



NATIONAL HIGHWAYS AUTHORITY OF INDIA

(Ministry of Road Transport & Highways) Government of India

NAME OF WORK: Balance work of Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode in the state of Uttar Pradesh

TECHNICAL SCHEDULES (A, B, C, D)

Balance work of Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode in the state of Uttar Pradesh

SCHEDULE-A

(See Clauses 2.1 and 8.1)

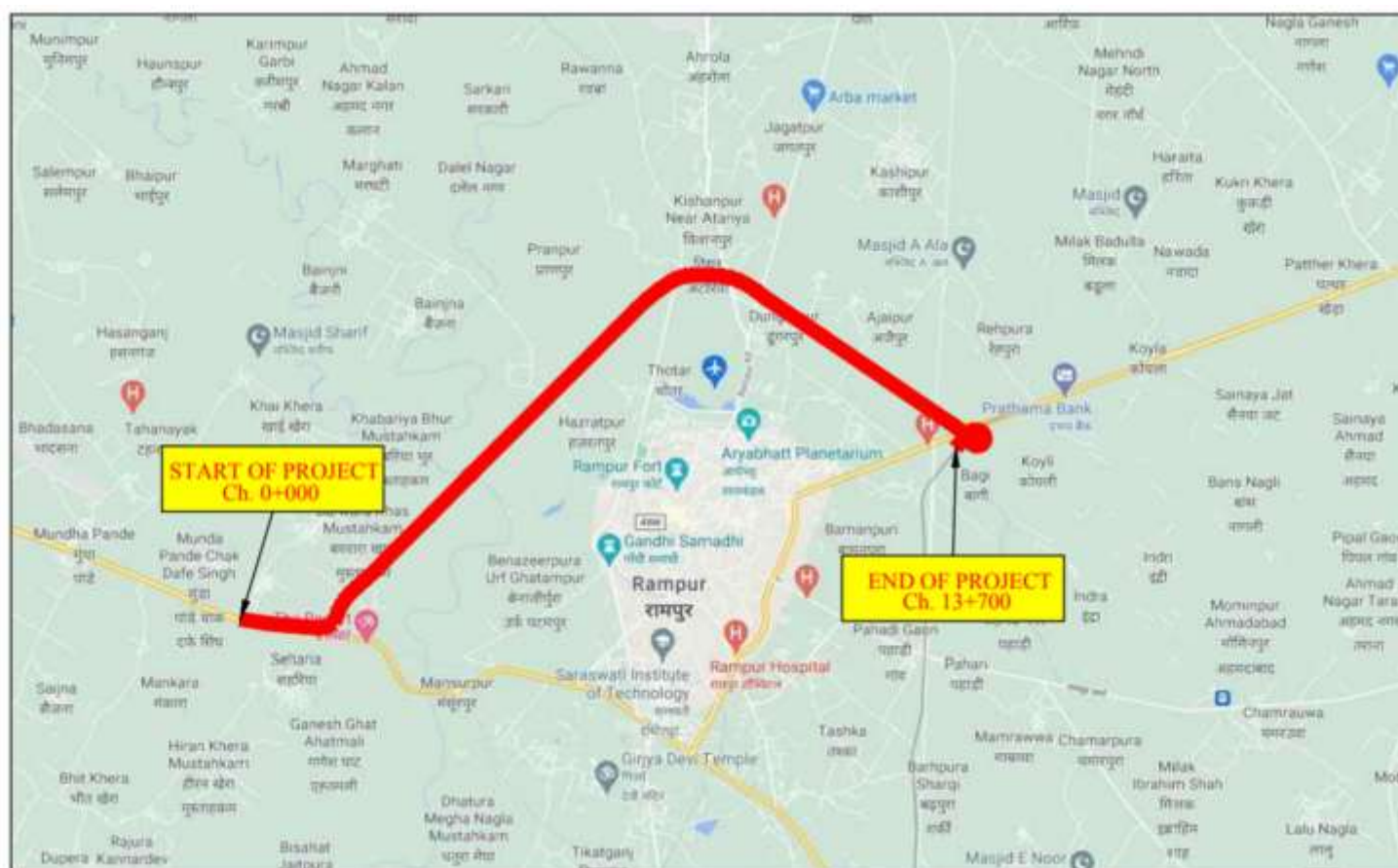
SITE OF THE PROJECT

1. THE SITE

- 1.1 Site of the Four-Lane with Paved Shoulder Project Highway shall include the land, buildings, structures and road works as described in **Annex-I** of this **Schedule-A**.
- 1.2 The Site of the Project Highway comprises the land (sum total of land already in possession and land to be possessed (Annexure II)) as described below

Sl. No.	Start	End	Remarks
1	0+000	13+700	Total of land already in possession and it will be handed over at appointment date

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



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ANNEX – I
(SCHEDULE-A)
SITE FOR FOUR LANING

1.1 The Site

The site of the project highway is a Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town commencing from Intersection with (NH-09 New, Old NH-24) near Village Sehar, (Rampur) and terminates at Intersection with (NH-09 New, Old NH-87) near Village Koyali, (Rampur) passing through Greenfield area in the state of Uttar Pradesh.

1.2 Alignment

Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town commencing from Intersection with (NH-09, Old NH-24) near Village Sehar, (Rampur) and terminates at Intersection with (NH-09, Old NH-87) near Village Koyali, (Rampur) passing through Greenfield area in the state of Uttar Pradesh. Alignment passing through Villages- Lodhi Nagar, Hazratpur, Atariya, Dungarpur and Koyali. Latitude and longitude of the project corridor lies between 28°47'39.02"N to 78°58'4.36"E and 28°49'20.57"N to 79° 4'21.63"E. An index map of the Project Highway is given in appendix-A-1.

1.3 Terrain

The Terrain along the project stretch is predominantly plain terrain.

1. Land

The site of the Project Highway comprises the land described below.

Sl. No.	Start	End	Remarks
1	0+000	13+700	Total of land already in possession and it will be handed over at appointment date

NOTE: The land for Construction of the Project and scope of work acquired as per the requirement and shall be handed over to the Contractor before commencement of construction activities. which shall be recorded jointly by both the parties.

2. CARRIAGEWAY

The project pertains to balance work of the existing 4-Lane divided carriageway.

Note:

1. The information provided is for bidding purpose only and does not constitute any representation or warranty by the Authority. Bidders shall undertake their own due diligence, including site inspection and verification of existing conditions and completed works. Submission of the bid shall be deemed as confirmation that the bidder has reviewed all relevant information and assessed all risks and contingencies. No change of scope is admissible to the extent of items executed on ground.

2. In certain stretches, Dense Bituminous Macadam (DBM) has already been completed along

the main carriageway. However, the finished levels of the existing DBM shall be re-verified, and a minimum overlay thickness of 50 mm shall be provided to achieve the design levels in accordance with the approved plan and profile, wherever required. In locations where the minimum 50 mm overlay cannot be accommodated over the existing DBM surface, milling of the existing layer shall be carried out to the extent necessary.

3. Major Bridge

Sl. No.	Design Chainage (km)	Side (LHS/RHS/Bot h)	Structure Type	Span Length (m)	Total Width (m)	Type of cross section
1	3+550	Both	PSC I GIRDER	10x33	2 x 12.5	TCS-VI

4. RAILWAY OVER-BRIDGES (ROB)/ RAILWAY UNDER-BRIDGES (RUB)

Since the project is a Green field alignment, there is no ROB/RUB.

5. GRADE SEPERATORS

Sl. No	Design Chainage (km)	Proposal	Span Arrangement (Clear opening) (m)	Vertical Clearance (m)	Deck Configuration (m)	Skew Angle	Status of work
1	0+770	New construction	2X50	5.5	1X11	0	Sub Structure completed (Balance - Slab, wearing coat, Crash Barrier, approach slab)
2	8+700	New construction	1x40	5.5	2x11	18	Sub Structure completed & Girder casting completed (Balance - Slab, launching, Dirt Wall, Approach Slab, wearing coat)
3	12+810	New construction	1X35+4X30	5.5	2X11	0	Completed (Balance – Crash Barrier, Dirt Wall, Approach Slab, wearing coat)

6. MINOR BRIDGES (Over River, Streams, Nallas)

Sl. No.	Design Chainage (KM)	Span Arrangement c/c Expansion/Clear Opening in Perpendicular direction (m)	Type of Structure	Deck Configuration
1	8+205	1 x 10	RCC Box	2 x 12.5
2	11+216	2 x 10	RCC Box	2 x 12.5

MINOR BRIDGE CUM UNDERPASS

Sl. No.	Design Chainage (KM)	Span Arrangement c/c Expansion/Clear Opening in Perpendicular direction (m)	Type of Structure	Deck Configuration
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1	12+275	1 x 10+1 X 40	PSC -I Girder	2 x 12.5
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7. RAILWAY LEVEL CROSSINGS

Since the project is a Green field alignment, there is no Existing Railway Level Crossings.

8. UNDERPASSES (VEHICULAR, NON-VEHICULAR)

Sl. No.	Design Chainage (km)	Proposal	Span Arrangement (Clear opening) (m)	Vertical Clearance (m)	Deck Configuration (m)	Skew Angle	Status of work
1	7+920	New construction	1 x 35.691	5.5	2x11	34 ⁰	Substructure completed & Girder casting completed (Balance – Launching of Girder, Slab A1 A2, Wearing Coat, Approach Slab, Crash Barrier & Dirt Wall)
2	8+255	New construction	1 x 26.199	5.5	2x11	54 ⁰	Substructure completed & Girder casting completed (Balance – Slab, Girder Launching, Dirt wall, Approach Slab, Pre-stressing Girder, Wearing Coat)
3	9+183	New construction	1 x 41.474	5.5	2x11	18 ⁰	Substructure completed & Girder casting completed (Balance - Launching of Girder, Slab, Wearing Coat, Approach Slab, Crash Barrier & Dirt Wall)

9. LVUP

Sl. No.	Design Chainage (km)	Proposal	Span Arrangement (Clear opening) (m)	Vertical Clearance (m)	Deck Configuration (m)	Skew Angle	Status of work
1	5+476	New construction	1x12	4.5	2x11	30 ⁰	Completed (Balance – Crash Barrier, Wearing Coat)

10. SVUP

Sl. No.	Design Chainage (km)	Proposal	Span Arrangement (Clear opening) (m)	Vertical Clearance (m)	Deck Configuration (m)	Skew Angle	Status of work
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			opening) (m)				
1	2+070	New construction	1x7	4.5	2x11	40 ⁰	Completed
2	6+440	New construction	1x7	4.5	2x11	27 ⁰	Completed (Balance – Wearing Coat)
3	9+700	New construction	1x7	4.5	2x11	0 ⁰	Completed (Balance – Crash Barrier & Wearing Coat)
4	10+860	New construction	1x7	4.5	2x11	0 ⁰	(Balance – Crash Barrier & Wearing Coat)
5	11+340	New construction	1x7	4.5	2x11	0 ⁰	(Balance – Crash Barrier & Wearing Coat)

11. GRADE SEPARATED STRUCTURES

Grade separated structures shall be provided as per paragraph 2.13 of the IRC: SP: 84-2019.

Proposed levels at structure locations as shown in plan & profile specified in Annex III of schedule A are only for guidance and any changes in levels shall not constitute any change of scope. The requisite particulars given below:

Sl. No.	Design Chainage (Km) of Main Carriageway /loop/ramp	Span Arrangement (clear Opening) (m)	Proposed Structure	Cross Road	Status of work
1	0+770	2x50	Flyover	NH-09	Sub Structure completed
2	2+070	1x7	SVUP	Village Road	Completed
3	5+476	1x12	LVUP	ODR	Completed
4	6+440	1x7	SVUP	ODR	Completed
5	7+920	35.691	VUP	MDR	Substructure completed & Girder casting completed
6	8+255	26.199	VUP	MDR	Substructure completed & Girder casting completed
7	8+700	1x40	Flyover	4-Lane Rampur Road	Sub Structure completed & Girder casting completed
8	9+183	41.474	VUP	MDR	Substructure completed & Girder Launching completed
9	9+700	1x7	SVUP	Village Road	Completed
10	10+860	1x7	SVUP	ODR	Completed
11	11+340	1x7	SVUP	Proposed Spur	Completed
12	12+275	2x25	MNB Cum Underpass	Canal + ODR	Sub Structure completed only Pier Cap P1 Pier Cap balance, Girder Completed

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13	12+810	1x35+4x30	FLYOVER-MCW	NH-09	Completed
14	0+545	1x30	FLYOVER-Ramp	NH-09	Sub Structure Completed & Girder Launching Completed
15	0+532	2x40	FLYOVER-Ramp	NH-09	Sub Structure A1&A2 Completed Pier Cap Balance
18	0+215	1X12	LVUP	From Moradabad to Rudrapur Entry Up Ramp	Up to Super Structure Completed
19	0+500 (Part-1)	1X12	LVUP	From Rudrapur to Moradabad Exit Ramp	Up to Super Structure Completed
20	0+500 (Part-2)	1X12	LVUP	From Rampur to Moradabad Existing NH	To be Done
21	0+360 (13+086)	1X12	LVUP	Moradabad to Bareilly Exit Ramp	Completed
22	0+587	1X12	LVUP	Moradabad to Bareilly Exit Ramp	Completed
23	0+530	1X12	LVUP	Moradabad to Rudrapur Exit Ramp	Sub Structure Completed

12. CULVERTS

Annex-1 Schedule-B

Sl. No.	Design Chainage	Type of Structure	Span Arrangements	Remarks
1	01+280	Box Culvert	1 x 3 x 3	
2	01+600	Box Culvert	1 x 3 x 3	
3	01+874	Box Culvert	1 x 4 x 4	
4	02+510	Box Culvert	1 x 3 x 3	
5	02+950	Box Culvert	1 x 3 x 3	
6	03+160	Box Culvert	1 x 3 x 3	
7	04+050	Box Culvert	1 x 3 x 3	
8	04+470	Box Culvert	1 x 3 x 3	
9	04+900	Box Culvert	1 x 3 x 3	
10	05+200	Box Culvert	1 x 3 x 3	
11	06+040	Box Culvert	1 x 3 x 3	
12	07+040	Box Culvert	1 x 3 x 3	
13	07+400	Box Culvert	1 x 3 x 3	
14	09+700	Box Culvert	1 x 3 x 3	
15	10+400	Box Culvert	1 x 3 x 3	
16	11+720	Box Culvert	1 x 3 x 3	
17	13+400	Box Culvert	1 x 3 x 3	

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List of Culvert for Interchange				
(0+250 to 1+200)				
Sl. No.	Design Chainage	Type of Structure	Span Arrangements	Remarks
1	00+250	Pipe	1 x 1.2	Road 2
2	00+585	Pipe	1 x 1.2	Road 2
3	00+915	Pipe	1 x 1.2	MCW
(12+300 to 13+700)				
Sl. No.	Design Chainage	Type of Structure	Span Arrangements	Remarks
1	00+460	Pipe	1X1.2	Road-1
2	00+280	Pipe	1X1.2	Road-2
3	00+510	Pipe	1X1.2	Road-3
4	13+400	Pipe	1X1.2	From Rudrapur to Moradabad MCW
5	00+300	Pipe	1X1.2	Rampur Main city Road
6	00+542	Pipe	1X1.2	Rampur Main city Road

13. BUS BAYS

Since the project is a Green field alignment, there is no existing Bus Bays.

14. TRUCK LAY BYES

Since the project is a Green field alignment, there are no existing Truck Lay bays.

15. ROAD SIDE DRAINS

Since the project is a Green field alignment, there is no existing Road side Drains.

16. MAJOR JUNCTIONS

Since the project is a Green field alignment, there is no existing Major Junctions.

17. MINOR JUNCTIONS

At chainage 9+188, the project alignment intersects with MDR-49W (Rampur–Swar–Bajpur Road), which has been considered as a Minor Junction in the design.

18. BYPASSES

Since the project is a Green field alignment, there is no existing Bypasses.

19. SERVICE ROAD/Slip Road

(a) Slip Roads

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Slip roads shall be constructed at the locations and for the minimum lengths and width indicated below:

Sl. No.	Design Chainage		Side	Length of Service Road (m)	Width (m)	Remark	Status of work
	From (km)	To (km)					
1	1+600	2+000	LHS	900	7.5	As per Drawing	SG Top
2	2+000	2+500	LHS	900	7.5	As per Drawing	CTSB Top
3	1+600	2+500	RHS	900	7.5	As per Drawing	Work to be done
4	2+950	3+100	LHS	150	7.5	As per Drawing	SG Top
5	2+950	3+100	RHS	150	7.5	As per Drawing	Work to be done
6	7+300	7+510	BOTH	210	7.5	As per Drawing	SG Top

(b) Service Roads

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

Sl. No.	Design Chainage		Side	Length of Slip Road (m)	TCS Type	Width (m)	Remark
	From (km)	To (km)					
1	8+820	9+550	BOTH	730	7.5	As per Drawing	Work to be done

20. OTHER STRUCTURES

Details of structures on loop and ramp: -

Sl. No	Design Chainage (Km) Of Main Carriageway /Loop/Ramp	Details Of Loop and Ramp	Structure	Span Arrangement (Clear Opening) (M)	Deck Configuration (M)	Skew Angle	Vertical Clearance (M)	Status Of Work
1	0+215	From Moradabad to Rudrapur Entry Up	LVUP	1X12	1X11	0	4.5	Upto Super Structure Completed (Balance - Crash Barrier &

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								Wearing coat)
2	0+500 (Part-1)	Ramp From Rudrapur to Moradabad Exit	LVUP	1X12	1X11	0	4.5	Upto Super Structure Completed (Balance – Crash Barrier, Wearing Coat)
3	0+500 (Part-2)	Ramp From Rampur to Moradabad Existing NH	LVUP	1X12	2X11	0	4.5	To be started
4	0+545	From Bareilly to Moradabad Entry Up Ramp	FLYOVER	1X30	1X11	0	5.5	Sub Structure A1&A2 Completed & Girder Launching Completed, Balance – Slab, Wearing coat, Crash Barrier, Approach Slab)
5	0+560	From Rudrapur to Rampur Main City	FLYOVER	2X40	1X11	0	5.5	(Balance - P1 Substructure pending, super Structure)
6	0+238	Bareilly to Moradabad Entry Up Ramp	MNB	1X30	1X11	0	As per GAD	Sub Structure Completed & Girder Launching Completed, (Balance – Dirt Wall, Slab A1 to A2, Wearing Coat, Approach Slab, Crash Barrier)

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7	0+360 (13+086)	Moradabad to Bareilly Exit Ramp	LVUP	1X12	1X59.56	0	4.5	Completed (Balance - Crash Barrier & Wearing Coat, Approach Slab)
8	0+587	Moradabad to Bareilly Exit Ramp	LVUP	1X12	1X11	0	4.5	Completed, (Balance - Crash Barrier & Wearing Coat, Approach Slab)
9	0+530	Moradabad to Rudrapur Exit Ramp	LVUP	1X12	1X11	0	4.5	Sub Structure Completed (Balance – Crash Barrier, Wearing Coat)

21. Utility Details

The details of the utilities are as follows

The site includes the following electrical utilities: -

S. N	Chainage No.	33 KV Crossing (Nos)	11 KV Crossing (Nos.)	11 KV Crossing (Nos.)	LT Crossing (Nos)	33 KV Line (MTR)	11 KV Line (MTR)	LT Line (MTR)	Transformer Shifting
		ROW 60 M	ROW 60 M	ROW 100 M	ROW 60 M				
1	4+500				1				
2	4+750 to 4+900						250		
3	4+900							60	
4	5+470		1						
5	5+570							60	
6	6+980				1				
7	7+300 to 7+450						100	150	1
8	7+900	1				100			
9	7+910		1				100		
10	7+950		1				70		
11	8+050								1
12	8+700		1		1		30	30	
13	8+750 to 8+850						150		1
14	9+200	1							
15	10+100		1				150		

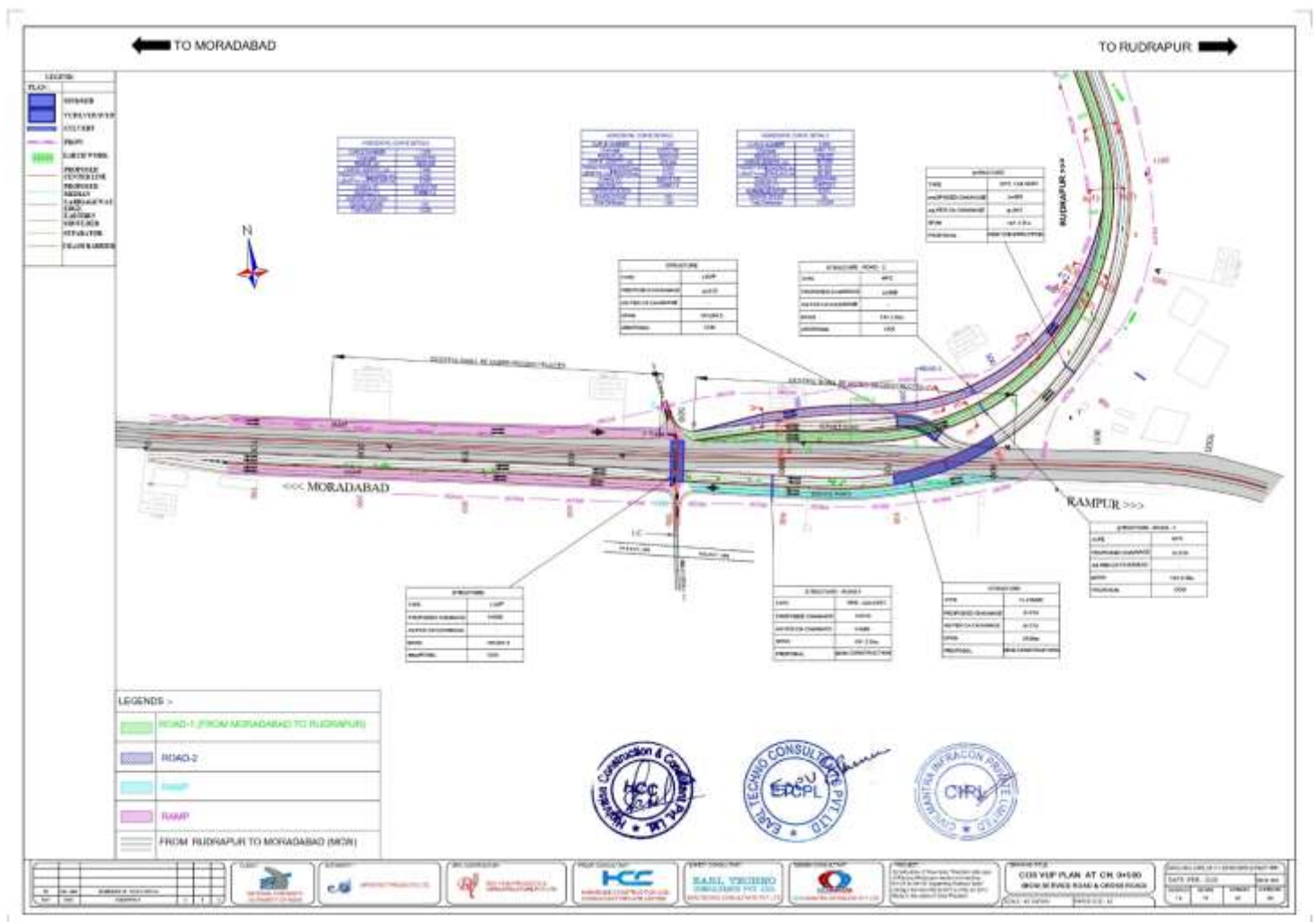
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16	10+860		1						
17	11+100		1				100		
18	12+250		1						2
19	Interchange-2			1			1400		
TOTAL		2	8	1	3	100	2350	300	5

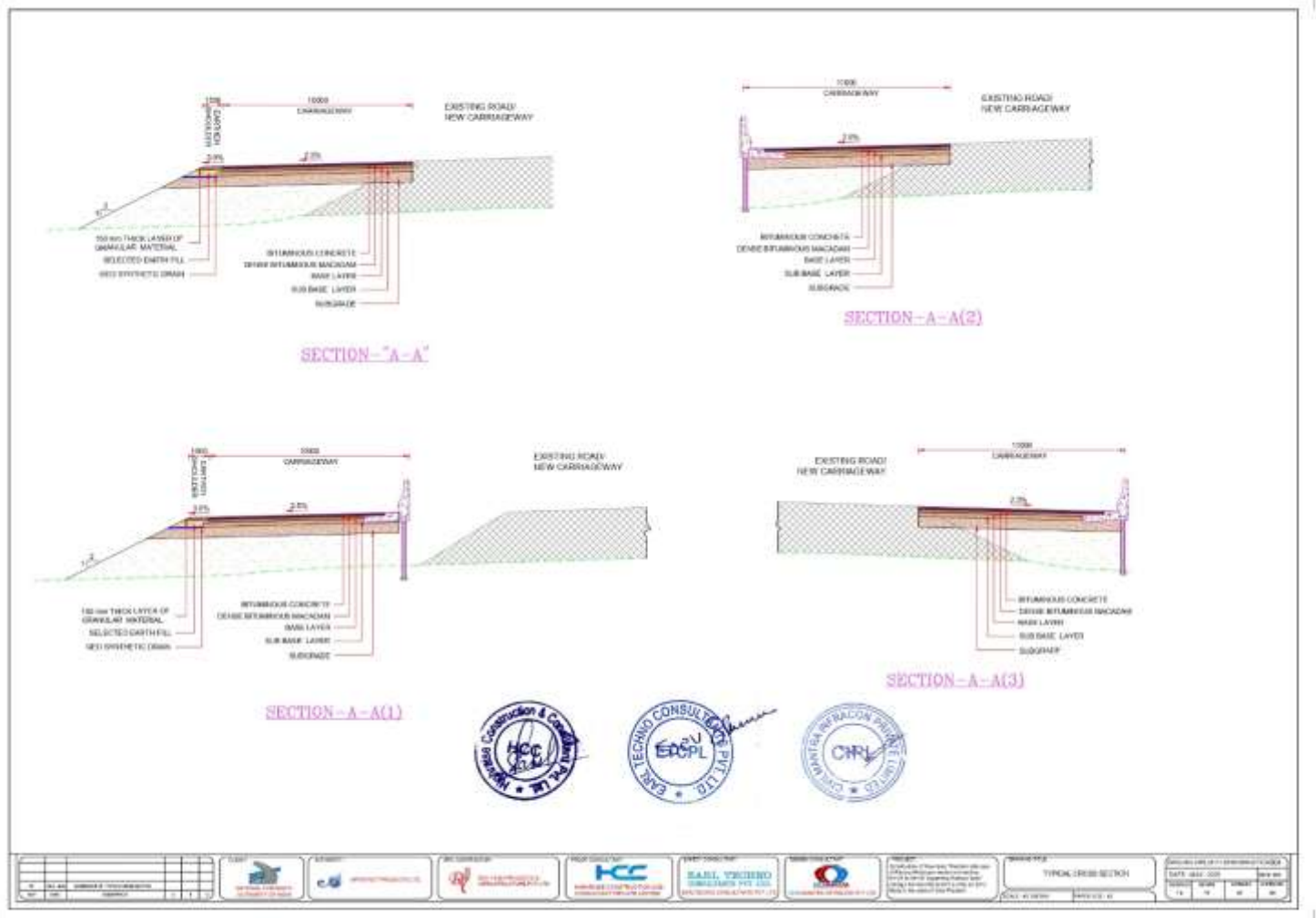
21. TYPICAL CROSS SECTION (LOOP/RAMP)

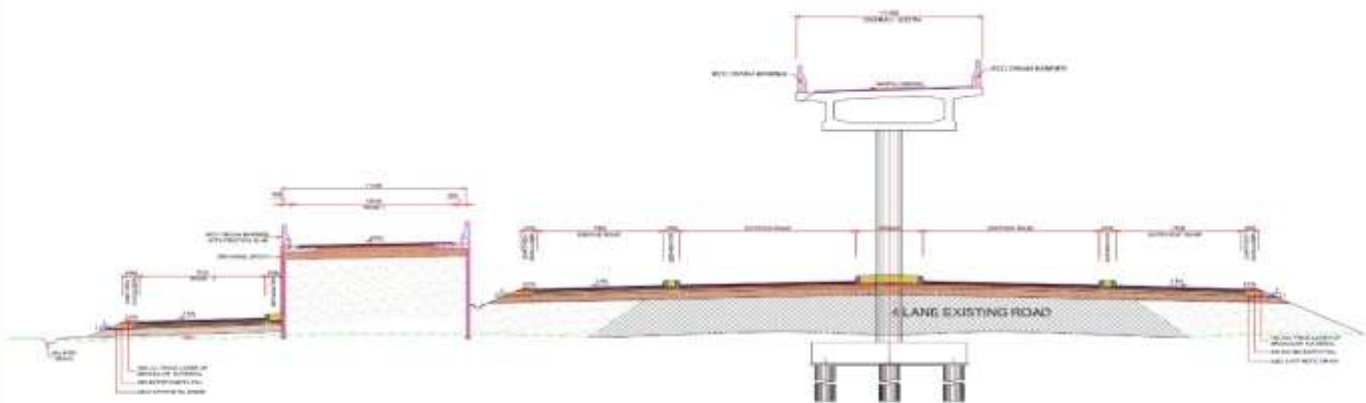
a) Interchange-1 at Chainage 00+000 to 01+200, NH-09

Sl. No.	Interchange No. & Chainage (KM)	Description	Chainage		Length	Side	Direction
			From	To			
1	Interchange-1 at Chainage 00+000 to 01+200, NH-09	MCW	00+000	01+200	1200	RHS	FROM RUDRAPUR TO MORADABAD (MCW)
2		Road -01	00+000	00+645	645	LHS	Entry - Up Ramp
3		Road -02	00+000	00+412	412	LHS	Entry - Up Ramp
4		Ramp	00+000	00+810	810	BHS	Service Road



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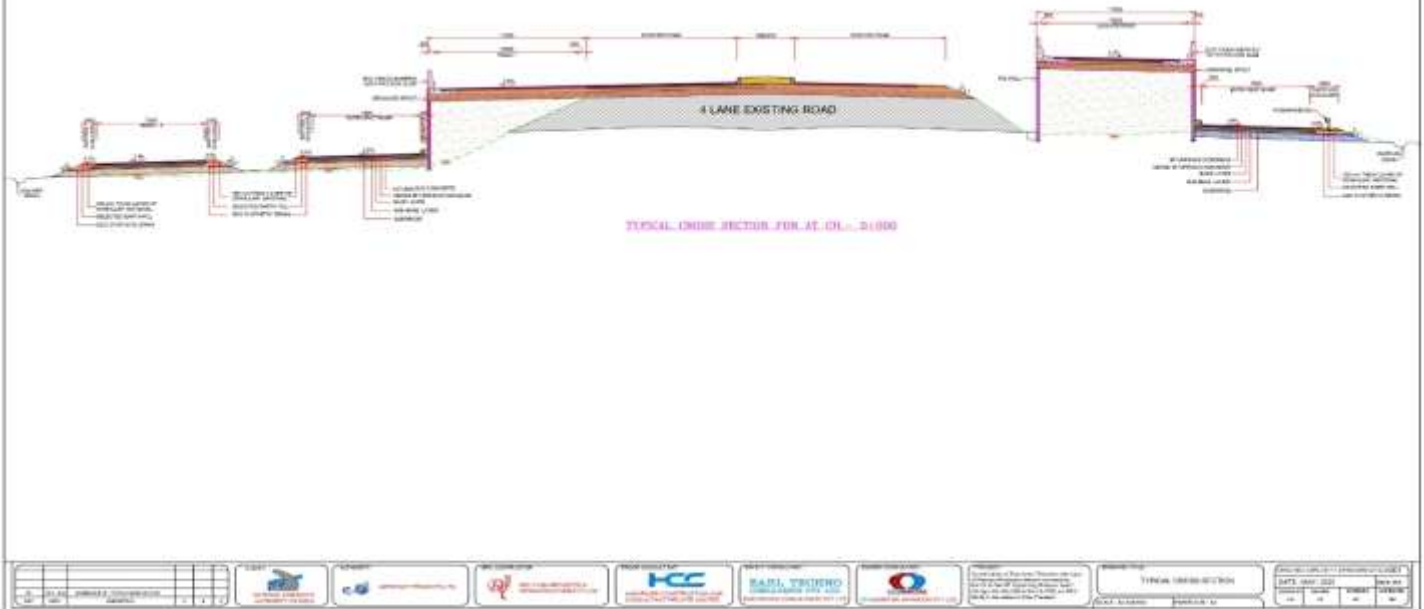




TYPICAL CROSS SECTION FOR AT CH.- 0+750



1. PROJECT NAME 2. PROJECT NO. 3. PROJECT LOCATION 4. PROJECT TYPE 5. PROJECT STATUS 6. PROJECT OWNER 7. PROJECT MANAGER 8. PROJECT COORDINATOR 9. PROJECT ENGINEER 10. PROJECT SUPERVISOR 11. PROJECT INSPECTOR 12. PROJECT AUDITOR 13. PROJECT REVIEWER 14. PROJECT APPROVER 15. PROJECT SIGNATURE 16. PROJECT DATE 17. PROJECT SCALE 18. PROJECT SHEET NO. 19. PROJECT TOTAL SHEETS 20. PROJECT REVISIONS 21. PROJECT COMMENTS 22. PROJECT NOTES 23. PROJECT DETAILS 24. PROJECT SPECIFICATIONS 25. PROJECT STANDARDS 26. PROJECT REFERENCES 27. PROJECT SOURCES 28. PROJECT MATERIALS 29. PROJECT EQUIPMENT 30. PROJECT LABOR 31. PROJECT COST 32. PROJECT BUDGET 33. PROJECT FINANCING 34. PROJECT RISK 35. PROJECT IMPACT 36. PROJECT BENEFITS 37. PROJECT CHALLENGES 38. PROJECT OPPORTUNITIES 39. PROJECT LESSONS LEARNED 40. PROJECT BEST PRACTICES 41. PROJECT INNOVATIONS 42. PROJECT SUSTAINABILITY 43. PROJECT SOCIAL RESPONSIBILITY 44. PROJECT ENVIRONMENTAL IMPACT 45. PROJECT CLIMATE CHANGE 46. PROJECT DIGITALIZATION 47. PROJECT CYBER SECURITY 48. PROJECT DATA PROTECTION 49. PROJECT INFORMATION SECURITY 50. PROJECT COMPLIANCE 51. PROJECT ETHICS 52. PROJECT GOVERNANCE 53. PROJECT LEGAL 54. PROJECT TAX 55. PROJECT ACCOUNTING 56. PROJECT HR 57. PROJECT IT 58. PROJECT LOGISTICS 59. PROJECT PROCUREMENT 60. PROJECT CONSTRUCTION 61. PROJECT OPERATION 62. PROJECT MAINTENANCE 63. PROJECT DECOMMISSIONING 64. PROJECT DISPOSAL 65. PROJECT RECYCLING 66. PROJECT WASTE MANAGEMENT 67. PROJECT SAFETY 68. PROJECT HEALTH 69. PROJECT WELLNESS 70. PROJECT QUALITY 71. PROJECT RELIABILITY 72. PROJECT AVAILABILITY 73. PROJECT PERFORMANCE 74. PROJECT EFFICIENCY 75. PROJECT EFFECTIVENESS 76. PROJECT IMPACT 77. PROJECT BENEFITS 78. PROJECT CHALLENGES 79. PROJECT OPPORTUNITIES 80. PROJECT LESSONS LEARNED 81. PROJECT BEST PRACTICES 82. PROJECT INNOVATIONS 83. PROJECT SUSTAINABILITY 84. PROJECT SOCIAL RESPONSIBILITY 85. PROJECT ENVIRONMENTAL IMPACT 86. PROJECT CLIMATE CHANGE 87. 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INTERCHANGE 1				
TCS SCHEDULE FOR ROAD-1				
S.NO.	CHAINAGE		LENGTH (m)	TCS TYPE
	FROM	TO		
1	0	100	100	A-A(2)
2	100	400	300	E-E
3	400	645	245	A-A
6	TOTAL (m)		645	
TCS SCHEDULE FOR ROAD-2				
S.NO.	CHAINAGE		LENGTH (m)	TCS TYPE
	FROM	TO		
1	0	75	75	A-A
2	75	280	205	F-F
4	280	412	132	A-A(2)
	TOTAL (m)		412	



TYPICAL CROSS SECTION SCHEDULE MCW				
S. No.	Design Chainage (m)		Type	Length (m)
	From	To		
1	0	250	TCS of 4 Lane Divided Highway without Service Road & Eccentric Widening	250
2	250	500	Interchange - 1 (TCS-I)	250
3	500	800	Interchange - 1 (TCS-II)	300
4	800	1290	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	490
5	1290	1600	TCS of 4 Lane Divided Highway without Service Road	310
6	1600	2066.5	TCS of 4 Divided Highway with Service Road	467
7	2066.5	2073.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	7
8	2073.5	2500	TCS of 4 Divided Highway with Service Road	427
9	2500	2950	TCS of 4 Lane Divided Highway without Service Road	450
10	2950	3100	TCS of 4 Divided Highway with Service Road	150
11	3100	3385	TCS of 4 Lane Divided Highway without Service Road	285
12	3385	3715	TCS of 4 Divided Highway at Bridge Location	330
13	3715	3920	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	205
14	3920	5215	TCS of 4 Lane Divided Highway without Service Road	1295
15	5215	5470	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	255
16	5470	5482	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	12
17	5482	5690	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	208
18	5690	6100	TCS of 4 Lane Divided Highway without Service Road	410

Balance work of Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode in the state of Uttar Pradesh

19	6100	6436.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	337
20	6436.5	6443.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	7
21	6443.5	6762	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	319
22	6762	7300	TCS of 4 Lane Divided Highway without Service Road	538
23	7300	7510	TCS of 4 Divided Highway with Service Road	210
24	7510	7802	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	292
25	7802	7902	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	100
26	7902	7962	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	60
27	7962	8200	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	238
28	8200	8210	TCS of 4 Divided Highway at Bridge Location	10
29	8210	8230	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	20
30	8230	8290	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	60
31	8290	8680	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	390
32	8680	8720	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	40
33	8720	8820	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	100
34	8820	9080	TCS of 4 Divided Highway with Service Road	260
35	9080	9163	TCS of 4 Divided Highway with Service Road	83

Balance work of Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode in the state of Uttar Pradesh

36	9163	9203	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	40
37	9203	9350	TCS of 4 Divided Highway with Service Road	147
38	9350	9550	TCS of 4 Divided Highway with Service Road	200
39	9550	9690	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	140
40	9690	10480	TCS of 4 Lane Divided Highway without Service Road	790
41	10480	10856.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	377
42	10856.5	10863.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	7
43	10863.5	11206	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	343
44	11206	11226	TCS of 4 Divided Highway at Bridge Location	20
45	11226	11336.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	111
46	11336.5	11343.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	7
47	11343.5	12250	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	907
48	12250	12300	TCS of 4 Divided Highway at Bridge Location	50
49	12300	12725	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	425
50	12725	12880	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	155
51	12880	13000	Interchange-2 TCS	120
52	13000	13500	Interchange-2 TCS	500
53	13500	13700	Interchange-2 TCS	200
			Total Length (m)	13700

Balance work of Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode in the state of Uttar Pradesh



- All dimensions are in millimeter unless otherwise specified.
- Thickness of the Layers has been shown in Pavement design report.
- Kerb Channel & Chute Drain arrangement shall be provided for Embankment height-6m.
- Metal Beam Crash Barrier shall be provided for Embankment height-3m.
- Chute drain has been provided as per IRC Specifications.
- Slope Protection :
 - 0-3 Turfing
 - 3-6 Coir Mat with Vetiver Grass
 - >6 Geocell with PCC

INTERCHANGE-
SECTION - "F-F"

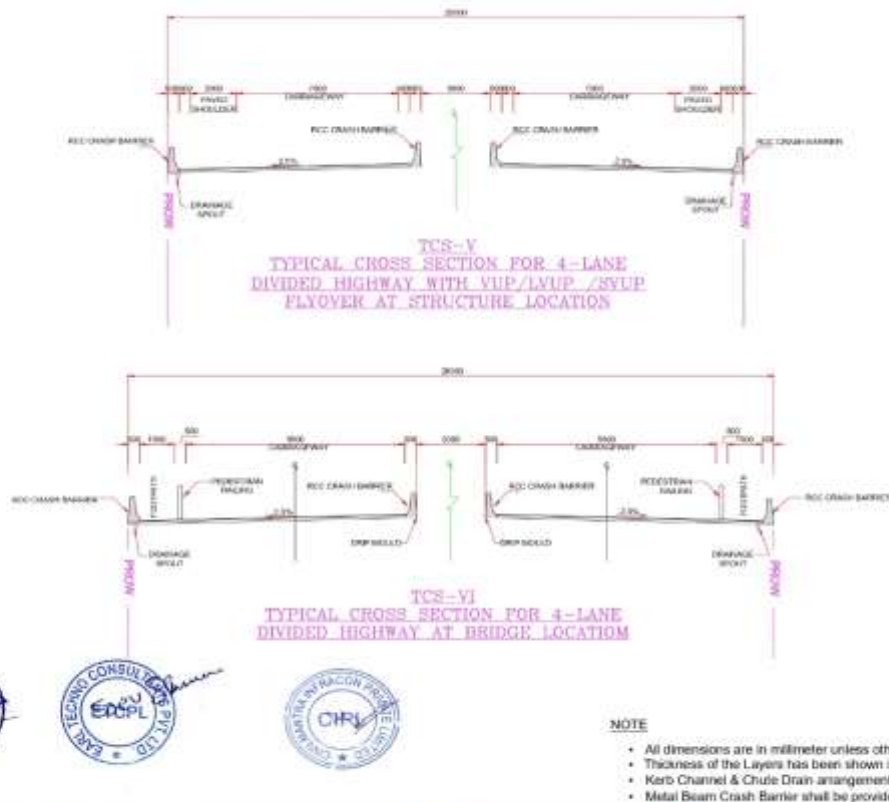


INTERCHANGE—
SECTION—"G-G"

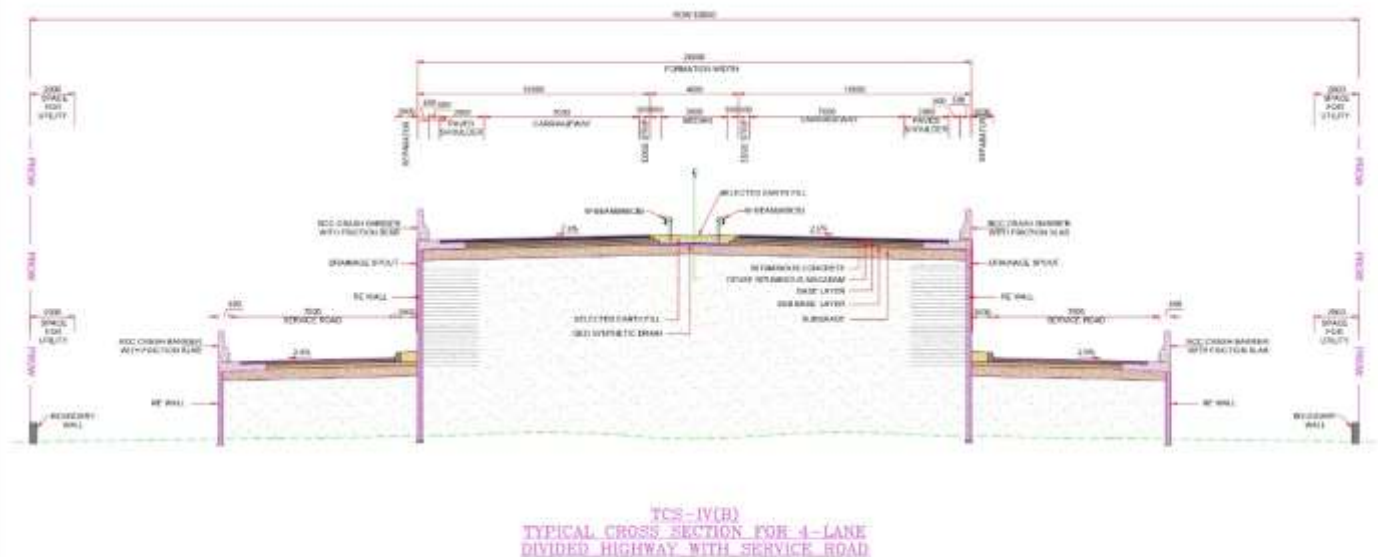
- All dimensions are in millimeter unless otherwise specified.
- Thickness of the Layers has been shown in Pavement design report.
- Kerb Channel & Chute Drain arrangement shall be provided for Embankment height=0m.
- Metal Beam Crash Barrier shall be provided for Embankment height=3m.
- Chute drain has been provided as per IRC Specifications.
- Slope Protection :-
 - 0-3 Turling
 - 3-6 Coir Mat with Vetiver Grass
 - 6-8 Geocell with PCC



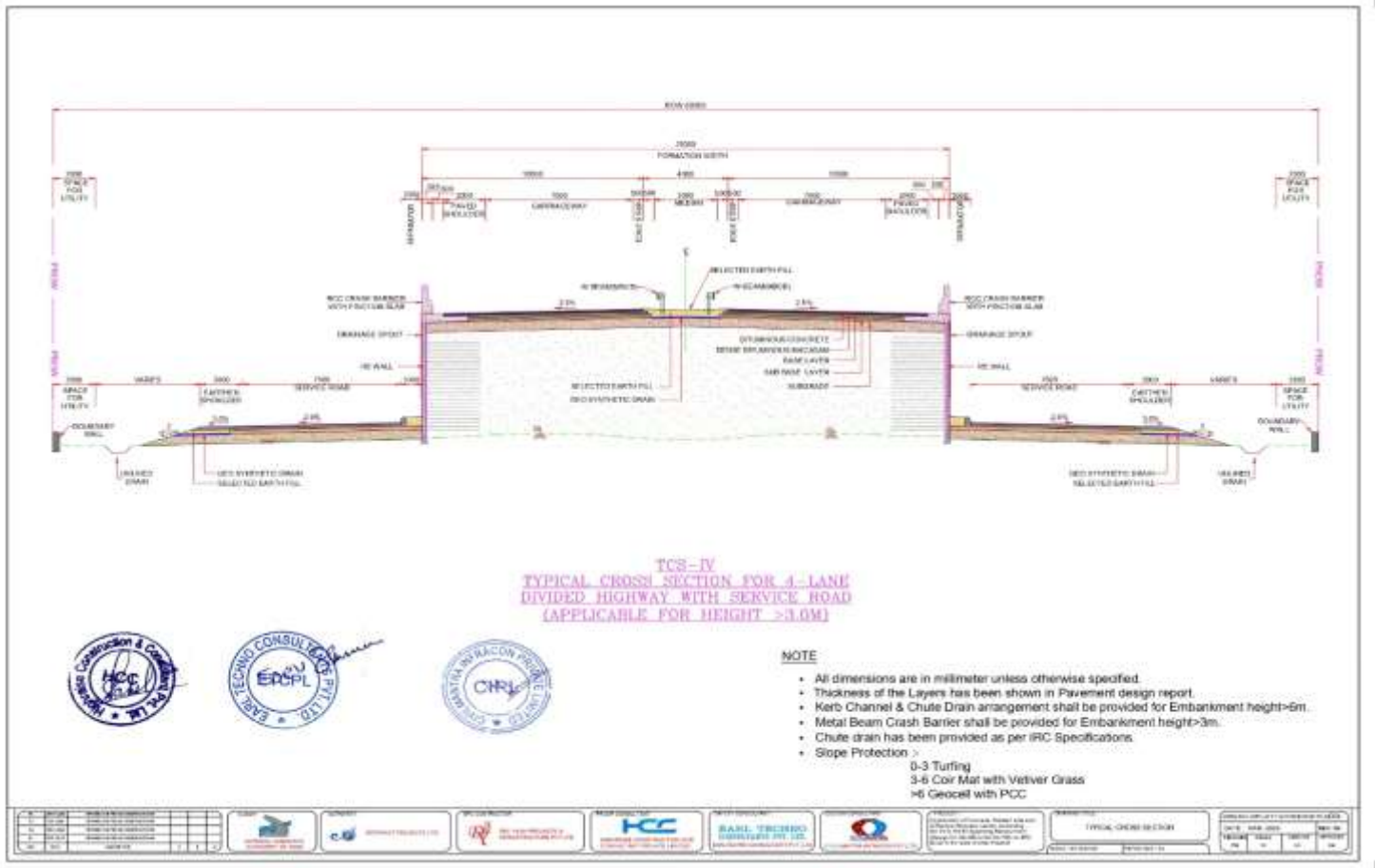
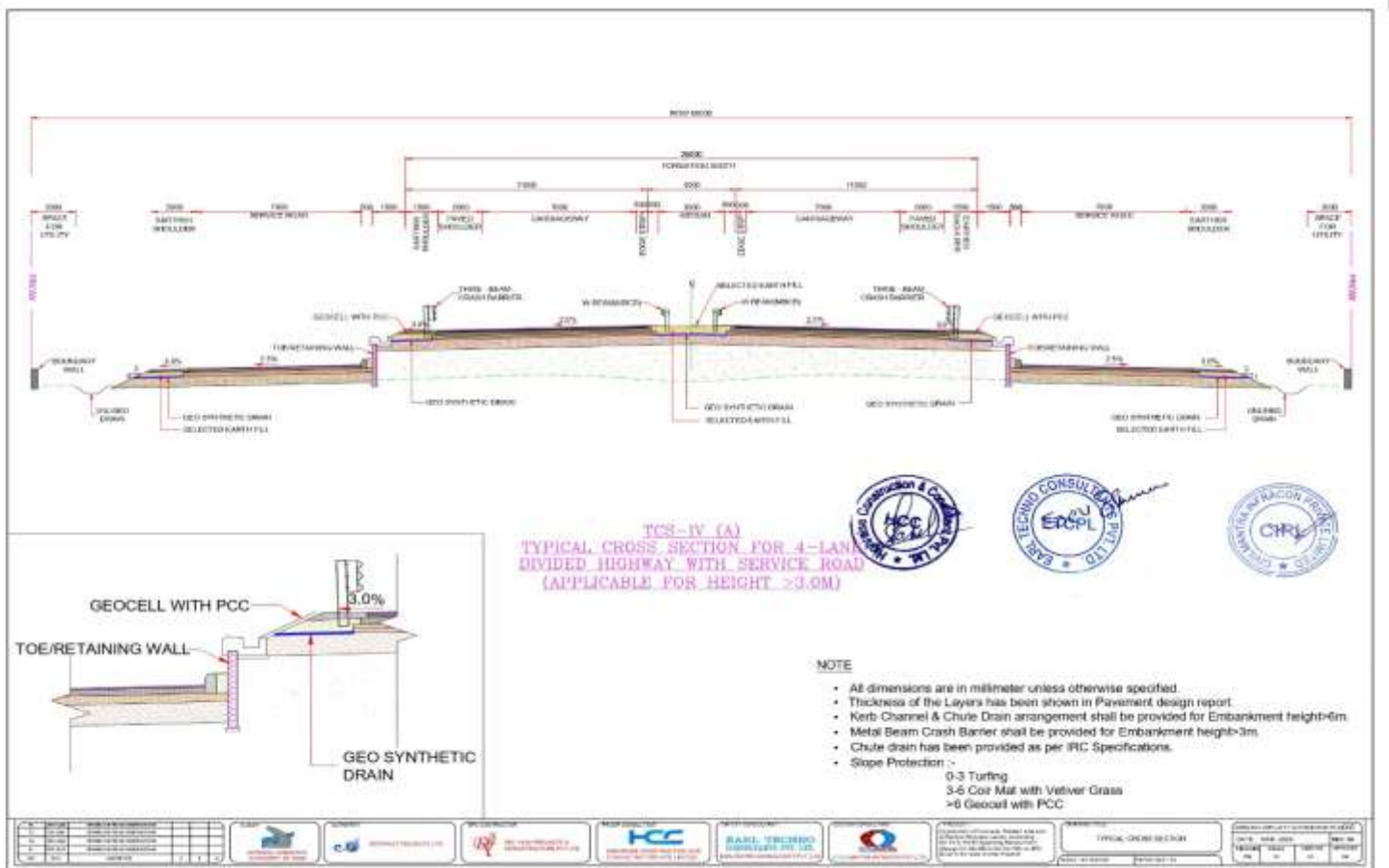
Balance work of Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode in the state of Uttar Pradesh

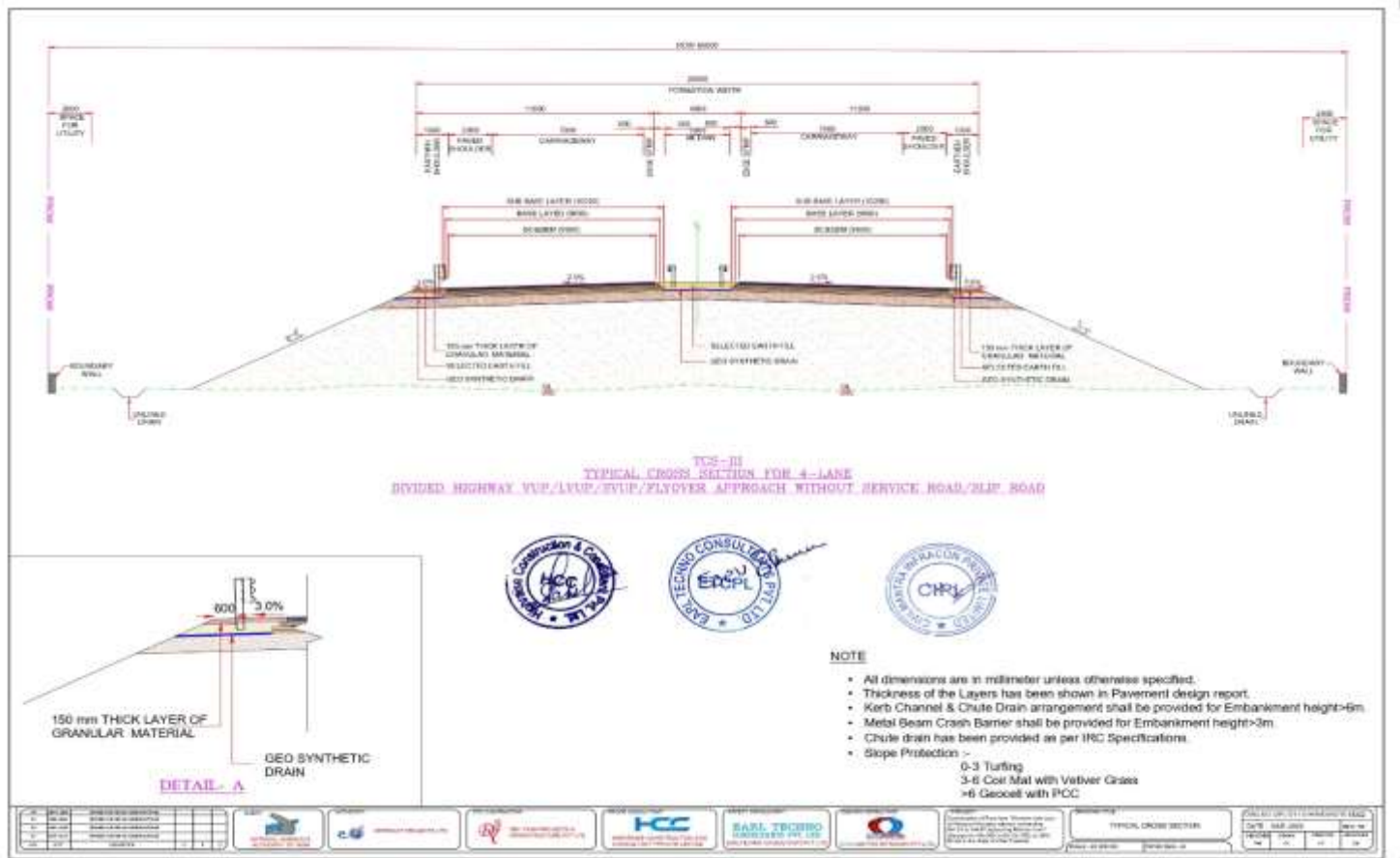
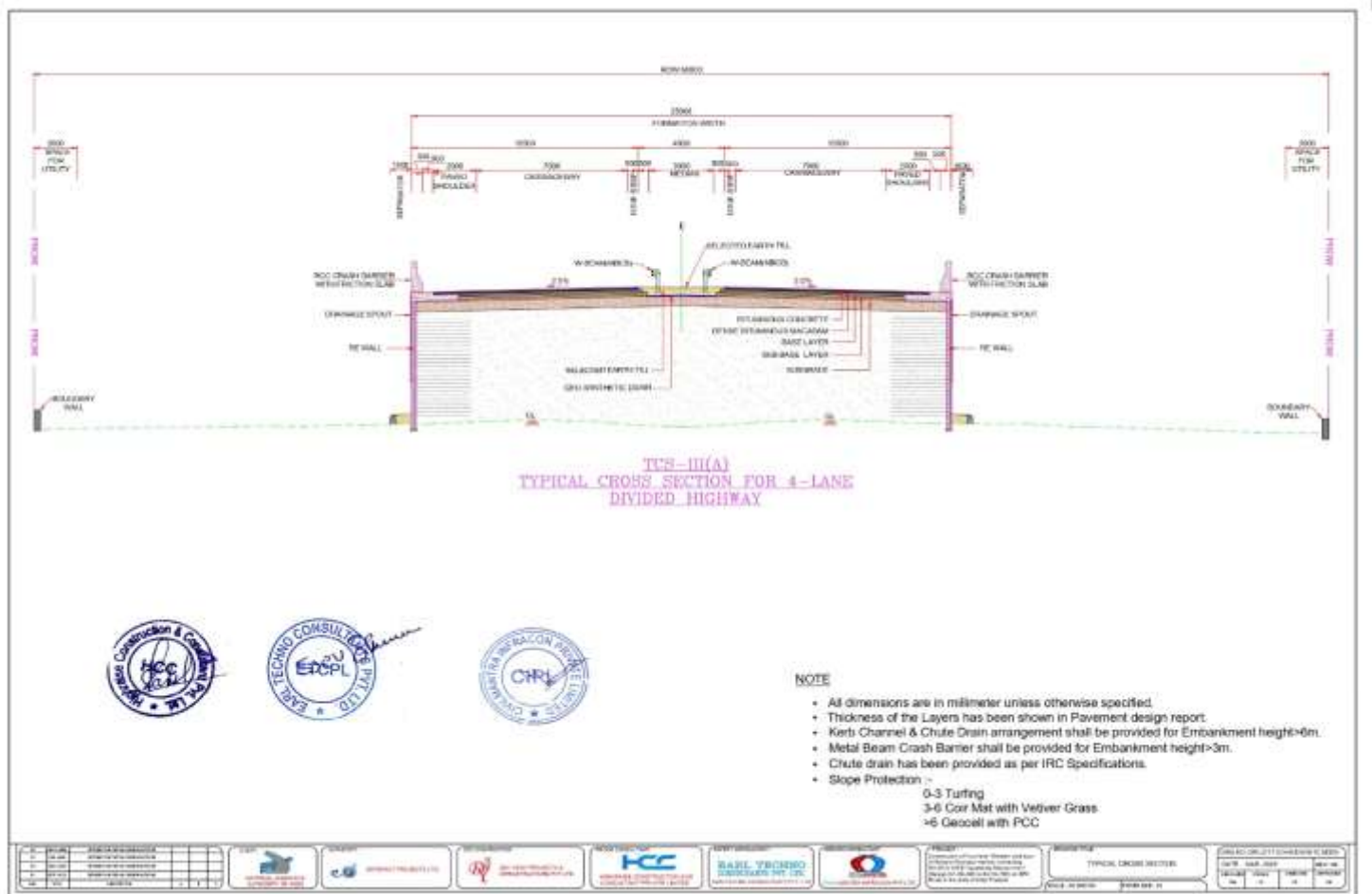


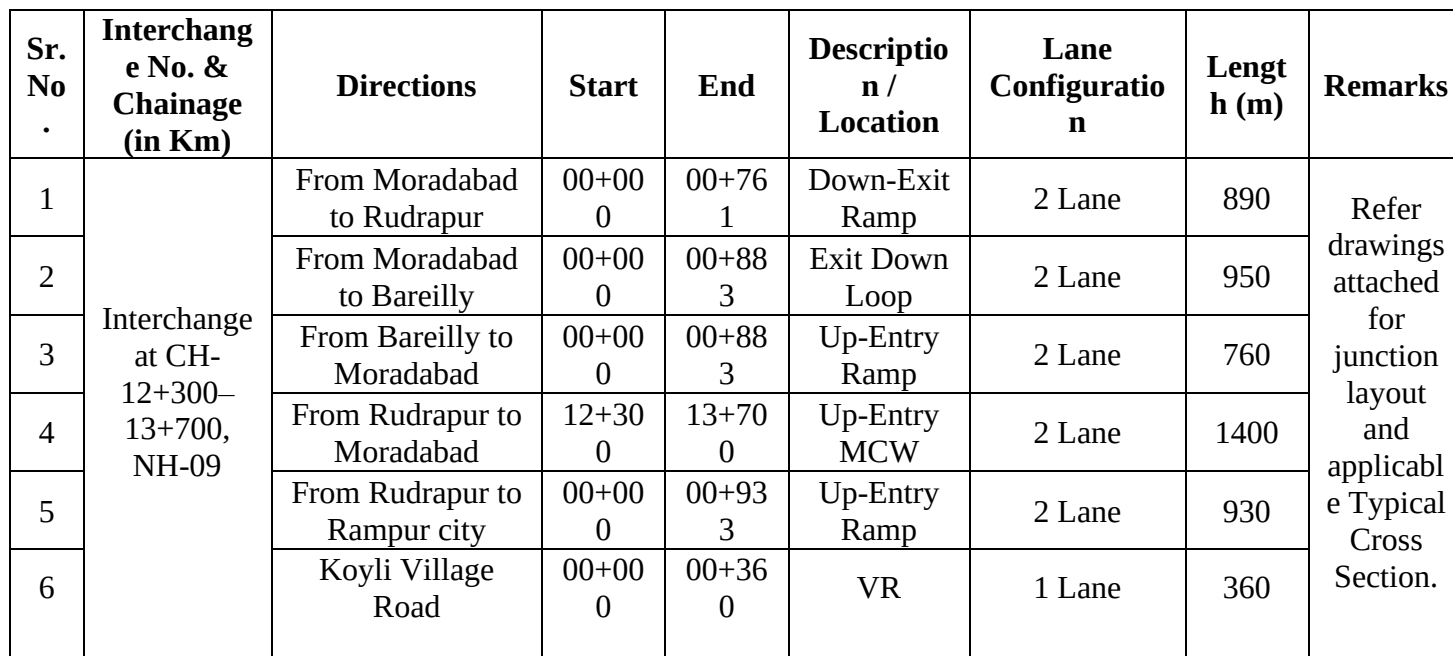
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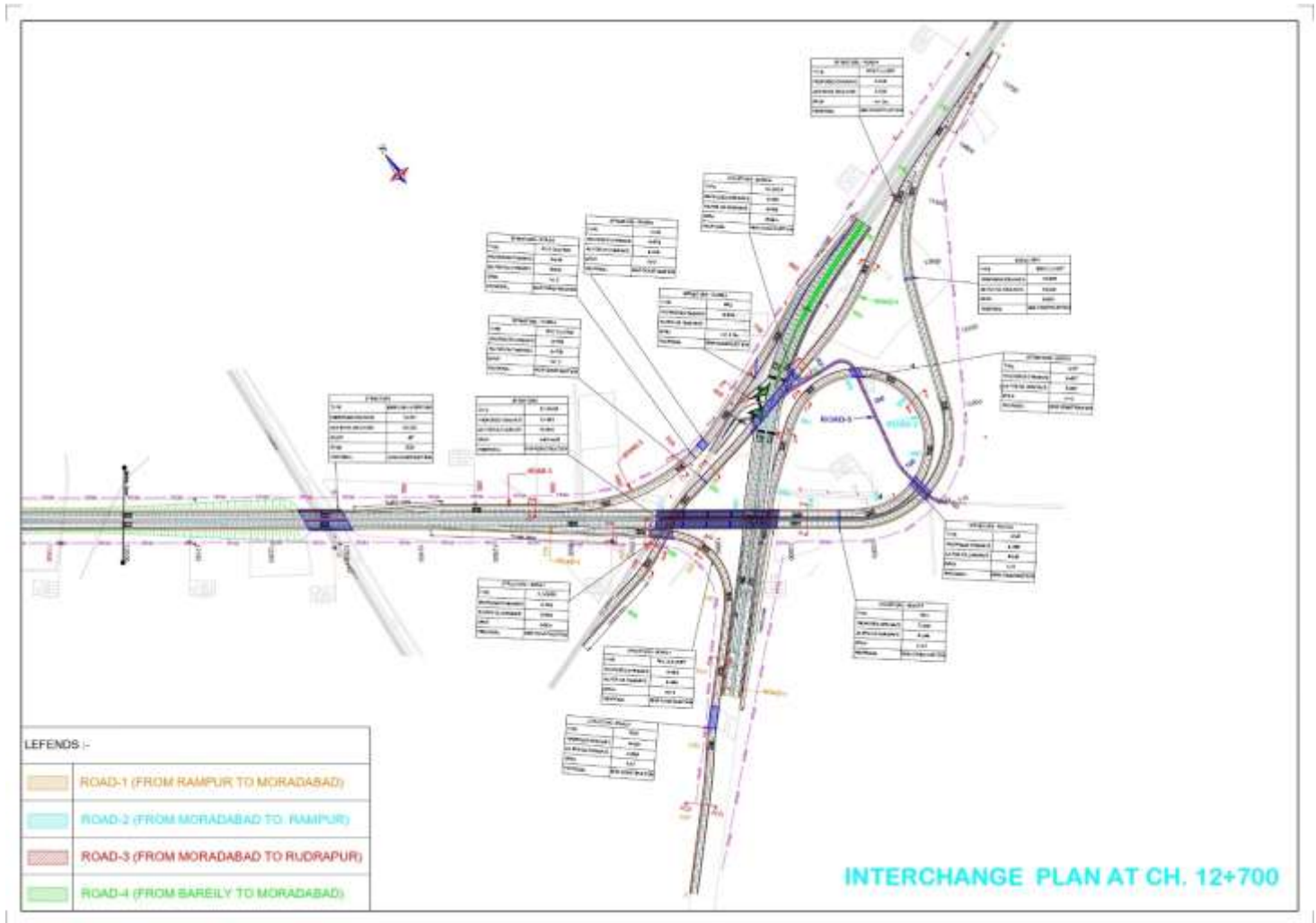
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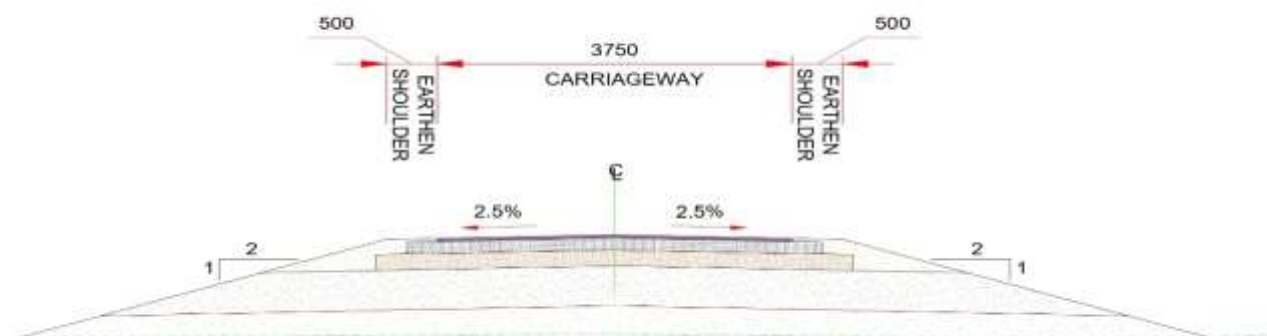


Balance work of Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode in the state of Uttar Pradesh



Balance work of Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode in the state of Uttar Pradesh

TYPICAL CROSS SECTIONS



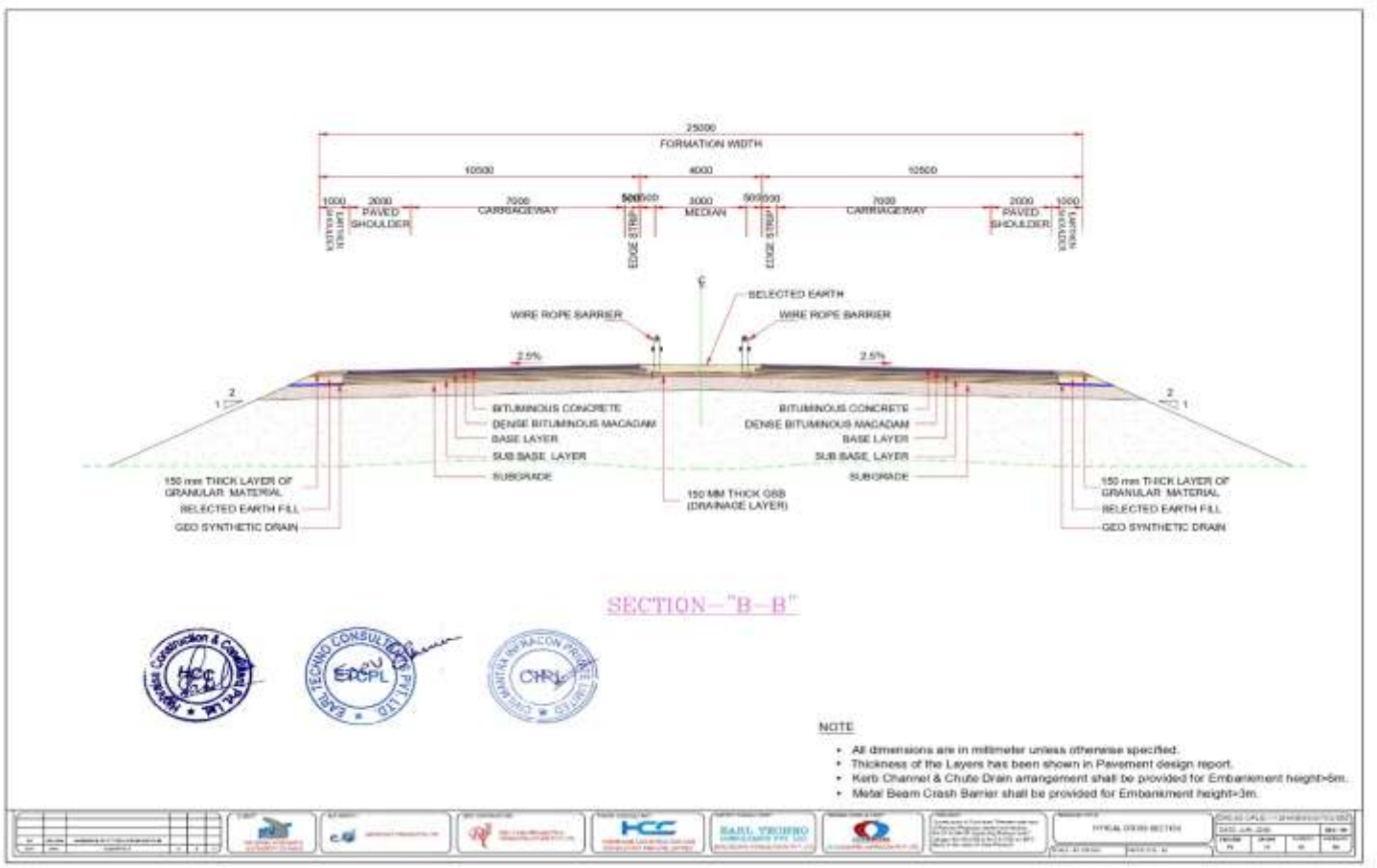
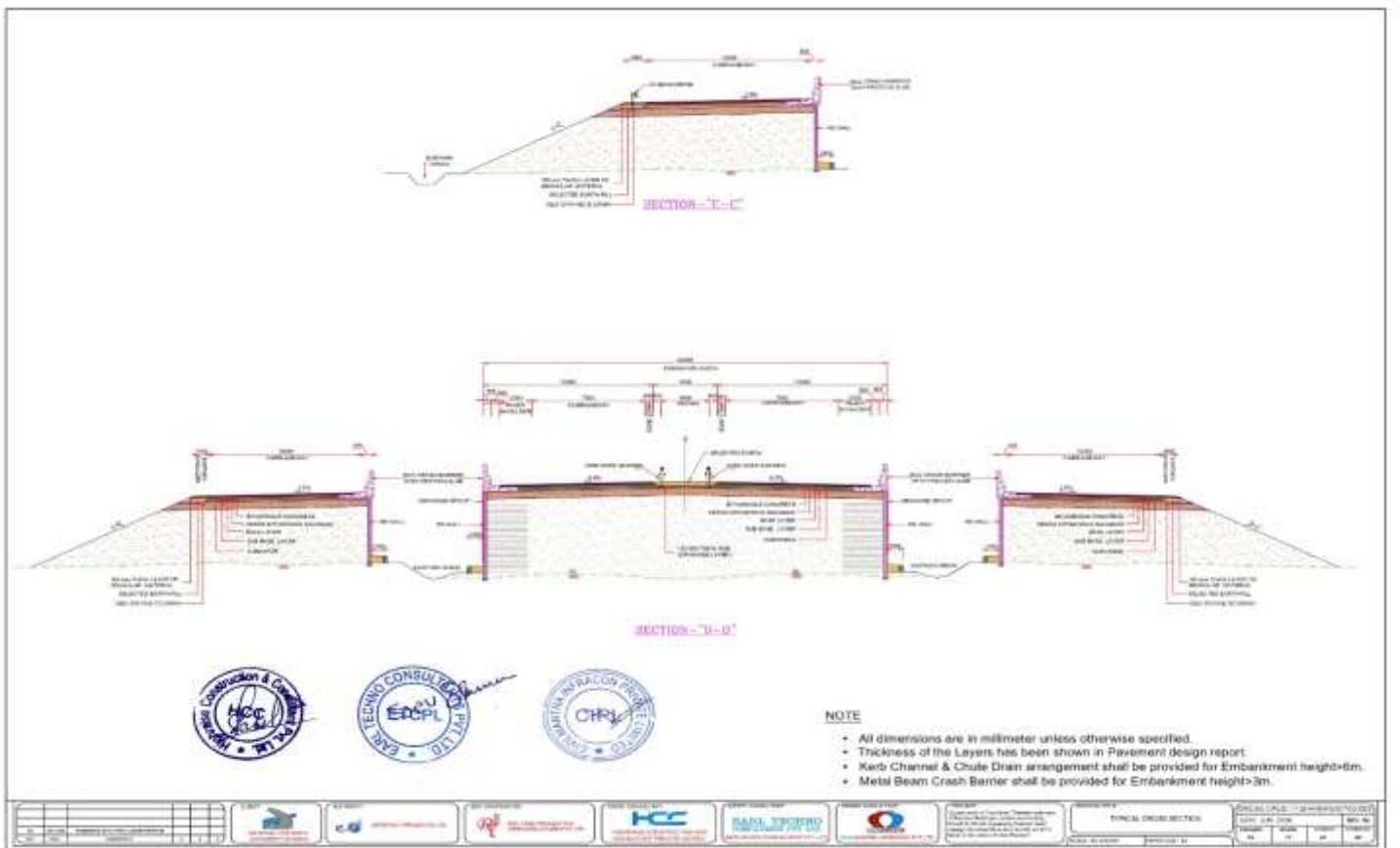
TCS FOR ROAD-5

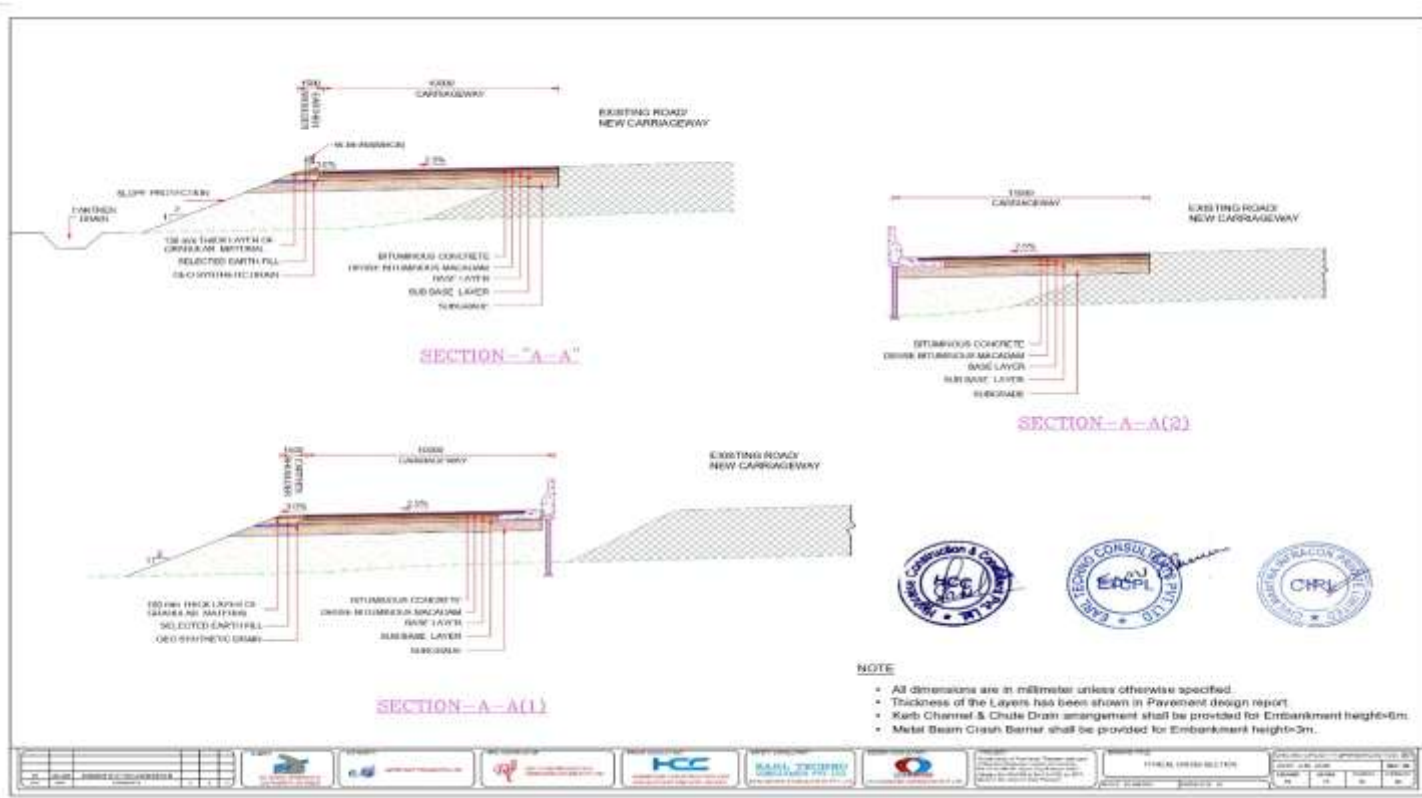


NOTE

- All dimensions are in millimeter unless otherwise specified.
- Thickness of the Layers has been shown in Pavement design report.
- Kerb Channel & Cuts Drain arrangement shall be provided for Embankment height > 6m.
- Metal Beam Crash Barrier shall be provided for Embankment height > 3m.







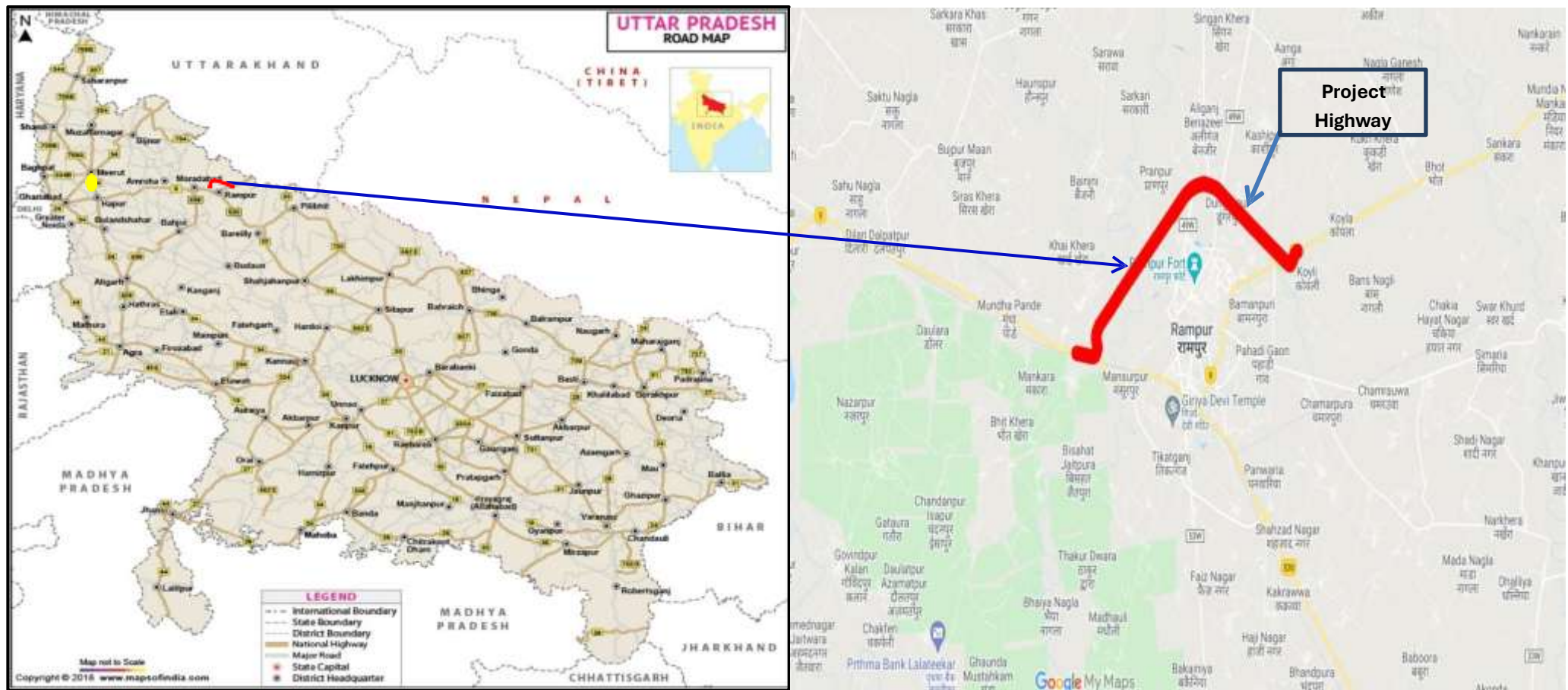
INTERCHANGE 2				
TCS SCHEDULE FOR ROAD-1				
S.NO.	CHAINAGE		LENGTH (m)	TCS TYPE
	FROM	TO		
1	0	223	223	A-A(2)
2	223	253	30	C-C
3	253	530	277	E-E
4	530	600	70	C-C
5	600	761	161	A-A
	TOTAL (m)		761	
TCS SCHEDULE FOR ROAD-2				
S.NO.	CHAINAGE		LENGTH (m)	TCS TYPE
	FROM	TO		
1	0	140	140	STR
2	140	300	160	A-A
3	300	580	280	F-F
4	580	700	120	C-C
5	700	883	183	A-A
	TOTAL (m)		883	

TCS SCHEDULE FOR ROAD-3				
S.NO.	CHAINAGE		LENGTH (m)	TCS TYPE
	FROM	TO		
1	0	330	330	A-A(2)
2	330	580	250	C-C
3	580	883	303	F-F
	TOTAL (m)		883	
TCS SCHEDULE FOR ROAD-4				
S.NO.	CHAINAGE		LENGTH (m)	TCS TYPE
	FROM	TO		
1	0	480	480	F-F
2	480	670	190	E-E
3	670	730	60	C-C
4	730	820	90	E-E
5	820	933	113	C-C
	TOTAL (m)		933	



Appendix A-1

Index map of Project Highway



Balance work of Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode in the state of Uttar Pradesh

ANNEX – II (SCHEDULE-A)**Dates for Providing Right of Way of Construction Zone**

Sl. No	From km to km	Length (km)	Width	Date of Providing Right of Way
(i) Full Right of Way (Full Width)	0+000 to 13+700	13.7	60 m	100% ROW to be handed over on Appointed Date

- Note:** 1. The Authority shall provide the ROW not less than 100% of the total length of the Project Highway on Appointed Date in compliance to Article 8 of Contract Agreement.
2. Additional land acquired for structures, road works etc. shall constitute the Project Highway.

Coordinates: The co-ordinates of the ROW have been enclosed.

Coordinates of Centre Line

Sl. No.	Chainage	EASTING (X)	NORTHING (Y)	Remarks
1	0	301652.55	3186869.788	
2	50	301701.85	3186861.407	
3	100	301751.14	3186853.027	
4	150	301800.43	3186844.646	
5	200	301849.72	3186836.265	
6	250	301899.03	3186827.956	
7	300	301948.33	3186819.65	
8	350	301997.61	3186811.186	
9	400	302046.86	3186802.563	
10	450	302096.09	3186793.781	
11	500	302145.28	3186784.84	
12	550	302194.46	3186775.798	
13	600	302243.63	3186766.754	
14	650	302292.88	3186758.12	
15	700	302342.7	3186754.723	
16	750	302392.25	3186760.761	
17	800	302439.72	3186776.229	
18	850	302483.31	3186800.549	
19	900	302521.41	3186832.81	
20	950	302552.58	3186871.804	
21	1000	302575.66	3186916.072	
22	1050	302589.78	3186963.955	
23	1100	302594.42	3187013.661	
24	1150	302589.54	3187063.355	
25	1200	302579	3187112.226	
26	1250	302567.93	3187160.986	
27	1300	302557.84	3187209.954	
28	1350	302550.96	3187259.463	
29	1400	302548.37	3187309.38	
30	1450	302550.12	3187359.333	
31	1500	302556.21	3187408.946	
32	1550	302566.58	3187457.842	
33	1600	302581.16	3187505.653	
34	1650	302599.83	3187552.017	
35	1700	302622.47	3187596.584	
36	1750	302648.88	3187639.017	
37	1800	302678.89	3187678.996	
38	1850	302712.24	3187716.221	
39	1900	302748.21	3187750.944	
40	1950	302785.13	3187784.661	
41	2000	302821.78	3187818.675	
42	2050	302858	3187853.144	
43	2100	302893.95	3187887.89	
44	2150	302929.9	3187922.639	

Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode in the state of Uttar Pradesh.

45	2200	302965.86	3187957.388	
46	2250	303001.81	3187992.138	
47	2300	303037.76	3188026.887	
48	2350	303073.71	3188061.636	
49	2400	303109.66	3188096.385	
50	2450	303145.61	3188131.134	
51	2500	303181.56	3188165.883	
52	2550	303217.48	3188200.665	
53	2600	303253.4	3188235.447	
54	2650	303289.33	3188270.223	
55	2700	303325.25	3188305.004	
56	2750	303361.16	3188339.793	
57	2800	303397.08	3188374.575	
58	2850	303433.01	3188409.35	
59	2900	303468.92	3188444.138	
60	2950	303504.93	3188478.824	
61	3000	303541.14	3188513.307	
62	3050	303577.09	3188548.06	
63	3100	303613.03	3188582.824	
64	3150	303648.97	3188617.58	
65	3200	303684.91	3188652.341	
66	3250	303720.85	3188687.099	
67	3300	303756.8	3188721.857	
68	3350	303792.74	3188756.616	
69	3400	303828.69	3188791.369	
70	3450	303864.64	3188826.118	
71	3500	303900.59	3188860.867	
72	3550	303936.54	3188895.616	
73	3600	303972.49	3188930.365	
74	3650	304008.44	3188965.115	
75	3700	304044.39	3188999.863	
76	3750	304080.41	3189034.548	
77	3800	304116.42	3189069.234	
78	3850	304152.43	3189103.919	
79	3900	304188.45	3189138.605	
80	3950	304224.46	3189173.29	
81	4000	304260.47	3189207.976	
82	4050	304296.48	3189242.661	
83	4100	304332.49	3189277.359	
84	4150	304368.51	3189312.032	
85	4200	304404.52	3189346.718	
86	4250	304440.54	3189381.403	
87	4300	304476.55	3189416.09	
88	4350	304512.56	3189450.772	
89	4400	304548.59	3189485.461	
90	4450	304584.6	3189520.152	
91	4500	304620.49	3189554.943	
92	4550	304656.36	3189589.774	

93	4600	304692.22	3189624.59	
94	4650	304728.11	3189659.435	
95	4700	304763.98	3189694.265	
96	4750	304799.87	3189729.079	
97	4800	304835.73	3189763.926	
98	4850	304871.6	3189798.757	
99	4900	304907.47	3189833.587	
100	4950	304943.16	3189868.607	
101	5000	304978.87	3189903.606	
102	5050	305014.58	3189938.604	
103	5100	305050.29	3189973.602	
104	5150	305086.01	3190008.599	
105	5200	305121.74	3190043.569	
106	5250	305157.63	3190078.389	
107	5300	305193.52	3190113.2	
108	5350	305229.43	3190147.986	
109	5400	305265.3	3190182.821	
110	5450	305301.19	3190217.632	
111	5500	305338.64	3190250.834	
112	5550	305374.59	3190285.583	
113	5600	305410.54	3190320.332	
114	5650	305446.49	3190355.082	
115	5700	305482.45	3190389.831	
116	5750	305518.4	3190424.58	
117	5800	305554.35	3190459.329	
118	5850	305590.3	3190494.078	
119	5900	305626.25	3190528.828	
120	5950	305662.2	3190563.577	
121	6000	305698.15	3190598.326	
122	6050	305734.1	3190633.075	
123	6100	305770.06	3190667.824	
124	6150	305806.01	3190702.573	
125	6200	305841.96	3190737.323	
126	6250	305877.91	3190772.072	
127	6300	305913.86	3190806.821	
128	6350	305949.81	3190841.57	
129	6400	305985.76	3190876.319	
130	6450	306021.71	3190911.068	
131	6500	306057.67	3190945.818	
132	6550	306093.62	3190980.567	
133	6600	306129.57	3191015.316	
134	6650	306165.52	3191050.065	
135	6700	306201.47	3191084.814	
136	6750	306237.42	3191119.564	
137	6800	306273.37	3191154.313	
138	6850	306309.33	3191189.062	
139	6900	306345.28	3191223.811	
140	6950	306381.23	3191258.56	

141	7000	306417.18	3191293.309	
142	7050	306453.13	3191328.059	
143	7100	306489.08	3191362.808	
144	7150	306525.03	3191397.557	
145	7200	306560.98	3191432.306	
146	7250	306596.94	3191467.055	
147	7300	306632.89	3191501.805	
148	7350	306668.84	3191536.554	
149	7400	306704.79	3191571.303	
150	7450	306740.96	3191605.821	
151	7500	306778.33	3191639.034	
152	7550	306817.05	3191670.661	
153	7600	306857.06	3191700.648	
154	7650	306898.28	3191728.943	
155	7700	306940.64	3191755.497	
156	7750	306984.07	3191780.262	
157	7800	307028.5	3191803.197	
158	7850	307073.84	3191824.262	
159	7900	307120.02	3191843.419	
160	7950	307166.96	3191860.637	
161	8000	307214.57	3191875.884	
162	8050	307262.78	3191889.135	
163	8100	307311.5	3191900.366	
164	8150	307360.64	3191909.558	
165	8200	307410.13	3191916.694	
166	8250	307459.87	3191921.764	
167	8300	307509.77	3191924.757	
168	8350	307559.76	3191925.669	
169	8400	307609.74	3191924.497	
170	8450	307659.63	3191921.245	
171	8500	307709.35	3191915.917	
172	8550	307758.79	3191908.524	
173	8600	307807.89	3191899.076	
174	8650	307856.55	3191887.593	
175	8700	307904.69	3191874.092	
176	8750	307952.22	3191858.597	
177	8800	307999.07	3191841.137	
178	8850	308045.15	3191821.739	
179	8900	308090.38	3191800.44	
180	8950	308134.69	3191777.274	
181	9000	308177.99	3191752.283	
182	9050	308220.21	3191725.51	
183	9100	308261.32	3191697.055	
184	9150	308301.96	3191667.925	
185	9200	308342.6	3191638.789	
186	9250	308383.23	3191609.653	
187	9300	308423.86	3191580.517	
188	9350	308464.5	3191551.38	

189	9400	308505.13	3191522.244	
190	9450	308545.76	3191493.108	
191	9500	308586.4	3191463.971	
192	9550	308627.03	3191434.835	
193	9600	308667.66	3191405.699	
194	9650	308708.3	3191376.562	
195	9700	308748.93	3191347.426	
196	9750	308789.56	3191318.29	
197	9800	308830.2	3191289.153	
198	9850	308870.83	3191260.017	
199	9900	308911.46	3191230.881	
200	9950	308952.1	3191201.745	
201	10000	308992.73	3191172.608	
202	10050	309033.36	3191143.472	
203	10100	309074	3191114.336	
204	10150	309114.63	3191085.199	
205	10200	309155.26	3191056.063	
206	10250	309195.9	3191026.927	
207	10300	309236.53	3190997.79	
208	10350	309277.17	3190968.654	
209	10400	309317.8	3190939.518	
210	10450	309358.43	3190910.382	
211	10500	309399.13	3190881.338	
212	10550	309439.95	3190852.464	
213	10600	309480.89	3190823.76	
214	10650	309521.95	3190795.227	
215	10700	309563.13	3190766.865	
216	10750	309604.42	3190738.672	
217	10800	309645.72	3190710.486	
218	10850	309686.88	3190682.103	
219	10900	309727.9	3190653.515	
220	10950	309768.78	3190624.722	
221	11000	309809.51	3190595.725	
222	11050	309850.1	3190566.525	
223	11100	309890.54	3190537.122	
224	11150	309930.84	3190507.517	
225	11200	309970.98	3190477.711	
226	11250	310010.98	3190447.705	
227	11300	310050.86	3190417.553	
228	11350	310090.86	3190387.549	
229	11400	310131	3190357.737	
230	11450	310171.28	3190328.119	
231	11500	310211.71	3190298.694	
232	11550	310252.27	3190269.465	
233	11600	310292.91	3190240.329	
234	11650	310333.54	3190211.192	
235	11700	310374.17	3190182.056	
236	11750	310414.81	3190152.92	

237	11800	310455.44	3190123.784	
238	11850	310496.08	3190094.648	
239	11900	310536.71	3190065.512	
240	11950	310577.34	3190036.375	
241	12000	310617.98	3190007.239	
242	12050	310658.61	3189978.103	
243	12100	310699.24	3189948.967	
244	12150	310739.88	3189919.831	
245	12200	310780.51	3189890.694	
246	12250	310821.14	3189861.558	
247	12300	310861.78	3189832.422	
248	12350	310902.41	3189803.286	
249	12400	310943.04	3189774.15	
250	12450	310983.68	3189745.013	
251	12500	311024.31	3189715.877	
252	12550	311064.94	3189686.741	
253	12600	311105.58	3189657.605	
254	12650	311146.21	3189628.469	
255	12700	311186.85	3189599.333	
256	12750	311227.48	3189570.196	
257	12800	311268.11	3189541.06	
258	12850	311308.75	3189511.924	
259	12900	311349.38	3189482.788	
260	12950	311390.01	3189453.652	
261	13000	311431.19	3189425.346	
262	13050	311478.83	3189411.386	
263	13100	311528.04	3189417.9	
264	13150	311570.4	3189443.772	
265	13200	311598.67	3189484.575	
266	13250	311615.59	3189531.622	
267	13300	311632.33	3189578.736	
268	13350	311649.09	3189625.842	
269	13400	311668.65	3189671.809	
270	13450	311696.3	3189713.369	
271	13500	311731.66	3189748.608	
272	13550	311773.31	3189776.121	
273	13600	311819.32	3189795.563	
274	13650	311866.45	3189812.267	
275	13700	311913.58	3189828.955	
276	13720	311932.44	3189835.63	

Note: 1. These are the co-ordinates provided in the original Contract. But on ground, there has been changes in the co-ordinates and accordingly has been marked on the site.

ANNEX –
III
(SCHEDULE
E-A)
ALIGNMENT PLANS

1. The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. In any case, the finished road level of the project highway shall not be less than those indicated in the alignment plan. The contractor shall, however, improve/upgrade the road profile as indicated in Annex-III based on site/design requirement mentioned in Schedule-D.
2. Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per IRC: SP: 84-2019 & IRC: 67.

ANNEX –
IV
(SCHEDULE
E-A)
ENVIRONMENTAL CLEARANCES

Environmental Clearance is not required per EIA notification dated 14th September 2006 and its subsequent amendment.

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 described in this Schedule-B and in Schedule-C. The alignment plans of the Project Highway are specified in Annex-III of Schedule A. The proposed profile of the project highway as indicated in the Annex-III of Schedule A shall be treated as an approximate assessment. Based on site/design requirement specified in Schedule-D, the Contractor shall design the alignment plans and profiles of the project highway within the available Right of Way. However, in any case, the finished road level of the project highway shall not be less than those indicated in the alignment plan specified in Annex-III of Schedule A.

2. FOUR LANING WITH PAVED SHOULDER

Four laning with paved shoulder shall include construction of Four lane with paved shoulder as described in Annex-I of this Schedule-B and in Schedule- C.

3. SPECIFICATIONS AND STANDARDS

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

Annex-I (Schedule-B)

DESCRIPTION OF DEVELOPMENT

Balance work of Construction of Four-lane “Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town” (Design Km 00+000 to Design Km 13+700) on EPC Mode under Bharatmala Pariyojna in the state of Uttar Pradesh.

1. DEVELOPMENT OF THE GREENFIELD PROJECT HIGHWAY

The Project Highway shall follow the alignment shown in the plan and Profile as specified in Annex-III of Schedule-A, unless otherwise specified by the Authority. Not with standing anything to the contrary contained in the Agreements or IRC: SP: 84-2019, the proposed profile of the Project highway as indicated in the Annexure-III of schedule-A shall be treated as an approximate assessment. The contractor shall design the alignment plans and profile of the project highway based on site/Design requirements specified in schedule-D with approval from the Authority’s Engineer within the available ROW. However, in any case, the finished road level of the project highway shall not be less than those indicated in the alignment plan specified in Annex-III of Schedule A. The same shall not constitute a change of scope, save and except any variations arising out of a change of scope expressly undertaken in accordance with the provision of Article 13.

2. WIDTH OF CARRIAGEWAY

- 2.1. Four laning with paved shoulders divided carriageway shall be undertaken. The paved carriageway of Main highway shall be 18 m (2x9.0m) wide including paved shoulder and kerb shyness and excluding the median for 4-lane divided carriageway.
- 2.2. There is no built-up area as the alignment passes through Greenfield corridor.
- 2.3. Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall conform to paragraph 2.1 above of Schedule B.
- 2.4. The entire cross sections elements shall be accommodated in the available/proposed ROW. If required, suitable retaining structure shall be provided to accommodate the Highway cross sections within the available/Proposed ROW and the same shall not constitute a Change of Scope, save and except any variations in the design length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

3. GEOMETRIC DESIGN AND GENERAL

I. General

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the IRC: SP: 84-2019.

II. Design speed

The design speeds shall be 100 Km per hr. for plain terrain. Extra widening shall be provided as per Clause 2.7.2 of the IRC SP 84-2019 Manual at location with radius of Horizontal curve less than 300m.

III. Improvement of the existing road geometrics

In the following stretches, 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:

S. No.	Proposed Chainage (in km)		Type of Deficiency	Remarks
	Start	End		
Nil				

iv) RIGHT OF WAY

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

v) TYPE OF SHOULDERS

The shoulder specification shall be as per Section 2 and Section 4 of IRC: SP: 84-2014. The paved shoulder of 1.5 m width and earthen shoulder of 2.0 m width on the outer side (on either of the carriageway) shall be provided as per TCS referred to in para 2.8 of this Annexure-I of Schedule-B. The shoulder composition is as follows:

- The compositions and specification of the paved shoulder shall be as that of the main carriageway.
- The earthen shoulder shall be provided with 150mm thick compacted layer of granular material.

vi) LATERAL AND VERTICAL CLEARANCES AT UNDERPASSES

- Lateral and vertical clearances at underpasses shall be as provided in this schedule and provision of guard rails/crash barriers shall be as per IRC SP: 84:2019.
- Lateral clearance: The width of the opening at the underpasses shall be as follows:

GRADE SEPERATORS

Sl. No	Design Chainage (km)	Proposal	Span Arrangement (Clear opening) (m)	Vertical Clearance (m)	Deck Configuration (m)	Skew Angle	Status of work
1	0+770	New construction	2X50	5.5	1X11	0	Sub Structure completed (Balance - Slab, wearing coat, Crash Barrier, approach slab)
2	8+700	New construction	1x40	5.5	2x11	18	Sub Structure completed & Girder casting completed (Balance - Slab, launching, Dirt Wall, Approach Slab, wearing coat)
3	12+810	New construction	1X35+4X30	5.5	2X11	0	Completed (Balance – Crash Barrier, Dirt Wall, Approach Slab, wearing coat)

UNDERPASSES (VEHICULAR, NON-VEHICULAR)
VUP

Sl. No.	Design Chainage (km)	Proposal	Span Arrangement (Clear opening) (m)	Vertical Clearance (m)	Deck Configuration (m)	Skew Angle	Status of work
1	7+920	New construction	1 x 35.691	5.5	2x11	34 ⁰	Substructure completed & Girder casting completed (Balance – Launching of Girder, Slab A1 A2, Wearing Coat, Approach Slab, Crash Barrier & Dirt Wall)
2	8+255	New construction	1 x 26.199	5.5	2x11	54 ⁰	Substructure completed & Girder casting completed (Balance – Slab, Girder Launching, Dirt wall, Approach Slab, Pre-stressing Girder, Wearing Coat)
3	9+183	New construction	1 x 41.474	5.5	2x11	18 ⁰	Substructure completed & Girder casting completed (Balance - Launching of Girder, Slab, Wearing Coat, Approach Slab, Crash Barrier & Dirt Wall)

LVUP

Sl. No.	Design Chainage (km)	Proposal	Span Arrangement (Clear opening) (m)	Vertical Clearance (m)	Deck Configuration (m)	Skew Angle	Status of work
1	5+476	New construction	1x12	4.5	2x11	30 ⁰	Completed (Balance – Crash Barrier, Wearing Coat)

SVUP

Sl. No.	Design Chainage (km)	Proposal	Span Arrangement (Clear opening) (m)	Vertical Clearance (m)	Deck Configuration (m)	Skew Angle	Status of work
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1	2+070	New construction	1x7	4.5	2x11	40 ⁰	Completed
2	6+440	New construction	1x7	4.5	2x11	27 ⁰	Completed (Balance – Wearing Coat)
3	9+700	New construction	1x7	4.5	2x11	0 ⁰	Completed (Balance – Crash Barrier & Wearing Coat)
4	10+860	New construction	1x7	4.5	2x11	0 ⁰	(Balance – Crash Barrier & Wearing Coat)
5	11+340	New construction	1x7	4.5	2x11	0 ⁰	(Balance – Crash Barrier & Wearing Coat)

Note:-

- I. The span mentioned above is clear span measured in square direction only. The locations, orientation of the above-mentioned structures are tentative and may vary as per the actual site condition. For cross road in skew, the proposed structure shall be provided in skew only.
 - II. Proposed structure length and span arrangement is tentative; same shall be finalized in consultation with Authority Engineer /NHAI. However Total length of structure mentioned above is minimum. Any increase in structure length and change in span arrangement shall not be considered as change of scope.
 - III. Any realignment in the cross road, skew angle should not consider as change of scope.
 - IV. All the structures shall be designed for special vehicle loading.
- v)

LATERAL AND VERTICAL CLEARANCES AT OVERPASSES

- a. Lateral and vertical clearances at overpasses shall be as provided in this schedule and provision of guardrails / crash barriers shall be as per IRC SP:84:2019.
- b. Lateral clearance: The width of the opening at the Overpasses shall be as follows:

Sl. No.	Location (Chainage) (from Km to Km)	Span/Opening (m)	Remarks
Nil			

(a) Slip Roads

Slip roads shall be constructed at the locations and for the minimum lengths and width indicated below:

Sl. No.	Design Chainage		Side	Length of Service Road (m)	Width (m)	Remark	Status of work
	From (km)	To (km)					
1	1+600	2+000	LHS	900	7.5	As per Drawing	SG Top

2	2+000	2+500	LHS	900	7.5	As per Drawing	CTSB Top
3	1+600	2+500	RHS	900	7.5	As per Drawing	Work to be done
4	2+950	3+100	LHS	150	7.5	As per Drawing	SG Top
5	2+950	3+100	RHS	150	7.5	As per Drawing	Work to be done
6	7+300	7+510	BOTH	210	7.5	As per Drawing	SG Top

(b) Service Roads

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

Sl. No.	Design Chainage		Side	Length of Slip Road (m)	TCS Type	Width (m)	Remark
	From (km)	To (km)					
1	8+820	9+550	BOTH	730	7.5	As per Drawing	Work to be done

Note:-

1. Above length of service/slip road is indicative and minimum specified. The actual length of the service/slip road shall be determined by the Contractor in accordance with the IRC: SP: 87:2019 requirements with approval from authority's Engineers. Any increase in the length specified in this clause of schedule-B shall not constitute a Change of scope.
2. Length of service road and slip road given in above table excludes length across the Project Highway for proper connectivity of cross road on either side of Project Highway as given in the alignment plan enclosed at Annex-III, Schedule-A which shall be deemed to be included in the scope of work.
3. The length of Service Road/Slip Road mentioned above is excluding of the length of taper portion of entry/exit.

GRADE SEPARATED STRUCTURES

Grade separated structures shall be provided as per paragraph 2.13 of the IRC: SP: 84-2019. Proposed levels at structure locations as shown in plan & profile specified in Annex III of schedule A are only for guidance and any changes in levels shall not constitute any change of scope. The requisite particulars given below:

Sl. No.	Design Chainage (Km) of Main Carriageway /loop/ramp	Span Arrangement (clear Opening) (m)	Proposed Structure	Cross Road	Status of work
1	0+770	2x50	Flyover	NH-09	Sub Structure completed

Construction of Four-lane "Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town" (Design Km 00+000 to Design Km 13+700) on EPC Mode under Bharatmala Pariyojna in the state of Uttar Pradesh.

2	2+070	1x7	SVUP	Village Road	Completed
3	5+476	1x12	LVUP	ODR	Completed
4	6+440	1x7	SVUP	ODR	Completed
5	7+920	35.691	VUP	MDR	Substructure completed & Girder casting completed
6	8+255	26.199	VUP	MDR	Substructure completed & Girder casting completed
7	8+700	1x40	Flyover	4-Lane Rampur Road	Sub Structure completed & Girder casting completed
8	9+183	41.474	VUP	MDR	Substructure completed & Girder Launching completed
9	9+700	1x7	SVUP	Village Road	Completed
10	10+860	1x7	SVUP	ODR	Completed
11	11+340	1x7	SVUP	Proposed Spur	Completed
12	12+275	2x25	MNB Cum Underpass	Canal + ODR	Sub Structure completed only Pier Cap P1 Pier Cap balance, Girder Completed
13	12+810	1x35+4x30	FLYOVER-MCW	NH-09	Completed
14	0+545	1x30	FLYOVER-Ramp	NH-09	Sub Structure Completed & Girder Launching Completed
15	0+532	2x40	FLYOVER-Ramp	NH-09	Sub Structure A1&A2 Completed Pier Cap Balance
18	0+215	1X12	LVUP	From Moradabad to Rudrapur Entry Up Ramp	Up to Super Structure Completed
19	0+500 (Part-1)	1X12	LVUP	From Rudrapur to Moradabad Exit Ramp	Up to Super Structure Completed
20	0+500 (Part-2)	1X12	LVUP	From Rampur to Moradabad Existing NH	To be Done
21	0+360 (13+086)	1X12	LVUP	Moradabad to Bareilly Exit Ramp	Completed
22	0+587	1X12	LVUP	Moradabad to Bareilly Exit Ramp	Completed
23	0+530	1X12	LVUP	Moradabad to Rudrapur Exit Ramp	Sub Structure Completed

Cattle and Pedestrian underpass/overpass

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

Sl. No.	Design Chainage (km)	Structure Type	Proposal	No. of Span	Span Length (m)	Vertical Clearance (m)	Total Width (m)	Remarks
Nil								

Typical cross-sections of the project highway

The indicative cross section for the project road is given as under:-

Typical Cross-sections for the Main Project Highway

TYPICAL CROSS SECTION SCHEDULE MCW					
S. No.	Design Chainage (m)		Type	Length (m)	Remarks
	From	To			
1	0	250	TCS of 4 Lane Divided Highway without Service Road & Eccentric Widening	250	Work to be done in (RHS)
2	250	500	Interchange - 1 (TCS-I)	250	Work to be done in (RHS)
3	500	800	Interchange - 1 (TCS-II)	300	BC Completed (RHS)
4	800	1290	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	490	BC Completed (RHS) upto 1+200 (RHS) DBM Completed (BHS)
5	1290	1600	TCS of 4 Lane Divided Highway without Service Road	310	DBM Completed (BHS) BC Completed (RHS)
6	1600	2066.5	TCS of 4 Divided Highway with Service Road	467	DBM Completed (BHS) BC Completed upto 1+980 (RHS)
7	2066.5	2073.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	7	DBM Completed (BHS)
8	2073.5	2500	TCS of 4 Divided Highway with Service Road	427	DBM Completed (BHS)
9	2500	2950	TCS of 4 Lane Divided Highway without Service Road	450	DBM Completed (BHS)
10	2950	3100	TCS of 4 Divided Highway with Service Road	150	DBM Completed (BHS)
11	3100	3385	TCS of 4 Lane Divided Highway without Service Road	285	DBM Completed (BHS)

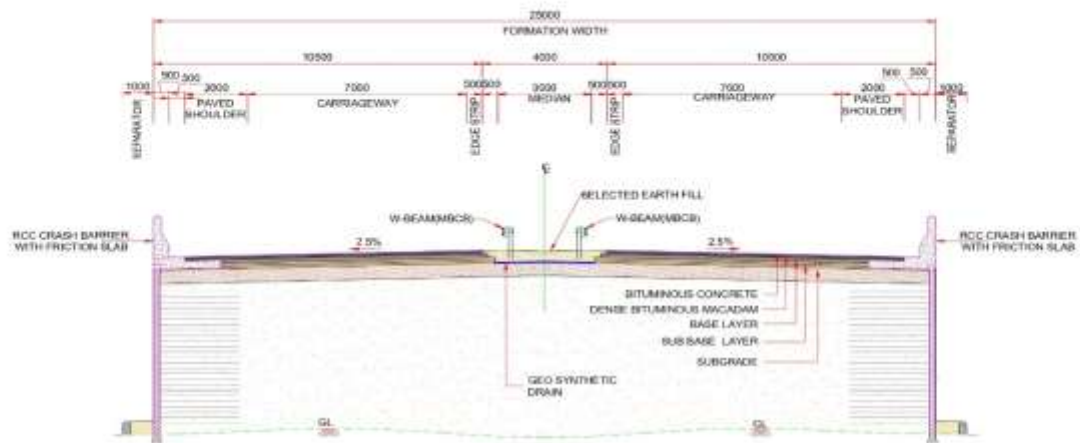
12	3385	3715	TCS of 4 Divided Highway at Bridge Location	330	DBM Completed (BHS)
13	3715	3920	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	205	DBM Completed (BHS)
14	3920	5215	TCS of 4 Lane Divided Highway without Service Road	1295	DBM Completed (BHS)
15	5215	5470	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	255	DBM Completed (BHS)
16	5470	5482	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	12	DBM Completed (BHS)
17	5482	5690	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	208	DBM Completed (BHS)
18	5690	6100	TCS of 4 Lane Divided Highway without Service Road	410	DBM Completed (BHS)
19	6100	6436.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	337	DBM Completed (BHS)
20	6436.5	6443.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	7	DBM Completed (BHS)
21	6443.5	6762	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	319	DBM Completed (BHS)
22	6762	7300	TCS of 4 Lane Divided Highway without Service Road	538	DBM Completed (BHS)
23	7300	7510	TCS of 4 Divided Highway with Service Road	210	DBM Completed (BHS)
24	7510	7802	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	292	DBM Completed (BHS)
25	7802	7902	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	100	DBM Completed (BHS) upto 7+840
26	7902	7962	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	60	Girder launching and deck slab and approaches and misc. work balance
27	7962	8200	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	238	Work to be done
28	8200	8210	TCS of 4 Divided Highway at Bridge Location	10	Completed

29	8210	8230	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	20	Work to be done
30	8230	8290	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	60	Girder launching and deck slab and approaches and misc. work balance
31	8290	8680	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	390	Upto Emb 2 nd Layers
32	8680	8720	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	40	Upto Emb 2 nd Layers
33	8720	8820	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	100	Girder launching and deck slab and approaches and misc. work balance
34	8820	9080	TCS of 4 Divided Highway with Service Road	260	Upto Emb 10 th Layers
35	9080	9163	TCS of 4 Divided Highway with Service Road	83	Upto Emb 10 th Layers
36	9163	9203	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	40	Girder Launching done, deck slab and approaches and misc. work balance
37	9203	9350	TCS of 4 Divided Highway with Service Road	147	Upto Emb 10 th Layers
38	9350	9550	TCS of 4 Divided Highway with Service Road	200	Upto Emb 12 th Layers
39	9550	9690	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	140	Upto Emb 10 th Layers
40	9690	10480	TCS of 4 Lane Divided Highway without Service Road	790	10+000 to 10+480 Upto Emb 2 nd Layers
41	10480	10856.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	377	10+480 to 10+700 Upto Emb 2 nd Layers
42	10856.5	10863.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	7	Completed
43	10863.5	11206	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	343	Work to be done
44	11206	11226	TCS of 4 Divided Highway at Bridge Location	20	Completed Misc. Work balance
45	11226	11336.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	111	Work to be done

46	11336.5	11343.5	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	7	Work to be done
47	11343.5	12250	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	907	Work to be done
48	12250	12300	TCS of 4 Divided Highway at Bridge Location	50	Sub structure P1 Pier cap balance and girder casted deck slab, approaches, Misc. Balance
49	12300	12725	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover approach without Service/Slip Road	425	12+300 to 12+600 Upto Emb 3 rd Layers
50	12725	12880	TCS of 4 Divided Highway VUP/LVUP/SVP/Flyover at Structure Location	155	Approaches, Misc work Balance
51	12880	13000	Interchange-2 TCS	120	Work to be done
52	13000	13500	Interchange-2 TCS	500	Upto Emb 12 th layers
53	13500	13700	Interchange-2 TCS	200	Work to be done
			Total Length (m)	13700	

Note:

1. At all TCS locations Flush median with Metal Beam Crash Barriers (on both edge of Median) shall be provided in accordance with MoRTH Circular **RW/NH-29023/02/2014-S&R(P&B) dated 01.01.2020, as shown in TCS enclosed with this schedule-B. At most of the locations MBCBs has been installed, which will be verified by the contractor on site before bidding.**
2. In median, a reverse cross slope of 3% is to be provided toward the centre line .A GSB layer should be continued in the median with that of pavement. As per IRC 37-2018, Clause 7.2.1 “When GSB layer is also provided below the median in continuation with that of the pavement, a non-woven geo-synthetic may be provided over the GSB in the median part so that the fines percolating through the median do not enter into the GSB and choke it”.
3. TCS schedule shown is indicative. It shall be read in concurrence with other features of Schedule B &C. As per site condition applicable arrangement of service road, cut / fill on LHS/RHS/BHS to be decided during execution and shall got approved from Authority Engineer. Any variation in length specified in the above table shall not constitute a Change of Scope.

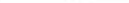
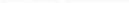
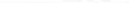


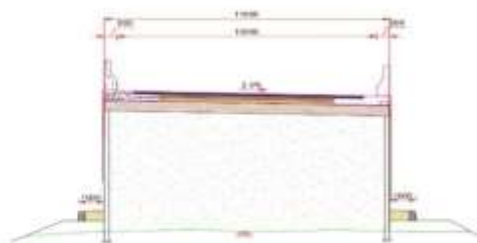
INTERCHANGE-2
SECTION-"B-B"



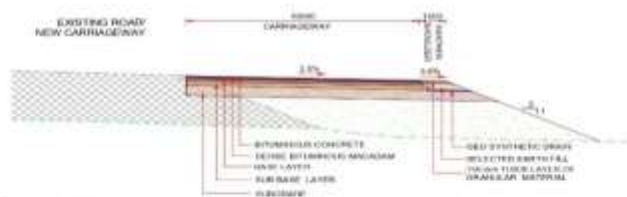
NOTE

- All dimensions are millimeter unless otherwise specified.
- Thickness of the Layers has been shown in Pavement design report.
- Kerb Channel & Chute Drain arrangement shall be provided for Embankment height-6m.
- Metal Beam Crash Barrier shall be provided for Embankment height-3m.
- Chute drain has been provided as per IRC Specifications.
- Slope Protection :-
 - 0-3 Turling
 - 3-6 Coir Mat with Vetiver Grass
 - >6 Geocell with PCC



INTERCHANGE-2
SECTION - "F-F"

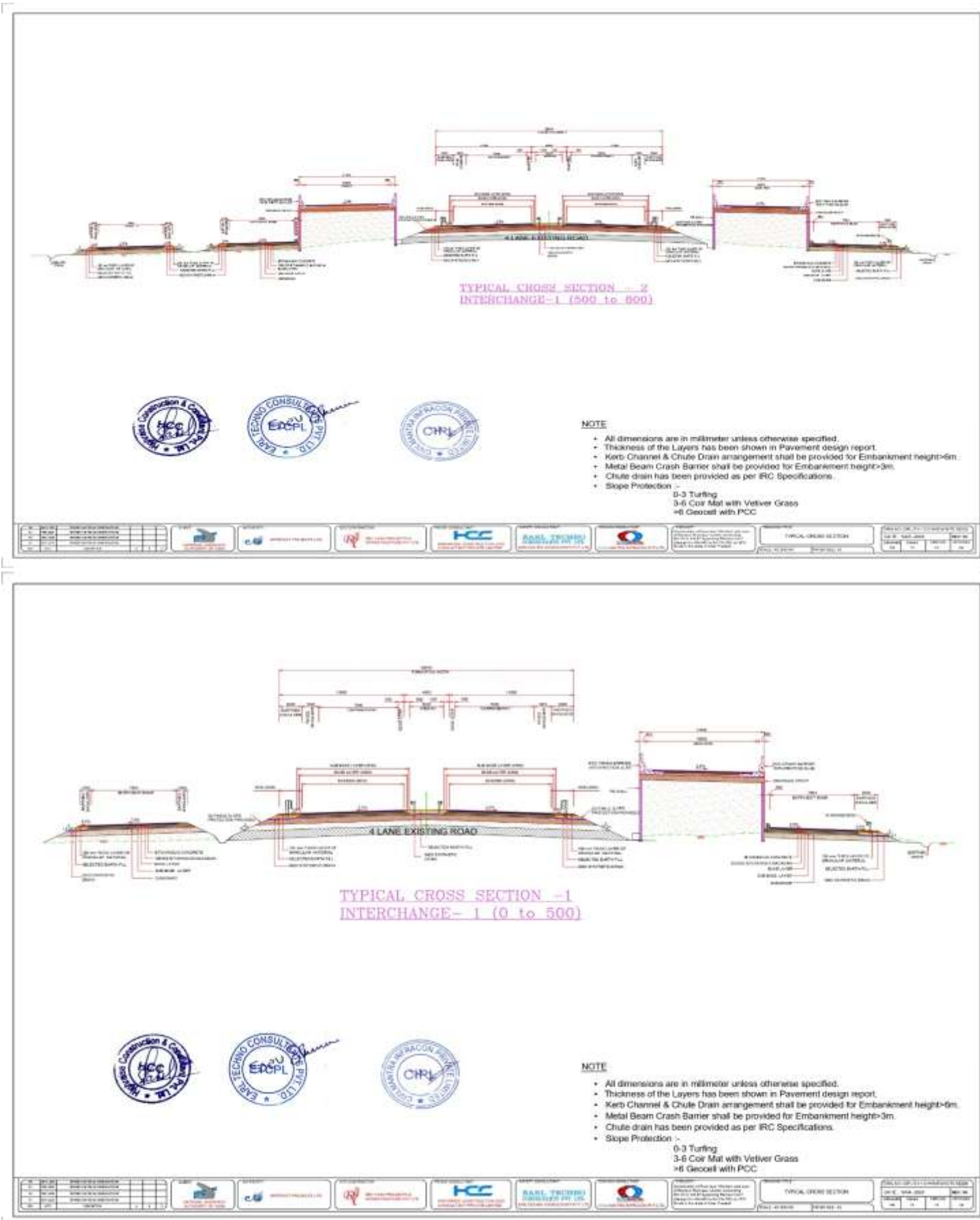


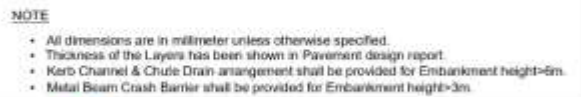
INTERCHANGE—
SECTION—"G—G"

NOTE

- All dimensions are in millimeter unless otherwise specified.
- Thickness of the Layers has been shown in Pavement design report.
- Kerb Channel & Chute Drain arrangement shall be provided for Embankment height > 3m.
- Metal Beam Crash Barrier shall be provided for Embankment height > 3m.
- Chute drain has been provided as per IRC Specifications.
- Slope Protection :-
 - o-3 Turling
 - o-4 Coir Mat with Vetiver Grass
 - o-6 Geocell with POC

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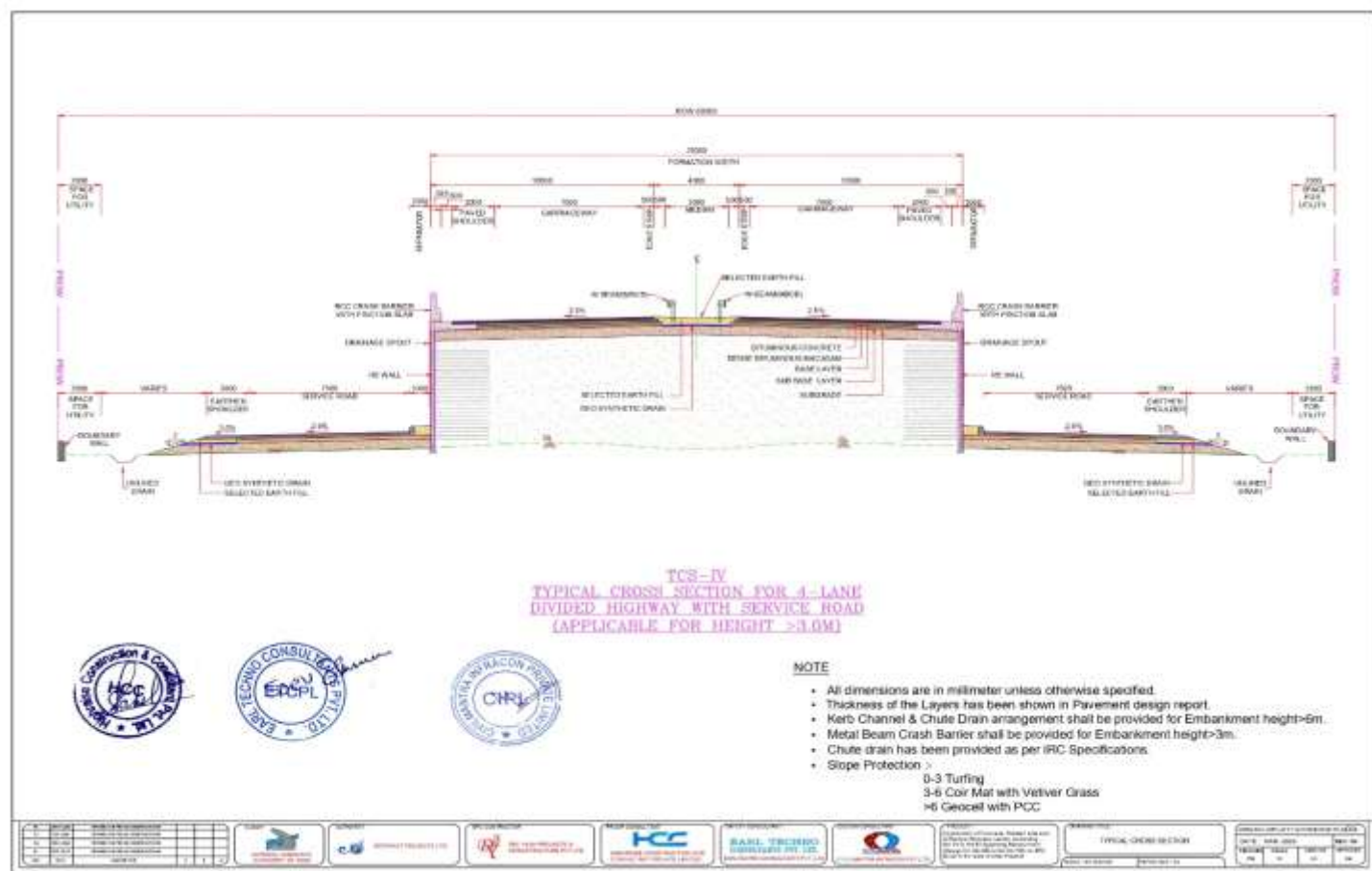
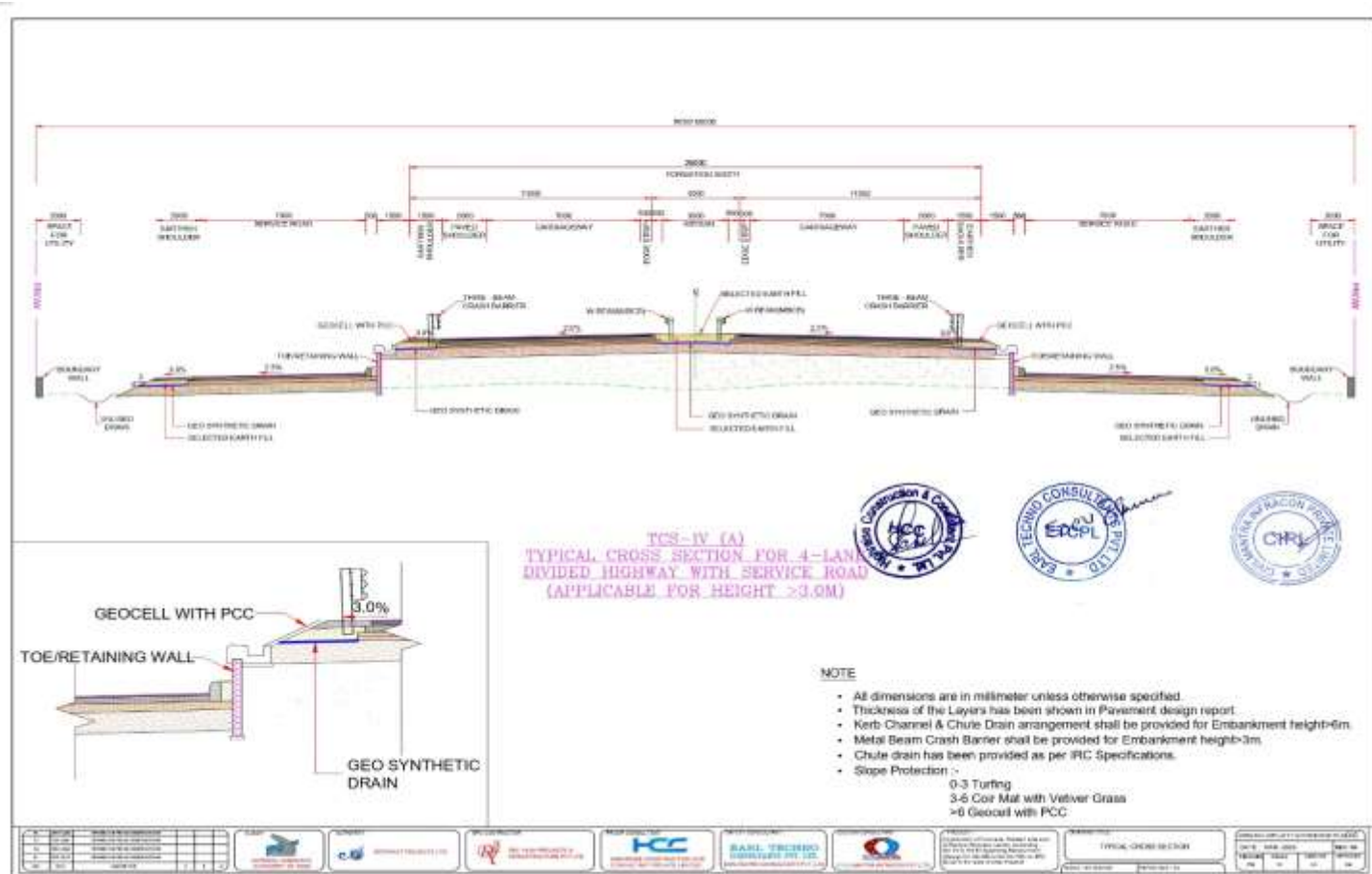


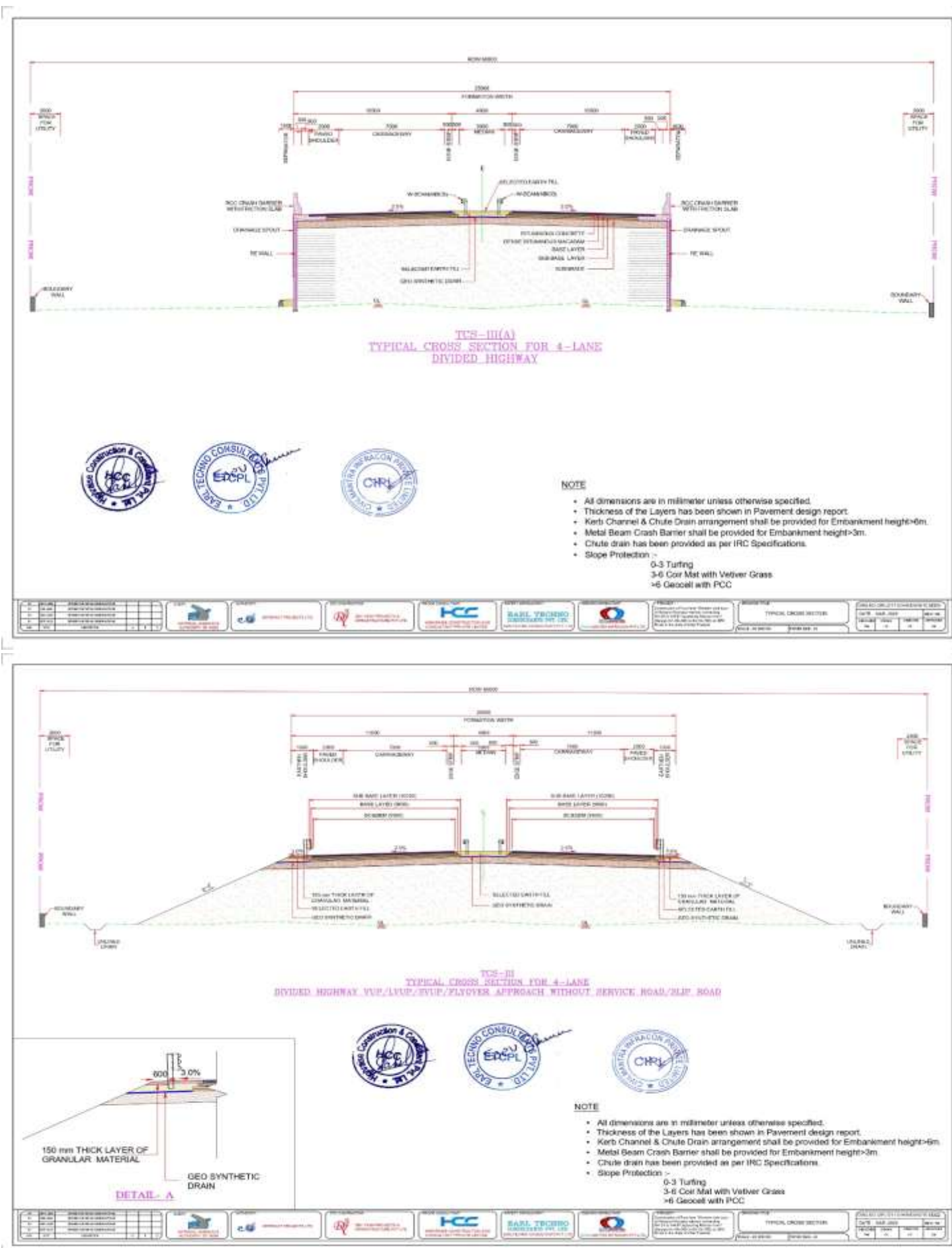


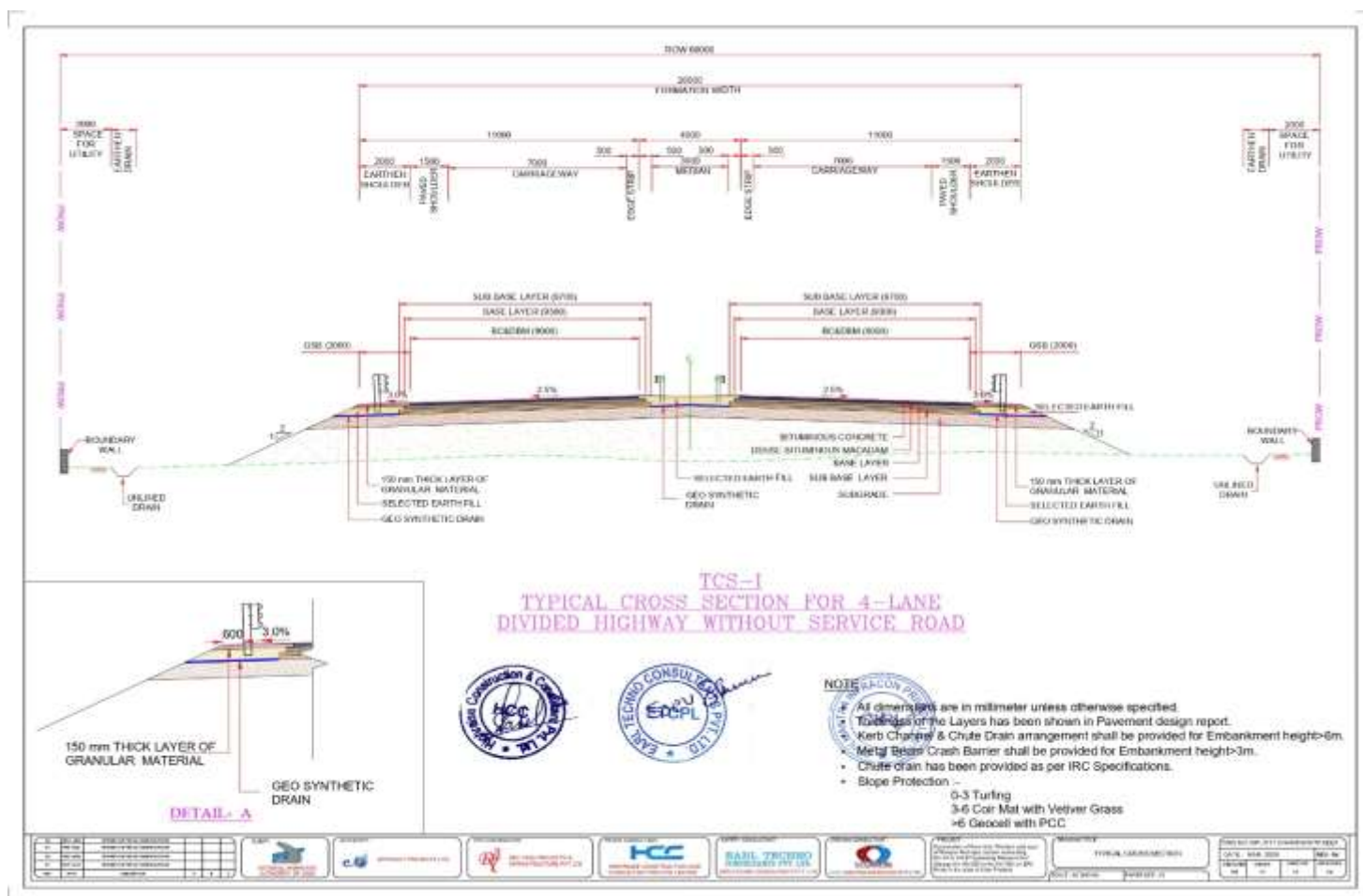
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TYPICAL CROSS SECTION (LOOP/RAMP)

Minimum number of traffic lanes required in the opening year on Loop/ Ramp for each interchange is as follows:

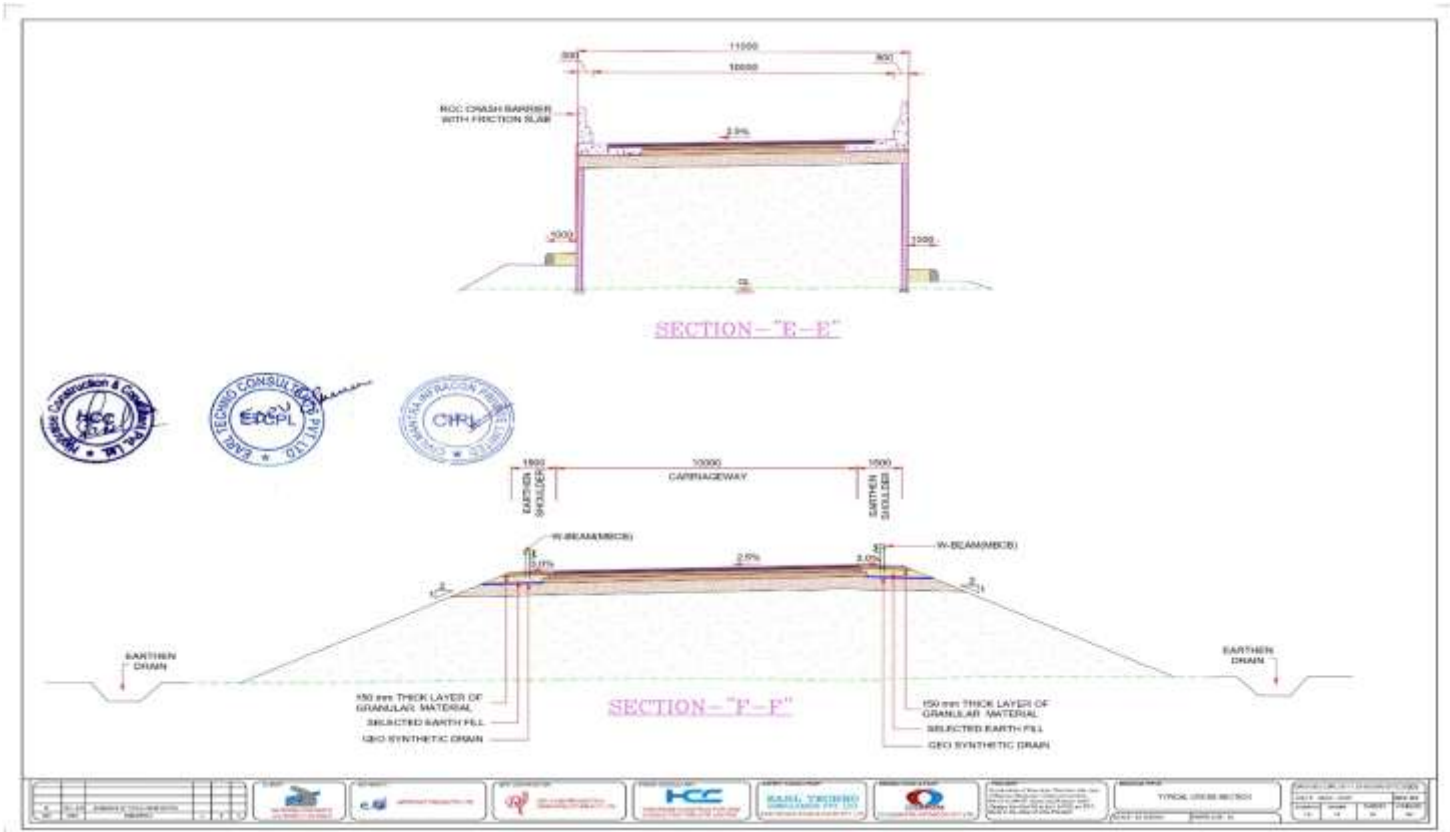
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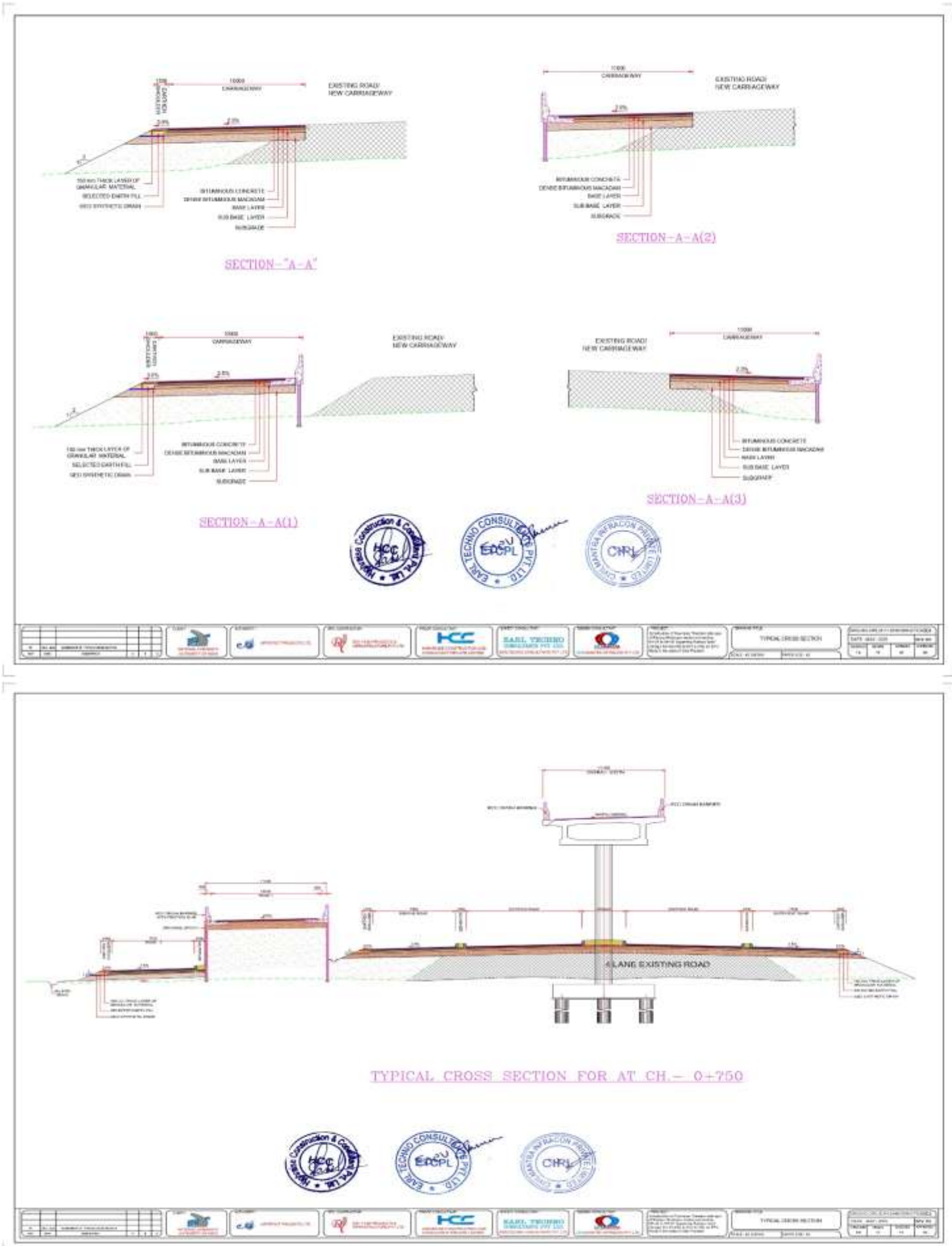
Sl. No.	Description	Chainage		Side	Factor	Remarks		Status of work
		From	To					
1	MCW	00+000	0+950	RHS	1	CA Length	FROM RUDRAPUR TO MORADABAD (MCW)	Work to be done
2	MCW	0+950	1+200	RHS	1	CA Length	FROM RUDRAPUR TO	BC Completed

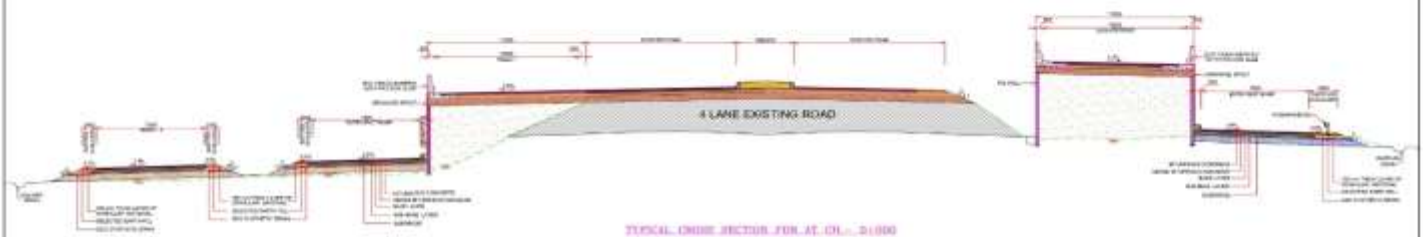
							MORADABAD (MCW)	
3	Road -01	00+000	00+086	LHS	1	Modified Length	Up Ramp	Work to be done
4	Road -01	00+086	00+194	LHS	1	Modified Length	Up Ramp	Upto RE Wall Emb layers
5	Road -01	00+194	00+645	LHS	1	Modified Length	Up Ramp	Upto RE Wall Emb layers
6	Road -02	00+000	00+280	LHS	1	COS Length	Up Ramp	DBM Completed
7	Road -02	00+280	00+412	LHS	1	COS Length	Up Ramp	Work to be done
8	Ramp	00+000	00+750	LHS	2	Modified Length		DBM Completed
9	Ramp	00+750	00+810	LHS	2	Modified Length		WMM Completed
10	Ramp	00+000	00+500	RHS	2	Modified Length		Work to be done
11	Ramp	00+500	00+810	RHS	2	Modified Length		DBM Completed

Note:

1. The above lengths of loops/ramps/slip roads are minimum and likely to get changed as per site/design requirement; Any change as per site requirement may not constitute change of scope, save and except any variations in the design length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.
2. Any structure falling within Ramp/ Loop shall be constructed as per schedule B.
3. Any structure (culvert/bridge) identified along the above connecting road, shall be widened/retained/reconstructed as per its structural condition as per schedule D in consultation with Authority/NHAI.
4. Loops/Ramps shall be designed as per IRC: SP:84-2019 within available ROW.
5. Acceleration and Deceleration Lane as per IRC: SP 84-2019.





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B - 60

INTERCHANGE 1				
TCS SCHEDULE FOR ROAD-1				
S.NO.	CHAINAGE		LENGTH (m)	TCS TYPE
	FROM	TO		
1	0	100	100	A-A(2)
2	100	400	300	E-E
3	400	645	245	A-A
6	TOTAL (m)		645	
TCS SCHEDULE FOR ROAD-2				
S.NO.	CHAINAGE		LENGTH (m)	TCS TYPE
	FROM	TO		
1	0	75	75	A-A
2	75	280	205	F-F
4	280	412	132	A-A(2)
	TOTAL (m)		412	



Interchange-2

Sl. No.	Description	Chainage		Side	Direction	Status of work
		From	To			
1	Road-01	00+000	00+761	Loop	ROAD-1 (FROM RAMPUR TO MORADABAD)	Subgrade upto 0+000 to 0+230
2	Road-02	00+000	00+883	Loop	ROAD-2 (FROM MORADABAD TO RAMPUR)	Work to be Done
3	Road-03	00+000	00+883	Loop	ROAD-3 (FROM MORADABAD TO RUDRAPUR)	Work to be Done
4	Road-04	00+000	00+933	Loop	ROAD-4 (FROM BAREILY TO MORADABAD)	Work to be Done
5	Road No-5	00+000	360		Koyali Village approaches Road	Upto WMM Completed

Note:

1. The above lengths of loops/ramps/slip roads are minimum and likely to get changed as per site/design requirement; any change as per site requirement may not constitute change of scope, save and except any variations in the design length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.
2. Any structure falling within Ramp/ Loop shall be constructed as per schedule B.
3. Any structure (culvert/bridge) identified along the above connecting road, shall be widened/retained/reconstructed as per its structural condition as per schedule D in consultation with Authority/NHAI.
4. Loops/Ramps shall be designed as per Manual within available ROW.
5. Acceleration and Deacceleration Lane as per IRC: SP 84-2019.

1. ROAD EMBANKMENT AND CUT SECTION

- i) Construction of new road embankment/cuttings shall conform to the Specifications and Standards given in section 4 of the IRC: SP: 84-2019 and the specified cross-sectional details. Notwithstanding anything to the contrary contained in this Agreement or IRC: SP: 84-2019, the proposed profile of the project highway as indicated in the Annex-III of Schedule A shall be treated as an approximate assessment. Based on site/design requirement specified in Schedule-D, the Contractor shall design the alignment plans and profiles of the project highway with approval from the Authority's Engineer within the available Right of Way.

- ii) Raising of the existing road:

Proposed Alignment is Green field Alignment.

- iii) Reinforced earth walls

RE wall should be provided at main carriageway and at interchange locations up to the full height as per site requirement.

- iv) Retaining Wall:

Retaining walls shall be provided as per details below:

Sl. No.	Start of Retaining Wall (Ch.)	End of Retaining Wall (Ch.)	Length (m)	Side
1	12+300	12+350	50	BOTH SIDE

6. PAVEMENT DESIGN

- i) Pavement design shall be carried out in accordance with the provision of IRC: 37-2018 and IRC: SP: 84-2019.

- ii) Type of pavement:

(A) Flexible Pavement -. Flexible Pavement shall be provided in entire project length, including service road/Slip Road and junctions as per IRC 37:2018. Project Highway, for Maximum 8% CBR and Minimum design traffic of 70 MSA in Main Carriageway. In case MSA is more than specified above at the time of traffic survey done by contractor at the time of design of project highway, then the higher traffic will be adopted for design.

The minimum thickness of Main Carriageway respective pavement layer shall not be less than as mentioned below:

For reconstruction/Widening stretches of main carriageway	
BC with Modified Bitumen	50mm
DBM	75mm
WMM	150mm
CTSB	200mm

Note:

- (1)** Contractor should conduct Axle Load survey & Falling weight Deflectometer (FWD) testing at the time of construction for assessing the structural strength of pavement. The overlay thicknesses & Reconstruction chainages as mentioned in TCS and Schedule above are the minimum values and if the requirement from the FWD analysis is coming out to be more than

contractor should provide the maximum of the two.

(2) For slip and service road, Maximum 8% CBR and minimum design traffic of 10 MSA taken.

7. ROADSIDE DRAINAGE

Drainage system including surface and sub surface drains for the Project Highway shall be provided as per section 6 of IRC: SP: 84-2019.

Note:

1. Contractor shall develop the full sustainable drainage plan for entire project as per the site requirements and according to the circular- NHAI/Policy Guidelines/ Miscellaneous/2020 no 18.48 dated the 8th July, 2020. Any increase shall not constitute a Change of Scope.
2. Contractor shall develop the full sustainable drainage plan for entire project as
3. Continuous kerb channel to be provided at shoulder edge at locations where embankment height is more than 3m (except RE wall location). Chute drain and energy dissipation chamber to be provided @20mc/c.

8. DESIGN OF STRUCTURES

i) General

- a. All bridges, culverts and structures shall be designed and constructed in accordance with Section 7 of the IRC: SP: 84-2014 and shall conform to the cross-sectional features specified in IRC: SP: 84-2014.
- b. Width of the carriageway of new bridges and structures of more than 60.0 m length shall be as follows: -

Sl. No	Design Chainage (km)	Proposal	Span Arrangement (Clear opening) (m)	Vertical Clearance (m)	Deck Configuration (m)	Skew Angle	Status of work
1	0+770	New construction	2X50	5.5	1X11	0	Sub Structure completed (Balance - Slab, wearing coat, Crash Barrier, approach slab)
2	8+700	New construction	1x40	5.5	2x11	18	Sub Structure completed & Girder casting completed (Balance - Slab, launching, Dirt Wall, Approach Slab, wearing coat)
3	12+810	New construction	1X35+4X30	5.5	2X11	0	Completed (Balance – Crash Barrier, Dirt Wall, Approach Slab, wearing coat)

- c. The following structures shall be provided with footpaths: -

RC C S.L.N o	Design Chainage (km)	Remarks	Status of work
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1	8+205	Minor Bridge	Completed
2	11+216	Minor Bridge	Completed (only Retaining wall & Crash Barrier, wearing coat Balance)
3	12+275	Minor Bridge cum Underpass	Sub Structure completed only Pier Cap P1 balance, Girder Completed

d. All bridge shall be high-level bridges.

e. The following structures shall be Designed to carry utility services specified in table below:

SI. No	Bridge at km (Design Chainage)	Utility service to be carried	Remarks
All bridges to be designed to carry utility services.			

f. Cross-section of the new culvert and bridges at deck level for the project highway shall conform to the typical cross-section given in the Schedule –B and in section 7 of the IRC: SP: 84-2014.

ii) Culverts

- a. Overall width of all culverts shall be equal to the roadway width of the approaches.
b. Reconstruction of existing culverts:

The existing Box culverts at the following locations shall be re-constructed as new culverts: (Refer section 7.3 (i) of the IRC: SP: 84:2014 and details provided as under)

Sl. No.	Design Chainage (km)	Structure Type	Span Length (m)	Remarks
Nil				

c. 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 Manual. Repairs and strengthening of existing structures where required shall be carried out.

The existing culverts at the following locations shall be widened as per para 7.3(iii) of the manual.

(1) Widening of existing Box culverts

Sl. No.	Existing Chainage	Design Chainage	Existing Structure		Proposed Structure Details		
			Type	Span (m)	Type	Span (m)	Remarks
Nil							

(2) Widening/Reconstruction of existing Pipe culverts

S.No	Existing Chainage	Design Chainage	Existing Structure		Proposed Structure Details	
			Span	Type	Span (m)	Remarks
Nil						

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

LIST OF CULVERTS FOR CROSS DRAINAGE

12.

Annex-1 Schedule-B

Sl. No.	Design Chainage	Type of Structure	Span Arrangements	Status of Work
1	01+280	Box Culvert	1 x 3 x 3	Completed
2	01+600	Box Culvert	1 x 3 x 3	Completed
3	01+874	Box Culvert	1 x 4 x 4	Completed
4	02+510	Box Culvert	1 x 3 x 3	Completed
5	02+950	Box Culvert	1 x 3 x 3	Completed
6	03+160	Box Culvert	1 x 3 x 3	Completed
7	04+050	Box Culvert	1 x 3 x 3	Completed
8	04+470	Box Culvert	1 x 3 x 3	Completed
9	04+900	Box Culvert	1 x 3 x 3	Completed
10	05+200	Box Culvert	1 x 3 x 3	Completed
11	06+040	Box Culvert	1 x 3 x 3	Completed
12	07+040	Box Culvert	1 x 3 x 3	Completed
13	07+400	Box Culvert	1 x 3 x 3	Completed
14	10+400	Box Culvert	1 x 3 x 3	Completed (Balance – U-Through & Crash Barrier)
15	11+720	Box Culvert	1 x 3 x 3	Completed (Balance – U-Through & Crash Barrier)
16	13+400	Box Culvert	1 x 3 x 3	Completed (Balance – U-Through & Crash Barrier)

List of Culvert for Interchange					
(0+250 to 1+200)					
Sl. No.	Design Chainage	Type of Structure	Span Arrangements	Remarks	Status of work
1	00+250	Pipe	1 x 1.2	Road 2	Completed
2	00+585	Pipe	1 x 1.2	Road 2	Work to be done
3	00+915	Pipe	1 x 1.2	MCW	Completed
(12+300 to 13+700)					

Sl. No.	Design Chainage	Type of Structure	Span Arrangements	Remarks	
1	00+460	Pipe	1X1.2	Road-1	Completed
2	00+280	Pipe	1X1.2	Road-2	Completed
3	00+510	Pipe	1X1.2	Road-3	Completed (Balance – One side headwall)
5	00+300	Pipe	1X1.2	Rampur Main city Road	Work to b done
6	00+542	Pipe	1X1.2	Rampur Main city Road	Completed

Note:

1. Vertical height to be ascertained as per site condition.
 2. Span mentioned as clear span.
 3. Overall width of all culverts shall be minimum to the roadway width. Where ever Service/Slip/Connecting roads are proposed, the width of the culvert shall be planned beyond the Service/Slip/Connecting roads so as to ensure proper drainage of storm water outside ROW.
 4. The Number of culverts mentioned above is minimum, any increase at site will not be considered as change of scope.
 5. Locations of the above culverts are indicative. Exact location of these culverts shall be decided in consultation with AE.
 6. Vent way/Span arrangement is minimum specified. The actual vent way/span arrangements of culverts shall be determined on the basis of detailed investigations by the Concessionaire in accordance with the Specifications and Standards. Any variations in vent way/span arrangements specified above shall not constitute a Change of Scope.
- e. Repairs/replacement so Frailing/parapets, flooring and protection works of the existing culverts shall be under taken as follows:

Sl.No.	Design Chainage	TYPE of Structure	Span Arrangement and Total Ventway	Remark
NIL				

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

iii) Bridges**a. Existing bridges to be Re-constructed/widened**

- (i) The existing bridges at the following locations shall be re-constructed as New Structures. GADs for the new bridges are attached in drawing folder.

Major Bridges

Sl. No.	Design Chainage (km)	Side (LHS/RHS/Both)	Structure Type	Span Length (m)	Total Width (m)	Type of cross section
Nil						

Minor Bridge

Sl. No.	Design Chainage (km)	Side (LHS/RHS/Both)	Structure Type	Span Length (m)	Total Width (m)	Remarks
Nil						

(ii) The following narrow bridges shall be widened.

Major Bridges

Sl. No.	Design Chainage (km)	Side (LHS/RHS/Both)	Structure Type	Span Length (m)	Total Width (m)	Remarks
Nil						

Minor Bridges

Sl. No.	Design Chainage (km)	Side (LHS/RHS/Both)	Structure Type	Span Length (m)	Total Width (m)	Remarks
Nil.						

b. Additional New Bridges

New bridges at the following locations on the project Highway shall be constructed. GAD of the new bridges is attached in the drawing folder.

MAJOR BRIDGE

Sl. No.	Design Chainage (km)	Span Arrangement c/c Expansion in perpendicular direction (m)	Type of Structure	Deck Configuration (m)	Status of Work
1	3+550	10X33	PSC I GIRDER	2x12.5	Sub Structure completed, Slab A1 to P3 Completed, only 4 girder to launch (Balance - P3 to A2 Slab, Wearing

Construction of Four-lane "Western side spur of Rampur - Rudrapur section connecting NH-24 to NH-87 bypassing Rampur town" (Design Km 00+000 to Design Km 13+700) on EPC Mode under Bharatmala Pariyojna in the state of Uttar Pradesh.

					Coat, Crash Barrier, Dirt Wall, Approach Slab)
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Note:

- i) Proposed structure length and span arrangement is tentative; same shall be finalized in consultation with Authority Engineer /NHAI. However, total length of structure mentioned above is minimum. Any increase in structure length and change in span arrangement shall not be considered as change of scope.
- ii) The length of Structure and bridges specified hear in above shall be treated as an approximate assessment. The actual length as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the specifications and Standards. Any variation in the length specified in the Schedule-B shall not constitute a change of scope.
- iii) No. of expansion joints shall be reduced by provision of continuous spans, as directed by NHAI. It shall also be ensured that distance between two consecutive expansions joints shall not be less than 100m.
- iv) All the structures shall be designed for special vehicle loading.
- v) The entire cross section elements shall be accommodated in the available ROW,if required Gap between new & Old bridge may be kept less than or equal to 1.0 m instead to 2.5 m specified in IRC:5:2015.

Minor Bridges (OVER RIVERS, STREAMS, NALLAS)

Sl. No.	Design Chainage (km)	Span Arrangement c/c Expansion/clear opening in perpendicular direction (m)	Type of Structure	Deck Configuration (m)	Status of Work
1	8+205	1X10	RCC BOX	2X12.5	Completed (Balance – Crash Barrier & Wearing Coat)
2	11+216	1X20	RCC I Girder	2X12.5	Completed (Balance - Retaining wall & Crash Barrier, wearing coat Balance)

MINOR BRIDGE CUM UNDERPASS

Sl. No.	Design Chainage (km)	Span Arrangement c/c Expansion/clear opening in perpendicular direction (m)	Deck Configuration (m)	Status of Work
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1	12+275	2x25.00	2X12.5	Sub Structure completed (Balance –Pier Cap P1, Slab A1A2 Wearing Coat, Crash Barrier & Dirt Wall, Retaining Wall A2 Side)
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Note:

- i) Proposed structure length and span arrangement is tentative; same shall be finalized in consultation with Authority Engineer /NHAI. However, total length of structure mentioned above is minimum. Any increase in structure length and change in span arrangement .Shall not be considered as change of scope.
- ii) The length of Structure and bridges specified hear in above shall be treated as an approximate assessment. The actual length as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the specifications and Standards. Any variation in the length specified in the Schedule-B shall not constitute a change of scope.
- iii) All the structures shall be designed for special vehicle loading.

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

Sl.No	Location (Km)	Remarks
NIL		

- d. Repairs/replacements of railing/parapets of the existing bridges shall be undertaken as follows:

Major Bridge-

Sl. No.	Design Chainage (km)	Side (LHS/RHS /Both)	Span Length (m)	Total Width (m)	Details of Rehabilitation*	Details of Repair*
Nil.						

Minor Bridge

Sl. No.	Design Chainage (km)	Side (LHS / RHS/Both)	Span Length (m)	Total Width (m)	Details of Rehabilitation *	Details of Repair
Nil.						

- e. Drainage system for bridge decks

An effective drainage system for bridge decks shall be provided as specified in the Manual.

- f. Structures in marine environment

-NA-

iv) Railway Over bridges (ROBs):-

- Design, construction and detailing of ROB/RUB shall be as specified in the Manual. (Refer para 7.18 of manual).
- Railway over- bridges

Railway over-bridges (ROBs) shall be provided at the following Railway line crossings: -

Sl. No.	Chainage (Km)	Type of Structure	Span Arrangement c/c Expansion (m)	Total length C/C of Exp. Joint (m)	Deck Configuration (m)	Remarks (Skew Angle)
NIL						

Note:-

- (1) ROB shall be designed, constructed and maintained as per requirements of Railway Authorities.
- (2) The ROB shall be constructed and maintained by the concessionaire under supervision of the Railway & Authority.
- (3) All Expenditures related to construction, maintenance and supervision of ROB (except P & E Charges) shall be borne by concessionaire.
- (4) The cross section of new construction of 4-lane ROB is attached in drawing folder.

c. Railway under-bridges (RUBs)

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

Sl. No	Location of Level crossing (Chainage km)	Number and length of span (m)
NIL.		

v) Grade separated structures

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 3. (ix) of this Schedule –B.

vi) 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. Bridge

Major Bridge

Sl. No.	Design Chainage (km)	Side (LHS/RHS /Both)	Span Length (m)	Total Width (m)	Details of Rehabilitation*	Details of Repair*
Nil						

Minor Bridges

Sl. No.	Design Chainage	Side (LHS)	Span Length	Total Width	Details of Rehabilitation	Details of Repair
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	e (km)	/ RHS/Both)	(m)	h (m)	*	
Nil						

*In addition to above repair/replacement work, any changes cannot be treated as change of scope.

b. ROB/RUB

SI. No	Location (Km)	Nature and extent of repairs/strengthening to be carried out
NIL		

c. Overpasses/Underpasses and other structures

SI. No	Location (Km)	Nature and extent of repairs/strengthening to be Carried out
NIL		

4. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

- i) Traffic control devices and road safety works shall be provided in accordance with the Manual.

Traffic Signs: Traffic Sign include road side signs, overhead signs, and curb mounted signs, along the entire project highway.

Pavement Marking: Pavement marking shall cover road marking for the entire project highway.

Safety Barrier:-

- ii) Specifications of the reflective sheeting:-

Retro reflective sheeting should be of high intensity grade with encapsulated lens or micro prismatic retro reflective element in accordance with ASTM Standard D 4956-04.

5. ROADSIDE FURNITURE

- i) Road side furniture shall be provided in accordance with the provisions of the Manual.

- ii) Overhead traffic signs: location and size:

- Full width overhead signs: Full width Overhead signs shall be provided as suggested in IRC SP: 84-2019.
- Cantilever Overhead signs: Cantilever Overhead signs shall be provided as suggested in IRC SP: 84-2019.
- Delineators: Delineators for the entire Project Highway at the locations as provided as suggested in IRC SP: 84-2019.
- MS Railing: MS Railing for separation of main carriageway and the service road along

the urban sections and at all the locations provided as suggested in IRC SP: 84-2019.

Note: - The numbers and locations of Traffic Signages Show in Signage plan as indicated in Annexure-III of schedule-A are tentative and minimum specified. The actual number and location of Traffic Signages shall be determined by the Contractor in accordance with the IRC: SP: 84-2019 requirements with approval from the Authority's Engineer. Any increase in the number specified in this Clause of Schedule-B shall not constitute a Change of Scope.

6. COMPULSORY AFFORESTATION

The number of Trees which are required to be planted, by the contractor as compensatory afforestation should be as per Forest Conservation Act, twice the number of trees to be cut and in accordance with IRC: SP:84-2019 keeping in view IRC: SP:21.

7. HAZARDOUS LOCATIONS

At hazardous locations, safety barriers and other safety measures shall also be provided in accordance with the Manual IRC SP 84:2019 and other IRC codes.

8. SPECIAL REQUIREMENTS FOR HILL ROADS

The project road is passing through Plain terrain therefore special requirement for hill roads shall not require.

9. CHANGE OF SCOPE

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

10. Rain Water Harvesting Structure

Rain Water harvesting pit shall be provided as per specifications given in schedule C and Schedule D

11. Utility Shifting

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

Utility Details

The details of the utilities are as follows

The site includes the following electrical utilities:-

S. N	Chainage No.	33 KV Crossin g (Nos)	11 KV Crossin g (Nos.)	11 KV Crossin g (Nos.)	LT Crossin g (Nos)	33 KV Line (MTR)	11 KV Line (MTR)	LT Line (MTR)	Transforme r Shifting
		ROW 60 M	ROW 60 M	ROW 100 M	ROW 60 M				
1	4+500				1				
2	4+750 to 4+900						250		
3	4+900							60	
7	7+300 to 7+450								1
10	7+950						70		
11	8+050								1
13	8+750 to 8+850						150		1
15	10+100		1				150		
17	11+100		1				100		
TOTAL		0	2	0	1	0	720	60	3

Note I:-

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

B. The supervision charges at the rates/charges applicable of the Utility owning Department shall be paid directly by the Authority to the Utility owning Department as and when Concessionaire furnished demand of Utility Owning Department along with a copy of estimated cost given by the latter.

C. The dismantled material/scrap of existing Utility to be shifted/dismantled shall belong to the Concessionaire who would be free to dispose-off the dismantled material as deemed fit by them unless the Concessionaire is required to deposit the dismantled material to Utility Owning Department as per the norms and practice and, in that case the amount of credit for dismantled material may be availed by the Concessionaire as per the estimate agreed between them.

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

Note II: - Copy of Utility shifting plans enclosed.

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. Road side Furniture;
- b. Traffic Signs;
- c. Street lighting;
- d. Pedestrian facilities;
- e. Landscaping and Tree Plantation;
- f. Operation & Maintenance center
- g. Traffic Safety Device
- h. Utility Pipe Ducts
- i. Rain Water Harvesting

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

Annex – I
(Schedule-
C)

1. Project Facilities Project Facilities for Four –Laning with Paved shoulder

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

- a. Roadside Furniture;
 - b. Traffic Signs
 - c. Street lighting;
 - d. Pedestrian facilities;
 - e. Landscaping and Tree Plantation;
 - f. Operation & Maintenance center
 - g. Traffic Safety Device
 - h. Utility Pipe Ducts
 - i. Rain Water Harvesting
- 2. Description of Project Facilities for four laning.**

(a) Roadside Furniture:

- (i) Road side furniture shall be provided in accordance with the provisions of the Manual.
- (ii) Crash Barriers :-

Thrie Beam Steel Barriers

Thrie beam metal crash barriers shall be provided in entire length on outer side earthen shoulder of each main carriageway and Loops/ Ramps of interchanges as per TCS referred in schedule-B but excluding stretches covered by bridges and RE wall structures, where concrete barriers to be provided.

W-Beam Crash Barriers

W-Beam crash barriers shall be provided in entire length at both edge of median as per TCS referred in schedule-B but excluding stretches covered by bridges/structures, where concrete barriers to be provided.

Concrete barriers shall be provided on bridges/structures, RE Walls/ retaining walls as specified in Schedule B and Schedule D.

- (iii) Boundary Wall :-

RCC boundary wall minimum 1.5m height above ground level shall be provided along the entire length on either side (including transverse requirements at structure locations) as per the

typical drawing enclosed as **Appendix-C1** of this schedule and Schedule D.

(b) Traffic Signs:

The Traffic signs including road side sign and chevron sign along the project highway. These shall be provided as per guidelines given in IRC: 67- 2012 and section 800 of MoRTH specifications.

i. Overhead Traffic Sign

Overhead traffic Signs shall be provided as per actual site requirements.

ii. Pavement Markings: Pavement markings shall cover the entire project highway and will be provided as per guideline of IRC: 35-2015 and section 800 of MoRTH specifications.

iii. LED Traffic Beacons (Solar Blinkers 24hrs): These shall be provided on the entire project Highway near pedestrian crossings, public gathering places (Educational Institutions, Hospitals, Worship places etc.) and cross roads at Major and Minor Junctions on.

iv. Delineators and Studs: Studs (100mm x 100mm) with reflective panels of dual prismatic cube capable of providing total reflection of light entering the lens face for lane marking and delineators for night time visibility shall be provided for the entire project Highway as per manual.

(c) Street Lighting:

Street Street lighting on the Project Highway shall be in accordance with IRC SP 84-2019 Manual & subjected to minimum requirement as mentioned below (Min 40 Lux to be maintained)

(i) Lighting shall be provided at following locations subjected to minimum requirement:-

a.) Interchanges/Flyovers/Underpass/Over passes/ Grade Separator & approaches including service road/slip road areas.

b.) Traffic aid posts, vehicle rescue posts, medical aid posts and all other facility & services buildings.

c.) Yellow flashing lights to alert drivers.

The lighting fittings (with LED features) shall be powered by solar system with back up facilities (power and battery both) at all locations and as per manual recommended in Schedule D.

(ii) Solar lights blinkers shall be provided at major & minor junctions etc.

(iii) High Mast Lighting shall be provided at all Major Junctions (Interchange) locations

Note:

- (i) The Contractor shall provide lighting at specified locations of the project highway, using appropriate system and source of electric power as per the requirements.
- (ii) The Contractor shall make suitable arrangements for procuring power supply to ensure uninterrupted lighting during night and when visibility is low, including provision of DG sets as standby arrangements.
- (iii) The Contractor shall bear all costs of running and operation cost of all lighting, including cost of energy consumption.

(d) Pedestrian Facilities:

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

(e) Landscaping and Tree Plantation:

Landscaping and Tree Plantation shall be done in accordance with section IRC SP: 21-2009 and as per directed by Authority Engineer.

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

- Grade Separated intersections
- Entry and Exit ramp
- At grade islands of intersection locations

S No	Types of Plantation	Location (Km)	Remarks
1	Shrubs	In Median Except Structures	Ornamental type plantation shall be provided
2	Land Scaping	All Interchanges/Service Areas/Toll Plazas/O & M Centers	Ornamental type plantation shall be provided
3	Avenue Plantation	Available Open land with in ROW	As per Manual IRC:SP 84-2019 and as per IRC SP: 21-2009.

(f) Operation & Maintenance center:

O&M Centre shall be provided at Toll Plaza in accordance with Concession Agreement and Schedule-D.

(g) Traffic Safety Devices

Traffic Control Devices, Road Safety Devices, Road side and Median safety barriers shall be provided / installed as per Schedule-D.

(h) Utility Pipe ducts

Utility pipe ducts in C.C. Pipe – 300mm @ 500.00m c/c for rural & urban length of project road across road with proper inlet and chamber for crossing service lines such as irrigation pipe lines and cables. In urban areas the ducts shall be constructed along the project road for linear underground utility lines. The ducts shall be laid at a suitable depth as approved by Authority Engineer.

(i) Rain Water Harvesting

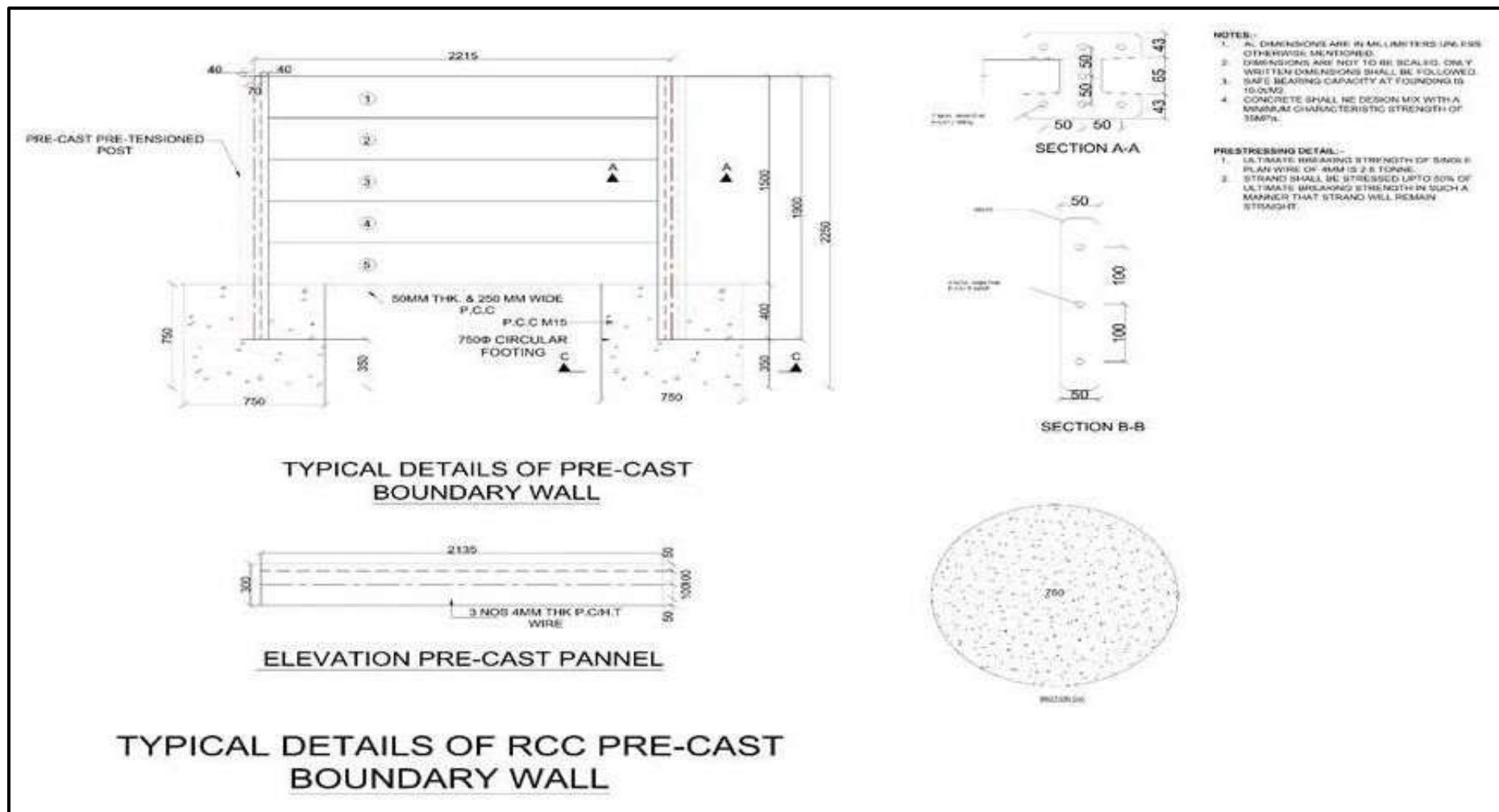
The provision of rain water harvesting shall be provided at every 500m in the entire project length and shall be executed in accordance with following specifications:

Constructing rain water harvesting recharge trench cum recharge shaft / well including grating passage joining storm water drain and trench having brick walls, RCC cover slab and filled with layers of filter media (size 75 mm to 100 mm), grating having brick walls and CC 1:2:4 base and PVC pipe shaft packed with gravel, provided with wire screen and bottom plug complete as per Drawing, direction of the Engineer and MORT&H Specifications sections 300, 1000, 1300, 1500, 1600 & 1700.

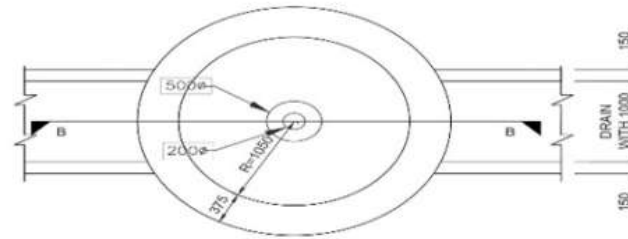
(Dimension of rain water harvesting pit 6.5 m depth, 2.10 meter inner dia, wall width 375 mm and top slab thickness 150 mm)

Typical Drawing of Rainwater Harvesting structure is attached as **Appendix-C2**.

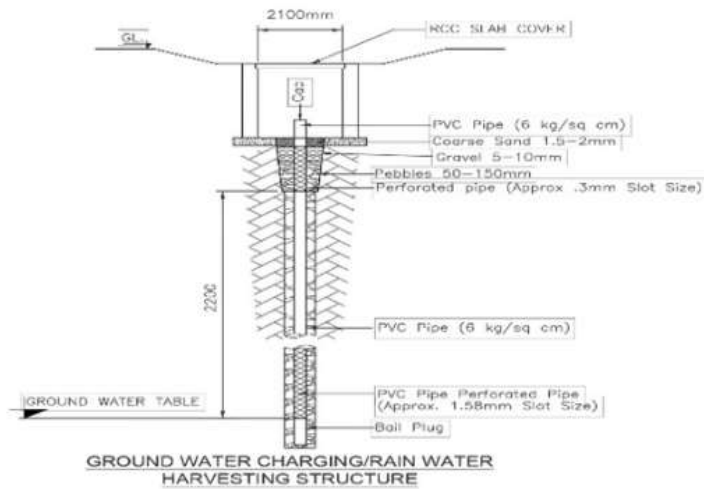
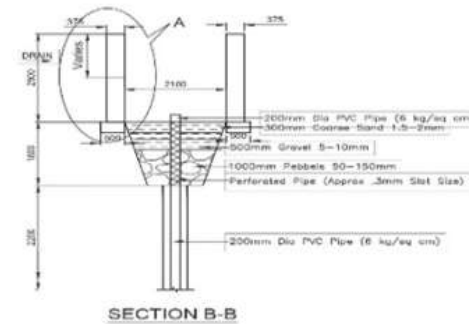
Appendix – C-1



Appendix – C-2



PLAN

GROUND WATER CHARGING/RAIN WATER
HARVESTING STRUCTURE

SECTION B-B

NOTES:-

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.
2. THE EXACT DISTANCE OF RAIN WATER HARVESTING PIT FROM TOE SHALL BE DECIDED AS PER SITE CONDITIONS.

TYPICAL DETAILS OF
RAIN WATER HARVESTING STRUCTURE

SCHEDULE – D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1 Four-Laning

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

2 Design Standards

The Project Highway including project facilities shall conform to design requirements set out in Manual of specifications and standards for 4-Laning of Highways, referred to herein as the Manual IRC: SP: 84-2019.

Annex - I

(Schedule-D)

SPECIFICATIONS AND STANDARDS FOR CONSTRUCTION**1 Specifications and Standards**

- (i) Subject to the provisions of Paragraph 2 of this Annex-I, Four-Lanning of the Project Highway shall conform to the Manual of Specifications and Standards for Four Laning of Highways through IRC: SP: 84-2019 (published by Indian Roads Congress), with all amendments and additions up to Bid date (Referred to as “Manual” in this Schedule) and MORTH Specifications for Road and Bridge Works (5th revision). Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority Engineer.
- (ii) As regards, the work of utility shifting, the relevant specifications, relevant rules, regulations and acts of Utility Owning Department/Agencies shall be applicable.

2 Deviations from the Manual

2.1 The terms “Concessionaire”, Authority 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 aforesaid Manual, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:

Sl. No.	Clause Referred in Manual	Provision as per Manual	Modified Provision
1	2.12.2	Service Road/Slip Road	Width of Service Road/Slip Road shall be adopted As Specified in Schedule 'B'
2	2.17	Typical Cross- Sections	Typical cross section shall be adopted As Specified in Schedule 'B'
3	7.3	Overall Width of structures	The overall deck configuration of all structures shall be as per schedule –B and all rail over bridge shall be as per GAD approved by railway authority
4	2.5	Median Width	As per TCS Schedule described in Schedule “B” (TCS).
5	2.6.1	Width of Shoulder	Width of Shoulder shall be adopted As Specified in Schedule 'B'.
6	2.10	Lateral and Vertical Clearance at Underpasses	Lateral and Vertical Clearance at Underpasses shall be adopted As Specified in Schedule 'B'.

Schedule - H

(See Clauses 10.1 (iv) and 19.3)

Contract Price Weightages

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

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

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
Road works including culverts, Widening and repair of culverts	64.20%	A - Widening & Strengthening of existing Road-(2 Lane)	
		1. Earthwork up to top of Embankment	0.00%
		2. Sub Grade	0.00%
		3. Sub Base course	0.00%
		4. Non-Bituminous Base Course	0.00%
		5. Bituminous Base course	0.00%
		6. Wearing Coat	0.00%
		7. Widening of Culverts	0.00%
		B1 - Reconstruction/ New realignment/ bypass (Flexible pavement)	
		1. Earthwork up to top of the Embankment	20.89%
		2. Sub-Grade	3.85%
		3. Sub Base course	9.77%
		4. Non-Bituminous Base Course	7.57%
		5. Bituminous Base course	19.10%
		6. Wearing Coat	27.21%
		B.2-Reconstruction/ New realignment/ bypass (Rigid Pavement)	
		(1) Earthwork up to top of the Embankment	0.00%
		(2) Sub-Grade	0.00%
		(3) Sub-base Course	0.00%
		(4) Dry Lean Concrete (DLC) Course	0.00%
		(5) Pavement Quality Control (PQC) Course	0.00%
		C.1-New Service Road- (Flexible Pavement)	
		1. Earthwork up to top of the Embankment	0.00%
		2. Sub-Grade	0.19%
		3. Sub Base course	3.66%
		4. Non-Bituminous Base Course	3.12%
		5. Bituminous Base course	0.28%
		6. Wearing Coat	4.23%
		C.2 - Reconstruction / New Slip Road (Rigid Pavement)	
		(1) Earthwork up to top of the Embankment	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		(2) Sub Base Course	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%
		(4) Pavement Quality Control (PQC) Course	0.00%
		D. Reconstruction and New culverts on existing road, realignments, bypass:	
		Culverts (length < 6m)	0.13%
		Road works including culverts	100.00%
Minor Bridges/ Underpasses/ Overpasses Works	3.94%	A1. Widening and repairs of minor bridges (length > 6m and <60 m)	
		Minor Bridges	
		1) Foundation: On completion of the foundation work of abutment & piers	0.00%
		2) Sub Structure: On completion of abutment & piers with abutment/pier cap	0.00%
		3) Super Structure: - On completion of the super structure in all respects including wearing coat, bearing expansion joints, hand rails, crash barriers, road signs & markings, tests on completion in all respect.	0.00%
		(4) Approaches: On completion of retaining walls, Reinforced Earth Wall/ stone pitching, protection works complete in all respect, tests on completion in all respect and fit for use.	0.00%
		A.2 – Reconstruction/New Minor Bridges (Length >6m and <60m)	
		(1) Foundation + Sub Structure: On completion of the foundation work of abutment & piers with abutment/pier cap	4.85%
		(2) Super Structure: - On completion of the super structure up to deck slab including bearings.	31.96%
		(3) Approaches: On completion of retaining walls, Reinforced Earth Wall/ stone pitching, protection works complete in all respect, tests on completion in all respect and fit for use.	1.37%
		(4) Guide bunds and River Training Works: On Completion of Guide Bunds and River Training Works complete in all respect.	0.00%
		B.1- Widening and repairs of Underpasses / Overpasses	
		(1) Repair of Underpasses / Overpasses	0.00%
		B.2.New Underpasses (VUP)	
		(1) Foundation: On completion of the foundation work of abutment & piers	0.70%
		(2) Sub Structure: On completion of abutment & piers with abutment/pier cap	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		(3) Super Structure: - On completion of the super structure up to deck slab including bearings.	46.41%
		(4) Miscellaneous Works: On completion of wearing coat, expansion joint, crash barrier, railings and any remaining work associated to bridge including test on bridge.	14.71%
		(5) Approaches: On completion of approaches including wing walls / Return walls, Retaining / Reinforced earth walls, RE/Embankment earth filling, stone pitching, protection works, complete in all respect and fit for use.	0.00%
		Minor Bridges/Underpasses/Overpasses	100.00%
Major Bridge (length > 60 m) works and ROB/RUB/elevated sections/flyovers including viaducts, if any	7.33%	A.1- Widening and repairs of Major Bridges	
		(1) Foundation:	0.00%
		i) Pile foundation	
		ii) Open foundation	
		(2) Sub-structure:	0.00%
		(3) Super-structure:	0.00%
		(4) Wearing Coat including expansion joints	0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
		(6) Wing walls/return walls up to top	0.00%
		(7) Guide bunds, River Training works etc.	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works for floor, embankment slope etc.)	0.00%
		A2. New Major Bridges	
		(1) Foundation:	0.00%
		i) Well foundation	
		ii) Pile foundation	
		iii) Open foundation	
		(2) Sub-structure:	0.00%
		(3) Super-structure including bearing	27.82%
		(4) Wearing Coat including expansion joints	8.80%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	6.40%
		(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%
		B1. Widening and repair of	

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		(a) ROB	
		(b) RUB	
		(1) Foundation	0.00%
		i) Pile foundation	
		ii) Open foundation	
		(2) Sub-structure	0.00%
		(3) Super-structure including bearings.	0.00%
		(4) Wearing Coat: a) in case of ROB wearing coat including expansion joints complete in all respect as specified b) In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
		(6) Wing walls/return walls	0.00%
		(7) Approaches: (including Retaining walls, stone pitching and protection works).	0.00%
		B2. New ROB/RUB	
		(a) ROB	
		(b) RUB	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearing)	0.00%
		(4) Wearing Coat: a) in case of ROB wearing coat including expansion joints complete in all respect as specified b) In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
		(6) Wing walls/return walls	0.00%
		(7) Approaches (including Retaining walls, stone pitching and protection works).	0.00%
		C.1.Widening and repair of Elevated Section/Flyovers/Grade Separators	
		(1) Foundation	0.00%
		i) Pile foundation	
		ii) Open foundation	
		(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 barrier, road markings etc.	0.00%
		(6) Wing walls/return walls	0.00%
		(7) Approaches: (including Retaining walls, stone pitching and protection works).	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		C2. New Elevated Section/Flyovers/Grade Separators	
		(1) Foundation	
		i) Well foundation	
		ii) Pile foundation	
		iii) Open foundation	0.00%
		(2) Sub-structure	0.85%
		(3) Super-structure (including bearing)	38.20%
		(4) Wearing Coat including expansion joints	12.04%
		(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	5.89%
		(6) Wing walls/return walls	0.00%
		(7) Approaches: (including Retaining walls, stone pitching and protection works).	0.00%
		Major Bridge (length > 60 m) works and ROB/RUB/elevated sections/flyovers including viaducts, if any	100.00%
Other works	24.53%	(1) Toll Plaza	0.00%
		(2) Road side drains	
		a) RCC Drain	0.00%
		b) Chute drain	5.76%
		c) Earthen drain	0.48%
		(3) Road signs boards, Road markings, Hazard Markers, Kerb, Km Stones, safety Devices, Road studs, Delineators, Footpath Tiles etc.	4.24%
		(4) overhead gantry mounted signs	0.00%
		(5) Project facilities	
		(a) Bus bays	0.00%
		(b) Truck lay byes	0.00%
		(c) Rest areas	0.00%
		(d) others	
		(d-1) Street Lighting	3.72%
		(d-2) Junction Improvement	3.59%
		(d-3) Utility ducts	0.00%
		(6) Dissipation Basin	3.38%
		(7) Rain water Harvesting	0.61%
		(8) Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROB's/ RUBs	0.00%
		a) Crash Barrier (THRIE & W type Metal Beam Crash Barrier)	17.40%
		b) Retaining Wall	0.76%
		c) RE Wall with friction slab crash barrier	59.61%
		d) Boundary Wall	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		e) Plantation	0.45%
		(9) Safety & Traffic Management during const.	0.00%
		Other works	100.00%
Shifting of Utility Services	0.00%	Shifting of Electrical & Water Supply Utilities	
		(i) Utility Shifting	0.00%
	100.000%	Shifting of Utility Services >>>	0.00%

1.3 Procedure of estimating the value of work done.

(i) Road works

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

Table 1.3. 1

Stage of Payment	Percentage – weightage	Payment Procedure
A - Widening & Strengthening of existing Road -(2 Lane)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length or 500m whichever is less.
1. Earthwork up to top of Embankment	0.00%	
2. Sub Grade	0.00%	
3. Sub Base course	0.00%	
4. Non-Bituminous Base Course	0.00%	
5. Bituminous Base course	0.00%	
6. Wearing Coat	0.00%	
7. Widening of Culverts	0.00%	Cost of completed culverts shall be determined pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of at least one culvert. 75% of the cost will be payable on completion of box/ abutments and slab/ pipe and head wall. Remaining 25% will become payable on completion of protection works including return/ wing walls and any other work associated with culverts.
B1 - Reconstruction/ New realignment/ bypass (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m length, whichever is less.
1. Earthwork up to top of the Embankment	20.89%	
2. Sub-Grade	3.85%	
3. Sub Base course	9.77%	
4. Non-Bituminous Base Course	7.57%	
5. Bituminous Base course	19.10%	
6. Wearing Coat	27.21%	
B.2- Reconstruction/ New realignment/ bypass (rigid pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on
1. Earthwork up to top of the embankment		

Stage of Payment	Percentage – weightage	Payment Procedure
2. Sub Grade		completion of a stage in full length or 500 m length, whichever is less.
3. Sub Base course		
4. Dry lean concrete (DLC) course		
5. Pavement quality control (PQC) course		
C.1-New Service Road- (Flexible Pavement)		
1. Earthwork up to top of the Embankment	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m length, whichever is less.
2. Sub-Grade	0.19%	
3. Sub Base course	3.66%	
4. Non-Bituminous Base Course	3.12%	
5. Bituminous Base course	0.28%	
6. Wearing Coat	4.23%	
C.2. – Reconstruction/New Slip Road (Rigid pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m length, whichever is less
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub Base Course	0.00%	
(3) Dry lean concrete (DLC) course	0.00%	
(4) Pavement quality concrete (PQC) course	0.00%	
D. New culverts		
Culverts (length < 6m)	0.13%	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 one culvert. 75% of the cost will be payable on completion of box/ abutments and slab/ pipe and head wall. Remaining 25% will become payable on completion of protection works including return/ wing walls and any other work associated with culverts.

Note- In case of CTB and AIL layer, this stage may be modified suitably to permit separate weightages for each of these layers.

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

Where P= Contract Price

L = Total length in km

Similarly, the rates per km for other 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.

(ii) Minor Bridges and Underpasses/Overpasses

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

Table 1.3. 2

Stage of Payment	Percentage – weightage	Payment Procedure
A.1. Widening and repair of minor bridges (length >6m and < 60m)		Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges.
(1) Foundation: On completion of the foundation work of abutments and piers	0.00%	i) Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least two foundations of each bridge. In case where load testing is specified for foundation, the trigger of first payment shall include load testing also.
(2) Sub structure:	0.00%	(ii) Substructure Payment shall be made on pro-rata basis on completion of stage i.e. completion of at least one sub-structure up to abutment/pier cap level of each bridge.
(3) Super-structure: On completion of the super-structure in all respects including wearing coat, bearing, expansion joints, hand rails, crash barrier, road signs & Markings, tests on completion etc. complete in all respect.	0.00%	(iii) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e., completion of super-structure of at least one span up to deck slab including bearing as specified in the column of "Stage of Payment" in this sub- clause.
(4) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.00%	Approaches: Payment shall be made on pro rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.
A.2.- New Minor bridges		
(1) Foundation+ Sub structure: On completion of the foundation work of abutments & piers	4.85%	(i) Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least two foundations of each bridge. In case where load testing is specified for foundation, the trigger of first payment shall include load testing also.
		(ii) Substructure Payment shall be made on pro-rata basis on completion of stage i.e. completion of at least one sub-structure up to abutment/pier cap level of each bridge.

Stage of Payment	Percentage – weightage	Payment Procedure
(2) Super-structure: On completion of the super-structure in all respects including wearing coat, bearing, expansion joints, hand rails, crash barrier, road signs & Markings, tests on completion etc. complete in all respect.	31.96%	(iii) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e., completion of super-structure of at least one span up to deck slab including bearing as specified in the column of "Stage of Payment" in this sub- clause. If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MORTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(3) Approaches:	1.37%	iii) 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.
(4) Guide Bunds: On completion of Guide Bunds and river training works complete in all respects	0.00%	iv) Guide Bunds and River Training Works: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bunds and River training Works in all respects as specified for each bridge.
B.1- Widening and repair of underpasses/overpasses		
(1) Repair of Underpasses	0.00%	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/overpasses. Payment shall be made on the completion of widening & repair works of an underpass / overpass.
B.2.- New Underpasses (LVUP)		Cost of each Underpass/Overpass shall be determined on pro rata basis with respect to the total linear length (m) of the Underpasses/Overpasses.
(1) Foundation: On completion of the foundation work including foundations of abutment & piers.	0.70%	(i) Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of foundation(s) of each underpass/overpass. In case where load testing is specified for foundation, the trigger of first payment shall include load testing also.
(2) Sub Structure:	0.00%	(ii) Sub-structure: Payment shall be made on pro-rata basis on completion of stage i.e. completion of at least one sub-structure up to abutment/ pier cap level of each bridge.

Stage of Payment	Percentage – weightage	Payment Procedure
(3) Super-structure: On completion of the super-structure up to deck slab	46.41%	iii) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure of at least one span up to deck slab including bearing as specified in the column of "Stage of Payment" in this sub-clause: If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MORTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Miscellaneous works:	14.71%	iv) Miscellaneous: Payments shall be made on prorata basis on completion of a stage i.e. completion of wearing coat, expansion joint, crash barrier, railing, protection works, drainage and any other remaining work associated to bridge including tests on bridge including tests on bridge for each bridge.
(5) Approaches: On completion of approaches including wing wall/ return wall, retaining wall/ Reinforced earth walls, stone pitching, protection works complete in all respect and fit for use.	0.00%	v) Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches including wing wall/ return wall, retaining walls, Reinforced Earth walls, stone pitching, protection works complete in all respect for each bridge

(iii) Major Bridge works, ROB/RUB and Structures

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

Table 1.3. 3

Stage of Payment	Percentage – weightage	Payment Procedure
A.1.-Widening/Repair and rehabilitation of Major Bridges		Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridges.
(1) Foundation:	0.00%	Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least one foundation of each of the major Bridge as specified
i) Pile foundation: (a) Piling On completion of pile upto bottom of pile cap (b) Pile Cap On completion of pile cap	0.00%	(i) Pile Foundation (a) Piling Payment of 70% shall be made on completion of piling up to bottom of pile cap for each pile on prorata basis. (b) Pile Cap: Payment of 30% on pro- rata basis shall be made on completion of pile cap.

Stage of Payment	Percentage – weightage	Payment Procedure
		In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
ii) Open foundation:		(ii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of at least one foundation.
(2) Sub-structure: On completion of abutments, piers up to the abutment/ pier cap	0.00%	Sub-structure: Payment against Sub-structure shall be made on pro- rata basis on completion of a stage i.e. completion of atleast one sub- structure of abutments/piers upto abutment/pier cap level of each of the major bridge.
(3) Super-structure: including bearings	0.00%	Super-structure: - Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure upto deck slab including bearings of at least one span as specified here in under: If pre-cast RCC/PSC/Steel girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MORTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints	0.00%	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete. In all respects as specified for each major bridge.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each major bridge.
(6) Wing walls/return walls up to top	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each major bridge.
(7) Guide bunds, River Training works etc.	0.00%	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified for each major bridge.
8) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth wall, stone pitching, protection works complete in all Respect and fit for use.	0.00%	Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified for each major bridge.
A.2. New Major Bridges		Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge.
(1) Foundation:	0.00%	Foundation: Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least one foundation of each of the major Bridge as specified
i) Well foundation:		i)Well foundation:

Stage of Payment	Percentage – weightage	Payment Procedure
(a) On completion of Cutting Edge+ Well Curb (b) Wellsteining On completion of well steining upto bottom of well cap. (c) On completion of bottom plug top plug (if provisioned as per design) + well cap		(a) Cutting Edge Well Curb: Payment of 10% shall be made on completion of a stage i.e. completion of cutting edge + well curb. (b) Well steining Payment of 65% shall be made on completion of well steining upto bottom of well cap. The payment stage shall be further sub-divided on pro-rata basis i.e. (i) on completion upto 10 m and (ii) on completion of each subsequent 5 m or part thereof. (c) Bottom plug top plug (if provisioned as per design) well cap: Payment of 25% shall be made on completion of a stage i.e. completion of bottom plug, back fill, top plug and well cap.
ii) Pile foundation: (a) Piling On completion of pile up to bottom of pile cap (b) Pile cap on completion of pile cap		(ii) Pile Foundation (a) Piling Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorata basis. (b) Pile Cap: Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
iii) Open foundation:		(ii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of at least one foundation.
(2) Sub-structure:	0.00%	(2) Sub-structure: Payment against Sub-structure shall be made on pro- rata basis on completion of a stage i.e. completion of at least one sub- structure of abutments/piers upto abutment/pier cap level of each of the major bridge.
(3) Super-structure: including bearings	27.82%	Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure upto deck slab including bearings of at least one span as specified here in under: If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MORTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon (For cable stayed bridge and suspension cable bridge, detailed payment stage may be included on case-to-case basis)
(4) Wearing Coat including expansion joints	8.80%	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each major bridge.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	6.40%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each major bridge.
(6) Wing walls/return walls upto top	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls

Stage of Payment	Percentage – weightage	Payment Procedure
		complete in all respects as specified for each major bridge.
(7) Guide bunds, River Training works etc.	0.00%	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified for each major bridge.
(8) Approaches: (including Retaining walls, stone pitching and protection works for floor, embankment slope etc.)	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified for each major bridge.
B.1.- Widening and repairs of		Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUBs.
(a) ROB		
(b) RUB		
(1) Foundation	0.00%	Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least one foundation of each of the ROB/RUB as specified as specified here under:
i) Pile foundation: (a) Piling On completion of pile up to bottom of pile cap (b) Pile cap on completion of pile cap		(ii) Pile Foundation (a) Piling Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorota basis. (b) Pile Cap: Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
ii) Open foundation:		(ii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of at least one foundation.
(2) Sub-structure	0.00%	Sub-structure: Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of at least one sub- structure of abutments/piers up to abutment/pier cap level of each of the ROB/RUB.
(3) Super-structure (including bearing)	0.00%	Payment shall be made on pro-rata basis on completion of a stage i.e. completion of superstructure up to deck slab including bearings of at least one span as specified here in under: If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cast of that element, as derived from MORTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints in case of ROB. In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%	Wearing Coat: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified for each of the ROB and

Stage of Payment	Percentage – weightage	Payment Procedure
		(b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified for each of the RUB
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each of the ROB/RUB.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each of the ROB/RUB.
(7) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth wall, stone pitching, protection works complete in all Respect and fit for use.	0.00%	Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified for each of the ROB/RUB.
B.2.- New (a) ROB (b) RUB		Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROBS/RUBs.
(1) Foundation	0.00%	Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least one foundation of each of the ROB/RUB as specified here in under
i) Well foundation: (a) On completion of Cutting Edge+ Well Curb (b) Wellsteining On completion of well steining upto bottom of well cap. (c) On completion of bottom plug top plug (if provisioned as per design) + well cap		i) Well foundation: (a) Cutting Edge Well Curb: Payment of 10% shall be made on completion of a stage i.e. completion of cutting edge + well curb. (b) Well steining Payment of 65% shall be made on completion of well steining upto bottom of well cap. The payment stage shall be further sub-divided on pro-rata basis i.e. (1) on completion upto 10 m and (ii) on completion of each subsequent 5 m or part thereof. (c) Bottom plug top plug (if provisioned as per design) well cap: Payment of 25% shall be made on completion of a stage i.e. completion of bottom plug, back fill, top plug and well cap.
ii) Pile foundation: (a) Piling On completion of pile up to bottom of pile cap (b) Pile cap on completion of pile cap		(ii) Pile Foundation (a) Piling Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorota basis. (b) Pile Cap: Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
iii) Open foundation:		(ii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of at least one foundation.
(2) Sub-structure	0.00%	Sub-structure: Payment against Sub-structure shall be made on pro- rata basis on completion of a stage i.e. completion of at least one sub- structure of

Stage of Payment	Percentage – weightage	Payment Procedure
		abutments/piers up to abutment/pier cap level of each of the ROB/RUB.
(3) Super-structure (including bearing)	0.00%	Super-structure: Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure up to deck slab including bearings of at least one span as specified here in under: If pre-cast girders/segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MORTH Data Book. Applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints in case of ROB. In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%	Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified for each of the ROB and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified for each of the RUB
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each of the ROB/RUB.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each of the ROB/RUB
(7) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth wall, stone pitching, protection works complete in all Respect and fit for use.	0.00%	Payments shall be made on completion of bath approaches of each ROB including stone pitching, protection works, etc. complete in all respects as specified here in under: If reinforced soil wall is used with facia panel/blocks, Interim payment shall be made 75% of the Cost of that element as derived from MORTH data Book. Applicable SOR of State PWD on Base Date with tender discount/premium applied thereon. Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures.
C.1- Widening and repairs of Elevated Section/Flyovers/Grade Separators		Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures.
(1) Foundation	0.00%	Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. Completion of at least one foundation of each of the structure as specified.
i) Pile foundation: (a) Piling On completion of pile up to bottom of pile cap (b) Pile cap on completion of pile cap		(i) Pile Foundation (c) Piling Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorota basis.

Stage of Payment	Percentage – weightage	Payment Procedure
		(d) Pile Cap: Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
ii) Open foundation:		(ii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of at least one foundation.
(2) Sub-structure	0.00%	Sub-structure: Payment against Sub-structure shall be made on pro- rata basis on completion of a stage i.e. Completion of at least one sub- structure of abutments/piers up to abutment/pier cap level of each of the structure.
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%	Super-structure: Payment shall be made on pro- rata bash on completion of a stage le. completion of super structure upto deck slab including bearings of at least one span as specified here in under: If pre-cast girders/ segments are used, Interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints	0.00%	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each of the structure.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each of the structure.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each of the structure.
(7) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth wall, stone pitching, protection works complete in all Respect and fit for use.	0.00%	Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects of each structure.
C.2- New Elevated Section/Flyovers/Grade Separators		Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures.
(1) Foundation		Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one foundation of each of the structure as specified
i) Well foundation: (a) On completion of Cutting Edge+ Well Curb		i) Well foundation: (a) Cutting Edge Well Curb: Payment of 10% shall be made on completion of a stage i.e. completion of cutting edge + well curb.

Stage of Payment	Percentage – weightage	Payment Procedure
(b)Wellsteining On completion of well steining upto bottom of well cap. (c)On completion of bottom plug top plug (if provisioned as per design) + well cap		(b)Well steining Payment of 65% shall be made on completion of well steining upto bottom of well cap. The payment stage shall be further sub-divided on pro-rata basis i.e. (1) on completion upto 10 m and (ii) on completion of each subsequent 5 m or part thereof. (c) Bottom plug top plug (if provisioned as per design) well cap: Payment of 25% shall be made on completion of a stage i.e. completion of bottom plug, back fill, top plug and well cap.
ii) Pile foundation: (a)Piling On completion of pile up to bottom of pile cap (b) Pile cap on completion of pile cap		(ii) Pile Foundation (e) Piling Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorota basis. (f) Pile Cap: Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
iii) Open foundation:	0.00%	(iii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of at least one foundation.
(2) Sub-structure	0.85%	Sub-structure: Payment against Sub- structure shall be made on pro- rata basis on completion of a stage 1.e. completion of atleast one sub- structure of abutments/piers upto abutment/pier cap level of each of the structure.
(3) Super-structure: including bearings	38.20%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure upto deck slab including bearings of at least one span as specified here in under: If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MORTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints	12.04%	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each of the structure.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	5.89%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each of the structure.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth wall, stone pitching, protection works complete in all Respect and fit for use.	0.00%	Payment shall be made on completion of both approaches including stone pitching, protection works etc. complete in all respects as specified here in under If reinforced soil wall is used with facia panel/blocks, interim payment shall be made

Stage of Payment	Percentage – weightage	Payment Procedure
		@75% of the cost of that element as derived from MORTH data Book. Applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.

(iv) Other Works.

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

Table 1.3. 4

Stage of Payment	Weightage	Payment Procedure
(1) Toll plaza	0.00%	Unit of measurement is each completed toll plaza. Payment for each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas as specified here in under
(a) DLC(LHS)		(a) DLC (LHS): Payment of 12.5% on pro-rata basis shall be made on completion of a stage i.e. completion of DLC on LHS.
(b) DLC (RHS)		(b) DLC (RHS): Payment of 12.5% on pro-rata basis shall be made on completion of a stage i.e. completion of DLC on LHS.
(c) PQC(LHS)		(c) PQC (LHS): Payment of 25% on pro-rata basis shall be made on completion of a stage i.e. completion of PQC on LHS.
(d) PQC(RHS)		(d) PQC (RHS): Payment of 25% on pro-rata basis shall be made on completion of a stage i.e. completion of PQC on RHS.
(e) Admin Building		(e) Admin Building: Payment of 10% on pro-rata basis shall be made on completion of a stage i.e. completion of Admin Building and miscellaneous works.
(f) Toll Booth, canopy, safety items and all other associated work		(f) Toll Booth, canopy, safety items and all other associated works: Payment of 15% on pro-rata basis shall be made on completion of a stage i.e. completion of Toll Booth, canopy, safety items and all other associated works.
(2) Road side drains		
a) RCC Drain	0.00%	Unit of measurement is linear length in meter Payment shall be made on pro rata basis on completion of a stage in a length of not less than 100 m on one side.
b) Chute Drain	5.76%	
c) Earthen Drain	0.48%	
(3) Road signs boards, Road markings, Hazard Markers, Kerb, Km Stones, safety Devices, Road studs, Delineators, Footpath Tiles etc.	4.24%	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 one Km on both sides.

Stage of Payment	Weightage	Payment Procedure
(4) Overhead gantry mounted signs	0.00%	Unit of measurement is each number. Payment shall be made on pro-rata basis on completion of each overhead gantry mounted sign
(5) Project Facilities		Unit of measurement is each number. Payment shall be made on pro rata basis for completed facilities.
a) Bus bays	0.00%	
b) Truck Lay bye	0.00%	
c) Rest areas	0.00%	
d) others		
(d-1) Street Lighting	3.72%	
(d-2) Junction Improvement	3.59%	
(d-3) Utility ducts	0.00%	
(6) Dissipation Basin	3.38%	
(7) Rain water Harvesting	0.61%	Unit of measurement is linear length in km. Payment shall be made on pro-rata basis on completion of 1 km.
(8) Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs		Unit of measurement is linear length in km. Payment shall be made on pro-rata basis on completion of a stage in a length or not less than 10% of the total length and 100 m whichever is less.
a) Crash Barrier (THRIE & W” type Metal Beam Crash Barrier)	17.40%	
b) Retaining Wall	0.76%	
c) RE Wall with friction slab crash barrier	59.61%	
d) Boundary Wall	0.00%	
e) Plantation	0.45%	
(9) Safety and traffic management during construction	0.00%	Payment shall be made on pro-rata basis every six months

(v) Shifting of Electrical & Water Supply Utilities

Procedure for estimating the value of other works done shall be as stated in table 1.3.5:

Table 1.3. 5

Stage of Payment	Weightage	Payment Procedure
(i) Utility Shifting	100.00%	Unit of measurement will linear length and payment to be made on pro-rata basis for shifted utility of at least 10% of total scope after submission of handing over certificate by Utility owning agency.