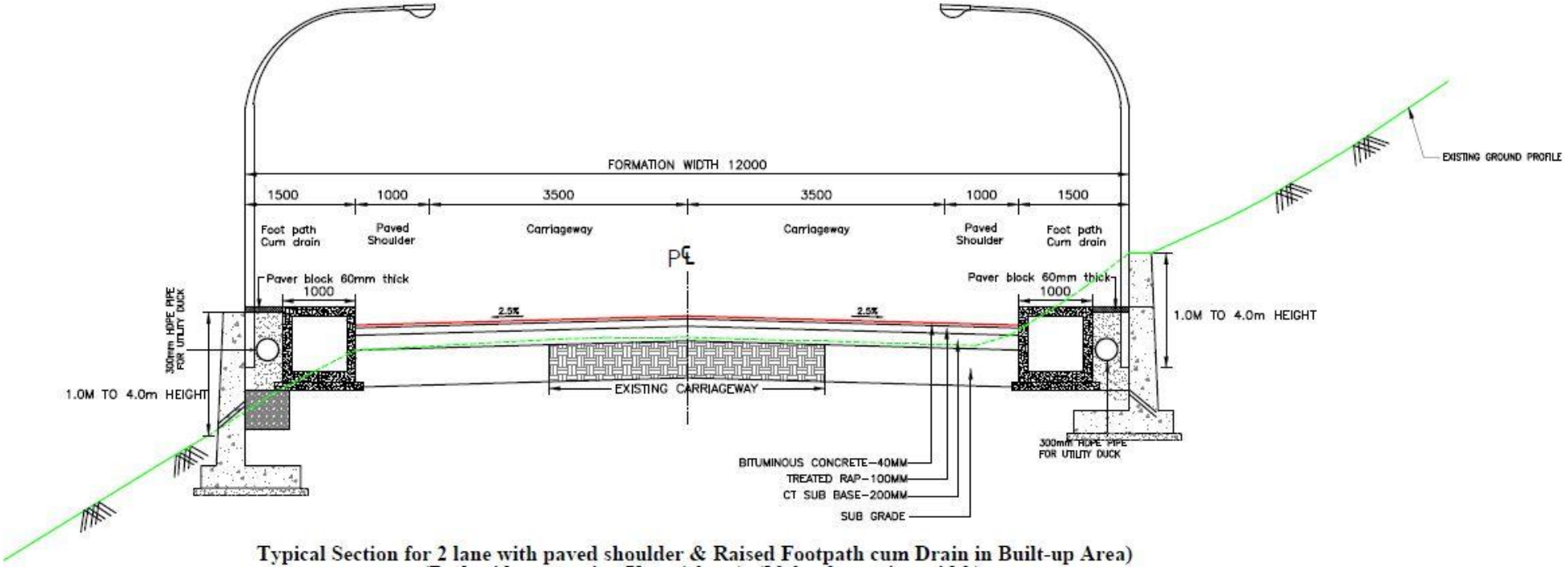
Typical Section for 2 lane with paved shoulder & Raised Footpath cum Drain in Built-up Area)
(12.0m formation width)
(TYPE-V)



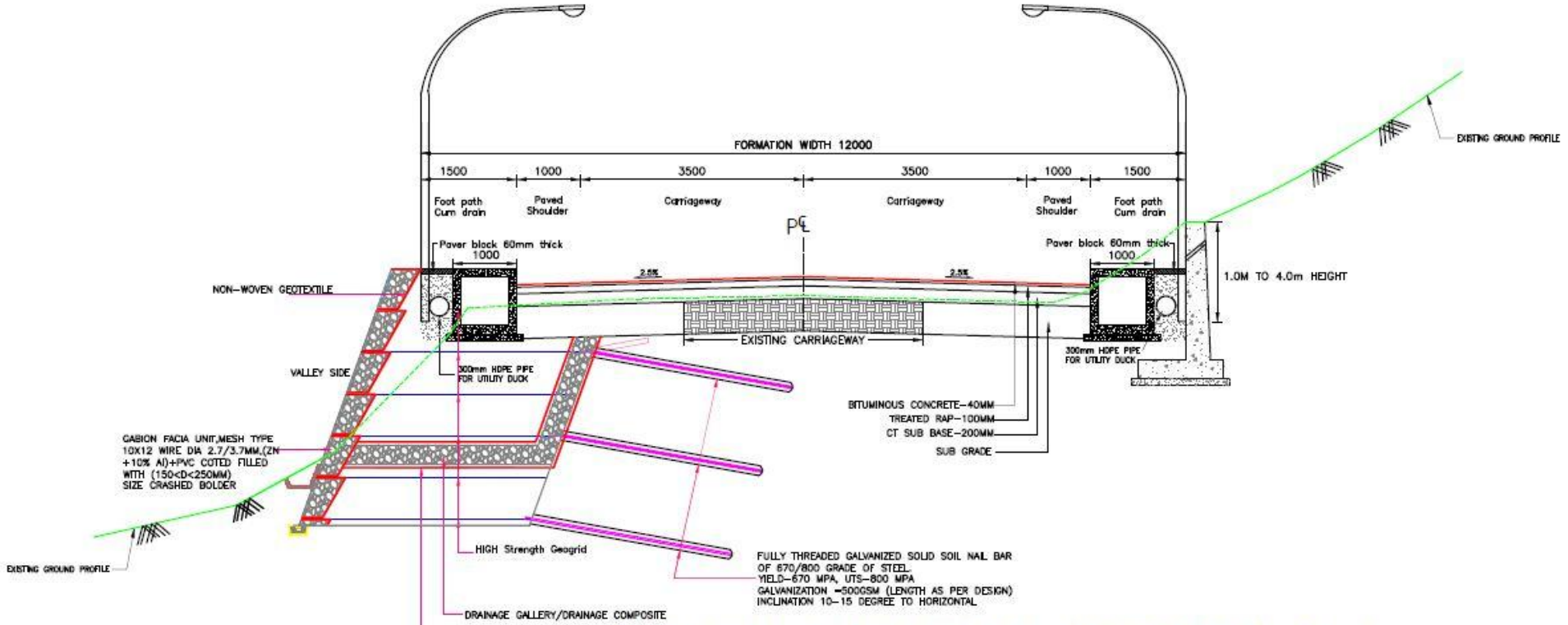
Typical Section for 2 lane with paved shoulder & Raised Footpath cum Drain in Built-up Area)
(Hill side Upto 4 m Protection) (12.0m formation width)
(TYPE-V-A)



Typical Section for 2 lane with paved shoulder & Raised Footpath cum Drain in Built-up Area)
(Valley side Upto 4 m Protection and hill side no Protection) (12.0m formation width)
(TYPE-V-B)



Typical Section for 2 lane with paved shoulder & Raised Footpath cum Drain in Built-up Area)
(Both side protection Upto 4.0 m) (12.0m formation width)
(TYPE-V-C)



Typical Section for 2 lane with paved shoulder & Raised Footpath cum Drain in Built-up Area)
(Valley side Protection >4.0m) (12.0m formation width)
(TYPE-V-D)

SCHEDULE - C

(See Clause 2.1)

PROJECT FACILITIES

1. Project Facilities

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

a) Roadside furniture;

b) Pedestrian facilities;

c) Bus shelter

Others to be specified

2. Description of Project Facilities

Each of the Project Facilities is described below:

a) Roadside furniture;

The roadside furniture shall include the provision of:

i. **Traffic Signs**:
Traffic signs include roadside signs, overhead signs and kerb-mounted signs along the entire Project Highway as per the manual of specifications.

ii. Pavement Markings:
Pavement markings shall cover road marking as per the manual of specifications.

iii. LED Traffic Blinkers:
LED Traffic Blinkers for the entire project highway at the locations as suggested in Manual.

iv. Delineators
Delineators for the entire Project Highway at the locations as suggested in Manual.

v. **Hectometer / Kilometer stones**
Hectometer/ Kilometer Stones for the entire Project Highway at the locations as suggested in Manual.

vi. Boundary Pillar
Boundary pillar@50m along the alignment of the project road.

b) Pedestrian facilities;

The pedestrian facilities shall be provided as per the Manual.

c) Bus Shelter

The Contractor shall provide additional 17nos. of Bus Shelters along the project highway and the locations are given below. The design of Bus Shelters should be aesthetically pleased with surrounding. The locations of these bus shelters shall be finalized by the Contractor in consultation with Authority's Engineer.

S. No.	Design Chainage (km)	Village	Side
1	400+300	Rajnagar	Both Side
2	402+950	Humatha	Both Side
3	403+200	Kalpeshwar	Both Side
4	405+300	Jaikandigad	Both Side
5	407+000	Langasu	Both Side
6	409+450	Baidanu	Both Side
7	410+700	Bakuda	Both Side
8	411+550	Virajgang	Both Side
9	413+000	Devli	Both Side
10	414+000	Sonla	Both Side
11	417+000	Nandprayag	Both Side
12	421+000	Pursadi	Both Side
13	424+000	Mathana	Both Side
14	426+000	Bazbara	Both Side
15	427+000	Kuher	Both Side
16	428+000	Bachpur	Both Side
17	429+000	Chamoli	Both Side

SCHEDULE – D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1. Construction

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

2. Design Standards

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

Manual of Specifications and Standards for Two-Laning of Highways (IRC: SP:73-2015) & Hill road (IRC:SP: 48-1998), referred to herein as the Manual.

{Note: specify the relevant Manual, Specifications and Standards}

Annex - I

(Schedule-D)

Specifications and Standards for Construction

1. Specification and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Two-Lanning of Highways (IRC: SP:73-2015), referred to as the Manual, and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Engineer in charge.

2. Deviations from the Specifications and Standards

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

2.2. Notwithstanding anything to the contrary contained in Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:
{Note 1: Deviations from the aforesaid specifications and Standards shall be listed out here. Such deviations shall be specified only if they are considered essential in view of project-specific requirements.}

SCHEDULE – E

(See Clause 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1. Maintenance Requirements

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

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

1.3. All Materials, works and construction operations shall conform to the "SPECIFICATIONS FOR ROAD ANDBRIDGE WORKS (FIFTH REVISION, April 2013)", including latest corrections slips, issued by the Ministry of Surface Transport & Highways, Government of India and published by the Indian Roads Congress.

This being not an item rate contract, the procedure for Measurement and Payment for the items of works shall be in accordance with provision of Article 19 of the Agreement. Therefore the Sub Clauses of measurement for payment and rates in above specifications stand deleted.

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

2. Repair/rectification of Defects and deficiencies

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

3. Other Defects and deficiencies

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

4. Extension of time limit

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

5. Emergency repairs/restoration

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

6. Daily inspection by the Contractor

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

7. Pre-monsoon inspection / Post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and drainage system before [1st June] every year in accordance with the guidelines contained in IRC: SP:35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [30th September] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities

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

Annex – I

(Schedule-E)

Repair/rectification of Defects and deficiencies

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

Nature of Defect or deficiency		Time limit for repair/ rectification
ROADS		
(a)	**Carriageway and paved shoulders**	
(i)	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days
(ii)	Any significant change in roughness value from original value [more than 5%] in a stretch of 1 km (as measured by a Calibrated bump integrator)	120 (one hundred and twenty) days
(iii)	Pot holes	24 hours
(iv)	Any cracks in road surface	15 (fifteen) days
(v)	Any depressions, rutting exceeding 10 mm in road surface	30 (Thirty) days
(vi)	Skidding	7 (seven) days
(vii)	Any other defect/distress on the road	15 (fifteen) days
(viii)	Damage to pavement edges	15 (fifteen) days
(ix)	Removal of debris, dead animals	6 hours
(x)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(b)	**Granular earth shoulders, side slopes, drains and culverts**	
(i)	Edge drop at shoulders exceeding 40 mm	7 (Seven) days

(ii)	Variation by more than 1% in the prescribed slope of camber/cross fall (shall not be less than the camber on the main carriageway)	7 (seven) days
(iii)	Variation by more than 15% in the prescribed side (embankment) slopes	30 (thirty) days
(iv)	Rain cuts/gullies in slope	7 (Seven) days
(v)	Damage to or silting of culverts and side drains	7 (Seven) days
(vi)	Desilting of drains in urban/semi-urban areas	24 hours
(vii)	Railing, parapets, crash barriers	7 (Seven) days (Restore immediately if causing safety hazard)
(viii)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(c)	**Road side furniture including road sign and pavement marking**	
(i)	Damage to shape or position, poor visibility or loss of retro-reflectivity	48 hours
(ii)	Painting of KM stone, railing, parapets, crash barriers	As and when required/Once every year
(iii)	Danaged/missing roa signs required replacement	7 (Seven) days
(iv)	Damage to road mark ups	7 (Seven) days
(v)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(d)	**Road lighting**	
(i)	Any major failure of the system	24 hours
(ii)	Faults and minor failures	8 hours
(iii)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(e)	**Trees and plantation**	
(i)	Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs	24 hours
(ii)	Removal of fallen trees from carriageway	4 hours

(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
(iv)	Trees and bushes requiring replacement	30 (Thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(vi)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(f)	**Other Project Facilities, Rest Area and Approach roads**	
(i)	Damage in pedestrian facilities, truck lay-buys, bus-bays, bus-shelters, cattle, crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads	15 (fifteen) days
(ii)	Cleaning of toilets	Every 4 hours
(iii)	Defects in electrical, water and sanitary installations	24 hours
(iv)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(v)	Rescue operations and attendance at accidents	Round the clock patrolling Inform police and other agencies immediately Removal of vehicles or debris. Assistance for first-aid and transport of accident victim to hospital Arrangement for safe movement of traffic
(vi)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(vii)	Damaged vehicles or debris on the road	4 (Four) hours
(viii)	Malfunctioning of the mobile cranes	4 (four) hours
Bridges		
(a)	**Superstructure**	
(i)	Any damage, cracks, spalling/scaling	

	Temporary measures Permanent measures	Within 48 hours Within 15 (fifteen) days or as specified by the Authority's Engineer
(b)	**Bearings (metallic) of bridges**	
(i)	Deformation	15 (fifteen) days Greasing of metallic bearings once in a year
(c)	**Joints**	
(i)	malfunctioning of joints	15 (fifteen) days
(ii)	Any other defects/deficiency not covered above (a) , (b) &(c) but pointed out by Engineer	3 (Three) days
(d)	**Foundations**	
(i)	Scouring and/or cavitation	15 (fifteen) days
(e)	**Piers, abutments, return walls and wing walls**	
(i)	Cracks and damages including settlement and tilting, Spalling, scaling	30 (thirty) days
(ii)	Any other defects/deficiency not covered above (d) & (e) but pointed out by Engineer	3 (Three) days
(f)	**Other items**	
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days
(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days (immediately within 24 hours if posing danger of safety)
(iv)	Rain-cuts or erosion of banks of the side slopes of approaches	7 (seven) days
(v)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach Slabs,	30 (thirty) days

	pitching, apron, toes, floor or guide bunds	
(vii)	Growth of vegetation affecting the structure or obstructing the waterway	15 (fifteen) days
(viii)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days

The failure to address above measures for any of the defects/deficiency may attract reduction in payment as per schedule M

Schedule-F

(See Clause 3.1.5(a))

APPLICABLE PERMITS

1. **Applicable Permits**

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

(a) Permission of the State Government for extraction of boulders from quarry;

(b) Permission of Village Panchayat and Pollution Control Board for installation of crushers;

(c) License for use of explosives;

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

(e) License from inspector of factories or other competent Authority for setting up batching plant;

(f) Clearance of Pollution Control Board for setting up batching plant;

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

(h) Permission of Village Panchayats and State Government for borrow earth; and

(i) Any other permits, clearances or approvals required under Applicable Laws.

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

Schedule-G

(See Clause 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE

Annex-I

(See Clause 7.1.1)

PERFORMANCE SECURITY

The Managing Director,
NHIDCL,
3rd Floor, PTI Building, Sansad Marg,
New Delhi

WHEREAS:

(A) _____ [name and address of contractor] (hereinafter called "the Contractor") and [**NHIDCL**], (**"the Authority"**) have entered into an agreement (the **"Agreement"**) for **"Construction and Upgradation of existing road to 2-lane with paved shoulder from Km 399.000 to Km. 430.000 of Karanpyarag to Chamoli (Excluding Km 420.250 to Km 420.500 and Km 423.300 to km 423.650) of NH-07 under Chardham Pariyojna on EPC basis in the state of Uttarakhand "**subject to and in accordance with the provisions of the Agreement.

(B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the Construction Period and Defects Liability Period (as defined in the Agreement) in a sum of Rs. …. Crore (Rupees …. Crore) (the "Guarantee Amount").

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

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

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

2. A letter from the Authority, under the hand of an officer not below the rank of [Executive Director, NHIDCL], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

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

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

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

to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.

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

8. The Performance Security shall cease to be in force and effect upto 90 (ninety) days after the end of the Defects Liability Period as set forth in Clauses 17.1 of EPC agreement.

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

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

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This guarantee shall also be operable at our…… Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.
13. Intimation regarding issuance of this Bank Guarantee shall be sent to Authority's Bank through SFMS gateway as per the details below:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC SYNB0009062
4	Beneficiary Bank Branch	Transport Bhawan, New Delhi

	Name	
5	Beneficiary Bank Address	Syndicate Bank transport Bhawan, 1st Parliament Street, New Delhi-110001

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

Annex-II

(Schedule-G)

(See Clause 7.5.3)

Form for Guarantee for Withdrawal of Retention Money

The Managing Director,
NHIDCL,
3rd Floor, PTI Building, Sansad Marg,
New Delhi

WHEREAS:

[Name and address of contractor] (hereinafter called "**the Contractor**") has executed an agreement (hereinafter called the "Agreement") with the [NHIDCL], (hereinafter called "the Authority") for the **"Construction and Upgradation of existing road to 2-lane with paved shoulder from Km 399.000 to Km. 430.000 of Karanpyarag to Chamoli (Excluding Km 420.250 to Km 420.500 and Km 423.300 to km 423.650) of NH-07 under Chardham Pariyojna on EPC basis in the state of Uttarakhand "**subject to and in accordance with the provisions of the Agreement.

a. in accordance with the Clause 7.5.3 of the Agreement, whenever the amount of the retention money (hereinafter called "Retention Money") held by the Authority exceeds 1% (one per cent) of the Contract Price, the Contractor may, at its option, withdraw the Retention Money after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.

b. We, …….. through our branch at ……. (the "Bank") have agreed to furnish this bank guarantee (hereinafter called the "Guarantee") for the amount of Rs. ……. (……. in words) (the "**Guarantee Amount"**).

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

1. The Bank hereby unconditionally and irrevocably undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of [Executive Director, NHIDCL], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

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

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

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

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

8. The guarantee shall cease to be in force and effect 90 (ninety) days after the end of the Defects Liability Period specified in Clauses 17.1 of the Agreement.

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

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

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This guarantee shall also be operable at our…… Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.
13. Intimation regarding issuance of this Bank Guarantee shall be sent to Authority's Bank through SFMS gateway as per the details below:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Syndicate Bank transport Bhawan, 1st Parliament Street, New Delhi-110001

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

Annex-III

(Schedule-G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

The Managing Director,
NHIDCL,
3rd Floor, PTI Building, Sansad Marg,
New Delhi

WHEREAS:

(A) [name and address of contractor] (hereinafter called "**the Contractor**") has executed an agreement (hereinafter called the "Agreement") with the [**NHIDCL**], (hereinafter called "**the Authority**") for the **"Construction and Upgradation of existing road to 2-lane with paved shoulder from Km 399.000 to Km. 430.000 of Karanpyarag to Chamoli (Excluding Km 420.250 to Km 420.500 and Km 423.300 to km 423.650) of NH-07 under Chardham Pariyojna on EPC basis in the state of Uttarakhand "**subject to and in accordance with the provisions of the Agreement.

(B) in accordance with the Clause 19.2 of the Agreement the Authority shall make to the Contractor advance payment (hereinafter called "Advance Payment") equal to 10% (ten per cent) of the contract price for mobilization expenses and acquisition of equipment; and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equal to the amount of each installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement; and the amount of (first/second) installment of the Advance Payment is Rs. **** cr. (Rupees ***** crore) (the "Guarantee Amount").

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

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

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

2. A letter from the Authority, under the hand of an officer not below the rank of [Executive Director, NHIDCL], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

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

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

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

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

8. The guarantee shall cease to be in force and effect 90 (ninety) days after the end of the one year from the date of payment of the installment of the Advance Payment, as set forth in Clause 19.2 of the Agreement.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. Notwithstanding anything contained herein before, our liability under this Bank Guarantee is restricted to Rs._____ (Rs._____ in words) and the bank guarantee shall remain valid till _____. Unless a claim or a demand in writing is served upon us on or before_____ all our liability under this Bank Guarantee shall cease.

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

14. Intimation regarding issuance of this Bank Guarantee shall be sent to Authority's Bank through SFMS gateway as per the details below:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659

3	Beneficiary Bank Branch	IFSC SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Syndicate Bank transport Bhawan, 1st Parliament Street, New Delhi-110001

15.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

Schedule-H

(See Clauses 10.1.4 and 19.3)

Contract Price Weightages

1.1 The Contract Price for this Agreement is **Rs. Crore.**

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

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	**2**	**3**	**4**
Road works including culverts, widening and repair of culverts	44.38%	**A- Widening and Strengthening of Existing Road**	
		(1) Earthwork up to top of the sub-grade	22.91%
		(2) Treated Sub-Base Course	12.20%
		(3) Treated RAP	13.78%
		(4) Bituminous Base Course	0.00%
		(5) Wearing Coat	8.68%
		(5) Widening and repair of culvert	0.00%
		B.1- Reconstruction/ New 2-lane realignment/bypass (Flexible pavement)	
		(1) Earthwork up to top of the sub-grade	2.85%
		(2) Treated Sub-Base Course	1.35%
		(3) Treated RAP	3.44%
		(4) Bituminous Base Course	0.00%
		(5) Wearing Coat	9.27%
		D-Re-Construction and New culverts on existing road, realignments, bypasses:	
		Culverts (lengths < 6m)	25.52%
Minor Bridges	11.12%	**A.1- Widening and Repair of Minor bridges (length >6 m and < 60 m)**	
		Minor bridges	0.00%

		A.2- New Minor bridges (length >6 m and < 60 m)	
		(1) Foundation + Sub- Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/ pier cap.	76.93%
		(2) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion in all respect.	23.07%
		(3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.00%
Major Bridge works	0.00%	**A.1- Widening and Repair of Major bridges**	
		Major Bridges	0.00%
		A.2 -New major bridges & Viaduct	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat including expansion joints	0.00%
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	0.00%
		(6) Wing walls/ return walls	0.00%
		(7) Guide Bunds, River Training works etc.	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%
Other works	44.50%	(i) Road side drains	7.11%

		(ii) Road signs, markings, km stones, safety devices, (a) W Beam Crash Barrier (b) Utility duct (c) Miscellaneous	 6.74% 6.26% 1.35%
		(iii) Project facilities (a) Bus Bays and Bus Shelter (b) Truck lay-byes (c) Rest areas (d) Others (scenic overlook, Junction)	 0.68% 0.00% 0.00% 0.36%
		(iv) Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs	0.00%
		(v) Repair of Protection works (a) Retaining Wall/ Brest Wall (b) Reinforced Earth Wall	 64.78% 12.72%
		(vi) Safety and traffic management during construction	0.00%

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

1.3 Procedure of estimating the value of work done.

1.3.1 Road works.

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

Table 1.3.1

Stage for Payment	Percentage weightage	Payment Procedure
A- Widening and Strengthening of Existing Road		
(1) Earthwork up to top of the sub-grade	22.91%	Unit of measurement is linear length for two lane. Payment of each stage shall be made on pro rata basis on completion of a stage in length of nor less than 10% of the total length
(2) Treated Sub-Base Course	12.20%	
(3) Treated RAP	13.78%	
(4) Bituminous Base Course	0.00%	
(5) Wearing Coat	8.68%	
B.1- Reconstruction/ New 2-lane realignment/bypass (Flexible pavement)		
(1) Earthwork up to top of the sub-grade	2.85%	Unit of measurement is linear length for two lane. Payment of each stage shall be made on pro rata basis on completion of a stage in length of nor less than 10% of the total length.
(2) Treated Sub-Base Course	1.35%	
(3) Treated RAP	3.44%	
(4) Bituminous Base Course	0.00%	
(5) Wearing Coat	9.27%	
D-Re-construction and New culverts on existing road, realignments, bypasses:		
(1) Culverts (length < 6m)	25.52%	Cost of each culvert shall be determined on pro- rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least five culverts.

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

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

Where P = Contract Price

L = Total length in km

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

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

1.3.2 Minor Bridge and Underpasses/ Overpasses

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

Table 1.3.2

Stage of Payment	**Weightage**	**Payment Procedure**
1	**2**	**3**
A.1- Widening and Repair of Minor bridges (length >6 m and < 60 m)	0.00%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge.
A.2- <u>New minor bridges</u>		
(1) Foundation + Sub- Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/ pier cap.	76.93%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation + sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation + sub-structure of each bridge subject to completion of at least two foundations along with sub-structure upto abutment/pier cap level of each bridge. In case where load testing is required for foundation, the trigger of first payment shall

		include load testing also where specified.
(2) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion in all respect.	23.07%	Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause.
(3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.00%	Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.

1.3.3 Major Bridge works & Viaducts

Procedure for estimating the value of Major Bridge works & Viaducts shall be as stated in table 1.3.3:

Table 1.3.3

Stage for Payment	**Percentage weightage**	**Payment Procedure**
A.1- Widening and Repair of Major bridges	0.00%	Cost of each major bridge shall be determined on pro rata basis with respect to the total linear length of the major bridges. Payment shall be made on the completion of widening & repair works of a minor bridge.
A.2-<u>New major bridges</u>		
i. Foundation	0.00%	Cost of each major bridge/ Viaduct shall be determined on pro rata basis with respect to the total linear length (m) of the Major bridge/ Viaduct. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the Major bridge/ Viaduct subject to completion of at least two

ii. Substructure		foundations of the Major bridge/ Viaduct. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
	0.00%	Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the Major bridge/ Viaduct subject to completion of at least two sub-structures of abutments/piers upto abutment/pier cap level of the Major bridge/ Viaduct.
(3) Super-structure (including bearings)	0.00%	Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of at least one span in all respects as specified.
(4) Wearing Coat including expansion joints	0.00%	Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	0.00%	Payment shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/ return walls	0.00%	Payment shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Guide Bunds, River Training works etc.	0.000%	Payment shall be made on completion of all Guide Bunds/River Training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respect as specified.

1.3.4 Other works.

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

Table 1.3.4

Stage for Payment		**Percentage weightage**	**Payment Procedure**
(i) Road side drains		7.11%	Unit of measurement is linear length in km. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(ii) Road signs, markings, km stones, safety devices. (a) W Beam Crash Barrier (b) Utility duct (c) Miscellaneous		 6.74% 6.26% 1.35%	
(iii) Project facilities	(i) Bus byes	0.68%	Payment shall be made on pro-rata basis for completed facilities.
	(ii) Truck lay bye	0.000%	
	(iii) Rest areas	0.000%	
	Others (scenic overlook, Junction)	0.10% 0.26%	
(iv) Repair of Protection Works (a) Retaining wall/Breast Wall (b) Reinforced Earth wall		 64.78% 12.72%	Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(v) Safety and traffic management during construction		0.00%	Payment shall be made on pro rata basis every six months.

2. Procedure for payment for Maintenance

2.1 The cost for maintenance shall be as stated in Clause 14.1.1.

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

SCHEDULE-I

(See Clause 10.2)

DRAWINGS

1. Drawings

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

2. Additional Drawings

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

Annex-I

(Schedule-I)

List of Drawings

Alignment Plan and longitudinal Section are enclosed in digital form in CD marked as Annex-I

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

- Horizontal and Vertical Alignment (with plan & profile) with details of reference pillars. Horizontal Intersection Point, Vertical Intersection Points, elements of curves, and sight distances.
- Typical Cross-section with details of pavement structures.
- Detailed drawings of individual Bridges/Structures/ROB.
- Detailed drawing for individual culverts.
- Detailed drawings of guide bunds and protection works and retaining structures.
- Detailed drawings of Drainage including Masonry drains and other drains.

SCHEDULE-J

(See Clause 10.3.2)

PROJECT COMPLETION SCHEDULE

1. Project Completion Schedule

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

2. Project Milestone-I

2.1 Project Milestone-I shall occur on the date falling on the 180th (One hundred eighty) day from the Appointed Date (the "**Project Milestone-I"**).

2.2 Prior to the occurrence of Project Milestone-I, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements completion schedule in reference to Schedule-H Items, Stages and Sub-stages payment statements for an amount not less than 10% (ten per cent) of the Contract Price.

3. Project Milestone-II

3.1 Project Milestone-II shall occur on the date falling on the 420th (four hundred twenty) day from the Appointment Date (the **"Project Milestone-II**").

Prior to the occurrence of Project Milestone-II, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements completion schedule in reference to Schedule-H Items, Stages and Sub-stages payment statements for an amount not less than 40% (forty per cent) of the Contract Price.

4. Project Milestone-III

4.1 Project Milestone-III shall occur on the date falling on the 660th (six hundred sixty) day from the Appointed Date (the "**Project Milestone-III"**).

4.2 Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared payment Statements for an amount not less than 70% (seventy per cent) of the Contract Price.

5 Schedule Completion Date

5.1 The Schedule Completion Date shall occur on the 912th (nine hundred twelve) day from the Appointed Date.

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

6 Extension of time

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

SCHEDULE-K

(See Clause 12.1.2)

Tests on Completion

1. Schedule for Tests

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

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

2 Tests

2.1 Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include: all the tests specified in IRC code, manual and MORTH specifications for the road and Bridge works, 5th revision, 2013.

2.2 Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometer.

2.3 Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) meters or more shall also be subjected to load testing.

2.4 Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards.

2.5 Environmental audit: The Authority's Engineer shall carry out a check to determine conformity of the Project Highway with the environmental requirements set forth in Applicable Laws and Applicable Permits.

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

3 Agency for conducting Tests

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

4. Completion Certificate

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

SCHEDULE-L

(See Clause 12.2 and 12.4)

PROVISIONAL CERTIFICATE

1. I, …….. (Name of the Authority's Engineer), acting as Authority's Engineer, under and in accordance with the Agreement dated …….. (the "**Agreement**"), for construction of the **"Construction and Upgradation of existing road to 2-lane with paved shoulder from Km 399.000 to Km. 430.000 of Karanpyarag to Chamoli (Excluding Km 420.250 to Km 420.500 and Km 423.300 to km 423.650) of NH-07 under Chardham Pariyojna on EPC basis in the state of Uttarakhand "**through ……. (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been undertaken to determine compliance of the Project Highway with the provisions of the Agreement.

2. Construction Works that are incomplete on account of Time Extension have been specified in the Punch List appended hereto, and the Contractor has agreed and accepted that it shall complete all such works in the time and manner set forth in the Agreement. In addition, certain minor works are incomplete and these are not likely to cause material inconvenience to the users of the Project Highway or other their safety. The contractor has agreed and accepted that as a condition of this Provisional Certificate, it shall complete such minor works within 30 (thirty) days hereof. These minor works have also been specified in the aforesaid punch list.

3. In view of the foregoing, I am satisfied that that Project Highway can be safety and reliably placed in service of the users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into operation on this the ……day of …….20 …..

ACCEPTED, SIGNED, SEALED AND DELIVERED	SIGNED, SEALED AND DELIVERED
For and on behalf of	For and on behalf of
CONTRACTOR	by Authority's Engineer
by:	
(Signature)	(Signature)

COMPLETION CERTIFICATE

1. I, …….. (Name of the Authority's Engineer), acting as Authority's Engineer, under and in accordance with the Agreement dated …….. (the "**Agreement**"), for construction of the **"Construction and Upgradation of existing road to 2-lane with paved shoulder from Km 399.000 to Km. 430.000 of Karanpyarag to Chamoli (Excluding Km 420.250 to Km 420.500 and Km 423.300 to km 423.650) of NH-07 under Chardham Pariyojna on EPC basis in the state of Uttarakhand "**through ……. (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safety and reliably placed in service of the Users thereof..

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

SIGNED, SEALED AND DELIVERED

For and on behalf of

Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

SCHEDULE-M

(See Clauses 14.6., 15.2 and 19.7)

PAYMENT REDUCTION FOR NON-COMPLIANCE

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

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

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

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

2. Percentage reductions in lump sum payments

2.1 The following percentages shall govern the payment reduction:

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

(d)	**Roadside Drains**	
(i)	Cleaning and repair of drains	5%
(e)	**Road Furniture**	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5th km stones	5%
(f)	**Miscellaneous Items**	
(i)	Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	**Defects in Other Project Facilities**	5%

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

R=P/100 * M * L1/L

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

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

L1 = Non-complying length

L = Total length of the road,

R = Reduction (the amount to be deducted for noncompliance for a particular item/Defect/deficiency

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

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

SCHEDULE-N

(See Clause 18.1.1)

SELECTION OF AUTHORITY'S ENGINEER

1 Selection of Authority's Engineer

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

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

2 Terms of Reference

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

3 Appointment of Government entity as Authority's Engineer

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

Annex – I

(Schedule - N)

TERMS OF REFERENCE FOR AUTHORITY'S ENGINEER

1. Scope

1.1 These Terms of Reference (the "**TOR**") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated ..... (the "**Agreement**), which has been entered into between the Ministry of Road Transport and Highways (the "**Authority**") and ..... (the "**Contractor**") for "**Construction and Upgradation of existing road to 2-lane with paved shoulder from Km 399.000 to Km. 430.000 of Karanpyarag to Chamoli (Excluding Km 420.250 to Km 420.500 and Km 423.300 to km 423.650) of NH-07 under Chardham Pariyojna on EPC basis in the state of Uttarakhand"**and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

1.2 The TOR shall apply to construction and maintenance of the Project Highway.

2. Definitions and interpretation

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

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

2.3 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, *mutatis mutandis*, to this TOR.

3. General

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

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

(a) Any Time extension;

(b) Any additional cost to be paid by the Authority to the Contractor;

(c) The Termination Payment; or

(d) Any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs. 5,000,000 (Rs. fifty lakh).

3.2 The Authority's Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.

3.4 The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2.

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

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

4 Construction Period

4.1 During the Construction Period, the Authority's Engineer shall review the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1.6. The Authority's Engineer shall complete such review and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

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

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

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

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

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

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

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

4.9 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4.9, the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.

4.10 The Authority's Engineer shall test check at least 20 (twenty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

4.11 The timing of tests referred to in Paragraph 4.9, and the criteria for acceptance/ rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

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

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

4.14 In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

4.15 The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.4.

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

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

4.18 The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate or Provisional Certificate,

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

5. Maintenance Period

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

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

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

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

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

6 Determination of costs and time

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

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

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

7. Payments

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

7.2 Authority's Engineer shall -

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

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

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

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

8. Other duties and functions

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

9 Miscellaneous

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

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

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

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

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

SCHEDULE - O

(See Clauses 19.4.1, 19.6.1, and 19.8.1)

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

(a) The estimated amount for the Works executed in accordance with Clause 19.3.1 subsequent to the last claim;

(b) Amounts reflecting adjustments in price for the aforesaid claim;

(c) The estimated amount of each Change of Scope Order executed subsequent to the last claim;

(d) Amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2.3 (a);

(e) Total of (a), (b), (c) and (d) above;

(f) Deductions:

  (i) Any amount to be deducted in accordance with the provisions of the Agreement except taxes;

  (ii) Any amount towards deduction of taxes; and

  (iii) Total of (i) and (ii) above.

(g) Net claim: (e) – (f) (iii);

(h) The amounts received by the Contractor upto the last claim:

  (i) For the Works executed (excluding Change of Scope orders);
  (ii) For Change of Scope Orders, and
  (iii) Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

(a) the monthly payment admissible in accordance with the provisions of the agreement;

(b) the deductions for maintenance work not done;

(c) net payment for maintenance due, (a) minus (b);

(d) amounts reflecting adjustments in price under Clause 19.12; and

(e) amount towards deduction of taxes

3. Contractor's claim for Damages

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

SCHEDULE-P

(See Clause 20.1)

INSURANCE

1. Insurance during Construction Period

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

(a) insurance of Works, Plant and Materials and an additional sum of [15 (fifteen)] per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and

(b) Insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

1.2 The insurance under paragraph 1.1 (a) and (b) above shall cover the authority and the Contractor against all loss or damage from whatsoever cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

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

3. Insurance against injury to persons and damage to property

3.1. The Contractor shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Paragraph l and 2 of this Schedule or to any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this agreement and occurring before the issue of the Performance Certificate. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.

The insurance cover shall be as per the applicable laws of government and procedure in vogue.

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

(a) the Authority's right to have the construction works executed on, over, under, in or through any land, and to occupy this land for the Works; and

(b) Damage which is and unavoidable result of the Contractor's obligations to execute the Works.

4. Insurance to be in joint names

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