

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

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## **SCHEDULE – A**

*(See Clause 10.1)*

### **SITE OF THE PROJECT**

#### **1 The Site**

- 1.i Site of the Six Lane Project Highways shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.
- 1.ii The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.
- 1.iii An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on or attached to the Site shall be prepared jointly by the Authority Representative and the Concessionaire and such inventory shall form part of the memorandum referred to in Clause 10.3.1 of the Agreement.
- 1.iv Additional land required for Toll Plazas, Traffic Aid Posts, Medical Aid Posts and vehicle rescue posts or for construction of works specified in Change of Scope Order issued under Clause 16.2.3 of this agreement shall be acquired in accordance with the provisions of Clause 10.3.6 of this Agreement. Upon acquisition, such land shall form part of the Site and vest in the Authority.
- 1.v The chainages given in this document are in km unless otherwise specified, all other dimensions are in meters.
- 1.vi The status of the Environmental Clearances obtained or awaited is given in Annex-IV.

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## Annex - I

(Schedule-A)

### SITE

#### 1. The Site

The site of the six-lane divided Greenfield Project Highway forms a section of the Indore Eastern Bypass. Package-3 of the project commences at design km 116+000 near Village Ambachandan and ends at design km 139+630 near Village Nanded. The project road primarily lies on a greenfield alignment along the eastern side of Indore city. Presently, an existing road and associated structures are present along NH-52 from design km 30+400 to km 37+700, while the remaining portion of the alignment passes through undeveloped greenfield areas surrounding Indore. The details of the land, carriageway, and stretches comprising the project site are described below. An Index Map of the Project Highway is provided in **Appendix A-I**.

#### 2. Land

The Site of the Project Highway comprises the land (existing ROW) as described below.

S. No	Ex Chainage (NK 52)		Right of Way (m)	Remarks
	From	To		
1	31500	39+500	60	

#### 3. Carriageway

The project follows a greenfield alignment from design km 116+000 to km 139+600, after which it traverses along the existing NH-52 from existing km 30+400 to km 37+700.

#### 4. Major Bridges

The site includes the following Major Bridges:

S. No.	Chainage (km)	Type of Structure			No of Spans with Span Length (m)	Total Width (m)
		Foundation	Sub Structure	Super Structure		
Nil						

#### 5. Road Over Bridges (ROB)/ ROAD Under Bridges (RUB)

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

S. No.	Chainage (km)	Type of Structure		No. of Spans with Span Length (m)	Width (m)	ROB/ RUB
		Foundation	Super structure			
Nil						

#### 6. Grade Separators/Flyover:

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The Site includes the following grade separators:

S. No.	Chainage (km)	Type of Structure		No. of Spans with Span Length (m)	Width (m)
		Foundation	Superstructure		
Nil					

## 7. Minor Bridges

The Site includes the following minor bridges:

S. No.	Existing Chainage (km)	Type of Structure			No of Spans with Span Length (m)	Remarks
		Foundation	Sub Structure	Super Structure		
1	32+334	Single Cell Cast In Situ Box			1x6.82	
2	37+539	Single Cell Cast In Situ Box			1x8	

## 8. Railway Level Crossings

The Site includes the following railway level crossings:

S. No	Location (km)	Remarks
NIL		

## 9. Underpasses (Vehicular, Non-Vehicular)

The Site includes the following underpasses:

S. No.	Existing Chainage (km)	Type of Structure	No. of Spans with span length (m)	Width (m)
1	30+973	RCC Box Type	1x5	2x13.00
2	31+450	RCC Box Type	1x10.22	2x14.35
3	31+459	RCC Box Type	1x10	2x13.55
4	32+072	RCC Box Type	1x10.26	2x14.10
5	34+062	RCC Box Type	1x10	2x14.75
6	35+630	RCC Box Type	1x10.5	2x13.75

## 10. Culverts

The Site has the following culverts:

S. No.	Existing Chainage (km)	Type of Culvert	Span / Opening with span length (m)	Remarks
1	33+387	Box	1X3X4	Nallah
2	34+725	Box	1X4X4.7	Nallah
3	35+300	Box	1X2X2.6	Nallah

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S. No.	Existing Chainage (km)	Type of Culvert	Span / Opening with span length (m)	Remarks
4	36+291	Box	1X2X1.8	Nallah
5	36+959	Box	1X2X3.2	Nallah
6	30+828	Pipe	1X1	Cross Road Both Side (Pipe 1X1)
7	31+632	Pipe	1X1	Cross Road Both Side (Pipe 1X1)
8	32+566	Pipe	1X1	Cross Road Left Side (Pipe 1X1)
9	33+607	Pipe	1X1	Cross Road Both Side (Pipe 1X1)
10	37+788	Pipe	1X1	Cross Road Right Side (Pipe 1X1)

#### 11. Bus bays

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

S. No.	Chainage (km)	Length (m)	Left Hand Side	Right Hand Side
1	31+550	36m	Y	Y

#### 12. Truck Lay Bys

The details of truck lay bays are as follows:

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

#### 13. Roadside Drains

The details of roadside drains are as follows:

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

#### 14. Major Junctions

The details of major junctions are as follows:

S. No.	Location		At grade	Separated	Category of Cross Road			
	From km	to km			NH	SH	MDR	Others
1	36+730	36+800	Atgrade					Y

(NH: National Highway, SH: State Highway, MDR: Major District Road, ODR: Other District Road, VR: Village Road)

#### 15. Minor Junctions

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The details of minor junctions are as follows:

S. No.	Location		Type		
	From km	To km	T -junction	Cross road	
1	30495	30505	t		At grade
2	30545	30555		x	Grade separated
3	31095	31105		X	Grade separated
4	31447	31457		+	At grade
5	31525	31535	t		At grade
6	31595	31605	t		Grade separated
7	32065	32075		X	At grade
8	33365	33375	staggered		At grade
9	33745	33755	y		At grade
10	34060	34070		X	At grade
11	34395	34405		X	At grade
12	34835	34845	t		At grade
13	34625	34635		X	At grade
14	38225	38235		x	At grade

## 16. Bypasses

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

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

## 17. Detail of any Other Structures

S. No.	Chainage (km)	Type of Structure	No. of Spans with Span Length (m)	Width (m)
Nil				

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## 18. Utility Details

The site includes the following electrical utilities:

### a) Extra High Tension lines (EHT Lines)

Sr. No.	Design Chainage		Length (in Km)				Crossings (in Nos)					Remarks
	From	To	400 KV	230 KV	110 KV	66 KV	765 KV	400 KV	220KV	132 KV	66 KV	
1	22+700	22+800							01			NH-52 Chainage

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

S. No	Chainage (Km)		Length (in Km)			Crossing			Transformers		DP/TP/4P
	From	To	33 Kv	11 Kv	LT	33 Kv	11 Kv	LT	No	Capacity (kv)	
23	113000	114000			0.6	1	1	2	1	100 KVA	
24	114000	115000		0.5	0.3	1	2	2	2	100 KVA	at Ch. 114+900 one complete 33/11 s/s affected by alignment plz check once against
25	115000	116000			0.2		1	2			
Total			0	5.6	2.5	4	44	25	12		

S. No	Chainage (Km)		Length (in Km)			Crossing			Transformers		DP/TP/4P
	From	To	33 Kv	11 Kv	LT	33 Kv	11 Kv	LT	No	Capacity (kv)	
1	116000	117000			0.5			2			
2	117000	118000						2			

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S. No	Chainage (Km)		Length (in Km)			Crossing			Transformers		DP/TP/4P
3	118000	119000			0.3		1	2			
4	119000	120000									
5	120000	121000				1	1	2			
6	121000	122000						1			
7	122000	123000		0.2	0.1	1	3	2			
8	123000	124000		0.1	0.3		3	2	1	100kva	
9	124000	125000					3	1			
10	125000	126000			0.5		1	1			
11	126000	127000			0.3		1	1	1	100kva	
12	127000	128000					1	1	1	100kva	
13	128000	129000				2	3	1			
14	129000	130000				1	1	1			
15	130000	131000					1	3			
16	131000	132000		0.5		1	2		1	100kva	
17	132000	133000					1	2	1	100kva	
18	133000	134000		0.5	0.3		2	2	2	100kva	
19	134000	135000		0.2	0.4		1	2	1	100kva	
20	135000	136000		0.3	0.3	4	1				
20	136000	137000									
21	137000	138000									
22	138000	139000		2	1	0.5	4	2	2	100kva	
<b>Total</b>			<b>0</b>	<b>3.8</b>	<b>4</b>	<b>10.5</b>	<b>30</b>	<b>30</b>	<b>10</b>		

The details of utility on the Site are as follows:

- i. **No of EP Pole, Lamp Pole, Electric Box, Transformer, Pylon, OFC**

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[illegible]



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S.	CHAINAGE		EP POLE		LAMP POLE		ELECTRIC BOX		TRANSFORMER		PYLON		OFC	
48	136+500	137+000												
49	137+000	137+500												
50	137+500	138+000												
51	138+000	138+500	3	0					1	0				
52	138+500	139+000	5	3										
53	139+000	139+500	1	11					1	0				
54	139+500	139+635	0	1										
	Total		74	109	0	0	1	0	11	3	0	0	1	0
	G. Total		183		0		1		14		0		1	

### Existing NH-52 Utilities:

[illegible]

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S. NO.	CHAINAGE		EP POLE		LAMP POLE		ELECTRIC BOX		TRANSFORMER		PYLON		OFC	
11	23+000	23+500	3	10					1	0				
12	23+500	24+000	6	3	0	1								
13	24+000	24+500	6	5										
14	24+500	25+000												
15	25+000	25+500	1	3										
16	25+500	26+000	9	1					1	0				
17	26+000	26+500												
18	26+500	27+000												
	<b>Total</b>		<b>70</b>	<b>46</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
	<b>G. Total</b>		<b>116</b>		<b>6</b>		<b>0</b>		<b>5</b>		<b>0</b>		<b>1</b>	

ii. No of Trees, Handpump, Borehole

S. NO.	CHAINAGE		TREE		HANDPUMP		BOREHOLE	
	FROM	TO	LHS	RHS	LHS	RHS	LHS	RHS
1	113+000	113+500	41	84				
2	113+500	114+000	45	37				
3	114+000	114+500	14	29				
4	114+500	115+000	33	16				
5	115+000	115+500	39	38				
6	115+500	116+000	38	44			2	0
7	116+000	116+500	44	70				
8	116+500	117+000	77	43				
9	117+000	117+500	5	21				

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S. NO.	CHAINAGE		TREE		HANDPUMP		BOREHOLE	
10	117+500	118+000	22	13				
11	118+000	118+500	17	31				
12	118+500	119+000	12	14				
13	119+000	119+500	1	9				
14	119+500	120+000		0				
15	120+000	120+500		0				
16	120+500	121+000	4	2				
17	121+000	121+500	1	6				
18	121+500	122+000	21	17				
19	122+000	122+500	13	19				
20	122+500	123+000	5	6			1	0
21	123+000	123+500	22	11				
22	123+500	124+000	61	94				
23	124+000	124+500	18	12				
24	124+500	125+000	8	27				
25	125+000	125+500	10	7				
26	125+500	126+000	5	6				
27	126+000	126+500	14	40				
28	126+500	127+000	1	0				
29	127+000	127+500	13	8			1	0
30	127+500	128+000	5	7				
31	128+000	128+500	44	23				
32	128+500	129+000	18	7			1	0
33	129+000	129+500	0	5				

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S. NO.	CHAINAGE		TREE		HANDPUMP		BOREHOLE	
34	129+500	130+000	20	31				
35	130+000	130+500	9	13				
36	130+500	131+000	27	29				
37	131+000	131+500	14	2			0	1
38	131+500	132+000	15	28				
39	132+000	132+500	42	28				
40	132+500	133+000	25	43				
41	133+000	133+500	8	40				
42	133+500	134+000	38	78				
43	134+000	134+500	263	239				
44	134+500	135+000	81	42				
45	135+000	135+500	43	44			1	0
46	135+500	136+000	11	5				
47	136+000	136+500	134	59				
48	136+500	137+000	267	253				
49	137+000	137+500	80	162				
50	137+500	138+000	47	50			1	0
51	138+000	138+500	69	51				
52	138+500	139+000	66	36				
53	139+000	139+500	45	150				
54	139+500	139+635	4	3				
	<b>Total</b>		<b>1959</b>	<b>2132</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>1</b>
	<b>G. Total</b>		<b>4091</b>		<b>0</b>		<b>8</b>	

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**iii. No of EP Pole, Lamp Pole, Electric Box, Transformer, Pylon, OFC**

S. NO.	CHAINAGE			EP POLE		LAMP POLE		ELECTRIC BOX		TRANSFORMER		PYLON		OFC	
	FROM	TO		LHS	RHS	LHS	RHS	LHS	RHS	LHS	RHS	LHS	RHS	LHS	RHS
1	139+635	140+000	14	5	9					0	1				
2	140+000	140+500	5	4	1										
3	140+500	141+000			0										
4	141+000	141+500	10	5	5										
5	141+500	142+000	11	7	4	1	0								
6	142+000	142+500	19	16	3					0	1			1	0
7	142+500	143+000	9	9	0										
8	143+000	143+500	7	7	0									1	0
9	143+500	144+000	14	12	2	3	0			1	0				
10	144+000	144+500	17	11	6					0	1				
11	144+500	145+000	8	8	0										
12	145+000	145+500	9	8	1										
13	145+500	146+000			0	2	0								
14	146+000	146+500	5	0	5										
15	146+500	147+000	1	1	0									0	1
16	147+000	147+500	2	0	2	0	2								
17	147+500	148+000	4	1	3										
18	148+000	148+175			0										
	<b>Total</b>			<b>94</b>	<b>41</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>
	<b>G. Total</b>			<b>135</b>		<b>8</b>		<b>0</b>		<b>4</b>		<b>0</b>		<b>3</b>	

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**iv. No of Trees, Handpump, Borehole**

S. NO.	CHAINAGE		TREE		HANDPUMP		BOREHOLE	
	FROM	TO	LHS	RHS	LHS	RHS	LHS	RHS
1	139+635	140+000	61	52				
2	140+000	140+500	48	45				
3	140+500	141+000	37	17				
4	141+000	141+500	26	12				
5	141+500	142+000	7	26				
6	142+000	142+500	51	24	1	0		
7	142+500	143+000	61	114				
8	143+000	143+500	97	40				
9	143+500	144+000	37	36				
10	144+000	144+500	53	22				
11	144+500	145+000	23	19				
12	145+000	145+500	28	15				
13	145+500	146+000	14	9				
14	146+000	146+500	23	8				
15	146+500	147+000	33	10				
16	147+000	147+500	59	44				
17	147+500	148+000	7	11				
18	148+000	148+175	21	0				
	<b>Total</b>		<b>686</b>	<b>504</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>G. Total</b>		<b>1190</b>		<b>1</b>		<b>0</b>	

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

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Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

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## Annex II

(As per Clause 8.3

(i)) (Schedule-A)

### Dates for Providing Right of Way of Construction Zone

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

S. No.	Chainage		Width of PROW (m)	Remark
	From	To		
1	113+000	137+650	80	
	137+650	138+455	90	
2	138+455	140+000	90-300	Varies due to Trumpet Interchange
3	140+000	148+175	60	

(Schedule-A)

## Alignment Plans

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

- (i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. In any case, the finished road level of the project highway shall not be less than those indicated in the alignment plan. However, the contractor shall improve/upgrade the Road profile as indicated in Annex-III based on site/design requirement.
- (ii) Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. However, the contractor shall improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per IRC: SP: 99-2013 & IRC: 67- 2022.



### Alignment Plan of Project Highway

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

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**Annex – IV**  
*(Schedule-A)*

**Environment Clearances**

As per notification of MOEF F.O.2559 (E) dated 22/08/2013, the project will attract Environmental Clearance and under progress.

**The project alignment cross Reserve forest lands and clearances are under progress**

**The Highway crosses Canal hence involve the clearance and is under progress.**

**Wildlife clearance** - Not applicable

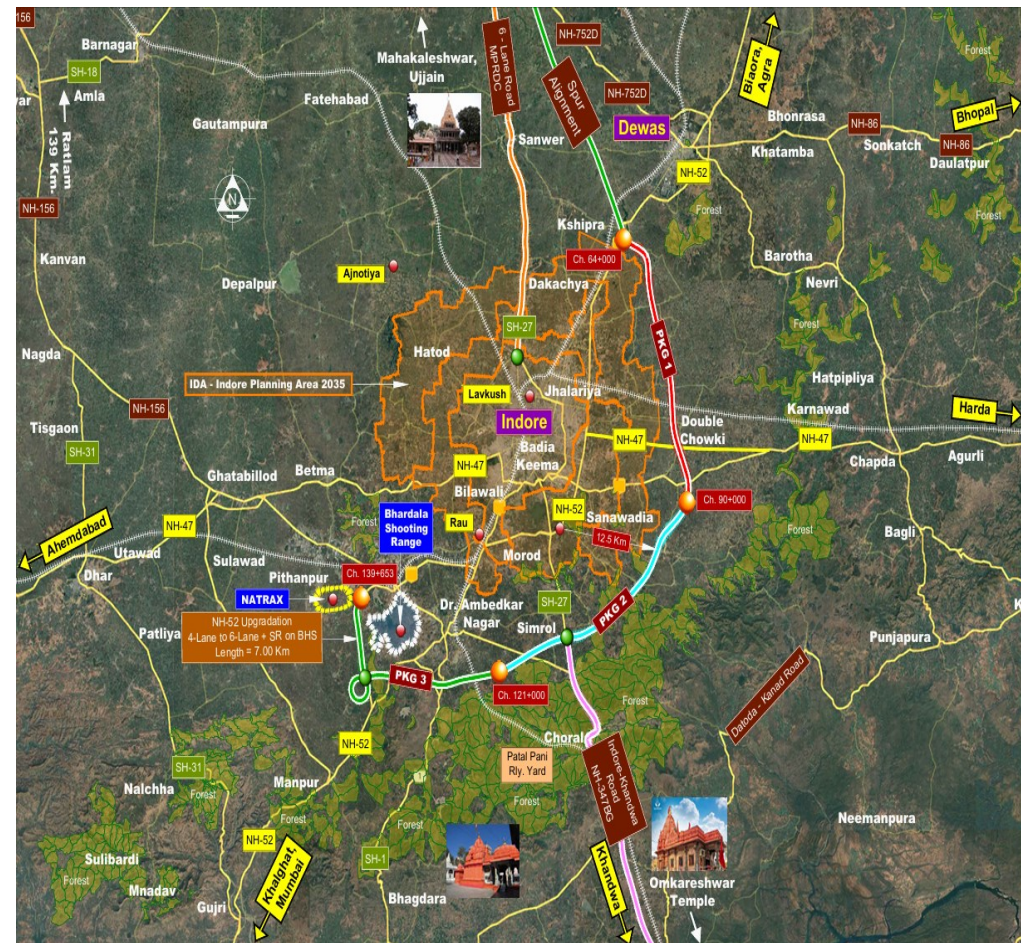
**CRZ Clearance** - Not applicable



Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

## Appendix A-I

Index Map of Project Highway



Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

**Annex – V**

(Schedule-A)

**CO-ORDINATE SYSTEM-UNIVERSAL TRANSVERSE MERCATOR (UTM) – WGS84 (Zone 43R)**

Station	Northing	Easting	Tangential Direction
113000	2,494,911.1967m	591,901.4417m	
113050	2,494,906.3930m	591,851.6732m	
113100	2,494,901.2513m	591,801.9383m	
113150	2,494,896.0778m	591,752.2066m	
113200	2,494,890.9042m	591,702.4750m	
113250	2,494,885.7306m	591,652.7434m	
113300	2,494,880.5571m	591,603.0118m	
113350	2,494,875.3835m	591,553.2802m	
113400	2,494,870.2099m	591,503.5485m	
113450	2,494,865.0364m	591,453.8169m	
113500	2,494,859.8628m	591,404.0853m	
113550	2,494,854.6892m	591,354.3537m	
113600	2,494,849.5157m	591,304.6220m	
113650	2,494,844.3421m	591,254.8904m	
113700	2,494,839.1685m	591,205.1588m	
113750	2,494,833.9949m	591,155.4272m	
113800	2,494,828.8214m	591,105.6956m	
113850	2,494,823.6478m	591,055.9639m	

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
113900	2,494,818.4742m	591,006.2323m	
113950	2,494,813.3007m	590,956.5007m	
114000	2,494,808.1271m	590,906.7691m	
114050	2,494,802.9535m	590,857.0374m	
114100	2,494,797.7800m	590,807.3058m	
114150	2,494,792.6064m	590,757.5742m	
114200	2,494,787.4328m	590,707.8426m	
114250	2,494,782.2593m	590,658.1110m	
114300	2,494,777.0857m	590,608.3793m	
114350	2,494,771.9121m	590,558.6477m	
114400	2,494,766.7386m	590,508.9161m	
114450	2,494,761.5650m	590,459.1845m	
114500	2,494,756.3914m	590,409.4529m	
114550	2,494,751.2178m	590,359.7212m	
114600	2,494,746.0443m	590,309.9896m	
114650	2,494,740.8707m	590,260.2580m	
114700	2,494,735.6971m	590,210.5264m	
114750	2,494,730.5236m	590,160.7947m	
114800	2,494,725.3500m	590,111.0631m	

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
114850	2,494,720.1764m	590,061.3315m	
114900	2,494,715.0029m	590,011.5999m	
114950	2,494,709.8293m	589,961.8683m	
115000	2,494,704.5413m	589,912.1488m	
115050	2,494,698.9051m	589,862.4676m	
115100	2,494,692.9142m	589,812.8279m	
115150	2,494,686.5690m	589,763.2322m	
115200	2,494,679.8696m	589,713.6832m	
115250	2,494,672.8165m	589,664.1833m	
115300	2,494,665.4100m	589,614.7350m	
115350	2,494,657.6505m	589,565.3408m	
115400	2,494,649.5383m	589,516.0034m	
115450	2,494,641.0740m	589,466.7252m	
115500	2,494,632.2579m	589,417.5087m	
115550	2,494,623.0905m	589,368.3564m	
115600	2,494,613.5722m	589,319.2708m	
115650	2,494,603.7036m	589,270.2545m	
115700	2,494,593.4851m	589,221.3099m	
115750	2,494,582.9173m	589,172.4396m	

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
115800	2,494,572.0006m	589,123.6460m	
115850	2,494,560.7358m	589,074.9316m	
115900	2,494,549.1232m	589,026.2989m	
115950	2,494,537.1636m	588,977.7504m	
116000	2,494,525.2539m	588,933.3514m	S75° 46' 32.84"W
116050	2,494,512.7950m	588,884.9286m	S75° 21' 59.52"W
116100	2,494,499.9906m	588,836.5960m	S74° 57' 26.20"W
116150	2,494,486.8413m	588,788.3562m	S74° 32' 52.88"W
116200	2,494,473.3488m	588,740.2111m	S74° 10' 11.87"W
116250	2,494,459.7095m	588,692.1074m	S74° 10' 11.87"W
116300	2,494,446.0703m	588,644.0036m	S74° 10' 11.87"W
116350	2,494,432.4311m	588,595.8999m	S74° 10' 11.87"W
116400	2,494,418.7918m	588,547.7961m	S74° 10' 11.87"W
116450	2,494,405.1526m	588,499.6924m	S74° 10' 11.87"W
116500	2,494,391.5134m	588,451.5886m	S74° 10' 11.87"W
116550	2,494,377.8742m	588,403.4849m	S74° 10' 11.87"W
116600	2,494,364.2349m	588,355.3811m	S74° 10' 11.87"W
116650	2,494,350.5957m	588,307.2773m	S74° 10' 11.87"W
116700	2,494,336.9565m	588,259.1736m	S74° 10' 11.87"W



Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
116750	2,494,323.3172m	588,211.0698m	S74° 10' 11.87"W
116800	2,494,309.6780m	588,162.9661m	S74° 10' 11.87"W
116850	2,494,296.0388m	588,114.8623m	S74° 10' 11.87"W
116900	2,494,282.3995m	588,066.7586m	S74° 10' 11.87"W
116950	2,494,268.7603m	588,018.6548m	S74° 10' 11.87"W
117000	2,494,255.1211m	587,970.5510m	S74° 10' 11.87"W
117050	2,494,241.4818m	587,922.4473m	S74° 10' 11.87"W
117100	2,494,227.8426m	587,874.3435m	S74° 10' 11.87"W
117150	2,494,214.2034m	587,826.2398m	S74° 10' 11.87"W
117200	2,494,200.5641m	587,778.1360m	S74° 10' 11.87"W
117250	2,494,186.9249m	587,730.0323m	S74° 10' 11.87"W
117300	2,494,173.2857m	587,681.9285m	S74° 10' 11.87"W
117350	2,494,159.6465m	587,633.8248m	S74° 10' 11.87"W
117400	2,494,146.0072m	587,585.7210m	S74° 10' 11.87"W
117450	2,494,132.3680m	587,537.6172m	S74° 10' 11.87"W
117500	2,494,118.7288m	587,489.5135m	S74° 10' 11.87"W
117550	2,494,105.0895m	587,441.4097m	S74° 10' 11.87"W
117600	2,494,091.4503m	587,393.3060m	S74° 10' 11.87"W
117650	2,494,077.8111m	587,345.2022m	S74° 10' 11.87"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
117700	2,494,064.1718m	587,297.0985m	S74° 10' 11.87"W
117750	2,494,050.5326m	587,248.9947m	S74° 10' 11.87"W
117800	2,494,036.8934m	587,200.8909m	S74° 10' 11.87"W
117850	2,494,023.2541m	587,152.7872m	S74° 10' 11.87"W
117900	2,494,009.6149m	587,104.6834m	S74° 10' 11.87"W
117950	2,493,995.9757m	587,056.5797m	S74° 10' 11.87"W
118000	2,493,982.3365m	587,008.4759m	S74° 10' 11.87"W
118050	2,493,968.6972m	586,960.3722m	S74° 10' 11.87"W
118100	2,493,955.0580m	586,912.2684m	S74° 10' 11.87"W
118150	2,493,941.4188m	586,864.1647m	S74° 10' 11.87"W
118200	2,493,927.7795m	586,816.0609m	S74° 10' 11.87"W
118250	2,493,914.1403m	586,767.9571m	S74° 10' 11.87"W
118300	2,493,900.5011m	586,719.8534m	S74° 10' 11.87"W
118350	2,493,886.8618m	586,671.7496m	S74° 10' 11.87"W
118400	2,493,873.2226m	586,623.6459m	S74° 10' 11.87"W
118450	2,493,859.5834m	586,575.5421m	S74° 10' 11.87"W
118500	2,493,845.9441m	586,527.4384m	S74° 10' 11.87"W
118550	2,493,832.3049m	586,479.3346m	S74° 10' 11.87"W
118600	2,493,818.6657m	586,431.2308m	S74° 10' 11.87"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
118650	2,493,805.0264m	586,383.1271m	S74° 10' 11.87"W
118700	2,493,791.3872m	586,335.0233m	S74° 10' 11.87"W
118750	2,493,777.7480m	586,286.9196m	S74° 10' 11.87"W
118800	2,493,764.1088m	586,238.8158m	S74° 10' 11.87"W
118850	2,493,750.4695m	586,190.7121m	S74° 10' 11.87"W
118900	2,493,736.8303m	586,142.6083m	S74° 10' 11.87"W
118950	2,493,723.1911m	586,094.5046m	S74° 10' 11.87"W
119000	2,493,709.5518m	586,046.4008m	S74° 10' 11.87"W
119050	2,493,695.9126m	585,998.2970m	S74° 10' 11.87"W
119100	2,493,682.2734m	585,950.1933m	S74° 10' 11.87"W
119150	2,493,668.5213m	585,902.1218m	S73° 46' 38.92"W
119200	2,493,654.3131m	585,854.1832m	S73° 12' 16.27"W
119250	2,493,639.6262m	585,806.3892m	S72° 37' 53.62"W
119300	2,493,624.4621m	585,758.7443m	S72° 03' 30.97"W
119350	2,493,608.8223m	585,711.2535m	S71° 29' 08.32"W
119400	2,493,592.7084m	585,663.9215m	S70° 54' 45.68"W
119450	2,493,576.1220m	585,616.7530m	S70° 20' 23.03"W
119500	2,493,559.0647m	585,569.7527m	S69° 46' 00.38"W
119550	2,493,541.5383m	585,522.9253m	S69° 11' 37.73"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
119600	2,493,523.5445m	585,476.2755m	S68° 37' 15.08"W
119650	2,493,505.0851m	585,429.8080m	S68° 02' 52.44"W
119700	2,493,486.1620m	585,383.5274m	S67° 28' 29.79"W
119750	2,493,466.7770m	585,337.4383m	S66° 54' 07.14"W
119800	2,493,446.9321m	585,291.5454m	S66° 19' 44.49"W
119850	2,493,426.6293m	585,245.8532m	S65° 45' 21.84"W
119900	2,493,405.8706m	585,200.3664m	S65° 10' 59.19"W
119950	2,493,384.6580m	585,155.0893m	S64° 36' 36.55"W
120000	2,493,362.9938m	585,110.0267m	S64° 02' 13.90"W
120050	2,493,340.8800m	585,065.1830m	S63° 27' 51.25"W
120100	2,493,318.3189m	585,020.5627m	S62° 53' 28.60"W
120150	2,493,295.3127m	584,976.1701m	S62° 19' 05.95"W
120200	2,493,271.8638m	584,932.0099m	S61° 44' 43.31"W
120250	2,493,247.9744m	584,888.0864m	S61° 10' 20.66"W
120300	2,493,223.6470m	584,844.4039m	S60° 35' 58.01"W
120350	2,493,198.8840m	584,800.9669m	S60° 01' 35.36"W
120400	2,493,173.6879m	584,757.7797m	S59° 27' 12.71"W
120450	2,493,148.0612m	584,714.8466m	S58° 52' 50.07"W
120500	2,493,122.0064m	584,672.1719m	S58° 18' 27.42"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
120550	2,493,095.5262m	584,629.7599m	S57° 44' 04.77"W
120600	2,493,068.6232m	584,587.6149m	S57° 09' 42.12"W
120650	2,493,041.3001m	584,545.7409m	S56° 35' 19.47"W
120700	2,493,013.5608m	584,504.1415m	S56° 03' 27.50"W
120750	2,492,985.6428m	584,462.6616m	S56° 03' 27.50"W
120800	2,492,957.7249m	584,421.1816m	S56° 03' 27.50"W
120850	2,492,929.8070m	584,379.7016m	S56° 03' 27.50"W
120900	2,492,901.8890m	584,338.2216m	S56° 03' 27.50"W
120950	2,492,873.9711m	584,296.7416m	S56° 03' 27.50"W
121000	2,492,846.0532m	584,255.2616m	S56° 03' 27.50"W
121050	2,492,818.1352m	584,213.7816m	S56° 03' 27.50"W
121100	2,492,790.2173m	584,172.3017m	S56° 03' 27.50"W
121150	2,492,762.2994m	584,130.8217m	S56° 03' 27.50"W
121200	2,492,734.3815m	584,089.3417m	S56° 03' 27.50"W
121250	2,492,706.4635m	584,047.8617m	S56° 03' 27.50"W
121300	2,492,678.5456m	584,006.3817m	S56° 03' 27.50"W
121350	2,492,650.6277m	583,964.9017m	S56° 03' 27.50"W
121400	2,492,622.7097m	583,923.4217m	S56° 03' 27.50"W
121450	2,492,594.7918m	583,881.9418m	S56° 03' 27.50"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
121500	2,492,566.8739m	583,840.4618m	S56° 03' 27.50"W
121550	2,492,538.9559m	583,798.9818m	S56° 03' 27.50"W
121600	2,492,511.0380m	583,757.5018m	S56° 03' 27.50"W
121650	2,492,483.1201m	583,716.0218m	S56° 03' 27.50"W
121700	2,492,455.2022m	583,674.5418m	S56° 03' 27.50"W
121750	2,492,427.2842m	583,633.0618m	S56° 03' 27.50"W
121800	2,492,399.3663m	583,591.5819m	S56° 03' 27.50"W
121850	2,492,371.4484m	583,550.1019m	S56° 03' 27.50"W
121900	2,492,343.5304m	583,508.6219m	S56° 03' 27.50"W
121950	2,492,315.6125m	583,467.1419m	S56° 03' 27.50"W
122000	2,492,287.6946m	583,425.6619m	S56° 03' 27.50"W
122050	2,492,259.7766m	583,384.1819m	S56° 03' 27.50"W
122100	2,492,231.8587m	583,342.7019m	S56° 03' 27.50"W
122150	2,492,203.9408m	583,301.2220m	S56° 03' 27.50"W
122200	2,492,176.0229m	583,259.7420m	S56° 03' 27.50"W
122250	2,492,148.1049m	583,218.2620m	S56° 03' 27.50"W
122300	2,492,120.1870m	583,176.7820m	S56° 03' 27.50"W
122350	2,492,092.2691m	583,135.3020m	S56° 03' 27.50"W
122400	2,492,064.3511m	583,093.8220m	S56° 03' 27.50"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
122450	2,492,036.4332m	583,052.3421m	S56° 03' 27.50"W
122500	2,492,008.5153m	583,010.8621m	S56° 03' 27.50"W
122550	2,491,980.5973m	582,969.3821m	S56° 03' 27.50"W
122600	2,491,952.6794m	582,927.9021m	S56° 03' 27.50"W
122650	2,491,924.7615m	582,886.4221m	S56° 03' 27.50"W
122700	2,491,896.8436m	582,844.9421m	S56° 03' 27.50"W
122750	2,491,868.9256m	582,803.4621m	S56° 03' 27.50"W
122800	2,491,841.0077m	582,761.9822m	S56° 03' 27.50"W
122850	2,491,813.0898m	582,720.5022m	S56° 03' 27.50"W
122900	2,491,785.1718m	582,679.0222m	S56° 03' 27.50"W
122950	2,491,757.2539m	582,637.5422m	S56° 03' 27.50"W
123000	2,491,729.3360m	582,596.0622m	S56° 03' 27.50"W
123050	2,491,701.4180m	582,554.5822m	S56° 03' 27.50"W
123100	2,491,673.5001m	582,513.1022m	S56° 03' 27.50"W
123150	2,491,645.5822m	582,471.6223m	S56° 03' 27.50"W
123200	2,491,617.6643m	582,430.1423m	S56° 03' 27.50"W
123250	2,491,589.7463m	582,388.6623m	S56° 03' 27.50"W
123300	2,491,561.8284m	582,347.1823m	S56° 03' 27.50"W
123350	2,491,533.9105m	582,305.7023m	S56° 03' 27.50"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
123400	2,491,505.9925m	582,264.2223m	S56° 03' 27.50"W
123450	2,491,478.0746m	582,222.7423m	S56° 03' 27.50"W
123500	2,491,450.1567m	582,181.2624m	S56° 03' 27.50"W
123550	2,491,422.2387m	582,139.7824m	S56° 03' 27.50"W
123600	2,491,394.3208m	582,098.3024m	S56° 03' 27.50"W
123650	2,491,366.4029m	582,056.8224m	S56° 03' 27.50"W
123700	2,491,338.4850m	582,015.3424m	S56° 03' 27.50"W
123750	2,491,310.5670m	581,973.8624m	S56° 03' 27.50"W
123800	2,491,282.6491m	581,932.3824m	S56° 03' 27.50"W
123850	2,491,254.7312m	581,890.9025m	S56° 03' 27.50"W
123900	2,491,226.8132m	581,849.4225m	S56° 03' 27.50"W
123950	2,491,198.8953m	581,807.9425m	S56° 03' 27.50"W
124000	2,491,170.9774m	581,766.4625m	S56° 03' 27.50"W
124050	2,491,143.0594m	581,724.9825m	S56° 03' 27.50"W
124100	2,491,115.1415m	581,683.5025m	S56° 03' 27.50"W
124150	2,491,087.2236m	581,642.0225m	S56° 03' 27.50"W
124200	2,491,059.3292m	581,600.5267m	S56° 11' 39.12"W
124250	2,491,031.6142m	581,558.9109m	S56° 28' 50.45"W
124300	2,491,004.1076m	581,517.1571m	S56° 46' 01.77"W



Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
124350	2,490,976.8102m	581,475.2663m	S57° 03' 13.09"W
124400	2,490,949.7225m	581,433.2394m	S57° 20' 24.42"W
124450	2,490,922.8453m	581,391.0777m	S57° 37' 35.74"W
124500	2,490,896.1792m	581,348.7821m	S57° 54' 47.07"W
124550	2,490,869.7250m	581,306.3538m	S58° 11' 58.39"W
124600	2,490,843.4832m	581,263.7936m	S58° 29' 09.71"W
124650	2,490,817.4546m	581,221.1028m	S58° 46' 21.04"W
124700	2,490,791.6397m	581,178.2824m	S59° 03' 32.36"W
124750	2,490,766.0393m	581,135.3335m	S59° 20' 43.69"W
124800	2,490,740.6539m	581,092.2571m	S59° 37' 55.01"W
124850	2,490,715.4842m	581,049.0543m	S59° 55' 06.33"W
124900	2,490,690.5308m	581,005.7262m	S60° 12' 17.66"W
124950	2,490,665.7944m	580,962.2738m	S60° 29' 28.98"W
125000	2,490,641.2756m	580,918.6984m	S60° 46' 40.31"W
125050	2,490,616.9749m	580,875.0009m	S61° 03' 51.63"W
125100	2,490,592.8931m	580,831.1824m	S61° 21' 02.95"W
125150	2,490,569.0306m	580,787.2440m	S61° 38' 14.28"W
125200	2,490,545.3881m	580,743.1869m	S61° 55' 25.60"W
125250	2,490,521.9662m	580,699.0122m	S62° 12' 36.93"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
125300	2,490,498.7655m	580,654.7209m	S62° 29' 48.25"W
125350	2,490,475.7865m	580,610.3141m	S62° 46' 59.57"W
125400	2,490,453.0298m	580,565.7930m	S63° 04' 10.90"W
125450	2,490,430.4961m	580,521.1587m	S63° 21' 22.22"W
125500	2,490,408.1857m	580,476.4122m	S63° 38' 33.55"W
125550	2,490,386.0994m	580,431.5548m	S63° 55' 44.87"W
125600	2,490,364.2377m	580,386.5875m	S64° 12' 56.19"W
125650	2,490,342.6010m	580,341.5114m	S64° 30' 07.52"W
125700	2,490,321.1900m	580,296.3278m	S64° 47' 18.84"W
125750	2,490,300.0052m	580,251.0376m	S65° 04' 30.17"W
125800	2,490,279.0471m	580,205.6421m	S65° 21' 41.49"W
125850	2,490,258.3163m	580,160.1423m	S65° 38' 52.81"W
125900	2,490,237.8132m	580,114.5395m	S65° 56' 04.14"W
125950	2,490,217.5383m	580,068.8347m	S66° 13' 15.46"W
126000	2,490,197.4923m	580,023.0292m	S66° 30' 26.79"W
126050	2,490,177.6755m	579,977.1239m	S66° 47' 38.11"W
126100	2,490,158.0885m	579,931.1202m	S67° 04' 49.43"W
126150	2,490,138.7318m	579,885.0191m	S67° 22' 00.76"W
126200	2,490,119.6058m	579,838.8218m	S67° 39' 12.08"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
126250	2,490,100.7110m	579,792.5294m	S67° 56' 23.41"W
126300	2,490,082.0479m	579,746.1432m	S68° 13' 34.73"W
126350	2,490,063.6170m	579,699.6642m	S68° 30' 46.05"W
126400	2,490,045.4187m	579,653.0936m	S68° 47' 57.38"W
126450	2,490,027.4535m	579,606.4327m	S69° 05' 08.70"W
126500	2,490,009.7218m	579,559.6825m	S69° 22' 20.03"W
126550	2,489,992.2241m	579,512.8442m	S69° 39' 31.35"W
126600	2,489,974.9608m	579,465.9190m	S69° 56' 42.67"W
126650	2,489,957.9324m	579,418.9081m	S70° 13' 54.00"W
126700	2,489,941.1392m	579,371.8126m	S70° 31' 05.32"W
126750	2,489,924.5614m	579,324.6408m	S70° 41' 08.78"W
126800	2,489,908.0239m	579,277.4549m	S70° 41' 08.78"W
126850	2,489,891.4865m	579,230.2690m	S70° 41' 08.78"W
126900	2,489,874.9491m	579,183.0830m	S70° 41' 08.78"W
126950	2,489,858.4116m	579,135.8971m	S70° 41' 08.78"W
127000	2,489,841.8742m	579,088.7111m	S70° 41' 08.78"W
127050	2,489,825.3368m	579,041.5252m	S70° 41' 08.78"W
127100	2,489,808.7993m	578,994.3392m	S70° 41' 08.78"W
127150	2,489,792.2619m	578,947.1533m	S70° 41' 08.78"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
127200	2,489,775.7245m	578,899.9674m	S70° 41' 08.78"W
127250	2,489,759.1870m	578,852.7814m	S70° 41' 08.78"W
127300	2,489,742.6496m	578,805.5955m	S70° 41' 08.78"W
127350	2,489,726.1121m	578,758.4095m	S70° 41' 08.78"W
127400	2,489,709.5747m	578,711.2236m	S70° 41' 08.78"W
127450	2,489,693.0373m	578,664.0376m	S70° 41' 08.78"W
127500	2,489,676.4998m	578,616.8517m	S70° 41' 08.78"W
127550	2,489,659.9624m	578,569.6658m	S70° 41' 08.78"W
127600	2,489,643.4250m	578,522.4798m	S70° 41' 08.78"W
127650	2,489,626.8875m	578,475.2939m	S70° 41' 08.78"W
127700	2,489,610.3501m	578,428.1079m	S70° 41' 08.78"W
127750	2,489,593.8127m	578,380.9220m	S70° 41' 08.78"W
127800	2,489,577.2752m	578,333.7360m	S70° 41' 08.78"W
127850	2,489,560.7378m	578,286.5501m	S70° 41' 08.78"W
127900	2,489,544.2003m	578,239.3642m	S70° 41' 08.78"W
127950	2,489,527.6629m	578,192.1782m	S70° 41' 08.78"W
128000	2,489,511.1255m	578,144.9923m	S70° 41' 08.78"W
128050	2,489,494.5910m	578,097.8053m	S70° 42' 53.78"W
128100	2,489,478.2028m	578,050.5674m	S71° 05' 27.91"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
128150	2,489,462.3046m	578,003.1627m	S71° 54' 04.65"W
128200	2,489,447.2590m	577,955.4812m	S73° 08' 44.00"W
128250	2,489,433.4344m	577,907.4322m	S74° 49' 25.96"W
128300	2,489,421.1515m	577,858.9668m	S76° 44' 00.59"W
128350	2,489,410.4906m	577,810.1189m	S78° 38' 36.08"W
128400	2,489,401.4636m	577,760.9429m	S80° 33' 11.57"W
128450	2,489,394.0805m	577,711.4933m	S82° 27' 47.07"W
128500	2,489,388.3495m	577,661.8252m	S84° 22' 22.56"W
128550	2,489,384.2770m	577,611.9936m	S86° 16' 58.05"W
128600	2,489,381.8675m	577,562.0540m	S88° 11' 33.55"W
128650	2,489,381.1237m	577,512.0619m	N89° 53' 50.96"W
128700	2,489,382.0464m	577,462.0727m	N87° 59' 15.47"W
128750	2,489,384.6346m	577,412.1421m	N86° 04' 39.97"W
128800	2,489,388.8854m	577,362.3254m	N84° 10' 04.48"W
128850	2,489,394.7940m	577,312.6781m	N82° 15' 28.99"W
128900	2,489,402.3540m	577,263.2553m	N80° 20' 53.49"W
128950	2,489,411.5570m	577,214.1118m	N78° 26' 18.00"W
129000	2,489,422.3926m	577,165.3024m	N76° 31' 42.50"W
129050	2,489,434.8489m	577,116.8813m	N74° 37' 07.01"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
129100	2,489,448.9120m	577,068.9021m	N72° 42' 31.52"W
129150	2,489,464.5663m	577,021.4183m	N70° 47' 56.02"W
129200	2,489,481.7944m	576,974.4826m	N68° 53' 20.53"W
129250	2,489,500.5771m	576,928.1471m	N66° 58' 45.04"W
129300	2,489,520.8937m	576,882.4634m	N65° 04' 09.54"W
129350	2,489,542.7215m	576,837.4821m	N63° 09' 34.05"W
129400	2,489,566.0330m	576,793.2515m	N61° 16' 55.66"W
129450	2,489,590.6659m	576,749.7421m	N59° 45' 26.44"W
129500	2,489,616.2858m	576,706.8055m	N58° 39' 59.84"W
129550	2,489,642.5577m	576,664.2642m	N58° 00' 35.84"W
129600	2,489,669.1553m	576,621.9256m	N57° 47' 14.46"W
129650	2,489,695.8085m	576,579.6218m	N57° 47' 14.33"W
129700	2,489,722.4617m	576,537.3181m	N57° 47' 14.33"W
129750	2,489,749.1149m	576,495.0143m	N57° 47' 14.33"W
129800	2,489,775.7680m	576,452.7105m	N57° 47' 14.33"W
129850	2,489,802.4212m	576,410.4068m	N57° 47' 14.33"W
129900	2,489,829.0744m	576,368.1030m	N57° 47' 14.33"W
129950	2,489,855.7276m	576,325.7993m	N57° 47' 14.33"W
130000	2,489,882.3801m	576,283.4951m	N57° 47' 52.93"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
130050	2,489,908.9544m	576,241.1418m	N58° 02' 39.70"W
130100	2,489,935.2255m	576,198.5999m	N58° 36' 58.43"W
130150	2,489,960.9489m	576,155.7250m	N59° 30' 49.12"W
130200	2,489,985.8743m	576,112.3819m	N60° 44' 11.76"W
130250	2,490,009.7702m	576,068.4632m	N62° 09' 56.34"W
130300	2,490,032.5610m	576,023.9609m	N63° 35' 52.96"W
130350	2,490,054.2322m	575,978.9029m	N65° 01' 49.58"W
130400	2,490,074.7703m	575,933.3171m	N66° 27' 46.20"W
130450	2,490,094.1624m	575,887.2323m	N67° 53' 42.82"W
130500	2,490,112.3965m	575,840.6771m	N69° 19' 39.44"W
130550	2,490,129.4611m	575,793.6806m	N70° 45' 36.06"W
130600	2,490,145.3456m	575,746.2722m	N72° 11' 32.68"W
130650	2,490,160.0401m	575,698.4816m	N73° 37' 29.30"W
130700	2,490,173.5353m	575,650.3386m	N75° 03' 25.92"W
130750	2,490,185.8228m	575,601.8733m	N76° 29' 22.54"W
130800	2,490,196.8951m	575,553.1160m	N77° 55' 19.16"W
130850	2,490,206.7450m	575,504.0971m	N79° 21' 15.78"W
130900	2,490,215.3665m	575,454.8474m	N80° 47' 12.40"W
130950	2,490,222.7542m	575,405.3975m	N82° 13' 09.02"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
131000	2,490,228.9035m	575,355.7784m	N83° 39' 05.64"W
131050	2,490,233.8105m	575,306.0210m	N85° 05' 02.26"W
131100	2,490,237.4722m	575,256.1566m	N86° 30' 58.88"W
131150	2,490,239.8862m	575,206.2162m	N87° 56' 55.50"W
131200	2,490,241.0703m	575,156.2314m	N89° 17' 31.66"W
131250	2,490,241.2154m	575,106.2323m	S89° 40' 44.39"W
131300	2,490,240.6048m	575,056.2363m	S88° 58' 32.40"W
131350	2,490,239.5224m	575,006.2481m	S88° 35' 52.37"W
131400	2,490,238.2507m	574,956.2643m	S88° 31' 36.75"W
131450	2,490,236.9653m	574,906.2808m	S88° 31' 36.75"W
131500	2,490,235.6799m	574,856.2974m	S88° 31' 36.75"W
131550	2,490,234.3945m	574,806.3139m	S88° 31' 36.75"W
131600	2,490,233.1091m	574,756.3304m	S88° 31' 36.75"W
131650	2,490,231.8237m	574,706.3469m	S88° 31' 36.75"W
131700	2,490,230.5383m	574,656.3635m	S88° 31' 36.75"W
131750	2,490,229.2529m	574,606.3800m	S88° 31' 36.75"W
131800	2,490,227.9675m	574,556.3965m	S88° 31' 36.75"W
131850	2,490,226.6821m	574,506.4130m	S88° 31' 36.75"W
131900	2,490,225.3967m	574,456.4296m	S88° 31' 36.75"W



Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
131950	2,490,224.1113m	574,406.4461m	S88° 31' 36.75"W
132000	2,490,222.8259m	574,356.4626m	S88° 31' 36.75"W
132050	2,490,221.5404m	574,306.4792m	S88° 31' 36.75"W
132100	2,490,220.2550m	574,256.4957m	S88° 31' 36.75"W
132150	2,490,218.9696m	574,206.5122m	S88° 31' 36.75"W
132200	2,490,217.6842m	574,156.5287m	S88° 31' 36.75"W
132250	2,490,216.3988m	574,106.5453m	S88° 31' 36.75"W
132300	2,490,215.1134m	574,056.5618m	S88° 31' 36.75"W
132350	2,490,213.8280m	574,006.5783m	S88° 31' 36.75"W
132400	2,490,212.5426m	573,956.5948m	S88° 31' 36.75"W
132450	2,490,211.2572m	573,906.6114m	S88° 31' 36.75"W
132500	2,490,209.9718m	573,856.6279m	S88° 31' 36.75"W
132550	2,490,208.6864m	573,806.6444m	S88° 31' 36.75"W
132600	2,490,207.4010m	573,756.6609m	S88° 31' 36.75"W
132650	2,490,206.1156m	573,706.6775m	S88° 31' 36.75"W
132700	2,490,204.8302m	573,656.6940m	S88° 31' 36.75"W
132750	2,490,203.5448m	573,606.7105m	S88° 31' 36.75"W
132800	2,490,202.2594m	573,556.7270m	S88° 31' 36.75"W
132850	2,490,200.9740m	573,506.7436m	S88° 31' 36.75"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
132900	2,490,199.6886m	573,456.7601m	S88° 31' 36.75"W
132950	2,490,198.4032m	573,406.7766m	S88° 31' 36.75"W
133000	2,490,197.1178m	573,356.7931m	S88° 31' 36.75"W
133050	2,490,195.8324m	573,306.8097m	S88° 31' 36.75"W
133100	2,490,194.5470m	573,256.8262m	S88° 31' 36.75"W
133150	2,490,193.2616m	573,206.8427m	S88° 31' 36.75"W
133200	2,490,191.9762m	573,156.8592m	S88° 31' 36.75"W
133250	2,490,190.6908m	573,106.8758m	S88° 31' 36.75"W
133300	2,490,189.4054m	573,056.8923m	S88° 31' 36.75"W
133350	2,490,188.1200m	573,006.9088m	S88° 31' 36.75"W
133400	2,490,186.8346m	572,956.9253m	S88° 31' 36.75"W
133450	2,490,185.5492m	572,906.9419m	S88° 31' 36.75"W
133500	2,490,184.2638m	572,856.9584m	S88° 31' 36.75"W
133550	2,490,182.9784m	572,806.9749m	S88° 31' 36.75"W
133600	2,490,181.6930m	572,756.9914m	S88° 31' 36.75"W
133650	2,490,180.4076m	572,707.0080m	S88° 31' 36.75"W
133700	2,490,179.1222m	572,657.0245m	S88° 31' 36.75"W
133750	2,490,177.8368m	572,607.0410m	S88° 31' 36.75"W
133800	2,490,176.5514m	572,557.0575m	S88° 31' 36.75"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
133850	2,490,175.2660m	572,507.0741m	S88° 31' 36.75"W
133900	2,490,173.9806m	572,457.0906m	S88° 31' 36.75"W
133950	2,490,172.6952m	572,407.1071m	S88° 31' 36.75"W
134000	2,490,171.4098m	572,357.1236m	S88° 31' 36.75"W
134050	2,490,170.3729m	572,307.1346m	S89° 05' 53.46"W
134100	2,490,169.8359m	572,257.1377m	S89° 40' 16.11"W
134150	2,490,169.7989m	572,207.1379m	N89° 45' 21.24"W
134200	2,490,170.2619m	572,157.1403m	N89° 10' 58.60"W
134250	2,490,171.2249m	572,107.1497m	N88° 36' 35.95"W
134300	2,490,172.6877m	572,057.1714m	N88° 02' 13.30"W
134350	2,490,174.6502m	572,007.2101m	N87° 27' 50.65"W
134400	2,490,177.1122m	571,957.2710m	N86° 53' 28.00"W
134450	2,490,180.0735m	571,907.3589m	N86° 19' 05.36"W
134500	2,490,183.5337m	571,857.4790m	N85° 44' 42.71"W
134550	2,490,187.4925m	571,807.6362m	N85° 10' 20.06"W
134600	2,490,191.9496m	571,757.8355m	N84° 35' 57.41"W
134650	2,490,196.9045m	571,708.0818m	N84° 01' 34.76"W
134700	2,490,202.3566m	571,658.3801m	N83° 27' 12.11"W
134750	2,490,208.3055m	571,608.7355m	N82° 52' 49.47"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
134800	2,490,214.7505m	571,559.1528m	N82° 18' 26.82"W
134850	2,490,221.6910m	571,509.6371m	N81° 44' 04.17"W
134900	2,490,229.1263m	571,460.1932m	N81° 09' 41.52"W
134950	2,490,237.0556m	571,410.8262m	N80° 35' 18.87"W
135000	2,490,245.4783m	571,361.5409m	N80° 00' 56.23"W
135050	2,490,254.3933m	571,312.3423m	N79° 26' 33.58"W
135100	2,490,263.7999m	571,263.2353m	N78° 52' 10.93"W
135150	2,490,273.6971m	571,214.2249m	N78° 17' 48.28"W
135200	2,490,284.0839m	571,165.3158m	N77° 43' 25.63"W
135250	2,490,294.9592m	571,116.5131m	N77° 09' 02.99"W
135300	2,490,306.1097m	571,067.7723m	N77° 06' 46.49"W
135350	2,490,317.2612m	571,019.0317m	N77° 06' 46.49"W
135400	2,490,328.4127m	570,970.2912m	N77° 06' 46.49"W
135450	2,490,339.5642m	570,921.5506m	N77° 06' 46.49"W
135500	2,490,350.7157m	570,872.8100m	N77° 06' 46.49"W
135550	2,490,361.8673m	570,824.0694m	N77° 06' 46.49"W
135600	2,490,372.7723m	570,775.2734m	N77° 45' 24.89"W
135650	2,490,383.0696m	570,726.3456m	N78° 28' 23.20"W
135700	2,490,392.7545m	570,677.2929m	N79° 11' 21.51"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
135750	2,490,401.8256m	570,628.1229m	N79° 54' 19.82"W
135800	2,490,410.2813m	570,578.8434m	N80° 37' 18.13"W
135850	2,490,418.1204m	570,529.4621m	N81° 20' 16.44"W
135900	2,490,425.3416m	570,479.9866m	N82° 03' 14.75"W
135950	2,490,431.9438m	570,430.4248m	N82° 46' 13.06"W
136000	2,490,437.9260m	570,380.7843m	N83° 29' 11.37"W
136050	2,490,443.2873m	570,331.0729m	N84° 12' 09.68"W
136100	2,490,448.0267m	570,281.2983m	N84° 55' 07.99"W
136150	2,490,452.1436m	570,231.4684m	N85° 38' 06.30"W
136200	2,490,455.6374m	570,181.5910m	N86° 21' 04.61"W
136250	2,490,458.5074m	570,131.6737m	N87° 04' 02.92"W
136300	2,490,460.7532m	570,081.7245m	N87° 47' 01.23"W
136350	2,490,462.3745m	570,031.7511m	N88° 29' 59.54"W
136400	2,490,463.3711m	569,981.7614m	N89° 12' 57.85"W
136450	2,490,463.7427m	569,931.7631m	N89° 55' 56.16"W
136500	2,490,463.4893m	569,881.7641m	S89° 21' 05.53"W
136550	2,490,462.6109m	569,831.7721m	S88° 38' 07.22"W
136600	2,490,461.1078m	569,781.7950m	S87° 55' 08.91"W
136650	2,490,458.9801m	569,731.8406m	S87° 12' 10.60"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
136700	2,490,456.2281m	569,681.9168m	S86° 29' 12.29"W
136750	2,490,452.8523m	569,632.0312m	S85° 46' 13.98"W
136800	2,490,448.8532m	569,582.1917m	S85° 03' 15.67"W
136850	2,490,444.2314m	569,532.4061m	S84° 20' 17.36"W
136900	2,490,438.9877m	569,482.6821m	S83° 37' 19.05"W
136950	2,490,433.1229m	569,433.0276m	S82° 54' 20.74"W
137000	2,490,426.9079m	569,383.4154m	S82° 51' 29.08"W
137050	2,490,420.6915m	569,333.8033m	S82° 51' 29.08"W
137100	2,490,414.4752m	569,284.1913m	S82° 51' 29.08"W
137150	2,490,408.2588m	569,234.5792m	S82° 51' 29.08"W
137200	2,490,402.0424m	569,184.9671m	S82° 51' 29.08"W
137250	2,490,395.8260m	569,135.3551m	S82° 51' 29.08"W
137300	2,490,389.6097m	569,085.7430m	S82° 51' 29.08"W
137350	2,490,383.3933m	569,036.1309m	S82° 51' 29.08"W
137400	2,490,377.1769m	568,986.5189m	S82° 51' 29.08"W
137450	2,490,370.9605m	568,936.9068m	S82° 51' 29.08"W
137500	2,490,364.7442m	568,887.2948m	S82° 51' 29.08"W
137550	2,490,358.5278m	568,837.6827m	S82° 51' 29.08"W
137600	2,490,352.3114m	568,788.0706m	S82° 51' 29.08"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
137650	2,490,346.0950m	568,738.4586m	S82° 51' 29.08"W
137700	2,490,339.8786m	568,688.8465m	S82° 51' 29.08"W
137750	2,490,333.6623m	568,639.2344m	S82° 51' 29.08"W
137800	2,490,327.4459m	568,589.6224m	S82° 51' 29.08"W
137850	2,490,321.2295m	568,540.0103m	S82° 51' 29.08"W
137900	2,490,315.0131m	568,490.3983m	S82° 51' 29.08"W
137950	2,490,308.7968m	568,440.7862m	S82° 51' 29.08"W
138000	2,490,302.5804m	568,391.1741m	S82° 51' 29.08"W
138050	2,490,296.3640m	568,341.5621m	S82° 51' 29.08"W
138100	2,490,290.1476m	568,291.9500m	S82° 51' 29.08"W
138150	2,490,283.9313m	568,242.3380m	S82° 51' 29.08"W
138200	2,490,277.7149m	568,192.7259m	S82° 51' 29.08"W
138250	2,490,271.4985m	568,143.1138m	S82° 51' 29.08"W
138300	2,490,265.2821m	568,093.5018m	S82° 51' 29.08"W
138350	2,490,259.0658m	568,043.8897m	S82° 51' 29.08"W
138400	2,490,252.8494m	567,994.2776m	S82° 51' 29.08"W
138450	2,490,246.6330m	567,944.6656m	S82° 51' 29.08"W
138500	2,490,240.4166m	567,895.0535m	S82° 51' 29.08"W
138550	2,490,234.2003m	567,845.4415m	S82° 51' 29.08"W

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
138600	2,490,227.9839m	567,795.8294m	S82° 51' 29.08"W
138650	2,490,221.7675m	567,746.2173m	S82° 51' 29.08"W
138700	2,490,215.5511m	567,696.6053m	S82° 51' 29.08"W
138750	2,490,209.3186m	567,646.9953m	S82° 34' 24.53"W
138800	2,490,199.5174m	567,598.0354m	S72° 20' 10.07"W
138850	2,490,176.1265m	567,554.1818m	S50° 58' 27.92"W
138900	2,490,138.0354m	567,522.2694m	S28° 56' 15.31"W
138950	2,490,090.7535m	567,506.9803m	S6° 54' 02.69"W
139000	2,490,041.1894m	567,510.5485m	S15° 08' 09.93"E
139050	2,489,996.5851m	567,532.4525m	S37° 10' 22.55"E
139100	2,489,963.4191m	567,569.4674m	S58° 49' 00.74"E
139150	2,489,946.2892m	567,616.1139m	S80° 51' 13.36"E
139200	2,489,947.9126m	567,665.7798m	N77° 06' 34.02"E
139250	2,489,968.0522m	567,711.2081m	N55° 04' 21.40"E
139300	2,490,003.7652m	567,745.7611m	N33° 02' 08.79"E
139350	2,490,049.8335m	567,764.3901m	N10° 59' 56.17"E
139400	2,490,099.5550m	567,764.5793m	N9° 28' 56.02"W
139450	2,490,147.8838m	567,751.9257m	N17° 24' 45.26"W
139500	2,490,195.5895m	567,736.9536m	N17° 25' 27.15"W



Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Station	Northing	Easting	Tangential Direction
139550	2,490,243.2952m	567,721.9814m	N17° 25' 27.15"W
139600	2,490,291.0009m	567,707.0093m	N17° 25' 27.15"W
139630	2,490,319.6243m	567,698.0259m	N17° 25' 27.15"W

List of DGPS										
S. No	Point ID	WGS 84		WGS 84 UTM 43N					Point ID	Final RL
		Latitude	Longitude	Easting	Northing	Projection SF	Height SF	Combined SF		
1	GPS13	22d52'11.28757"	76d00'28.78552"	603403.524	2529460.535	0.9997320963	0.9999273596	0.9996594753	GPS13	519.861
2	GPS13A	22d52'10.21504"	76d00'34.74015"	603573.442	2529428.713	0.9997325308	0.9999271606	0.9996597108	GPS13A	521.129
3	GPS14	22d49'19.24024"	76d01'02.54917"	604402.182	2524176.220	0.9997346614	0.9999264658	0.9996611467	GPS14	525.748
4	GPS14A	22d49'13.58872"	76d01'10.83992"	604639.730	2524004.050	0.9997352749	0.9999266073	0.9996619017	GPS14A	524.855
5	GPS15	22d46'42.57915"	76d02'09.60529"	606347.546	2519371.757	0.9997397278	0.9999258935	0.9996656406	GPS15	529.603
6	GPS15A	22d46'44.58372"	76d02'04.06237"	606189.050	2519432.297	0.9997393116	0.9999259864	0.9996653173	GPS15A	529.008
7	GPS16	22d43'56.66247"	76d02'26.01306"	606851.287	2514272.679	0.9997410558	0.9999235444	0.9996646200	GPS16	544.778
8	GPS16A	22d43'56.85945"	76d02'19.32820"	606660.551	2514277.400	0.9997405526	0.9999233349	0.9996639074	GPS16A	546.110
9	GPS17	22d41'47.96177"	76d03'18.08539"	608364.861	2510325.309	0.9997450814	0.9999228465	0.9996679476	GPS17	549.401
10	GPS17A	22d41'47.54669"	76d03'09.62547"	608123.558	2510310.831	0.9997444359	0.9999226291	0.9996670848	GPS17A	550.784
11	GPS18	22d38'51.31629"	76d02'30.69033"	607050.584	2504883.513	0.9997415845	0.9999214775	0.9996630822	GPS18	558.362
12	GPS18A	22d38'57.60885"	76d02'28.89259"	606997.916	2505076.663	0.9997414451	0.9999212698	0.9996627353	GPS18A	559.673
13	GPS19	22d36'54.43005"	76d00'53.34937"	604296.613	2501269.833	0.9997343937	0.9999218982	0.9996563126	GPS19	555.840
14	GPS19A	22d36'56.58645"	76d00'49.18807"	604177.356	2501335.337	0.9997340865	0.9999216748	0.9996557821	GPS19A	557.257
15	GPS20	22d34'50.57345"	75d58'43.28572"	600608.269	2497436.206	0.9997250566	0.9999238987	0.9996489762	GPS20	543.256
16	GPS2	22d34'47.	75d58'40.	60052	249733	0.99972	0.99992	0.99964	GPS2	545.

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

List of DGPS										
	0A	20586"	26946"	2.812	2.083	48442	34697	83350	0A	990
17	GPS2 1	22d33'22. 75979"	75d56'27. 42337"	59674 5.456	249471 0.871	0.99971 56379	0.99992 18855	0.99963 75456	GPS2 1	556. 145
18	GPS2 1A	22d33'26. 62947"	75d56'24. 18442"	59665 2.196	249482 9.286	0.99971 54150	0.99992 09752	0.99963 64127	GPS2 1A	561. 931
19	GPS2 2	22d32'44. 57033"	75d53'27. 20200"	59160 5.000	249350 4.946	0.99970 36754	0.99991 47425	0.99961 84432	GPS2 2	601. 572
20	GPS2 2A	22d32'44. 15078"	75d53'22. 41239"	59146 8.267	249349 1.230	0.99970 33662	0.99991 53435	0.99961 87348	GPS2 2A	597. 746
21	GPS2 3	22d31'49. 98042"	75d50'51. 11658"	58715 6.126	249180 0.342	0.99969 38496	0.99991 46977	0.99960 85734	GPS2 3	601. 849
22	GPS2 3A	22d31'43. 75174"	75d50'47. 60119"	58705 6.787	249160 8.238	0.99969 36358	0.99991 47816	0.99960 84435	GPS2 3A	601. 322
23	GPS2 4	22d30'59. 46157"	75d47'58. 15393"	58222 3.461	249021 9.663	0.99968 35271	0.99991 82721	0.99960 18251	GPS2 4	579. 069
24	GPS2 4A	22d31'06. 65130"	75d47'57. 02921"	58219 0.148	249044 0.577	0.99968 34594	0.99991 87581	0.99960 22432	GPS2 4A	575. 966
25	GPS2 5	22d30'27. 03169"	75d45'13. 00415"	57751 0.265	248919 7.956	0.99967 42255	0.99991 34437	0.99958 76974	GPS2 5	609. 742
26	GPS2 5A	22d30'33. 19081"	75d45'13. 69640"	57752 9.089	248938 7.448	0.99967 42615	0.99991 40846	0.99958 83741	GPS2 5A	605. 656
27	GPS2 6	22d31'48. 16765"	75d43'01. 69630"	57374 6.709	249167 4.436	0.99966 71919	0.99991 39716	0.99958 11922	GPS2 6	606. 208
28	GPS2 6A	22d31'52. 56776"	75d42'57. 31882"	57362 1.013	249180 9.139	0.99966 69630	0.99991 38525	0.99958 08442	GPS2 6A	606. 958
29	GPS2 7	22d33'20. 84068"	75d41'01. 81850"	57030 9.215	249450 8.062	0.99966 10736	0.99991 70811	0.99957 81827	GPS2 7	586. 234
30	GPS2 7A	22d33'25. 78637"	75d41'06. 85819"	57045 2.455	249466 0.801	0.99966 13227	0.99991 74286	0.99957 87793	GPS2 7A	584. 018
31	GPS1 A	22d33'47. 99846"	75d57'00. 09109"	59767 3.575	249549 2.898	0.99971 78635	0.99992 15025	0.99963 93882	GPS1 A	558. 559
32	GPS N1	22d33'43. 53444"	75d56'59. 77288"	59766 5.361	249535 5.566	0.99971 78437	0.99992 13983	0.99963 92642	GPS N1	559. 228
33	GPS N2	22d33'27. 50475"	75d54'21. 77152"	59315 5.714	249483 4.592	0.99970 72121	0.99991 69835	0.99962 42199	GPS N2	587. 276
34	GPS N2A	22d33'33. 18784"	75d54'19. 15087"	59307 9.804	249500 8.899	0.99970 70374	0.99991 70816	0.99962 41433	GPS N2A	586. 642
35	GPS N3	22d33'06. 72501"	75d51'16. 43664"	58786 5.945	249416 4.400	0.99969 53818	0.99991 33955	0.99960 88037	GPS N3	610. 047
36	GPS N3A	22d33'10. 73848"	75d51'17. 85269"	58790 5.685	249428 8.048	0.99969 54681	0.99991 38830	0.99960 93773	GPS N3A	606. 940
37	GPS N3B	22d32'54. 12740"	75d48'39. 77653"	58339 3.469	249375 2.074	0.99968 59190	0.99991 61100	0.99960 20550	GPS N3B	592. 707
38	GPS N4	22d32'13. 59342"	75d48'49. 56411"	58367 9.819	249250 7.159	0.99968 65100	0.99991 79998	0.99960 45355	GPS N4	580. 736
39	GPS N4A	22d32'10. 62701"	75d48'54. 72639"	58382 7.778	249241 6.745	0.99968 68162	0.99991 77309	0.99960 45729	GPS N4A	582. 454

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

List of DGPS										
40	GPS N4C	22d32'12. 35387"	75d48'51. 63034"	58373 9.049	249246 9.364	0.99968 66325	0.99991 79140	0.99960 45722	GPS N4C	581. 285
41	GPS N4D	22d32'10. 66802"	75d48'54. 74038"	58382 8.171	249241 8.008	0.99968 68170	0.99991 77086	0.99960 45514	GPS N4D	582. 596
42	GPS N5	22d31'02. 91740"	75d47'44. 47883"	58183 2.206	249032 3.848	0.99968 27320	0.99991 90080	0.99960 17650	GPS N5	574. 377
43	GPS N5A	22d30'58. 08403"	75d47'46. 05529"	58187 8.036	249017 5.460	0.99968 28250	0.99991 90600	0.99960 19110	GPS N5A	574. 047
44	GPS N6	22d31'03. 06123"	75d43'33. 12517"	57465 1.247	249029 1.753	0.99966 88490	0.99991 11810	0.99958 00600	GPS N6	624. 042
45	GPS N6A	22d31'00. 51783"	75d43'35. 42137"	57471 7.226	249021 3.862	0.99966 89710	0.99991 08280	0.99957 98280	GPS N6A	626. 296
46	GPS N6C	22d30'23. 60683"	75d45'15. 74559"	57758 9.121	248909 3.036	0.99967 43750	0.99991 24180	0.99958 68220	GPS N6C	616. 276
47	GPS N6D	22d30'25. 08798"	75d45'16. 51070"	57761 0.752	248913 8.692	0.99967 44170	0.99991 19000	0.99958 63460	GPS N6D	619. 570
48	GPS N7	22d31'10. 92411"	75d40'37. 83985"	56964 2.464	249051 0.051	0.99965 99200	0.99990 86010	0.99956 85520	GPS N7	640. 362
49	GPS N7A	22d31'07. 32934"	75d40'39. 20868"	56968 2.070	249039 9.690	0.99965 99880	0.99990 87780	0.99956 87970	GPS N7A	639. 244
50	GPS N8	22d32'18. 12467"	75d39'15. 57362"	56728 3.225	249256 5.977	0.99965 59290	0.99992 03630	0.99957 63190	GPS N8	565. 383
51	GPS N8A	22d32'22. 20174"	75d39'14. 84391"	56726 1.832	249269 1.254	0.99965 58930	0.99992 06510	0.99957 65710	GPS N8A	563. 546
52	GPS N9	22d34'48. 96235"	75d39'01. 77239"	56686 8.800	249720 2.460	0.99965 52420	0.99991 99610	0.99957 52300	GPS N9	567. 726
53	GPS N9A	22d34'51. 91135"	75d39'05. 01464"	56696 0.989	249729 3.544	0.99965 53940	0.99991 98440	0.99957 52660	GPS N9A	568. 469

List of Benchmark Pillar				
S.No	Easting	Northing	Level	Point ID
1	600332.611	2531655.691	514.351	PL63-1
2	600504.082	2531467.779	515.224	PL63-2
3	600698.766	2531357.894	512.401	PL63-3
4	601575.690	2531111.310	514.949	PL64-3
5	601370.104	2531054.531	509.487	PL64-2
6	601794.892	2530985.117	516.252	PL65-0
7	602844.592	2530522.940	521.354	PL66-1
8	602636.907	2530505.838	519.924	PL66-0
9	603132.906	2530282.464	516.777	PL66-2
10	603360.602	2529679.793	519.564	PL67-1
11	603464.097	2529251.675	519.811	PL67-3
12	603457.042	2528264.647	515.884	PL68-2
13	603523.870	2528031.808	517.783	PL68-3
14	603729.561	2527359.191	519.754	PL69-2

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

List of Benchmark Pillar				
15	603651.557	2527136.598	519.229	PL69-3
16	603699.667	2526874.962	518.893	PL70-0
17	604124.250	2525600.799	521.700	PL71-1
18	604206.378	2525389.787	522.990	PL71-2
19	604257.423	2525166.399	522.143	PL71-3
20	604461.331	2524398.551	524.120	PL72-2
21	604702.498	2523762.759	524.878	PL73-1
22	604803.394	2523458.083	524.979	PL73-2
23	604880.011	2523210.764	522.658	PL73-3
24	605129.033	2522610.446	523.675	PL74-2
25	605201.581	2522381.283	525.245	PL74-3
26	605313.478	2522095.923	526.624	PL75-0
27	605401.174	2521860.739	528.132	PL75-1
28	605508.154	2521620.877	529.810	PL75-2
29	605496.113	2521333.543	529.555	PL75-3
30	605714.718	2521164.602	527.348	PL76-0
31	605788.882	2520919.569	526.741	PL76-1
32	605793.312	2520607.099	529.623	PL76-2
33	605870.283	2520387.466	529.122	PL76-3
34	606178.722	2519858.105	525.257	PL77-2
35	606259.534	2519652.085	525.935	PL77-3
36	606473.885	2518758.852	534.271	PL78-2
37	606582.647	2518006.075	534.695	PL79-1
38	606500.188	2517836.624	536.385	PL79-2
39	606538.049	2517575.403	534.923	PL79-3
40	606658.560	2517085.895	536.097	PL80-1
41	606685.883	2516823.720	537.216	PL80-2
42	606548.983	2516544.927	537.079	PL80-3
43	606621.413	2516113.889	539.582	PL81-1
44	606666.199	2515260.812	544.372	PL82-0
45	606681.592	2515030.393	545.842	PL82-1
46	606810.245	2514581.697	547.137	PL82-3
47	606907.212	2513953.661	543.452	PL83-2
48	606952.737	2513573.274	541.592	PL83-3
49	607142.151	2513016.616	540.552	PL84-1
50	607225.787	2512837.346	539.256	PL84-2
51	607390.078	2512466.445	538.667	PL85-0
52	607470.297	2512214.501	542.278	PL85-1
53	607481.062	2511888.621	542.352	PL85-2
54	607725.586	2511710.607	543.749	PL85-3
55	608142.611	2510622.650	549.939	PL87-0
56	608330.047	2509958.011	551.194	PL87-3
57	608811.774	2509069.507	548.402	PL88-2

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

List of Benchmark Pillar				
58	608719.569	2508828.627	550.011	PL88-3
59	608888.332	2508523.674	549.729	PL89-1
60	608794.806	2508267.887	550.313	PL89-2
61	608823.982	2507450.928	548.831	PL90-1
62	608790.074	2507243.371	550.544	PL90-2
63	608426.072	2506669.112	554.750	PL91-0
64	608232.578	2506013.575	554.251	PL91-3
65	607559.187	2505537.027	559.338	PL92-2
66	607217.469	2505103.405	558.595	PL93-1
67	605945.441	2504185.314	558.395	PL94-2
68	605863.848	2503970.612	559.933	PL94-3
69	605631.209	2503870.010	561.076	PL95-1
70	605445.435	2503510.377	563.792	PL95-2
71	605182.163	2503127.208	560.911	PL96-0
72	605007.859	2503014.656	556.183	PL96-1
73	604932.927	2502547.448	557.182	PL96-3
74	604677.132	2502204.397	569.792	PL97-0
75	604598.628	2502014.604	569.357	PL97-1
76	604571.120	2501659.797	560.006	PL97-2
77	604377.689	2501460.742	557.816	PL97-3
78	603509.961	2500041.537	552.812	PL99-2
79	603487.741	2499844.069	546.930	PL99-3
80	602943.487	2499208.788	536.170	PL100-2
81	602715.578	2499113.446	541.235	PL100-3
82	602298.769	2498909.261	550.273	PL101-1
83	602209.036	2498691.513	553.981	PL101-2
84	599812.552	2496624.093	544.965	PL104-2
85	599565.344	2496473.824	539.249	PL104-3
86	599428.374	2496336.231	539.101	PL105-0
87	599362.081	2496090.553	542.701	PL105-1
88	598864.433	2495904.130	545.559	PL105-3
89	598524.776	2495794.889	547.295	PL106-1
92	598193.470	2495670.956	557.630	PL106-2
93	597848.367	2495538.139	557.717	PL106-3
94	597667.672	2495444.852	558.974	PL107-1
96	597469.868	2495251.546	548.511	PL107-2
98	597142.695	2495056.351	556.498	PL107-3
105	593956.499	2494056.939	575.465	PL111-1
107	592660.477	2493912.176	584.279	PL112-2
108	593478.443	2493855.495	578.996	PL111-3
110	592382.045	2493821.172	592.333	PL112-3
111	591693.895	2493712.497	607.290	PL113-2
114	591046.509	2493375.325	594.198	PL114/1

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

List of Benchmark Pillar				
116	590255.364	2493102.373	597.196	PL115-0
115	572307.218	2493263.484	597.980	PL135/0
117	572417.655	2493002.248	603.759	PL134/3
118	572642.218	2492781.656	604.974	PL134/2
119	589467.089	2492715.309	601.101	PL115/3
120	589048.717	2492603.264	605.094	PL116-1
121	572991.278	2492481.965	603.856	PL133/2
122	588440.913	2492332.464	608.151	PL117-0
123	587813.081	2492106.387	602.977	PL117-3
124	573460.193	2492058.138	607.858	PL133/1
125	586323.589	2491386.181	600.386	PL119-1
126	574433.883	2491212.304	605.103	PL132/1
127	585402.418	2491012.157	593.747	PL120-1
128	574489.969	2490980.290	607.579	PL132/0
129	585357.540	2490862.404	591.016	PL120-2
130	584764.579	2490760.845	586.504	PL121-0
131	574688.584	2490713.878	614.202	PL131/2A
132	574849.988	2490543.198	619.309	PL131/1
133	575088.854	2490489.525	611.286	PL131/0
134	583840.030	2490365.153	588.666	PL121-3
135	582866.799	2490296.200	583.732	PL122-3
136	580686.301	2490268.525	586.513	PL125-0
137	580072.138	2490191.972	589.015	PL125-3
138	581344.535	2490172.016	580.600	PL124-2
139	579722.621	2490042.017	592.719	PL126-0
140	579482.626	2490006.822	591.927	PL126-1
141	575859.909	2489965.422	611.290	PL130/1
142	576263.083	2489733.267	615.933	PL129/3
143	578574.443	2489708.872	592.303	PL127-1
144	578934.438	2489676.617	591.769	PL126-3
145	576496.595	2489656.793	616.193	PL129/2
113	572098.024	2493416.725	595.648	PL135/1
112	571900.923	2493629.522	602.339	PL135/2
109	571684.000	2493828.881	610.369	PL135/3
106	571502.433	2493982.689	606.052	PL136/0
146	571289.110	2494143.312	600.700	PL136/1
147	571110.314	2494315.185	589.602	PL136/2
148	570819.314	2494456.196	584.262	PL137/0
149	570571.536	2494638.631	583.556	PL137/1
90	570393.798	2494855.726	591.218	PL137-2
91	570214.799	2495016.899	586.268	PL137-3
95	569888.029	2495092.695	588.474	PL138-0
97	569705.486	2495357.378	596.892	PL138-1

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

List of Benchmark Pillar				
99	569169.343	2495718.819	583.390	PL139-0
100	568893.033	2495730.979	597.482	PL139-1
101	568628.847	2495999.469	585.976	PL139-2
102	568180.206	2496130.147	590.109	PL140-0
103	568420.641	2496131.741	584.322	PL139-3
104	567922.559	2496218.839	594.963	PL140-1

List of Control Points				
S.No	Easting	Northing	Level	Point ID
1	601581.199	2531113.243	515.068	A1
2	601595.104	2531005.402	516.810	A2
3	602838.558	2530536.371	521.993	A3
4	602827.161	2530434.685	521.380	A4
5	604199.925	2525380.629	523.166	A5
6	604107.566	2525366.244	523.518	A6
7	603581.166	2528014.903	516.510	A12
8	604796.332	2523443.584	525.380	A13
9	604719.334	2523387.904	525.497	A14
10	605808.855	2520692.375	529.210	A16
11	605903.607	2520592.877	529.397	A18
12	605793.385	2520592.330	529.511	A17
13	606478.999	2518760.449	534.276	A19
14	606408.376	2518757.701	534.484	A20
15	606488.439	2517826.822	535.556	A22A
16	606620.364	2517788.437	534.993	A22
17	606737.719	2514595.068	547.587	A24
18	606804.563	2514581.478	547.105	A23
19	607486.439	2511897.020	543.352	A25
20	607525.202	2511825.517	543.717	A26
21	608813.406	2508851.279	549.728	A27
22	608706.596	2508828.817	550.022	A26A
23	608772.400	2508592.552	551.444	A29
24	608879.472	2508519.605	550.592	A28
25	605373.387	2503582.804	564.216	A30
26	605433.639	2503512.283	563.680	A29
27	602616.913	2499120.175	542.230	A46
28	602681.025	2499114.968	541.569	A45
29	599724.192	2496666.762	545.834	A32
30	599805.908	2496628.642	544.975	A31
31	599608.301	2496455.427	538.904	A33
32	599446.623	2496311.939	540.715	A34
33	599491.020	2496249.150	540.633	A35

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

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List of Control Points				
34	593953.633	2494055.369	575.414	A36
35	593915.813	2493986.724	575.538	A37
36	593472.771	2493860.340	579.355	A38
37	589036.483	2492610.925	604.863	A39
38	589020.918	2492533.193	604.078	A40
39	588443.508	2492334.935	608.335	A41
40	588547.348	2492307.438	609.902	A42
41	585412.779	2490999.709	594.702	A47
42	585484.540	2490968.848	595.938	A48
43	585330.122	2490882.350	590.988	A49
44	574737.231	2490806.048	614.762	A60
45	574681.874	2490718.994	614.606	A59
46	581308.009	2490264.142	581.639	A51
47	581345.264	2490185.588	580.906	A50
48	579724.294	2490036.689	592.689	A52
49	579489.130	2490001.743	591.962	A53
50	575848.425	2489963.555	611.240	A57
51	579491.647	2489932.887	592.185	A54
52	575779.778	2489900.169	611.585	A58
53	576501.417	2489658.126	616.253	A55
54	576548.533	2489560.151	617.735	A56



Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

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## **SCHEDULE - B**

*(See Clause 2.1)*

### **1. Development of the Project Highway**

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

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

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

### **2. Rehabilitation and Augmentation**

Rehabilitation and augmentation shall include Six Lane with Paved shoulders configuration as described in Annexure-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 Annexure-I of Schedule-D

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

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## Annexure – I

### Schedule B

#### Development of the Project

##### 1. Development of the Project Highway

The Project Highway shall generally follow the horizontal alignment shown in the plan specified in Annexure-III of Schedule-A, unless otherwise specified by the Authority. Notwithstanding anything to the contrary contained in this Agreement or IRC: SP: 87, the proposed plan & profile. locations of different structures/drains/service & slip road/RE walls, chainages of different structures/drains/service & slip road/RE walls, length of different structures/drains/service & slip road/RE walls etc. of the project highway as indicated in the Schedule A, Schedule B, Schedule C and their Annexures shall be treated as minimum requirement. Based on site/design requirement, the Concessionaire shall finalize their Detailed Designs (Development Stage) including plan & profile of the project highway and submit the same to Authority & its Engineer for its Consent/Approval and Safety Audit by Safety Auditor, before the start of the execution of project. The designs so approved shall not be in contradiction with the scope of project. For avoidance of doubt, the provisions mentioned in schedule B & C cannot be changed, only the design of the components is to be submitted for consent/ approval.

##### 1.1 Width of Carriageway

- 1.1.1 Six- Laning with Paved shoulders shall be undertaken. The paved carriageway shall be 29 meter for six laning (including paved shoulder and edge strip). The earthen shoulder shall be 2 meters on either side and Edge strip shall be minimum 0.6 m.
- 1.1.2 In built-up sections the width of paved carriageway shall be 28.5 meter for six laning (including paved shoulder and edge strip). The details of the built-up section on the project highway are as under: -

Sr. No.	Stretch (Design Chainage), Km		Length(m)	Remarks
	From	To		
1	139630	139923	293	
2	139933	140287	354	
3	140297	140903	606	

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Sr. No.	Stretch (Design Chainage), Km		Length(m)	Remarks
	From	To		
4	140913	141370	457	
5	142650	142895	245	
6	142905	143150	245	
7	144100	144460	360	
8	144470	144700	230	

1.1.3 Except as otherwise provided in this Agreement, the width shall be adjusted to fit into appropriate plans and cross sections developed in accordance with TCS enclosed.

1.1.4 The entire cross-sectional elements shall be accommodated in the available ROW. If required, suitable Toe Wall (up to 0.6m height) or retaining structure above 0.6m upto full height is to be provided to accommodate the highway cross section within the available ROW. The details of such sections are mentioned in Schedule-B. In case of any other section not included in Schedule-B, where retaining structures are to be provided, shall constitute a Change of Scope.

## 1.2 Width of Median

1.2.1 The width of median including Edge Strip shall be 5 meters for Flushed median. In built-up section the median shall be 2.5 meter.

1.2.2 In case of Flush/depressed median, a minimum of 0.6 meter with adjacent to carriageway in either direction shall be paved. In case of depressed/ flushed median, the metal beam (thrie beam) crash barrier shall be provided on either side of the median. In case width of median is more than 9 meter, no crash barrier is required in the median side.

1.2.3 A suitable paving (paver blocks/PCC etc.) shall be proposed for flush median to prevent spreading of soil on carriageway

1.2.4 A suitable anti-glare measures shall be proposed.

## 2. Geometric Design and General Features

**2.1 General:** Geometric design and general features of the Project Highway shall be in accordance with section 2 of the Manual. Intermediate sight distance (Desirable Minimum Sight Distance) shall be followed for design of all vertical curves including structures as well as highways.

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- 2.2 Design speed:** The project road shall be designed for 100 Kmph for plain and rolling terrain except the following sections where the design speed shall be as under (Desirable Minimum):-

SL. No	From Km	To Km	Length in m	Design Speed	Improvement Proposal	TCS Details	Remarks
				(Desirable minimum)			
Interchange at KM 138+660 Nanded INTERCHANGE on NH-52							
1	138692	139160	468	50	4 Lane +PS LOOP SECTION	LOOP Section	SINGLE TRUMPET INTERCHANGE on NH-52 Nanded Village KM 138+660
2	139160	139630	830	50	Two Lane +PS Ramp Section LHS Side		
3	0	334	334	50	Two Lane +PS Ramp Section LHS Side	Ramp 1	
4	0	1165	1165	50	Two Lane +PS Ramp Section LHS Side	Ramp 2	
5	0	1045	1045	50	Two Lane +PS Ramp Section LHS Side	Ramp 3	

### 2.3 Improvement of the Existing Road Geometrics

- 2.3.1** The existing road geometrics shall be improved as per the codal provisions. In the sections, where improvement of the existing road geometrics to the prescribed standards is not possible, the existing road geometrics shall be improved to the extent possible within the given right of way and appropriate road signs, pavement markings and safety measures shall be provided.

Sr. No.	Stretch (Design Chainage), Km		Type of Deficiency	Remarks
	From	To		
Nil				

- 2.3.2** The entire cross-sectional elements shall be accommodated in the available proposed ROW. If required, suitable toe wall (for 0.6 m Height) or full height retaining structures above 0.6m shall be provided to accommodate the highway cross section within the available proposed ROW. The details of such sections are mentioned in Schedule-B. In case of any other section not included in Schedule-B, where retaining structures are to be provided, shall constitute a Change of scope.

- 2.3.3** Realignments: The existing road shall be improved to the standards as specified in the manual at the following locations:

Sr. No.	Existing Chainages (Km)		Design Chainages (Km)		Length (Km)
	From	To	From	To	

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

NIL

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

Sr. No.	Name of the Bypass	Existing Chainages (Km)		Design Chainages (Km)		Length (Km)
		From	To	From	To	
NIL						

## 2.4 Right of way

Details of the Right of way along Project Highways and side roads are given in Annexure-II of Schedule-A.

## 2.5 Type of shoulders

- 2.5.1** The design specifications of paved shoulder shall conform to the requirements specified in paragraph 5.10 of the manual.
- 2.5.2** Paved shoulders and strip on median side shall be of same specifications and pavement composition as of main carriageway.
- 2.5.3** The Overlay on the main carriageway pavement and on the paved shoulder shall be uniform in thickness and compositions.
- 2.5.4** In built-up sections, footpaths/ fully paved shoulder shall be provided with 1.5m width.
- 2.5.5** In open country, Paved shoulder of 1.5 m width shall be provided
- 2.5.6** The Design Specification of earthen shoulder shall conform to the requirements specified in paragraph 5.11 of the manual.
- 2.5.7** The earthen shoulder of 2.0m width on shoulder side shall be provided with top 150 mm on earthen shoulder with well graded naturals and morrum gravel crust stones or combination thereof, confirming to Clause 401 of MORTH specification.
- 2.5.8** The earthen shoulder of 1.0m width on median side shall be provided with top 150 mm on earthen shoulder with well graded naturals and morrum gravel crust stones or combination thereof, confirming to Clause 401 of MORTH specification to fix MBCB and confirm placement requirement of MBCB.

## 2.6 Lateral and Vertical Clearance at Underpasses

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

**2.6.1** In the case of VUP/LVUP, the proposed structure, the finish road level in VUP/LVUP shall be kept 150 mm above the ground level/service road/ cross road (whichever is higher) to ensure that these VUP/ LVUP don't become water accumulation points.

**2.6.2** The vertical and horizontal clearance at the Underpasses shall be as per Clause 2.9 of the Schedule-B.

## 2.7 Lateral and vertical clearances at Overpasses

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

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

Sr. No.	Location Chainage (Km)	Span / Opening (m)	Remarks
NIL			

(MCW – Main carriageway, LHS – Left Hand side and RHS – Right hand side, SR- Service Road)

## 2.8 Service road/ Slip roads/ Connecting Roads:

**2.8.1 Service Road:** The height of the embankment of the service road shall conform to clause 4.2.1. of Manual

**2.8.2** The service roads shall be constructed at the locations and for the length indicated below:

INDORE EASTERN BYPASS FROM DESIGN KM 113+000 to KM 139+630-Package 2 (GREENFIELD)							
Sr. No.	Design Chainage (Km)		Length (m)		Paved Carriageway Width including shyness (m)	Total	Remarks
	From	To	LHS	RHS			
1	113+000	113+728	-	728	7.5	1986	
2	113+728	114+773	1045	1045	7.5	1020	
3	114+773	123+700	-	8927	7.5		
	Existing NH-52 4 lane to 6 lane Upgradation						
4	20+500	25+700	5200	5200	7.5		
	Total Length in m.		6,245	15,900			

**2.8.3** The parking bays shall be provided along service road

Sr. No.	Design chainages of Parking Bay	Remarks
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Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

	LHS Service Road	RHS Service Road	
NIL			

#### 2.8.4 Slip Road:

The slip- roads shall be constructed at the locations and for the lengths indicated below:

Sr. No.	Design Chainages (Km)		Length (Km)		Paved Carriageway width including shyness (m)	Total Length (Km)	Remarks
	From	To	LHS	RHS			
NIL							

**2.8.5** Separator Between Main Carriageway and Service/Slip Road A separator between main carriageway and service/slip road shall be provided to prevent the pedestrians, local vehicles and animals entering the highway. (Deleted)

#### Note:

- Above length of the service/slip roads is minimum specified. The actual length of the service/slip/connecting roads shall be determined by the Concessionaire in accordance with the approved plan & profile and design approved from the Independent Engineer. Any increase/decrease up to 5 percent length from the length specified in this Clause of Schedule-B shall not constitute a Change of Scope. Any additional length shall be dealt in Change of Scope.
- The Acceleration, deceleration lane, right turning storage lane, entry/exit lanes shall be constructed in addition to length given in above table and shall be deemed to be part of the scope and no Change of Scope shall be considered for the same.

#### 2.9 Grade Separated Structures:

Grade separated structures shall be constructed as per paragraph 2.13 of the Manual. Proposed levels at structure locations as shown in plan & profile specified in Annexure-III of schedule A are minimum requirement and only for guidance and any increase in levels shall not constitute any change of scope.

The sub-structure shall be continued in the median portion with RCC barrier wherever superstructure has not been proposed in median portion in Box type Structures.

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MBCB Safety barriers on structure approaches even if there are no embankments shall be provided on all four faces of each structure. MBCB provided towards median side of each structure shall be joined on ends in semi-circular shape.

1.5m wide footpaths shall be provided at grade intersection below structures for each direction of pedestrian movement as indicated in the GAD.

The requisite particulars are given below:

#### 2.9.1 Vehicular Overpass (VOP)

Sr. No.	Design Chainage (Km)	Top Roadway Width (m)	Super Structure Provision in Open Median	Span Arrangement (m)	Minimum Vertical Clearance (m)	Skew Angle (to be specified)	Remarks
NIL							

#### 2.9.2 Vehicle Underpass (VUP)

Sr. No.	Design Chainage (Km)	LHS Roadway Width (m)	RHS Roadway Width (m)	Super Structure Provision in Open Median	Clear Span Arrangement (m)	Minimum Vertical Clearance (m)	Skew Angle	Remarks
1	113+766	14.6	14.6	No	1 X 20	5.5	5	
2	120+130	14.6	14.6	No	1 X 20	5.5	45	
3	122+714	14.6	14.6	No	1 X 20	5.5	33	
4	124+647	14.6	14.6	No	1 X 20	5.5	46	
5	126+575	14.6	14.6	No	1 X 20	5.5	16	
6	128+590	14.6	14.6	No	1 X 20	5.5	12	
7	129+770	14.6	14.6	No	1 X 20	5.5	43	
8	130+400	14.6	14.6	No	1 X 20	5.5	9	
9	135+343	14.6	14.6	No	1 X 20	5.5	16	



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### 2.9.3 Light Vehicle Underpass (LVUP)

Sr. No.	Design Chainage (Km)	LHS Roadway Width (m)	RHS Roadway Width (m)	Super Structure Provision in Open Median	Clear Span Arrangement (m)	Minimum Vertical Clearance (m)	Skew Angle	Remarks
1	114+773	14.6	14.6	No	1 X 12	5.5	15	Mining areas and there is movement of loaded trucks with excessive heights. Thus height of vertical clearance of 5.50m to be provided as in LVUPs.
2	119+778	14.6	14.6	No	1 X 12	5.5	0	
3	123+733	14.6	14.6	Yes	1 X 12	5.5	48	
4	131+689	14.6	14.6	Yes	1 X 12	5.5	34	
5	132+440	14.6	14.6	No	1 X 12	5.5	26	
6	25+675	14.6	14.6	Yes	1 X 10	5.5	0	Retained+Widening
7	24+640	14.6	14.6	Yes	1 X 10	5.5	19	Retained+Widening
8	22+650	14.6	14.6	Yes	1 X 10	5.5	23	Retained+Widening
9	21+075	14.6	14.6	Yes	1 X 10	5.5	0	Retained+Widening

### 2.9.3 (a) Box Crossing (Box)

Sr. No.	Design Chainage (Km)	LHS Roadway Width (m)	RHS Roadway Width (m)	Super Structure Provision in Open Median	Clear Span Arrangement (m)	Minimum Vertical Clearance (m)	Skew Angle	Remarks
1	113+094	14.6	14.6	Yes	1 X 5	4	0	For movement of Agricultural Trolleys on Village roads
2	115+497	14.6	14.6	Yes	1 X 5	4	0	
3	115+946	14.6	14.6	No	1 X 5	4	0	
4	117+114	14.6	14.6	No	1 X 5	4	0	
5	117+811	14.6	14.6	No	1 X 5	4	0	
6	118+319	14.6	14.6	No	2 x 14.6	4	0	
7	118+927	14.6	14.6	No	2 x 14.6	4	0	
8	119+157	14.6	14.6	No	2 x 14.6	4	0	
9	121+212	14.6	14.6	No	2 x 14.6	4	0	

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Sr. No.	Design Chainage (Km)	LHS Roadway Width (m)	RHS Roadway Width (m)	Super Structure Provision in Open Median	Clear Span Arrangement (m)	Minimum Vertical Clearance (m)	Skew Angle	Remarks
10	121+648	14.6	14.6	Yes	2 x 14.6	4	0	
11	125+390	14.6	14.6	No	2 x 14.6	4	0	
12	125+959	14.6	14.6	No	2 x 14.6	4	0	
13	127+585	14.6	14.6	No	2 x 14.6	4	0	
14	127+881	14.6	14.6	No	2 x 14.6	4	0	
15	129+416	14.6	14.6	Yes	2 x 14.6	4	0	
16	130+924	14.6	14.6	No	2 x 14.6	4	0	
17	131+218	14.6	14.6	No	2 x 14.6	4	0	
18	131+437	14.6	14.6	No	2 x 14.6	4	0	
19	132+757	14.6	14.6	No	2 x 14.6	4	0	
20	134+052	14.6	14.6	No	2 x 14.6	4	0	
21	135+176	14.6	14.6	No	2 x 14.6	4	0	
22	136+091	14.6	14.6	No	2 x 14.6	4	0	
23	136+470	14.6	14.6	No	2 x 14.6	4	0	
24	136+720	14.6	14.6	No	2 x 14.6	4	0	
25	138+458	14.6	14.6	Yes	2 x 14.6	4	0	
26	138+700	14.6	14.6	Yes	2 x 14.6	4	0	
27	138+819	14.6	14.6	Yes	2 x 14.6	4	0	
28	139+111	14.6	14.6	Yes	2 x 14.6	4	0	
29	25+740	14.6	14.6	Yes	2 x 14.6	4	0	Retained+Widening

#### 2.9.4 Small Vehicle Underpass (SVUP)

Sr. No.	Design Chainage (Km)	LHS Roadway Width (m)	RHS Roadway Width (m)	Super Structure Provision in Median	Span Arrangement (m)	Minimum Vertical Clearance (m)	Skew Angle (to be specified)	Remarks
Nil								

#### 2.9.5 Cattle and Pedestrian Underpass

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Sr. No.	Design Chainage (Km)	LHS Roadway Width (m)	RHS Roadway Width (m)	Super Structure Provision in Median	Span Arrangement (m)	Minimum Vertical Clearance (m)	Skew Angle (to be specified)	Remarks
Nil								

#### 2.9.6 Boxes for passage of pedestrians

Sr. No.	Design Chainage (Km)	Width (m)	Size of opening (W x H)	Minimum Vertical Clearance (m)	Skew Angle (to be specified)	Remarks
Nil						

#### 2.9.7 Flyover

Sr. No.	Design Chainages (Km)	Name of structure	Clear Span Arrangement(m)	Total width(m)	Skew	Typical Cross section	Remarks
1	138+650	Flyover	2 x 35	2 x 14.6	12	8	

#### 2.9.8 Viaduct

Sr. No.	Design Chainage (Km)	LHS Roadway Width (m)	RHS Roadway Width (m)	Super Structure Provision in Median	Square Span Arrangement (m)	Minimum Vertical Clearance (m)	Skew Angle (to be specified)	Remarks
Nil								

#### 2.9.9 Tunnel

Sr. No	Design Chainage (Km)		Tunnel configuration (Single/ Twin)	LHS	RHS	Remarks
	From	To				
Nil						

1. All underpasses without slip roads shall be provided with steps for accessing the bottom in alternate two-cone filling portion.
2. 2 height barriers on either side of the underpasses for height less than 5.5m to be provided.

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

### 2.9.10 Interchanges (IC)

Sr. No	Design Chainage (km)	Name of structure	Clear Span Arrangement (m)	Total Width (m)	Typical Cross Section	Remarks
1	138+650	Flyover/ Interchange	2x35	2x14.6	8	

### 2.9.11 Details of Ramps, Cross Roads and Connecting Roads at Interchanges (IC)

Sr. No.	Carriageway Widths including Kerb Shyness	Length (m)	Description of Ramps, Crossroads and Connecting Roads	Remarks
1	15	468	4 Lane +PS LOOP SECTION	
2	7	830	Two Lane +PS Ramp Section LHS Side	
3	7	334	Two Lane +PS Ramp Section LHS Side	
4	7	1165	Two Lane +PS Ramp Section LHS Side	
5	7	1045	Two Lane +PS Ramp Section LHS Side	

**Note:** Layout, Geometric Design and Typical Cross Sections of Ramps, Cross Roads and Connecting Roads of Interchange is included in Annexure V to schedule-B.

### 2.10 Typical Cross section (TCS) of the Project Highway

The Project highway shall be constructed to six lane configurations. Typical cross sections required to be developed in different sections of the project Highway are given below: -

S. No	From Km	To Km	Length in m	TCS Type	Improvement Proposal
1	113000	113059	59	1A	Six Lane Divided Carriageway with Flush Median RET/Toe Wall
2	113059	113067	8	8	Minor Bridge
3	113067	113107	40	1A	Six Lane Divided Carriageway with Flush Median RET/Toe Wall
4	113107	113756	649	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
5	113756	113776	20	8	VEHICULAR UNDERPASS (VUP)
6	113776	114767	991	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
7	114767	114779	12	8	Light Vehicular Underpass
8	114779	115390	611	2B	Six Lane Divided Carriageway with Flush Median

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S. No	From Km	To Km	Length in m	TCS Type	Improvement Proposal
					+RE WALL ON RHS +SR on RHS Side
9	115390	115426	36	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
10	115426	115434	8	8B	Minor Bridge
11	115434	115450	16	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
12	115450	116419	969	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
13	116419	116444	25	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
14	116444	116456	12	8B	Minor Bridge-MNB
15	116456	116479	23	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
16	116479	117134	655	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
17	117134	117185.5	52	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
18	117185.5	117230.5	45	8B	Minor Bridge-MNB
19	117230.5	117281	51	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
20	117281	119772	2491	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
21	119772	119784	12	8	Light Vehicular Underpass
22	119784	120120	336	2	Six Lane Divided Carriageway with Flush Median REWALL +SR ON BOTH SIDES
23	120120	120140	20	8	Vehicular Underpass (VUP)
24	120140	121482	1342	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
25	121482	121532	50	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
26	121532	121552	20	8B	Minor Bridge-MNB
27	121552	121601	49	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
28	121601	122070	469	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

S. No	From Km	To Km	Length in m	TCS Type	Improvement Proposal
29	122070	122103	33	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
30	122103	122133	30	8B	Minor Bridge-MNB
31	122133	122164	31	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
32	122164	122239	75	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
33	122239	122297	58	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
34	122297	122317	20	8B	Minor Bridge-MNB
35	122317	122374	57	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
36	122374	122704	330	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
37	122704	122724	20	8	VEHICULAR UNDERPASS (VUP)
38	122724	123268	544	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
39	123268	123318	50	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
40	123318	123348	30	8B	Minor Bridge-MNB
41	123348	123409	61	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
42	123409	123464	55	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
43	123464	123538	74	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
44	123538	123558	20	8B	Minor Bridge-MNB
45	123558	123631	73	1D	Six Lane Divided Carriageway with Flush Median Embankment -Both Sides RETAINING Structure on Both sides +SR on RHS Side
46	123631	123727	96	2B	Six Lane Divided Carriageway with Flush Median +RE WALL ON RHS +SR on RHS Side
47	123727	123739	12	8	Light Vehicular Underpass
48	123739	124184.1	445	9	Six Lane Divided Carriageway with Flush Median RE WALL on BOTH SIDES
49	124184.1	124261.9	78	8A	ROB

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S. No	From Km	To Km	Length in m	TCS Type	Improvement Proposal
50	124261.9	124637	375	9	Six Lane Divided Carriageway with Flush Median RE WALL on BOTH SIDES
51	124637	124657	20	8	VEHICULAR UNDERPASS (VUP)
52	124657	124740	83	9	Six Lane Divided Carriageway with Flush Median RE WALL on BOTH SIDES
53	124740	126183	1443	1	Six Lane Divided Carriageway with Flush Median
54	126183	126234	51	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
55	126234	126254	20	8	Minor Bridge-MNB
56	126254	126328	74	1D	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
57	126328	126358	30	1	Six Lane Divided Carriageway with Flush Median
58	126358	126371	13	1J	6-lane Divided Carriageway with Flushed Median (Fill Section) with LHS FREE SLOPE AND RHS TOE WALL
59	126371	126446	75	1H	6-lane Divided Carriageway with Flushed Median (Fill Section) with BOTH SIDES TOE WALL
60	126446	126565	119	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
61	126565	126585	20	8	Vehicular Underpass (VUP)
62	126585	126670	85	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
63	126670	126684	14	1C	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on LHS & Free Slope on RHS
64	126684	126725	41	1H	6-lane Divided Carriageway with Flushed Median (Fill Section) with BOTH SIDES TOE WALL
65	126725	126735	10	1J	6-lane Divided Carriageway with Flushed Median (Fill Section) with LHS FREE SLOPE AND RHS TOE WALL
66	126735	126953	218	1	Six Lane Divided Carriageway with Flush Median
67	126953	127012	59	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
68	127012	127044	32	8	Minor Bridge-MNB
69	127044	127093	49	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
70	127093	128523	1430	1	Six Lane Divided Carriageway with Flush Median
71	128523	128580	57	9	Six Lane Divided Carriageway with Flush Median

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

S. No	From Km	To Km	Length in m	TCS Type	Improvement Proposal
					RE WALL on BOTH SIDES
72	128580	128600	20	8	Vehicular Underpass (VUP)
73	128600	128648	48	9	Six Lane Divided Carriageway with Flush Median RE WALL on BOTH SIDES
74	128648	128770	122	1	Six Lane Divided Carriageway with Flush Median
75	128770	128790	20	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
76	128790	129150	360	8A	MAJOR BRIDGE
77	129150	129179	29	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
78	129179	129686	507	1	Six Lane Divided Carriageway with Flush Median
79	129686	129760	74	9	Six Lane Divided Carriageway with Flush Median RE WALL on BOTH SIDES
80	129760	129780	20	8	Vehicular Underpass (VUP)
81	129780	129836	56	9	Six Lane Divided Carriageway with Flush Median RE WALL on BOTH SIDES
82	129836	130114	278	1D	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
83	130114	130145	31	1B	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on RHS Sides
84	130145	130192	47	1H	6-lane Divided Carriageway with Flushed Median (Fill Section) with BOTH SIDES TOE WALL
85	130192	130225	33	1J	6-lane Divided Carriageway with Flushed Median (Fill Section) with LHS FREE SLOPE & RHS TOE WALL
86	130225	130390	165	1	Six Lane Divided Carriageway with Flush Median
87	130390	130410	20	8	VEHICULAR UNDERPASS (VUP)
88	130410	130696	286	1	Six Lane Divided Carriageway with Flush Median
89	130696	130720	24	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
90	130720	130742	22	8	Minor Bridge-MNB
91	130742	130764	22	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
92	130764	131489	725	1	Six Lane Divided Carriageway with Flush Median
93	131489	131519	30	13B	Six Lane Divided Carriageway with Flush Median CUT Section on RHS & Free Slope on LHS
94	131519	131669	150	13	Six Lane Divided Carriageway with Flush Median CUT Section on Both Sides



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S. No	From Km	To Km	Length in m	TCS Type	Improvement Proposal
95	131669	131683	14	1	Six Lane Divided Carriageway with Flush Median
96	131683	131695	12	8	Light Vehicular Underpass
97	131695	132292	597	1	Six Lane Divided Carriageway with Flush Median
98	132292	132313	21	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
99	132313	132403	90	8A	MAJOR BRIDGE
100	132403	132434	31	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
101	132434	132446	12	8	Light Vehicular Underpass
102	132446	132482	36	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
103	132482	132504	22	8	Minor Bridge-MNB
104	132504	132519	15	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
105	132519	134099	1580	1	Six Lane Divided Carriageway with Flush Median
106	134099	134339	240	13	Six Lane Divided Carriageway with Flush Median CUT Section on Both Sides
107	134339	134373	34	13A	Six Lane Divided Carriageway with Flush Median CUT Section on LHS & Free Slope on RHS
108	134373	134575	202	1	Six Lane Divided Carriageway with Flush Median
109	134575	134608	33	1I	6-lane Divided Carriageway with Flushed Median (Fill Section) with LHS TOE WALL & RHS FREE SLOPE
110	134608	135220	612	1	Six Lane Divided Carriageway with Flush Median
111	135220	135243	23	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
112	135243	135265	22	8	Minor Bridge-MNB
113	135265	135286	21	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
114	135286	135333	47	9	Six Lane Divided Carriageway with Flush Median RE WALL on BOTH SIDES
115	135333	135353	20	8	Vehicular Underpass (VUP)
116	135353	135402	49	9	Six Lane Divided Carriageway with Flush Median RE WALL on BOTH SIDES
117	135402	136592	1190	1	Six Lane Divided Carriageway with Flush Median
118	136592	136607	15	13A	Six Lane Divided Carriageway with Flush Median CUT Section on LHS & Free Slope on RHS

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S. No	From Km	To Km	Length in m	TCS Type	Improvement Proposal
119	136607	137124	517	13	Six Lane Divided Carriageway with Flush Median CUT Section on Both Sides
120	137124	137185	61	13A	Six Lane Divided Carriageway with Flush Median CUT Section on LHS & Free Slope on RHS
121	137185	137227	42	1	Six Lane Divided Carriageway with Flush Median
122	137227	137244	17	1B	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on RHS Sides
123	137244	137252	8	1A	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on Both Sides
124	137252	137358	106	1C	6-lane Divided Carriageway with Flushed Median (Fill Section) with Retaining Structure on LHS & Free Slope on RHS
125	137358	138009	651	1	Six Lane Divided Carriageway with Flush Median
126	138009	138519	510	9A	Six Lane Divided Carriageway with Flush Median RE WALL +SR on BOTH SIDES
127	138519	138615	96	9	Six Lane Divided Carriageway with Flush Median RE WALL
128	138615	138685	70	8	FLYOVER
129	138685	139159	474	4A	FOUR LANE DIVIDED CARRIAGEWAY WITH FLUSH MEDIAN APPROACH TO FLYOVER/VUP/LVUP
130	139159	139630	471	5	Loop 1 section
Total Length			26630		

#### **Upgradation from 4 lane to 6 Lane configurations of existing NH-52-TCS Schedule**

S. No	From Km	To Km	Length in m	TCS Type	Improvement Proposal
1	18000	19149.5	1149.5	14	Concentric widening of existing 4 lane to 6lane with free slopes on both sides
2	19150	19157	7	17	MNBR WIDENING
3	19157	20870	1713.5	14	Concentric widening of existing 4 lane to 6lane with free slopes on both sides
4	20870	21070	200	16	Reconstruction of existing underpass approaches to 6 lane RE WALL +SR on Both sides
5	21070	21080	10	17	Underpass widening
6	21080	21460	380	16	Reconstruction of existing underpass approaches to 6 lane RE WALL +SR on Both sides
7	21460	22360	900	14	Concentric widening of existing 4 lane to 6lane with free slopes on both sides
8	22360	22645	285	16	Reconstruction of existing underpass

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S. No	From Km	To Km	Length in m	TCS Type	Improvement Proposal
					approaches to 6 lane RE WALL +SR on Both sides
9	22645	22655	10	17	Underpass widening
10	22655	22900	245	16	Reconstruction of existing underpass approaches to 6 lane RE WALL +SR on Both sides
11	22900	24202	1302	14	Concentric widening of existing 4 lane to 6lane with free slopes on both sides
12	24202	24372	170	16	Reconstruction of existing underpass approaches to 6 lane RE WALL +SR on Both sides
13	24372	24382	10	17	MNBR WIDENING
14	24382	24635	253	16	Reconstruction of existing underpass approaches to 6 lane RE WALL +SR on Both sides
15	24635	24645	10	17	Underpass widening
16	24645	25000	355	16	Reconstruction of existing underpass approaches to 6 lane RE WALL +SR on Both sides
17	25000	25262	262	14	Concentric widening of existing 4 lane to 6lane with free slopes on both sides
18	25262	25272	10	17	MNBR WIDENING
19	25272	25670	398	16	Reconstruction of existing underpass approaches to 6 lane RE WALL +SR on Both sides
20	25670	25680	10	17	Underpass widening
21	25680	26000	320	16	Reconstruction of existing underpass approaches to 6 lane RE WALL +SR on Both sides
22	26000	26442	442	14	Concentric widening of existing 4 lane to 6lane with free slopes on both sides
23	26442	26452	10	17	MNBR WIDENING
24	26452	27000	548	14	Concentric widening of existing 4 lane to 6lane with free slopes on both sides
	Total Length		9000		

**TCS Schedule Interchange at KM 138+660 Nanded INTERCHANGE on NH-52**

S.No	From Km	To Km	Length in m	TCS Type	Improvement Proposal	Remarks	
	<b>RAMP Sections</b>						

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

1	138692	139160	468	4A	4 Lane +PS LOOP SECTION	LOOP Section	<b>SINGLE TRUMPET INTERCHANGE on NH-52 NANDED Village KM 138+660</b>
2	139160	139630	470	5	Two Lane +PS Ramp Section LHS Side		
3	0	334	334	5	Two Lane +PS Ramp Section LHS Side	Ramp 1	
4	0	1165	1165	5	Two Lane +PS Ramp Section LHS Side	Ramp 2	
5	0	1045	1045	5	Two Lane +PS Ramp Section LHS Side	Ramp 3	

#### 2.10.1 Note:

- I. Any variations in the lengths of various TCS as specified in the Table 2.10 shall not constitute a Change of Scope. However, any authorized/ approved change in the length of the project highway, CoS clause as per CA.
- II. Lengths mentioned in the above list for cross section types concerned to structures are inclusive of structure length.
- III. RS wall shall be provided at the edge of the shoulder for full height
- IV. Toe wall (0.6m height) or retaining wall up to full height (height as required for side slopes) above 0.6m to maintain the slope of filling wherever restriction in ROW is required leaving space for utility corridor/ drain/ service road etc. as applicable and water bodies along the proposed highway on the sections specified in Schedule-B.
- V. Chainages may be adjusted according to location of structures as per drawings.
- VI. Carriageway width tapering shall be provided 1 in 50 as per Manual Clause no 2.5.4.
- VII. Intermediate Sight Distance (Desirable Minimum Sight Distance) shall be followed for design of all vertical curves (Summit and Valley Curves) including structures as well as highways. (Clause No. 2.9.5 IRC: SP:87-2019)

### 3. Intersections and Grade Separated Intersections

All at-grade intersections and grade separated intersections shall be as per drawings confirming Section 3 of the manual.

The service road pavement composition shall be continued on cross roads of the intersections for the length specified for at-grade and grade separated intersections.

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

#### 3.1 At-grade intersections (clause No. 3.2 IRC: SP:87-2019):

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

**a) Major Junctions:**

Sr. No	Design Chainage (Km)	Junction Type	Leads To		Median Opening	Category of Cross Road	Carriageway width of cross road (m)	Length of cross road to be developed		
			Left	Right				LHS	RHS	
Nil										

**b) Minor Intersections:**

Sr. No	Design Chainage (Km)	Junction Type	Leads To		Median Opening	Category of Cross Road	Carriageway width of cross road (m)	Length of cross road to be developed	
			Left	Right				LHS	RHS
Nil									

**3.1.1 Note:**

Typical Layout as per type Designs for Intersections on National Highways, 1992, Geometric Design and Typical Cross Sections of Major Junction is included in Annexure – IV to schedule-B.

1. Type of Junction to be improved as per manual.
2. The Concessionaire shall take up 'Detailed Engineering study to ascertain further details of all intersections and treatment of the intersections shall be designed in accordance with the latest guidelines mentioned out in section-3 of the manual. Auxiliary lanes including storage, acceleration and deceleration lane along with physical islands to be provided.

The cross road at the junctions which are having a level difference from the main carriageway, are to be improved at the level of main carriageway for the length of 30 meter and then to be merged with the cross road at the gradient not more than 1:50.

3. For minor / major layout for left-in / left out arrangement with physical islands with hazard marking. Where there is space constraint to provide physical islands, the effect of junction kept wide opened can be avoided by ghost island with marking.
4. For U-turn, Self-Regulated U-Turn facility shall be created.

**3.2 At-Grade Intersections below Grade Separators/ Interchanges:**

These shall be provided as given at para of this Annexure-I of the Schedule B. (clause No. 3.2.4 of IRC:SP:87-2019)

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Sr. No.	Design Chainage (Km)	Junction Type	Leads to		U-Turn provision in Viaduct	Category of Cross Road	Carriageway width of cross road	Length of cross road to be developed
			Left	Right	Spans			
1	113+762	-	Simrol	Datoda	No	Village Road	3.5	55
2	114+767	-	Simrol	Datoda	Yes	Village Road	3.5	55
3	119+778	+	-	-	NO	BT	3.5	55
4	120+130	+	-	-	NO	BT	3.5	55
5	122+714	+	-	-	NO	BT	3.5	55
6	123+733	+	-	-	NO	BT	3.5	55
7	124+647	+	-	-	NO	BT	3.5	55
8	126+575	+	-	-	NO	BT	3.5	55
9	128+590	+	-	-	NO	BT	3.5	55
10	129+770	+	-	-	NO	BT	3.5	55
11	130+400	+	-	-	NO	BT	3.5	55
12	131+689	+	-	-	NO	BT	3.5	55
13	132+440	+	-	-	NO	BT	3.5	55
14	135+343	+	-	-	NO	BT	3.5	55
15	139+928	+	-	-	NO	BT	5.5	55
16	140+292	+	-	-	NO	BT	5.5	55
17	140+908	+	-	-	NO	BT	5.5	55
18	142+898	+	-	-	NO	BT	5.5	55
19	144+465	+	-	-	NO	BT	5.5	55

### 3.2.1 Note:

1. The Concessionaire shall take up 'Detailed Engineering study to ascertain further details of all intersections and treatment of the intersections shall be designed in accordance with the latest guidelines mentioned out in section-3 of manual.
2. Junction improvement under grade separators shall be carried out as per manual with proper entry/exit to cross roads and slip/service roads, etc. Auxiliary lanes including storage, acceleration and deceleration lane along with physical islands to be provided.
3. Location of grade-separated structures are indicative. Exact location should be decided in consultation with Independent Engineer

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

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4. Intersection Layout, Entry/Exit, Right Turning Lane, U-Turns, Geometric Design and Typical Cross Sections of Interchange shall be included by DPR consultant in Annexure III to schedule-B.
5. Only Entry or Exit shall be designed at any location (provision of entry/exit by ghost island not permitted). **(Clause No. 2.13.1 IRC: SP:84-2019/ IRC: SP:87-2019)**

#### **4. Road Embankment and Cut Section**

Construction of road embankment/cuttings shall conform to the Specifications and Standards given in section 4 of the manual. Notwithstanding anything to the contrary contained in this Agreement or Manual, the proposed profile of the project highway as indicated in the Annex-III of Schedule A shall be treated as minimum requirement.

Based on site/design requirement, the Concessionaire shall design the alignment plans and profiles of the project highway based on site/design requirement mentioned in Schedule B with approval from the Independent Engineer/Authority Engineer within the available Right of Way. However, it is clarified that bottom of subgrade level shall be at-least 1000mm above HFL/Existing ground level for a greenfield/bypass stretch.

The side slopes shall be 2:1 as indicated in the TCS with adequate slope protection measures.

For stability of slope upto 3-meter height the turfing can be adapted. For the slope from 3-6 meter suitable, geocell, geo-grid, geo-green etc. can be provided with suitable drainage chutes as per IRC 56. For the slope more than 6-meter height, a complete slope stability analysis as per IRC: 75 shall be done and the slopes shall be compulsorily protected with stone pitching within stone masonry grid structure of 4x4 meter and suitable drains/chutes etc. shall be provided for effective drainage of the water.

The box cut locations, with cut height more than 6 m & with ROW limitations, adequate slope stabilization and/or earth retaining measures, have to be provided. The slope should be duly supported by systematic nailing with reinforced shotcrete, Waler beams & reinforced shotcrete cladding walls. Refer TCS drawings for details. Performance monitoring of the slope by optical targets or by visual observations of the shotcrete layer is recommended during and post construction. The stabilization measures may be redesigned depending upon the in-situ geologic conditions of the site exposed during construction.

Use of Pond Ash and Design of Pond Ash embankment shall be specified

#### **5. Pavement design**

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

**5.2 Type of Pavement and Design requirement (Clause No. 5.4 IRC: SP:87-2019)**

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

5.2.1 Design Period and Strategy Pavement shall be constructed for the entire length of Project Highway including paved shoulders. Flexible Pavement shall be designed for a minimum design period of 20 years and minimum sub grade CBR of 8% and maximum subgrade CBR of 10% whereas Rigid pavement shall be designed for a minimum design period of 30 years. Stage construction shall not be permitted.

5.2.2 Recommended Pavement Design Notwithstanding anything to the contrary contained in this Agreement or the manual, the Concessionaire shall design the pavement of main carriageway for design traffic of **193 MSA**.

5.2.3 The pavement for service road/slip roads shall be designed for minimum 20 MSA (Clause No. 5.5.4 IRC: SP 87-2019)

5.3 In order to meet the intended functional requirement of respective pavement layers on main carriageway, the minimum thickness of respective pavement layers for main carriageway and connecting cross roads/ service roads/ slip roads/ entry/exit locations, acceleration/ deceleration lane, right turning lanes shall, however, in no case be less than as given below:

5.3.1 Main carriageway, paved shoulder, median side paved strip, entry/exit locations, acceleration/ deceleration lane, right turning lanes (Flexible) with GSB/WMM: -

5.3.2 Main carriageway, paved shoulder, median side paved strip, entry/exit locations, acceleration/ deceleration lane, right turning lanes (Flexible) with CTSB/CTB: -

5.3.3 Main carriageway, paved shoulder, median side paved strip, entry/exit locations, acceleration/ deceleration lane, right turning lanes (Rigid) - For Toll Plaza Locations.

5.3.4 Cross roads/ Service Roads/ Slip Roads

#### 5.4 Reconstruction of Stretches with New pavement

The following stretches of existing road shall be dismantled/milled and reconstructed. These shall be designed as new pavement.

assigned as new pavement.				
Sr. No.	Design Chainages (Km)		Pavement Compositions	Remarks
	From	To		
Nil				

#### 5.5 Bituminous Mix for Overlay

The following stretches of the existing road shall be provided bituminous overlay as follows:

Sr. No.	Existing NH-52 KM		Design Chainages (Km)		Overlay Pavement Compositions	Remarks
	From	To	From	To		
1	31+500	39+500	139+630	147+000	BC-50mm DBM-135 mm	



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## 6. Road side Drainage

**6.1 Drainage System** including surface and subsurface drains for the Project Highway Drainage plan sections with chainages, dials, outfall including crossroads shall be provided as per section 6 of the manual. RCC Drain cum footpaths shall conform to the cross-sectional features and other details as given in Annexures to Schedule-B and shall be provided as under:

### Details of RCC Drain cum Footpath

Sr. No.	Design Chainages (Km)		Length(m)		Width of Drain (m)	Total Length (m)
	From	To	LHS	RHS		
Nil						

**6.2** RCC Drains shall conform to the cross-sectional features and other details as given in Annexures to Schedule-B and shall be provided as under:

S. No	Design Chainage		Length		Width Of Drain (m)	Total Length (m)
	From	To	LHS	RHS		
-						

**6.3 Unlined Drains** as per section shown in drainage plan except above mentioned locations of RCC Lined Drains shall be provided in the entire project length which gets terminated at all crossroad locations. In case, the definite outfall is not available, a rainwater harvesting system shall be provided at the deepest location for dispersal of water.

### 6.4 Median Drain

Lined drain shall be provided in the center of the median at super elevation locations and depressed median. Draining of storm water from one carriageway to another carriageway is not permitted. the Concessionaire shall design the median drain based on site/design requirement mentioned in Schedule D with approval from the Independent Engineer and shall be connected with the nearest culvert/outfall.

### 6.5 Drainage arrangement between Main Carriageway and Service/Slip Roads

A suitable drainage arrangement for draining storm water of main carriageway shall be provided. Storm water of main carriageway to service road is not permitted.

### 6.6 Drainage where Embankment Height is more than 3m

Drainage chutes shall be provided at suitable interval on embankment slopes. The drainage arrangement shall include kerb, cement concrete drainage channel at the edge roadway. Cement Concrete Chutes, CC bedding, energy dissipation basin, etc. Mountable Kerb shall be provided beyond the post of MBCB to channelize storm water into chute.

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## **6.7 Drainage for Structures**

A suitable drainage arrangement for draining storm water from deck slab shall be provided. Water shall not fall on any surface of the structures, or remain standing or flowing over the road below structure.

## **6.8 Drainage for Underpass and Subways Structures**

A suitable drainage arrangement for draining storm water from Underpass and Subways shall be provided

## **6.9 Drainage arrangement of Retaining Structures**

Vertical Drop-down drainage pipes with suitable cleaning provision shall be provided at suitable interval Drainage fixtures and dropdown pipes shall be of rigid, corrosion resistant material not less than 100mm dia. The Storm water of main carriageway draining on service road is not permitted.

# **7. Design of Structures**

## **7.1 General**

Project Highway is proposed to be constructed to Six-lane configuration with provision for widening to eight lane configurations in future. Special vehicle loading is to be considered in design of all bridges, culverts and structures. As Project Stretch Lies in Seismic Zone II and III but all the Structures to be designed and Detailed as per Seismic Zone III.

All structures except wherever expansion joints have been provided, the pavement layers WMM, DBM & BC shall be continued over the structures for smooth riding quality of the project highway. These structures shall be designed considering the dead load of pavement (WMM, DBM, BC, etc) layers.

All major structures will be designed preferably as continuous slab (Deck Continuity) to reduce the number of expansion joints on the MJB/ ROBs/ flyover/ Interchange etc.

- 7.1.1 All bridges, culverts and structures shall be designed for IRC class Special Vehicle (SV) loading as per IRC: 6 and constructed in accordance with section-7 of the manual and shall conform to the cross-sectional features and other details specified therein.
- 7.1.2 Clear width of Culverts (measured from inside of Head Wall to inside of Head Wall) should be equal to the overall roadway width of its approach (width of carriageway+ width of paved shoulder+ width of earthen shoulder+ width of median including shyness strip towards median as applicable). **(Circular: EFile No.RW/NH-33044/22/2020-S&R dated 4th June, 2024).**
- 7.1.3 Clear deck width of bridges/grade separated structures/ROBs (measured from inside to inside of crash barrier) shall be equal to the roadway width (carriageway width+ paved shoulder width+ earthen shoulder width+ width of median including shyness for raised median /depressed median as applicable) in their approaches. Wherever footpath is provided on bridge/ROB, RCC crash barrier should be provided between footpath and carriageway and pedestrian guard rail at outer edges of

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the bridge/Rob. In case of footpath on bridge/Rob, the width of earthen shoulder shall be tapered at the rate of 1:15 (Circular: EFile No. RW/NH-33044/22/2020-S&R dated 4th June, 2024)

- 7.1.4 The Safety Barrier and Footpath on Bridges and ROB shall continue on approaches. The footpath shall be provided with paved surface & railing till the embankment height is more than 3m.

Details of Structures with footpaths (Clause No. 7.2 ii IRC: SP:84- 2019/ IRC: SP:87-2019)

Sr. No.	Location at Km	Skew Angle	Footpath Width (m)		Remarks
			Left	Right	
1	ROB@124+223	0	1.5	1.5	
2	MJB@128+970	0	1.5	1.5	
3	MJB@132+358	0	1.5	1.5	

- 7.1.5 All bridges shall be high level bridges.

- 7.1.6 All structures shall be designed to carry utility services on outer side of RCC barrier/Railing as per site requirement.

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

## 7.2 Culverts

- 7.2.1 The Overall width of all culverts shall be equal to the roadway width of the approaches unless specifically brought in Schedule-B. The overall width of culverts shall be including width of main carriageway and slip/service roads/Entry ramps/ Exit Ramps/ Acceleration/Deceleration lanes, etc. All culverts shall also be continued in median and in gap between main carriageway and service road.

- 7.2.2 New / Reconstruction of existing RCC pipe culverts: The existing culverts at the following locations shall be reconstructed as new culverts:

Sr. No.	Design Chainage	Culvert Type	Skew Angle	Span/ Opening(m)	New/ Reconstruction/Dismantle	Culvert Crossing Type Balancing /Stream	Remarks
1	139+662	Pipe	0	1X1	Dismantle	-	Cross Road Both Side
2	140+467	Pipe	0	1X1	Dismantle	-	Cross Road Both Side

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Sr. No.	Design Chainage	Culvert Type	Skew Angle	Span/Opening(m)	New/ Reconstruction/Dismantle	Culvert Crossing Type Balancing /Stream	Remarks
3	141+400	Pipe	0	1X1	Dismantle	-	Cross Road Left Side
4	142+442	Pipe	0	1X1	Dismantle	-	Cross Road Both Side
5	146+632	Pipe	0	1X1	Dismantle	-	Cross Road Right Side

#### 7.2.3 Widening of existing RCC pipe culverts (Clause No. 7.3 iii IRC: SP: 87 – 2019)

All existing culverts which are to be retained shall be widened to the proposed roadway width of the Project Highway as per the typical cross section given in section 7 of the Manual unless specifically brought out in Schedule-B. Repairs and strengthening of existing structures where required shall be carried out.

Sr. No.	Design Chainage	Culvert Type	Skew Angle	Span/Opening (m)	Repair/ Rehabilitation proposals	Culvert Crossing Type (Balancing /Stream, etc)	Remarks
NIL							

#### 7.2.4 Construction of Box Culverts:

7.2.5 New culverts (given in table below) shall be constructed for width equal to the proposed roadway width of the Project Highway (unless specifically indicated in the Schedule-B ) & as per typical cross-section given in schedule B unless specifically brought out in Schedule-B. The details are given as under:

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#### Box Culverts on MCW

Sr. No.	Design Chainage (Km)	Clear Span Arrangement (m)	Skew Angle	Culvert Crossing Type (Balancing/Stream, etc)	Remarks
1	113+020	1X6X3	43	Nallah	
2	113+119	1X3X3	0	Balancing	
3	113+728	1X3X3	0	Balancing	
4	114+028	1X2X2	0	Balancing	
5	114+605	1X6X3	9	Nallah	
6	115+174	1X3X3	0	Balancing	
7	116+174	1X3X3	0	Nallah Realign	
8	116+807	1X2X2	0	Nallah Realign	
9	116+900	1X2X2	0	Balancing	
10	116+991	1X6X3	0	Balancing	
11	117+555	1X2X2	0	Balancing	
12	118+048	1X6X3	0	Balancing	
13	118+417	1X2X2	28	Nallah	
14	118+817	1X3X3	27	Nallah	
15	119+068	1X3X3	21	Nallah	
16	119+500	1X3X3	22	Balancing	
17	120+022	1X2X2	0	Nallah Realign	
18	120+320	1X2X2	0	Balancing	
19	120+550	1X2X2	0	Balancing	
20	121+011	1X6X3	38	Nallah	
21	121+300	1X6X3	28	Nallah	
22	121+950	1X6X3	0	Nallah	
23	122+455	1X2X2	0	Balancing	
24	122+790	1X2X2	0	Balancing	
25	123+015	1X2X2	0	Balancing	
26	123+200	1X2X2	0	Balancing	
27	123+645	1X2X2	0	Balancing	
28	123+967	1X3X3	44	Nallah	
29	124+438	1X2X2	0	Balancing	
30	124+777	1X2X2	0	Balancing	
31	125+100	1X2X2	0	Balancing	

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32	125+440	1X6X3	0	Nallah Realign	
33	125+805	1X2X2	0	Balancing	
34	126+780	1X2X2	0	Balancing	
35	127+200	1X6X3	0	Balancing	
36	127+441	1X3X3	0	Balancing	
37	127+560	1X3X3	0	Nallah Realign	
38	127+745	1X2X2	30	Nallah	
39	127+839	1X2X2	0	Nallah Realign	
40	128+205	1X3X3	0	Balancing	
41	129+470	1X2X2	0	Balancing	
42	129+820	1X2X2	0	Balancing	
43	130+000	1X2X2	0	Nallah Realign	
44	130+050	1X2X2	0	Nallah	
45	130+289	1X2X2	0	Balancing	
46	130+583	1X2X2	0	Nallah	
47	130+850	1X3X3	0	Balancing	
48	131+320	1X3X3	0	Balancing	
49	132+686	1X2X2	0	Balancing	
50	132+873	1X2X2	0	Nallah	
51	132+945	1X2X2	0	Nallah	
52	133+311	1X3X3	0	Nallah	
53	133+402	1X3X3	0	Nallah	
54	133+682	1X3X3	0	Nallah	
55	133+950	1X2X2	0	Nallah Realign	
56	134+750	1X3X3	0	Balancing	
57	135+140	1X6X3	0	Nallah Realign	
58	135+760	1X2X2	0	Nallah	
59	136+453	1X2X2	0	Nallah	
60	137+244	1X2X2	0	Nallah	
61	137+450	1X3X3	0	Balancing	
62	137+563	1X6X3	0	Nallah	
63	137+982	1X3X3	0	Nallah	

#### Box Culverts on Interchange

Sr. No.	Design Chainage (Km)	Clear Span Arrangement (m)	Skew Angle	Culvert Crossing Type (Balancing/Stream, etc)	Remarks
<b>Trumpet Interchange @ Km 139+650</b>					
1	138+950	1X2X2	0	Balancing	Loop-01

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2	139+300	1X2X2	0	Balancing	Loop-01
3	0+150	1X2X2	0	Balancing	Ramp-01
4	0+260	1X2X2	0	Balancing	Ramp-02
5	0+900	1X2X2	0	Balancing	Ramp-03

#### 7.2.6 Widening of existing box and Pipe culverts

All existing culverts which are to be retained shall be widened to the proposed roadway width of the Project Highway as per the typical cross section given in Schedule-B. Repairs and strengthening of existing structures where required shall be carried out.

Sr. No.	Design Chainage	Culvert Type	Skew Angle	Span/Opening (m)	Repair/ Rehabilitation proposals	Culvert Crossing Type (Balancing/Stream, etc)	Remarks
1	26+601	Pipe	0	1X1.2	Retained+Widening	Nallah	
2	26+065	Pipe	0	1X1.2	Retained+Widening	Nallah	
3	25+885	Pipe	0	1X1.2	Retained+Widening	Nallah	
4	25+080	Pipe	0	1X1.2	Retained+Widening	Nallah	
5	24+759	Box	0	1X3X3	Retained+Widening	Nallah	
6	24+145	Pipe	0	1X1.2	Retained+Widening	Nallah	
7	23+325	Box	0	1X3X3	Retained+Widening	Nallah	
8	23+104	Pipe	0	1X1.2	Retained+Widening	Nallah	
9	22+475	Pipe	0	2X1.2	Retained+Widening	Nallah	
10	21+986	Box	0	1X4X4	Retained+Widening	Nallah	
11	21+410	Box	0	1X2X2	Retained+Widening	Nallah	
12	20+420	Box	0	1X2X2	Retained+Widening	Nallah	
13	19+751	Box	0	1X2X3	Retained+Widening	Nallah	
14	18+916	Pipe	0	1X1.2	Retained+Widening	Nallah	
15	18+430	Box	0	1X3X3	Retained+Widening	Nallah	
16	18+320	Pipe	45	2X1.2	Retained+Widening	Nallah	
17	18+032	Pipe	0	1X1.2	Retained+Widening	Nallah	

#### 7.2.7 Culverts on Crossroads:

Sr. No.	Design Chainage (Km)	Clear Span Arrangement (m)	Type (Box/ Pipe)	Min. length of Culvert (m)	Remarks
1	113+762	1X1.2	Pipe	7	B/S
2	114+767	1X1.2	Pipe	7	B/S

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- 7.2.8 Utility ducts in bypasses (Greenfield as well as Brownfield which is being upgraded) in form of NP-4 RCC Pipe dia 600 mm shall be provided across the Project Highway @ 0.50 km c/c and along with inspection chamber where directed for crossing of utilities anywhere as per Manual (Clause 2.16) requirements. (Clause No. 2.16 IRC: SP:84-2019/ IRC: SP:87-2019)

**Location for utility Ducts**

Sr. No.	Design Chainage (Km)		Remarks
	From	To	
1	116+000	147+000	62 Nos. (@ 500m c/c across the Project Highway)

### 7.3 Bridges

- 7.3.1 Existing bridges to be re-constructed/widened:

- Existing bridges proposed for reconstructed as new structures (Clause No. 7.3 iv(a) IRC: SP:84-2019/ IRC: SP:87-2019):

Sr. No.	Design Chainage (Km)	Total Proposed length (m)	Type of Crossing	Total Proposed width (m)	Typical cross section of Manual	Skew Angle
Nil						

- Existing narrow bridges proposed to be retained and widened:

Sr. No.	Design Chainage (Km)	Total Proposed length (m)	Type of Crossing	Total Proposed width (m)	Typical cross section of Manual	Skew Angle
1	26+950	1 X 10	Nallah	2x14.6	14	40
2	26+447	1 X 10	Nallah	2x14.6	17	40
3	25+267	1 X 10	Nallah	2x14.6	17	0
4	24+377	1 X 10	Nallah	2x14.6	17	48
5	19+153	1 X 7	Nallah	2x14.6	17	0

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

<b>Major Bridges</b>
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Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Sr. No.	Design Chainage (Km)	Total Proposed length (m) (Clear Square Span)	Type of Crossing	Total Proposed width (m)	Typical cross section of Manual	Skew Angle
1	128+970	8 X 45	Water Body	2x16.55	8A	0
2	132+358	2 X 45	Water Body	2x16.55	8A	0

Minor Bridges						
Sr. No.	Design Chainage (Km)	Total Proposed length (m) (Clear Square Span)	Type of Crossing	Total Proposed width (m)	Typical cross section of Manual	Skew Angle
1	113+063	1 X 8	Nallah	2x14.6	8	45
2	115+430	1 X 8	Nallah	2x14.6	8	24
3	116+450	1 X 12	Water Pipe Line	2 X 14.6	8	20
4	117+208	1 X 45	Pond+Road	2 X 14.6	8	0
5	121+542	1 X 20	Canal & BT	2 X 14.6	8	26
6	122+118	1 X 30	Nallah	2 X 14.6	8	35
7	122+307	1 X 20	Canal & BT	2 X 14.6	8	26
8	123+333	1 X 30	Pond	2 X 14.6	8	37
9	123+548	1 X 20	Canal & BT	2 X 14.6	8	55
10	126+244	1 X 20	Canal & BT	2 X 14.6	8	45
11	127+028	1 X 32	Pond	2 X 14.6	8	25
12	130+731	1 X 22	Nallah	2 X 14.6	8	9
13	132+493	1 X 22	Nallah+Road	2 X 14.6	8	42
14	135+254	1 X 22	Nallah	2 X 14.6	8	0
15	00+272	1 X 10	Nallah	1 X 11	8	45

**Note:**

- The work of major/minor Bridge is inclusive of all protection works and guide bunds shall be as shown in drawings (Vol-IX of bidding documents).
  - Protection works shall be as shown in drawings (Vol-IX of bidding documents).
- 7.3.3 The railings of existing bridges shall be replaced by crash barriers at the following locations: the specific locations are to be mentioned by DPR Consultant. (Clause No. 7.17 iv IRC: SP:87-2019)

Sr. No.	Design Chainage (Km)	Length (Km)	Remarks
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Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

	From	To		
NIL				

7.3.4 The existing bridges/ RoB / Grade Separators/ RUB retained on the project highway shall be upgraded and rehabilitation measures/proposals shall be specified as follows: (Clause No.7.3 iv(b) IRC: SP:87-2019)

Sr. No.	Location at (Km)	Rehabilitation Proposals	Remarks
NIL			

7.3.5 Structures in marine environment: -

Sr. No.	Location at (Km)	Structure Type	Remarks
NIL			

7.3.1 Realignment of Nallah for bridges: -

SL. No	Culvert/ Bridge Design Ch.	Design Ch		Length of Nalla (m)
		From	To	
1	113+026	113+000	113+080	207
2	115+426	115+420	115+440	189

#### 7.4 Railroad Bridges (ROB/RUB)

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified in Section 7 of the manual.

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

Sr. No.	Design Chainage (Km)	Proposed Span Arrangement (m)	Type of structure (i.e., Bowstring, simply supported composite structure etc.)	Name of Crossing	Total width (m)	Skew Angle	Remarks
1	124+223	20+37.2 8+20	Steel Composite Girder and RCC Girder	Railway (Patal Pani to Dr. Ambedkar Nagar Station)	2x16.55	0	

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

**Note:**

1. The details of span and type of super-structure mentioned above as per approved GAD by the railways. If the length/width of the span/ type of super-structure is changed due to any reason the COS shall be considered.
  2. ROB shall be designed, constructed and maintained as per the requirements of Railway authorities. The construction plan shall be prepared in consultation with the concerned railway authority.
  3. The ROB shall be constructed and maintained by the concessionaire under supervision of the Railways.
  4. All charges payable to the Railways like D&G. Capitalized maintenance, signaling, cabling. OHE modification, earthing etc. except P&E charges and way leave charges shall be borne by the Concessionaire.
- 7.4.3 Road under bridges (road under railway line) shall be provided at the following level crossings, as per GAD drawings attached:

Sr. No.	Design Chainage (Km)	Proposed Span Arrangement (m)	Name of Crossing	Total width (m)	Skew Angle	Remarks
NIL						

**7.5 Grade Separated Structures**

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

**7.6 FoB/Skywalks**

FoB /Skywalks shall be provided in built up areas/ near schools. DPR Consultant to provide detailed drawings of FoB in schedule B.

Sr. No.	Location at (Km)	FOB Type	Remarks
NIL			

**7.7 A summary of culverts, Bridges and structures shall be presented as follows:**

Sr. No.	Name of the structure	Total Numbers	Remarks
1	Major Bridge	2	
2	Minor Bridge (New)	15	
3	Minor Bridge (Retained & Widening)	5	
4	ROB	1	

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Sr. No.	Name of the structure	Total Numbers	Remarks
5	Flyovers	1	
6	VUP (Single span)	9	
7	VUP (Multi Span)	Nil	
8	LVUP (New)	5	
9	LVUP (Retained & Widening)	4	
10	Box Crossing (New)	28	
11	Box Crossing (Retained & Widening)	1	
12	SVUP	NIL	
13	FOB	NIL	
14	Box Culverts (New)	68 (63 on MCW+ 5 on Int)	
15	Box Culverts and Pipe Culverts (Widening)	17	
16	Box Culverts on Cross Roads	12	
17	Pipe Culverts on Cross Roads	Nil	
18	Pipe Culverts	Nil	
19	VOP	Nil	

## 8. Traffic Control Devices and Road Safety Works

8.1 Traffic control devices and road safety works shall be provided in accordance with Section 9 of the IRC: SP: 87-2019.

### 8.2 Traffic Signs:

Traffic signs shall be provided as per IRC: 67-2022 as mentioned in Schedule-C.

### 8.3 Pavement Marking:

Pavement markings shall be completed as per IRC: 35-2015 as mentioned in Schedule-C.

### 8.4 Safety Barrier:

The safety barriers shall be provided in accordance with Section-9 of the Clause 9.7 of the manual.

**The Safety Barrier length proposed are excluding the safety barrier already proposed on Culverts, Grade Separated Structures, Interchange, Bridges, RoB and RUB as applicable cross sections respectively.**

End Treatment of Steel barriers/Rope Barrier shall be specified i.e., MELT or P-4 confirming to EN 1317-4, TT, MBCB barrier to Concrete Barrier

End Treatment to Concrete barrier shall be done as specified.

**Thrie beam Crash Barrier on Main Carriage Way (Both Edge)**

S. No.	Item	LHS		RHS		Total Length (m)	Remarks
		(From)	(To)	(From)	(To)		

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S. No.	Item	LHS		RHS		Total Length (m)	Remarks
		(From)	(To)	(From)	(To)		
1	Thrie Beam CB	116000	116444	116000	116444	444	TCS 1
2	Thrie Beam CB	116456	117186	116456	117186	730	TCS 1
3	Thrie Beam CB	117231	119772	117231	119772	2542	TCS 1
4	Thrie Beam CB	120140	121532	120140	121532	1392	TCS 1
5	Thrie Beam CB	121552	122103	121552	122103	551	TCS 1
6	Thrie Beam CB	122133	122297	122133	122297	164	TCS 1
7	Thrie Beam CB	122317	122708	122317	122708	391	TCS 1
8	Thrie Beam CB	122720	123318	122720	123318	598	TCS 1
9	Thrie Beam CB	123348	123538	123348	123538	190	TCS 1
10	Thrie Beam CB	123558	123727	123558	123727	169	TCS 1
11	Thrie Beam CB	124740	126234	124740	126234	1494	TCS 1
12	Thrie Beam CB	126254	126262	126254	126262	8	TCS 1
13	Thrie Beam CB (RHS)	126262	126328	126262	126328	66	TCS 1C
14	Thrie Beam CB	126328	126447	126328	126447	119	TCS 1
15	Thrie Beam CB (RHS)	126447	126456	126447	126456	9	TCS 1C
16	Thrie Beam CB (RHS)	126670	126684	126670	126684	14	TCS 1C
17	Thrie Beam CB	126684	127012	126684	127012	328	TCS 1
18	Thrie Beam CB	127044	128575	127044	128575	1531	TCS 1
19	Thrie Beam CB	128595	128790	128595	128790	195	TCS 1
20	Thrie Beam CB	129150	129752	129150	129752	602	TCS 1
21	Thrie Beam CB	129772	129797	129772	129797	25	TCS 1
22	Thrie Beam CB (LHS)	129797	129821	129797	129821	24	TCS 1B
23	Thrie Beam CB (LHS)	129860	129863	129860	129863	3	TCS 1B
24	Thrie Beam CB (LHS)	130114	130145	130114	130145	31	TCS 1B
25	Thrie Beam CB	130145	130389	130145	130389	244	TCS 1
26	Thrie Beam CB	130401	130724	130401	130724	323	TCS 1
27	Thrie Beam CB	130739	131490	130739	131490	752	TCS 1
28	Thrie Beam CB	131490	131520	131490	131520	30	TCS 13B
29	Thrie Beam CB	131520	131670	131520	131670	150	TCS 13
30	Thrie Beam CB	131670	131683	131670	131683	13	TCS 1
31	Thrie Beam CB	131695	132313	131695	132313	618	TCS 1
32	Thrie Beam CB	132403	132434	132403	132434	31	TCS 1
33	Thrie Beam CB	132446	132482	132446	132482	36	TCS 1
34	Thrie Beam CB	132504	134100	132504	134100	1596	TCS 1
35	Thrie Beam CB	134100	134340	134100	134340	240	TCS 13
36	Thrie Beam CB	134340	134400	134340	134400	60	TCS 13A
37	Thrie Beam CB	134400	135247	134400	135247	847	TCS 1
38	Thrie Beam CB	135262	135333	135262	135333	72	TCS 1
39	Thrie Beam CB	135353	136550	135353	136550	1197	TCS 1
40	Thrie Beam CB	136550	136590	136550	136590	40	TCS 13A

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S. No.	Item	LHS		RHS		Total Length (m)	Remarks
		(From)	(To)	(From)	(To)		
41	Thrie Beam CB	136590	137140	136590	137140	550	TCS 13
42	Thrie Beam CB	137140	137190	137140	137190	50	TCS 13A
43	Thrie Beam CB	137190	137228	137190	137228	38	TCS 1
44	Thrie Beam CB (LHS)	137228	137245	137228	137245	17	TCS 1B
45	Thrie Beam CB (RHS)	137248	137358	137248	137358	110	TCS 1C
46	Thrie Beam CB	137358	138010	137358	138010	652	TCS 1

#### Thrie beam crush barrier @ median

S. No.	Item	LHS		RHS		Total Length (m)	Remarks
		(From)	(To)	(From)	(To)		
1	Thrie Beam CB@ Median	116000	116444	116000	116444	444	TCS 1
2	Thrie Beam CB@ Median	116456	117186	116456	117186	730	TCS 1
3	Thrie Beam CB@ Median	117231	119772	117231	119772	2542	TCS 1
4	Thrie Beam CB@ Median	119784	120120	119784	120120	336	TCS 2
5	Thrie Beam CB@ Median	120140	121532	120140	121532	1392	TCS 1
6	Thrie Beam CB@ Median	121552	122103	121552	122103	551	TCS 1
7	Thrie Beam CB@ Median	122133	122297	122133	122297	164	TCS 1
8	Thrie Beam CB@ Median	122317	122708	122317	122708	391	TCS 1
9	Thrie Beam CB@ Median	122720	123318	122720	123318	598	TCS 1
10	Thrie Beam CB@ Median	123348	123538	123348	123538	190	TCS 1
11	Thrie Beam CB@ Median	123558	123727	123558	123727	169	TCS 1
12	Thrie Beam CB@ Median	123739	124184	123739	124184	445	TCS 9
13	Thrie Beam CB@ Median	124262	124641	124262	124641	379	TCS 9
14	Thrie Beam CB@ Median	124653	124740	124653	124740	87	TCS 9
15	Thrie Beam CB@ Median	124740	126234	124740	126234	1494	TCS 1
16	Thrie Beam CB@ Median	126254	126262	126254	126262	8	TCS 1
17	Thrie Beam CB@ Median	126262	126328	126262	126328	66	TCS 1C
18	Thrie Beam CB@ Median	126328	126447	126328	126447	119	TCS 1
19	Thrie Beam CB@ Median	126447	126456	126447	126456	9	TCS 1C
20	Thrie Beam CB@ Median	126456	126565	126456	126565	109	TCS 1A
21	Thrie Beam CB@ Median	126585	126670	126585	126670	85	TCS 1A
22	Thrie Beam CB@ Median	126670	126684	126670	126684	14	TCS 1C
23	Thrie Beam CB@ Median	126684	127012	126684	127012	328	TCS 1
24	Thrie Beam CB@ Median	127044	128575	127044	128575	1531	TCS 1
25	Thrie Beam CB@ Median	128595	128790	128595	128790	195	TCS 1
26	Thrie Beam CB@ Median	129150	129752	129150	129752	602	TCS 1
27	Thrie Beam CB@ Median	129772	129797	129772	129797	25	TCS 1
28	Thrie Beam CB@ Median	129797	129821	129797	129821	24	TCS 1B
29	Thrie Beam CB@ Median	129821	129860	129821	129860	39	TCS 1A

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S. No.	Item	LHS		RHS		Total Length (m)	Remarks
		(From)	(To)	(From)	(To)		
30	Thrie Beam CB@ Median	129860	129863	129860	129863	3	TCS 1B
31	Thrie Beam CB@ Median	129863	130114	129863	130114	251	TCS 1A
32	Thrie Beam CB@ Median	130114	130145	130114	130145	31	TCS 1B
33	Thrie Beam CB@ Median	130145	130389	130145	130389	244	TCS 1
34	Thrie Beam CB@ Median	130401	130724	130401	130724	323	TCS 1
35	Thrie Beam CB@ Median	130739	131490	130739	131490	752	TCS 1
36	Thrie Beam CB@ Median	131490	131520	131490	131520	30	TCS 13B
37	Thrie Beam CB@ Median	131520	131670	131520	131670	150	TCS 13
38	Thrie Beam CB@ Median	131670	131683	131670	131683	13	TCS 1
39	Thrie Beam CB@ Median	131695	132313	131695	132313	618	TCS 1
40	Thrie Beam CB@ Median	132403	132434	132403	132434	31	TCS 1
41	Thrie Beam CB@ Median	132446	132482	132446	132482	36	TCS 1
42	Thrie Beam CB@ Median	132504	134100	132504	134100	1596	TCS 1
43	Thrie Beam CB@ Median	134100	134340	134100	134340	240	TCS 13
44	Thrie Beam CB@ Median	134340	134400	134340	134400	60	TCS 13A
45	Thrie Beam CB@ Median	134400	135247	134400	135247	847	TCS 1
46	Thrie Beam CB@ Median	135262	135333	135262	135333	72	TCS 1
47	Thrie Beam CB@ Median	135353	136550	135353	136550	1197	TCS 1
48	Thrie Beam CB@ Median	136550	136590	136550	136590	40	TCS 13A
49	Thrie Beam CB@ Median	136590	137140	136590	137140	550	TCS 13
50	Thrie Beam CB@ Median	137140	137190	137140	137190	50	TCS 13A
51	Thrie Beam CB@ Median	137190	137228	137190	137228	38	TCS 1
52	Thrie Beam CB@ Median	137228	137245	137228	137245	17	TCS 1B
53	Thrie Beam CB@ Median	137245	137248	137245	137248	3	TCS 1A
54	Thrie Beam CB@ Median	137248	137358	137248	137358	110	TCS 1C
55	Thrie Beam CB@ Median	137358	138010	137358	138010	652	TCS 1

#### Thrie Beam Crash Barrier on Interchange

S.No.	Item	LHS		RHS		Total Length (m)	Remarks
		(From)	(To)	(From)	(To)		
1	Thrie Beam CB	139160	139630	139160	139630	470	
2	Thrie Beam CB	0	334	0	334	334	
3	Thrie Beam CB	0	1165	0	1165	1165	
4	Thrie Beam CB	0	1045	0	1045	1045	

#### The RCC Crash Barrier details on MCW at both Edge below:

S.No.	Item	LHS	RHS	Total Length	Remarks
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Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

		(From)	(To)	(From)	(To)	(m)	
1	RCC CB @ both edge	113022	113030	113022	113030	8	TCS 10
2	RCC CB @ both edge	113756	113768	113756	113768	12	TCS 10
3	RCC CB @ both edge	113768	114761	113768	114761	993	TCS 11A
4	RCC CB @ both edge	114761	114773	114761	114773	12	TCS 10
5	RCC CB @ Edge	116444	116456	116444	116456	12	TCS 8
6	RCC CB @ Edge	117186	117231	117186	117231	45	TCS 8
7	RCC CB @ Edge	119772	119784	119772	119784	12	TCS 8
8	RCC CB @ Edge	119784	120120	119784	120120	336	TCS 2
9	RCC CB @ Edge	120120	120140	120120	120140	20	TCS 8
10	RCC CB @ Edge	121532	121552	121532	121552	20	TCS 8
11	RCC CB @ Edge	122103	122133	122103	122133	30	TCS 8
12	RCC CB @ Edge	122297	122317	122297	122317	20	TCS 8
13	RCC CB @ Edge	122708	122720	122708	122720	12	TCS 8
14	RCC CB @ Edge	123318	123348	123318	123348	30	TCS 8
15	RCC CB @ Edge	123538	123558	123538	123558	20	TCS 8
16	RCC CB @ Edge	123727	123739	123727	123739	12	TCS 8
17	RCC CB @ Edge	123739	124184	123739	124184	445	TCS 9
18	RCC CB @ Edge	124184	124262	124184	124262	78	TCS 8A
19	RCC CB @ Edge	124262	124641	124262	124641	379	TCS 9
20	RCC CB @ Edge	124641	124653	124641	124653	12	TCS 8
21	RCC CB @ Edge	124653	124740	124653	124740	87	TCS 9
22	RCC CB @ Edge	126234	126254	126234	126254	20	TCS 8
23	RCC CB @ Edge (LHS)	126262	126328	126262	126328	66	TCS 1C
24	RCC CB @ Edge (LHS)	126447	126456	126447	126456	9	TCS 1C
25	RCC CB @ Edge	126456	126565	126456	126565	109	TCS 1A
26	RCC CB @ Edge	126565	126585	126565	126585	20	TCS 8
27	RCC CB @ Edge	126585	126670	126585	126670	85	TCS 1A
28	RCC CB @ Edge (LHS)	126670	126684	126670	126684	14	TCS 1C
29	RCC CB @ Edge	127012	127044	127012	127044	32	TCS 8
30	RCC CB @ Edge	128575	128595	128575	128595	20	TCS 8
31	RCC CB @ Edge	128790	129150	128790	129150	360	TCS 8A
32	RCC CB @ Edge	129752	129772	129752	129772	20	TCS 8
33	RCC CB @ Edge (RHS)	129797	129821	129797	129821	24	TCS 1B
34	RCC CB @ Edge	129821	129860	129821	129860	39	TCS 1A
35	RCC CB @ Edge (RHS)	129860	129863	129860	129863	3	TCS 1B
36	RCC CB @ Edge	129863	130114	129863	130114	251	TCS 1A
37	RCC CB @ Edge (RHS)	130114	130145	130114	130145	31	TCS 1B
38	RCC CB @ Edge	130389	130401	130389	130401	12	TCS 8



Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

39	RCC CB @ Edge	130724	130739	130724	130739	15	TCS 8
40	RCC CB @ Edge	131683	131695	131683	131695	12	TCS 8
41	RCC CB @ Edge	132313	132403	132313	132403	90	TCS 8A
42	RCC CB @ Edge	132434	132446	132434	132446	12	TCS 8
43	RCC CB @ Edge	132482	132504	132482	132504	22	TCS 8
44	RCC CB @ Edge	135247	135262	135247	135262	15	TCS 8
45	RCC CB @ Edge	135333	135353	135333	135353	20	TCS 8
46	RCC CB @ Edge(RHS)	137228	137245	137228	137245	17	TCS 1B
47	RCC CB @ Edge	137245	137248	137245	137248	3	TCS 1A
48	RCC CB @ Edge (LHS)	137248	137358	137248	137358	110	TCS 1C
49	RCC CB @ Edge	138010	138520	138010	138520	510	TCS 9A
50	RCC CB @ Edge	138520	138615	138520	138615	95	TCS 9
51	RCC CB @ Edge	138615	138685	138615	138685	70	TCS 8
52	RCC CB @ Edge	138685	139160	138685	139160	475	TCS 4A
53	RCC CB @ Edge	139630	139923	139630	139923	293	TCS 16
54	RCC CB @ Edge	139923	139933	139923	139933	11	TCS 17
55	RCC CB @ Edge	139933	140287	139933	140287	354	TCS 16
56	RCC CB @ Edge	140287	140297	140287	140297	10	TCS 17
57	RCC CB @ Edge	140297	140903	140297	140903	606	TCS 16
58	RCC CB @ Edge	140903	140913	140903	140913	11	TCS 17
59	RCC CB @ Edge	140913	141370	140913	141370	457	TCS 16
60	RCC CB @ Edge	142650	142895	142650	142895	245	TCS 16
61	RCC CB @ Edge	142895	142905	142895	142905	11	TCS 17
62	RCC CB @ Edge	142905	143150	142905	143150	245	TCS 16
63	RCC CB @ Edge	144100	144460	144100	144460	360	TCS 16
64	RCC CB @ Edge	144460	144470	144460	144470	10	TCS 17
65	RCC CB @ Edge	144470	144700	144470	144700	230	TCS 16

#### RCC Crash Barrier on Interchange

S. No.	Item	LHS		RHS		Total Length (m)	Remarks
		(From)	(To)	(From)	(To)		
1	RCC CB @ Both Edge	138692	139160	138692	139160	468	

#### RCC Crash Barrier on median

S. No.	Item	LHS		RHS		Total Length (m)	Remarks
		(From)	(To)	(From)	(To)		
1	RCC CB @ Median	116444	116456	116444	116456	12	TCS 8
2	RCC CB @ Median	117185.5	117230.5	117185.5	117230.5	45	TCS 8
3	RCC CB @ Median	119772	119784	119772	119784	12	TCS 8
4	RCC CB @ Median	120120	120140	120120	120140	20	TCS 8

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

S. No.	Item	LHS		RHS		Total Length (m)	Remarks
		(From)	(To)	(From)	(To)		
5	RCC CB @ Median	121532	121552	121532	121552	20	TCS 8
6	RCC CB @ Median	122103	122133	122103	122133	30	TCS 8
7	RCC CB @ Median	122297	122317	122297	122317	20	TCS 8
8	RCC CB @ Median	122708	122720	122708	122720	12	TCS 8
9	RCC CB @ Median	123318	123348	123318	123348	30	TCS 8
10	RCC CB @ Median	123538	123558	123538	123558	20	TCS 8
11	RCC CB @ Median	123727	123739	123727	123739	12	TCS 8
12	RCC CB @ Median	124184.1	124261.9	124184.1	124261.9	77.86	TCS 8A
13	RCC CB @ Median	124641	124653	124641	124653	12	TCS 8
14	RCC CB @ Median	126234	126254	126234	126254	20	TCS 8
15	RCC CB @ Median	126565	126585	126565	126585	20	TCS 8
16	RCC CB @ Median	127012	127044	127012	127044	32	TCS 8
17	RCC CB @ Median	128575	128595	128575	128595	20	TCS 8
18	RCC CB @ Median	128790	129150	128790	129150	360	TCS 8A
19	RCC CB @ Median	129752	129772	129752	129772	20	TCS 8
20	RCC CB @ Median	130389	130401	130389	130401	12	TCS 8
21	RCC CB @ Median	130723.5	130738.5	130723.5	130738.5	15	TCS 8
22	RCC CB @ Median	131683	131695	131683	131695	12	TCS 8
23	RCC CB @ Median	132313	132403	132313	132403	90	TCS 8A
24	RCC CB @ Median	132434	132446	132434	132446	12	TCS 8
25	RCC CB @ Median	132482	132504	132482	132504	22	TCS 8
26	RCC CB @ Median	135246.5	135261.5	135246.5	135261.5	15	TCS 8
27	RCC CB @ Median	135333	135353	135333	135353	20	TCS 8
28	RCC CB @ Median	138615	138685	138615	138685	70	TCS 8
29	RCC CB @ Median	139923	139933	139923	139933	11	TCS 17
30	RCC CB @ Median	140287	140297	140287	140297	10	TCS 17
31	RCC CB @ Median	140903	140913	140903	140913	11	TCS 17
32	RCC CB @ Median	142895	142905	142895	142905	11	TCS 17
33	RCC CB @ Median	144460	144470	144460	144470	10	TCS 17

The RCC Crash Barrier details on Service Road as below:

S.No	Item	LHS		RHS		Total Length (m)
		From	To	From	To	
NIL						

The W beam details on main carriageway as below:

S.No	Item	LHS		RHS		Total Length (m)	Remarks
		From	To	From	To		
Nil							

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

At W Beam Details Ramps and Loops

S.No	Item	LHS		RHS		Total Length (m)	Remarks
		From	To	From	To		
Nil							

## 9. Roadside furniture

9.1 It shall be provided as per the details mentioned in Schedule-C.

## 10. Hazardous locations

The safety barriers shall be provided at the following hazardous location such as ponds, well, electric sub-station, Electric tower, spilt carriageway, etc.

Sr. No.	Location stretches (Km)		Type of safety Barrier	LHS/RHS
	From	To		
1	136+410	136+490	Retaining Wall	LHS
2	128+950	129+150	Retaining Wall	Both
3	124+840	124+860	Retaining Wall	RHS
4	123+680	123+685	Retaining Wall	RHS
5	123+280	124+400	Retaining Wall	Both Side
6	121+780	121+785	Retaining Wall	LHS
7	117+190	117+270	Retaining Wall	LHS

## 11. Special Requirement for Retaining/ Protection works:

Retaining Structure and protection works shall be provided at locations as indicated below and as provided in TCS schedule in cl. 2.11 of schedule-B. The length of the Retaining wall/RE wall/Toe wall as indicated below is excluding the sections of Major Bridges, Minor Bridges, LVUP, VUP and Flyover, however the length is inclusive of the sections of Box Crossing, Box culverts

Retaining Wall location as below: -

Sr.No.	Design Chainage (Km)		Length (m)	Side	Height (m)	RS Wall Retaining Structure / Toe Wall	Type of Safety Barrier	Remarks
	From	To						
1	113+000	113+020	20	LHS	8	Retaining Wall	RCC CB	
2	113+040	113+060	20	LHS	7.5	Retaining Wall	RCC CB	
3	115+400	115+420	20		10	Retaining	RCC CB	

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

						Wall		
4	115+440	115+460	20	LHS	9	Retaining Wall	RCC CB	
5	126262	126329	67	LHS	12.58129	Retaining Wall	RCC CB	
6	126447	126565	118	LHS	10.60739	Retaining Wall	RCC CB	
7	126585	126685	100	LHS	10.68634	Retaining Wall	RCC CB	
8	129821	130115	294	LHS	10.74008	Retaining Wall	RCC CB	
9	137245	137359	114	LHS	10.55787	Retaining Wall	RCC CB	
10	126456	126565	109	RHS	10.70696	Retaining Wall	RCC CB	
11	126585	126671	86	RHS	10.63719	Retaining Wall	RCC CB	
12	129797	130146	349	RHS	11.48891	Retaining Wall	RCC CB	
13	137228	137249	21	RHS	10.74931	Retaining Wall	RCC CB	
14	126257	126262	5	LHS	0.2911	Toe Wall	Thrie Beam CB	
15	126329	126333	4	LHS	0.2825	Toe Wall	Thrie Beam CB	
16	126372	126447	75	LHS	0.3521	Toe Wall	Thrie Beam CB	
17	126685	126726	41	LHS	0.315476	Toe Wall	Thrie Beam CB	
18	128215	128218	3	LHS	0.2655	Toe Wall	Thrie Beam CB	
19	128225	128233	8	LHS	0.350125	Toe Wall	Thrie Beam CB	
20	129796	129863	67	LHS	0.29734	Toe Wall	Thrie Beam CB	
21	130115	130193	78	LHS	0.342359	Toe Wall	Thrie Beam CB	
22	134576	134609	33	LHS	0.245197	Toe Wall	Thrie Beam CB	
23	134693	134701	8	LHS	0.01325	Toe Wall	Thrie Beam CB	
24	134722	134743	21	LHS	0.137262	Toe Wall	Thrie Beam CB	
25	137235	137567	332	LHS	0.314776	Toe Wall	Thrie Beam CB	
26	138418	138441	23	LHS	0.255152	Toe Wall	Thrie Beam	

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

							CB	
27	139030	139049	19	LHS	0.281452	Toe Wall	Thrie Beam CB	
28	126359	126456	97	RHS	0.416964	Toe Wall	Thrie Beam CB	
29	126671	128571	1900	RHS	0.321653	Toe Wall	Thrie Beam CB	
30	128640	128783	143	RHS	0.202349	Toe Wall	Thrie Beam CB	
31	129730	129752	22	RHS	0.219682	Toe Wall	Thrie Beam CB	
32	129772	129797	25	RHS	0.25702	Toe Wall	Thrie Beam CB	
33	130146	130226	80	RHS	0.38395	Toe Wall	Thrie Beam CB	
34	137221	137228	7	RHS	0.296357	Toe Wall	Thrie Beam CB	
35	137249	137253	4	RHS	0.36025	Toe Wall	Thrie Beam CB	
36	138449	138465	16	RHS	0.219	Toe Wall	Thrie Beam CB	
37	139041	139061	20	RHS	0.3174	Toe Wall	Thrie Beam CB	

**Reinforced Earth Wall location as below: -**

Approaches ROB/Flyover/VUP: -

Sr. No.	Design Chainage (Km)		Length (m)	Side	Height (m)	RS Wall Retaining Structure / Toe Wall	Type of Safety Barrier	Remarks
	From	To						
1	113768	114761	993	Both side	5.5	RE Wall	RCC Crash Barrier on Both Side & Thrie Beam on median	11A
2	119784	120120	336	Both Side	5.5	RE Wall	RCC CB @ Edge & Thrie Beam CB @ median	TCS 2
3	123739	124184.1	445	Both Side	5.5	RE Wall	RCC CB @ Edge & Thrie Beam CB @ median	TCS 9
4	124261.9	124641	379	Both Side	5.5	RE Wall	RCC CB @ Edge & Thrie Beam CB @ median	TCS 9

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

5	124653	124740	87	Both Side	5.5	RE Wall	RCC CB @ Edge & Thrie Beam CB @ median	TCS 9
6	138010	138520	510	Both Side	5.5	RE Wall	RCC CB @ Edge & Thrie Beam CB @ median	TCS 9A
7	138520	138615	95	Both Side	5.5	RE Wall	RCC CB @ Edge & Thrie Beam CB @ median	TCS 9
8	138685	139160	475	Both Side	5.5	RE Wall	RCC CB @ Edge & Thrie Beam CB @ median	TCS 4A

**Brest Wall location as below: -**

Sr. No.	Design Chainages (Km)		Length(m)	Side	Height(m)	Retaining structure/Toe wall	Type of safety barrier	Remarks
	From	To						
NIL								

## 12. Open Well within Row

The Open well shall be identified and appropriate treatment shall be provided.

S. No.	Design Chainage	Well dimension	Well depth	Filling material for well	Slab on Top of well (Yes/No)	Remarks
NIL						

## 13. Shifting of Utilities

The Concessionaire shall undertake the work of shifting of any utility (including electric lines, water pipes, gas pipelines and telephone cables) to an appropriate location or alignment, in accordance with the provisions of Concession Agreement. The Utility shifting plans are as per Volume IX drawings

## 14. Work Zone Traffic Management Plans

The traffic diversion plans shall be prepared as per IRC SP 55 for smooth flow of traffic and safety. A diversion plan shall be proposed for construction of Culvert, Grade Separated Structures, Bridges, ROB/RUB, etc. and traffic management plan for widening/ reconstruction of carriageway.

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Sr · N o.	Design Chainage (Km)		Construction Activity	Diversion	Traffic Management Plan	Barricading Type – III/IV/CC Barrier with Lighting along barrier	Deployment of Flagman In Habitation/ Schools/ Hospital , etc.	Remarks
	From	To						
1	113+662	113+862	New construction of LVUP/VUP/ Box Crossing	Temporary Diversion for Reconstruction of CD Works	Figure 10.10	Type III & New Jersey Barrier	Not Applicable	
2	114+667	114+867						
3	141+072	141+272	Bridge Widening					
4	146+289	146+489	Bridge Widening					
5	138+450	138+250	Flyover Construction					
6	119+678	119+878	Underpass Construction					
7	120+030	120+230	Underpass Construction					
	122+614	122+814	Underpass Construction					
	123+633	123+833	Underpass Construction					
8	124+547	124+747	Underpass Construction					
9	126+475	126+675	Underpass Construction					
10	128+490	128+690	Underpass Construction					
11	129+670	129+870	Underpass Construction					
12	130+300	130+500	Underpass Construction					
13	131+589	131+789	Underpass Construction					
14	132+340	132+540	Underpass Construction					
15	135+243	135+443	Underpass Construction					
16	139+828	140+028	Underpass Construction					
17	140+192	140+392	Underpass Construction					
18	140+808	141+008	Underpass Construction					
19	142+798	142+998	Underpass					

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Sr · N o.	Design Chainage (Km)		Construction Activity	Diversion	Traffic Management Plan	Barricading Type – III/IV/CC Barrier with Lighting along barrier	Deployment of Flagman In Habitation/ Schools/ Hospital , etc.	Remarks
	From	To						
			Construction					
20	144+365	144+565	Underpass Construction					
21	139+612	139+712	Culvert Construction					
22	140+417	140+517	Culvert Construction					
23	141+350	141+450	Culvert Construction					
24	142+171	142+271	Culvert Construction					
25	142+392	142+492	Culvert Construction					
26	143+509	143+609	Culvert Construction					
27	144+085	144+185	Culvert Construction					
28	145+075	145+175	Culvert Construction					
29	145+743	145+843	Culvert Construction					
30	146+582	146+682	Culvert Construction					
31	138+900	139+000	Culvert Construction @ Interchange					
32	139+250	139+350	Culvert Construction @ Interchange					
33	00+100	00+200	Culvert Construction @ Interchange					
34	00+210	00+310	Culvert Construction @ Interchange					
35	00+850	00+950	Culvert Construction @ Interchange					

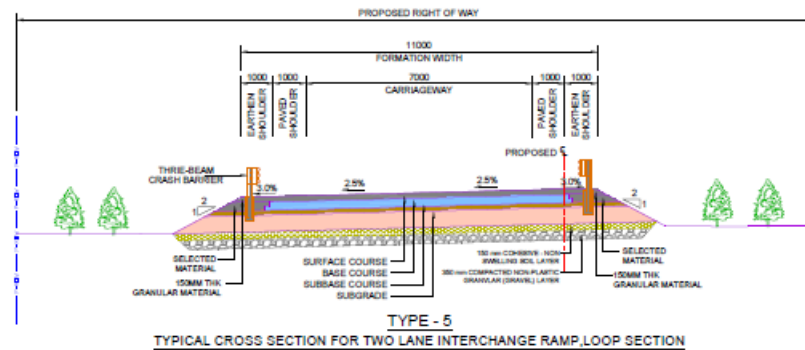
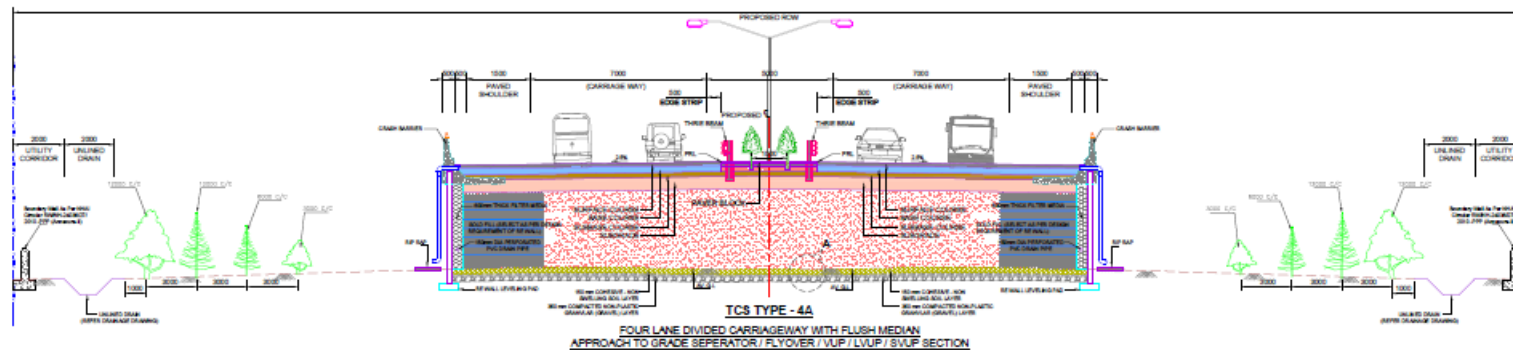


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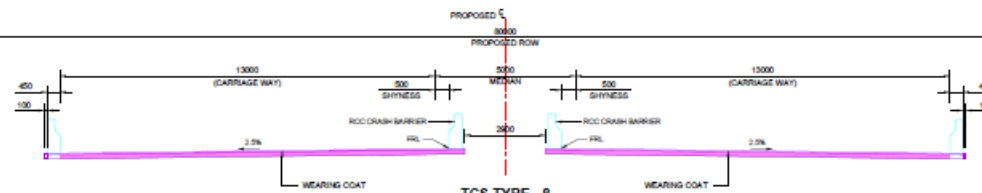
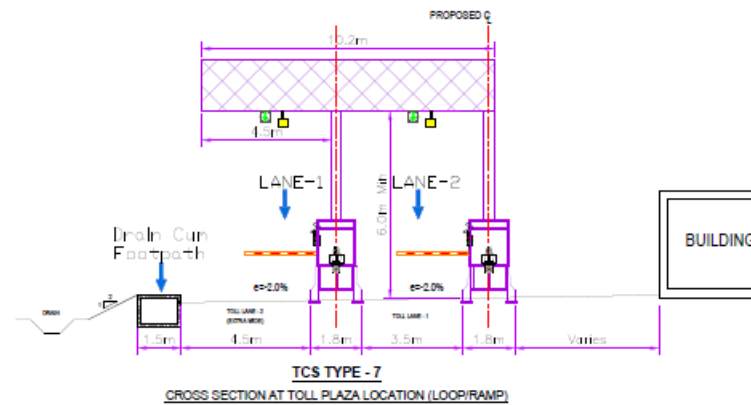
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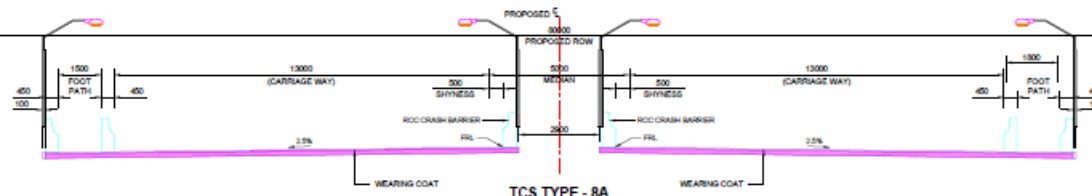
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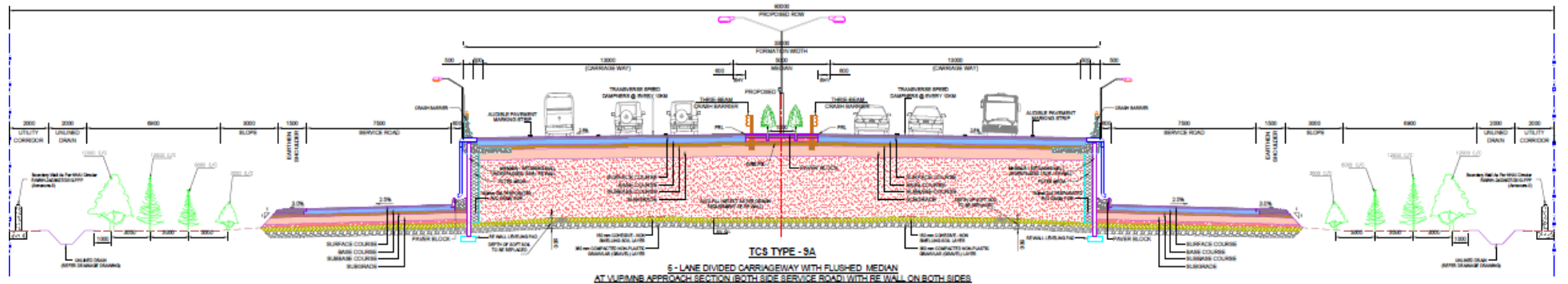
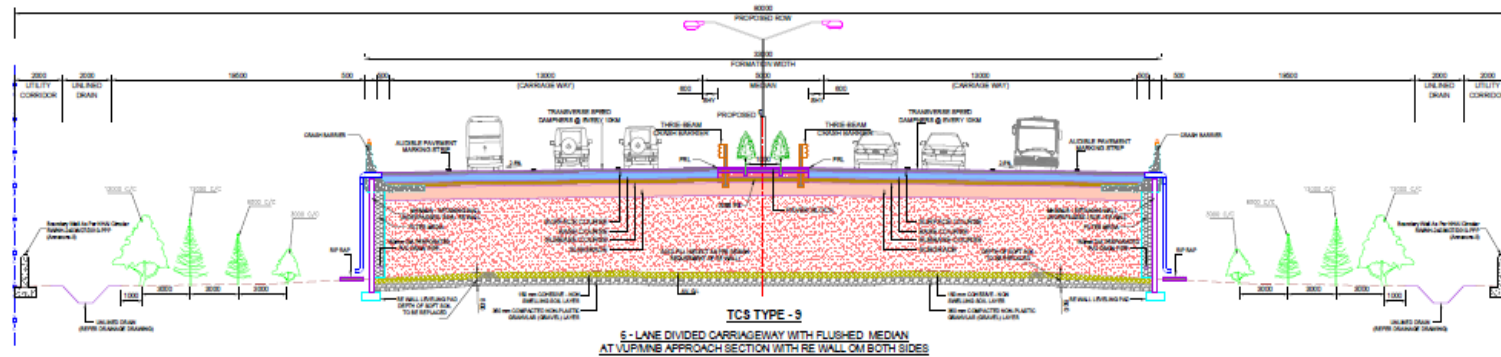


5-LANE DIVIDED CARRIAGE - BOTH SIDE NEW BRIDGES WITHOUT SERVICE ROAD (FLYOVER AND UNDERPASSES & MNR)

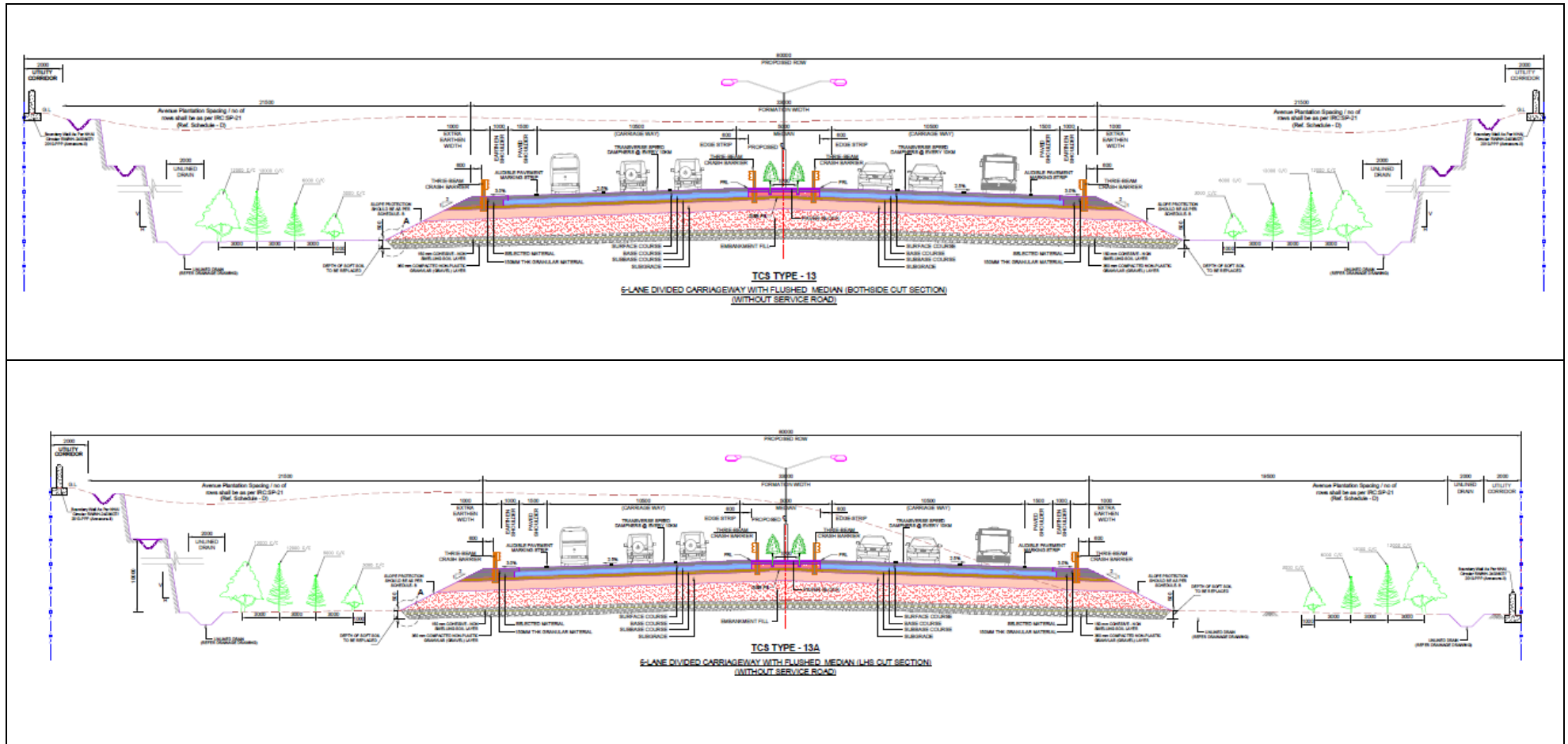


5-LANE DIVIDED CARRIAGE - BOTH SIDE NEW BRIDGES WITH FOOTPATH (ROB / MJB)

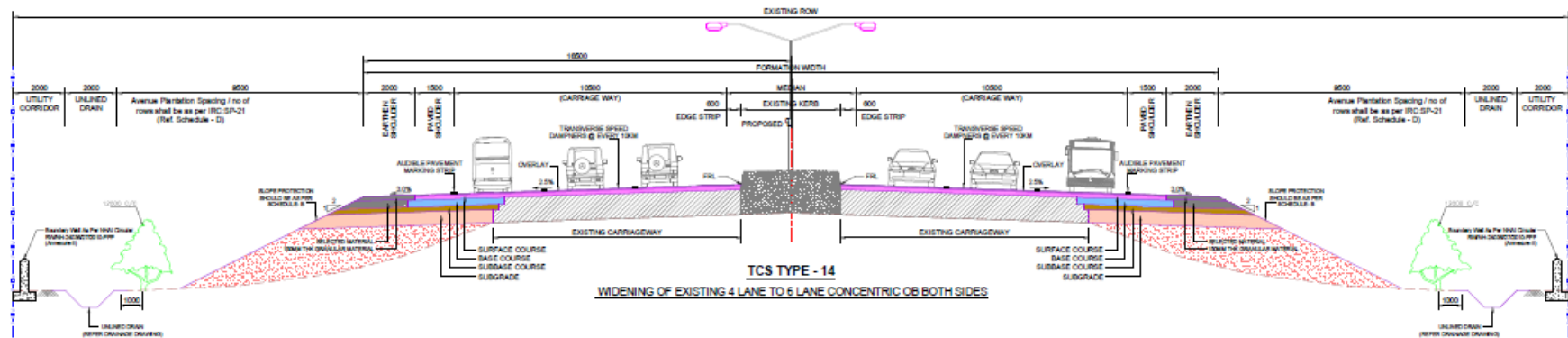
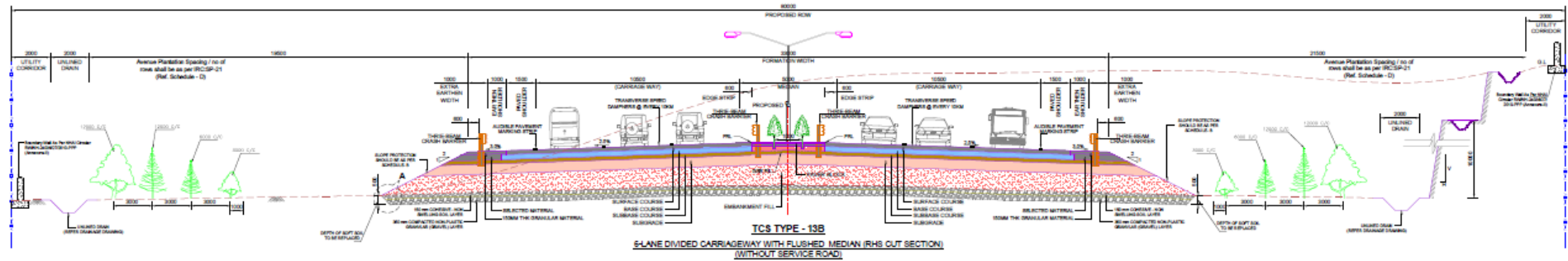
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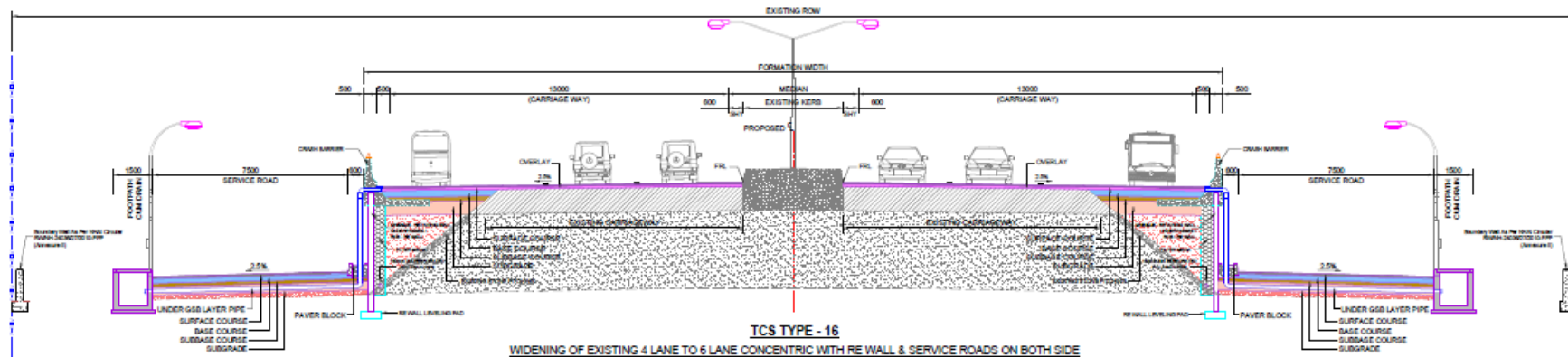
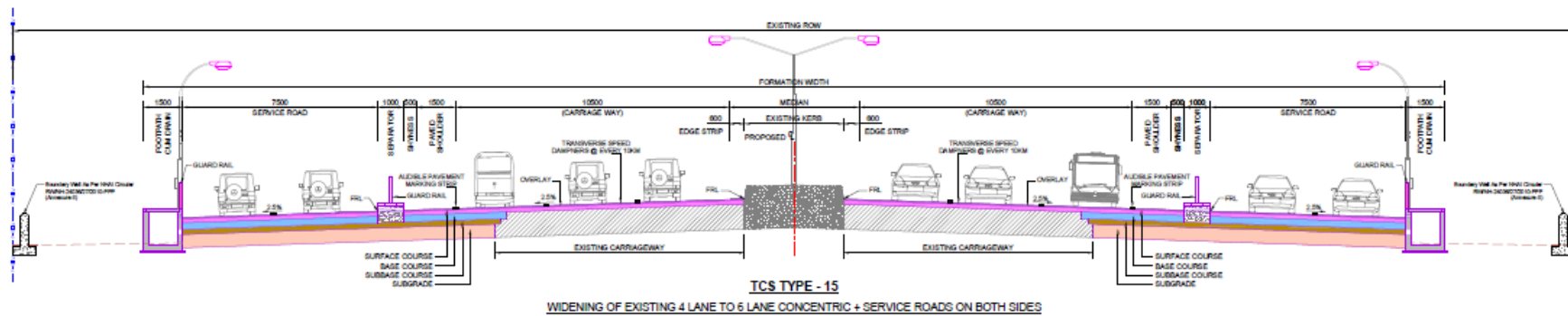


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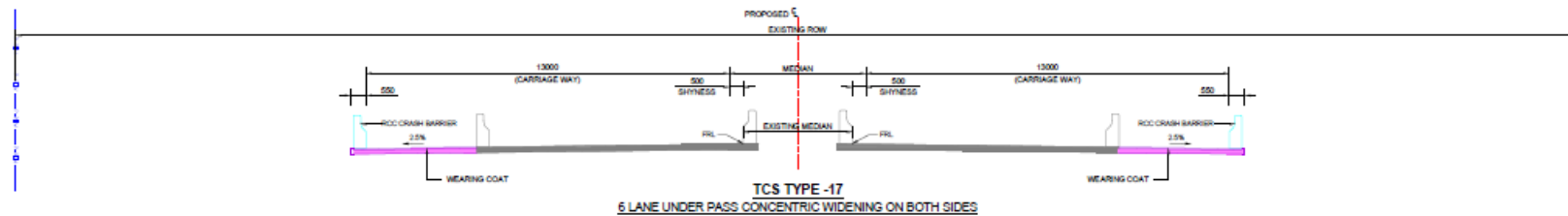
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## **SCHEDULE –C**

*(See Clause 2.1)*

### **PROJECT FACILITIES**

#### **1. Project Facilities**

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

- a) Toll Plaza
- b) Road side furniture
  - i. Kilometer and Hectometer Stones
  - ii. Traffic Signs
  - iii. Overhead Signs
  - iv. Road Marking
  - v. Road Delineators
  - vi. Reflective Pavement Markers & Solar Studs
  - vii. Traffic Impact Attenuators
  - viii. Boundary wall and Fencing
- c) Operation and Maintenance centers
- d) Way side Amenities / Service Areas
- e) Truck lay-byes
- f) Bus Bay and Bus shelter
- g) Pedestrian Facilities
- h) Highway Lighting
- i) Rainwater Harvesting
- j) Environmental Management Plan
- k) Land Scaping and Tree Plantation
- l) Advanced Traffic Management System (ATMS)
- m) Highway Patrol Units
- n) Emergency medical services
- o) Crane Service

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

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## **Annexure – I**

*(Schedule-C)*

### **PROJECT FACILITIES**

#### **1. Project Facilities**

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

- a)** Toll Plaza
- b)** Roadside furniture
  - i. Kilometer and Hectometer Stones
  - ii. Traffic Signs
  - iii. Overhead Signs
  - iv. Road Marking
  - v. Road Delineators
  - vi. Reflective Pavement Markers & Solar Studs
  - vii. Traffic Impact Attenuators
  - viii. Boundary wall and Fencing
- c)** Operation and Maintenance centers
- d)** Way side Amenities 1 Service Areas
- e)** Truck lay-byes
- f)** Bus Bay and Bus shelter
- g)** Pedestrian Facilities
- h)** Highway Lighting
- i)** Rainwater Harvesting
- j)** Environmental Management Plan
- k)** Land Scaping and Tree Plantation
- l)** Advanced Traffic Management System (ATMS)
- m)** Highway Patrol Units
- n)** Emergency medical services
- o)** Crane Service

#### **Description of Project Facilities**

Each of the Project Facilities is briefly described below:

##### **1. Toll Plaza**

Tolling system shall be provided in entire length of the project and the same is integrated with the adjoining packages. The Toll Plazas shall be provided as per NHA circular No. 17.5.82 dated 24/5/2021 and Schedule D. Minimum Lane requirement in the opening year are as follows.

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Toll Plaza shall be provided confirming to at the following locations:

S. No	Location of Toll Plaza		Direction (Entry: to highway, Exit: from Highway)	Minimum number of Toll Lanes		Remarks
	Existing Chainages	Design Chainages		Entry	Exit	
1	39+500	138+650	NH 52 to Indore Eastern Bypass	4	4	2 lanes Ramp Plaza for Each Ramp & Loop. Ramp 1,2 – Entry Ramp 3 & Loop 1 - Exit

The Sub Items of toll Plaza are as follows

S. No.	Item	Number	Remarks
1	No. of toll lane	8	2 lanes for each ramp plaza-
2	Toll Booth complex	8	2 toll Booth for each ramp plaza-
3	Weigh bridges	4	1 No for Each Side
4	Electrical systems	8	2 No for Each toll booth
5	Highway Nest with toilet facility	2	1 No for Each Side
6	Internet facility	8	4 No for Each toll booth

**Note:**

1. The Toll Plaza shall be constructed as per Manual (Schedule D) considering the modification as per NHAI Circular NHAI/Policy Guidelines/Management of Toll Plaza/2021 Policy Circular No. 17.5.82 dated 24th May, 2021. However, layout as mentioned in Schedule-C shall be followed.
2. Based on the toll lanes as given above, toll Booth complex, weigh bridges, electrical systems, and all other facilities required/ mentioned in manual shall be provided as per specification mentioned in Schedule D.
3. No. of toll lane specified above are to be provided. The Concessionaire shall design and provide toll lane as per Manual (Schedule D) & NHAI Circular NHAI/Policy Guidelines/Management of Toll Plaza/2021 Policy Circular No.17.5.82 dated 24th May, 2021 subject to as specified above.
4. All Toll Lanes to be equipped with Hybrid ETC equipment's as per NHAI/Policy Guidelines/Management of Toll Plaza/2021 Policy Circular No. 17.5.82 dated 24th May, 2021.
5. A separate Highway Nest with toilet facility for road users shall be provided near toll plaza location along with parking facility. One toilet block on each direction shall be provided. These toilet facilities shall follow CPWD specifications for sanitary ware items and fittings such as WC, wash basin, Wash basin-Under counter, Urinal flat back, PVC Cistern, IWC Orissa Pan, Flush Valve –CP, Wash Basin pillar cock-CP, Bib Cock—CP, Health Faucet, W/c Bib cock,

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Wash Basin angle cock. One WC shall be provided for specially challenged persons.

6. Point of Sale (POS) with card swapping machines shall be provided.
7. Provide Lane markings and Traffic Signs as per IRC: SP: 87-2019, IRC 35 and IRC 67
8. Solar panels shall be erected over the either on FOB or over Toll Plaza / Admin building to generate the green energy. Same shall be utilized for toll plaza lighting and other energy requirement within toll plaza area along with conventional lighting.
9. Medium speed Weigh in Motion (MSWIM) devices shall be provided in all toll lanes at Toll Plaza Location. In addition to MSWIM, Static weigh Bridge (SWBs) shall be provided on each direction as per manual.
10. Provide Impact Attenuators on Toll Plaza islands in the direction of traffic. Impact attenuators shall be self-restoring conform to section 10.6 of IRC SP 99 i.e. Manual of Specifications and Standards for Expressways.
11. Provide Staircase on either side of the FOB at Median Island location by widening the island appropriately.

## 2. Roadside furniture

### 2.1. Kilometer and Hectometer Stones

S. No.	Item	Number	Remarks
1	Kilometer Marker/ Stones	62	The K M / H e c t o m e t e r s t o n e s / marker can be Concrete/ Stones and shall be placed on both outer side of the earthen shoulder.  In case KM/ Hectometer marker are to be fixed on separator between Main Carriageway & Service Road then these should be fixed as reflective signs.  Hectometer marker should be fixed as reflective signs.  Km/ Hectometer stones are required to provide on main carriageway and Service Road, both if continuous service road is provided throughout project, length (Service Road length is more than 1 Km).
2	Hectometer Marker) Stones	248	
3	Fifth Km Stone	12 (5 on LHS & 5 no's on RHS Side)	

### 2.2. Traffic Signs

Traffic Signs include roadside signs, overhead signs and kerb mounted signs etc. shall be provided along the entire Project Highway and on all Side, Roads joining the main

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carriageway/service road. A QR code shall be marked on back of each sign as per IRC 67.

All sign shall be of Micro Prismatic Grade Sheeting Corresponding to Class C sheeting as per ASTM D 4956 Type VIII, IX and XI.

All shoulder mounted signs shall be supported on GI Pipes. Overhead Signs shall be placed on a structurally sound gantry or cantilever structure made of GI pipes.

On multi lane roads (6 lanes or above), signs shall be mounted overhead.

The siting of signs shall conform to Table 4.1 and Fig 4.1 of IRC 67. The two successive signs shall be placed at a minimum distance of  $0.6 \times V$  meter (V is design speed in Km/h).

**The overhead gantry signs shall be placed as given below:**

S. No.	Item	Carriageway (Left, Right, Both)
1	Overhead Gantry signs	Both Side
a	Start of Project	01 Nos Both Side
b	End of project	01 Nos Both Side
c	Toll plaza location on both side	01 Nos for Each Ramp Plaza @ Km138+650
D	Speed Limit Overhead Gantry	03 Nos Left & 03 Nos Right
2	Overhead Cantilever Gantry signs	Either left or right
a	At all major locations of cross roads i.e NH, SH, MDR (start of grade separated structure/at grade interchange)	Either left or right
b	At major trauma center, roads leading to religious places or any other important location	Both sides
3.	Double/Butterfly Cantilever	On Gore Area of Exit Locations of Access Controlled Highway/Expressway.

The detailed minimum numbers of signages indication places, direction, distances and other features shall be marked on the alignment plan and submitted, which are as mentioned below: -

S. No.	Road Signs	Number	Remarks
I	<b>Mandatory/Regulatory</b>		
1	Stop signs (Fig-14.01)	32	
2	Give Way Signs (Fig-14.02)	32	
3	Prohibitory signs	NA	
4	No Parking signs	NA	
5	No Stopping signs	NA	
6	Speed Limit signs (Circular) (Fig-14.39)	45	
7	Speed Limit signs (Vehicle Type) (Fig-14.40a)	NA	
8	Vehicle Control signs	NA	
9	Restriction Ends sign	NA	

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S. No.	Road Signs	Number	Remarks
<b>I</b>	<b>Mandatory/Regulatory</b>		
10	Compulsory Direction Control and other signs	NA	
11	Pass Either Side (Fig-14.52)	NA	
12	Height Limit (Fig-14.35)	20	
<b>II</b>	<b>Cautionary/Warning</b>		
1	Left/Right Curve (Fig-15.02)	40	
2	Left / Right Curve with side road	NA	
2	Right/Left Hairpin Bend	NA	
3	Right/Left Reverse Bend	NA	

S. No.	Road Signs	Number	Remarks
4	Series of Bends	NA	
5	270 Degree Loop	NA	
6	Side Road (Fig-15.10)	NA	
7	Y-intersection	NA	
8	Cross Road (Fig-15.14)	NA	
9	Roundabout	NA	
10	Traffic Signals	NA	
11	T-Intersection (Fig-15.18)	-	
12	Major Road Ahead	NA	
13	Staggered Inter-section	NA	
14	Merging Traffic Ahead (Fig-15.22)	18	
15	Narrow Road Ahead	NA	
16	Road Widens	NA	
17	Narrow Bridge Ahead	NA	
18	Steep Ascent/Descent	NA	
20	Reduced Carriageway	NA	
21	Start /End of Dual Carriageway	NA	
23	Gap in Median	NA	
24	Pedestrian Crossing (Fig-15.33)	35	
25	Pedestrian crossing with backing board	NA	
26	School Ahead	NA	
27	Built Up Area	NA	
28	Two Way Operation (on main carriage way / Service road	NA	
29	Two Way Traffic on Cross Road Ahead	NA	
30	Danger Warning Sign	NA	
31	Deaf or Blind Persons Likely on Road Ahead	NA	
32	Cycle Crossing	NA	
33	Cycle Route Ahead (Warning for Cycles on road ahead)	NA	

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34	Dangerous Dip	NA	
35	Speed Breaker	NA	
36	Rumble Strip (Fig-15.50)	35	
37	Rough Road	NA	
38	Dangerous Ditch	NA	
39	Slippery Road	NA	
40	Slippery Road because of Ice	NA	
41	Opening or Swing Bridge	NA	
42	Overhead Cable	NA	
43	Play Ground Ahead	NA	
44	Quay Side or River Bank	NA	
45	Sudden Side Winds	NA	
46	Tunnel Ahead Warning	NA	
47	Falling Rocks	NA	
48	Cattle Crossing	NA	
49	Wild Animals likely to be on Road Ahead	NA	

S. No.	Road Signs	Number	Remarks
50	Queues Likely Ahead	NA	
51	Low flying Air Craft	NA	
52	Unguarded Railway Crossing	NA	
53	Guarded Railway Crossing	NA	
54	Crash prone area ahead	NA	
55	U- Turn (Fig-17.09)	16	U-turns are provided at Service Road locations
<b>III</b>	<b>Chevron Signs</b>		
1	Single Chevron (Fig.-15.74)	64	
2	Double Chevron	NA	
3	Triple Chevron	NA	
<b>IV</b>	<b>Object Hazard Marker Sign</b>		
1	Left /Right side Object Hazard Marker (Fig-15.76)	276 (MCW) + 34 (interchange)	
2	Two-way Object Hazard Marker (Fig-15.80)	14	
<b>V</b>	<b>Informatory/Guide</b>		
1	Direction and Place Identification signs	NA	
2	Stack Type Advance Direction Sign (Shoulder Mounted) (Fig-16.01)	26	
3	Stack Type Advance Direction Sign with cautionary / regulatory signs (Shoulder Mounted)	NA	
4	Map Type Advance Direction Sign (Shoulder Mounted)	NA	



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5	Map Type Advance Direction Sign for roundabout (Shoulder Mounted)	NA	
6	Flag Type Direction Sign (Fig-16.04)	32	
7	Reassurance Sign (Fig-16.05)	13	
8	Place Identification Sign		
9	Truck Lay -By (Fig-16.07)	2	
10	Toll Booth Ahead (Fig-16.08)	Nil	
11	Weigh Bridge Ahead (Fig.-16.09)	Nil	
12	Shoulder Mounted Sign in Advance of a Grade Separated Junction/ Interchange	NA	
13	Expressway Sign	NA	
14	Gantry Mounted advance Direction Sign Ahead of a Flyover in Urban/City Roads (Fig-4.4)	4	
15	Gantry Mounted advance Direction Sign Ahead of a Grade Separated Junction	NA	
16	Gantry Mounted advance Direction Sign Ahead board, Separate of a At Grade Intersection	NA	
17	Gantry Mounted Advance Direction Sign for Interchange	NA	

S. No.	Road Signs	Number	Remarks
18	Cantilever Gantry Mounted Advance Direction Sign for Interchange	NA	
19	Lane Dedicated Gantry Sign	NA	
20	Definition/Supplementary Plates	NA	
21	Tourism Related Sign	NA	
22	Tourist Destination Direction Information Signs Without Photograph	NA	
23	Tourist Destination Direction Information Signs With Photograph	NA	
24	Finger Destination direction Information Sign for Pedestrians	NA	
25	Tourist Map Information Sign	NA	
26	Boundary Sign at Entrance to a City/Place	NA	
27	Boundary Sign at Entrance to a Tourist Destination	NA	
VI	Facility Information signs	NA	
1	Eating Place	NA	
2	Light Refreshment	NA	

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3	Resting Place	NA	
4	First Aid Post	NA	
5	Toilet	NA	
6	Filling Station (Fuel Pump)	NA	
7	Hospital	NA	
8	U-Turn Ahead	NA	
9	Pedestrian Subway	NA	
10	Police Station	NA	
11	Picnic Site	NA	
12	Repair Facility	NA	
13	Railway Station/Metro Station/Monorail Station	NA	
14	Industrial Area	NA	
15	Cycle Rickshaw Stand	NA	
16	Taxi Stand	NA	
17	Auto Rickshaw Stand	NA	
18	Home Zone	NA	
19	Camp Site	NA	
20	Airport	NA	
21	Golf Course	NA	
22	National Heritage	NA	
23	No Through Road	NA	
24	No Through Side Road	NA	
25	Toll Road Ahead	NA	
26	Guide Sign on Toll Lane Portal	NA	

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S. No.	Road Signs	Number	Remarks
27	Country Border	NA	
28	Entry Ramp for Highway (Fig.-17.31)	3	
29	Exit Ramp for Highway (Fig.-17.32)	3	
30	Expressway Symbol	NA	
31	End of Expressway	NA	
32	Bus Stop (Fig-17.35)	NA	
33	Bus Lane	NA	
34	Contra Flow Bus Lane	NA	
35	Cycle Lane	NA	
36	Contra Flow Cycle Lane	NA	
37	Holiday Chalets	NA	
38	Emergency Exit	NA	
<b>VII</b>	<b>Other Useful Information Signs</b>		
1	Signs For Persons with Disabilities	NA	
2	International symbol of Accessibility	NA	
3	Parking Information	NA	
4	Parking Areas	NA	
5	Ramped Entrance to Subway/Over Bridge	NA	
6	Telephone Facilities	NA	
7	Toilet Facilities	NA	
8	Way Finding	NA	
9	Parking Signs	NA	
10	Auto Rickshaw Parking	NA	
11	Cycle Parking	NA	
12	Cycle Rickshaw Parking	NA	
13	Scooter and Motorcycle Parking	NA	
14	Taxi Parking	NA	
15	Park and Ride	NA	
16	Parking Restrictions Signs for Traffic Management	NA	
17	Flood Gauge Sign	NA	
<b>VIII</b>	<b>Route Maker Signs</b>		
1	State Highway Route Marker Sign	NA	
2	National Highway Route Marker Sign (Fig.-22.02)	31	
3	Asian Highway Route Marker Sign	NA	
4	Expressway Route Marker Sign	NA	

**Note:** The locations of the placement of signages shall be finalized in consultation with IE/ NHAI, as per site requirement the signage shall be provided as per MoRTH Guideline no. RT-25035/07/2023-RS (Part) (221534) dated 20.07.2023.

### 2.3. Road Marking

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Road Markings shall be Hot applied thermoplastic materials with reflectorized beads to achieve visibility conforming to clause 2.7.2 of IRC 35

The cold applied plastics pavement markings shall be used for School Zone Markings, Audible Raised Profile Edge Lines and Block Markings (BM 01/02/03).

The detailed minimum requirement of the road marking on the project highway shall be as mentioned below: -

S. No.	Item	Unit		Remarks
		Length (m)	Number	
1	Longitudinal Marking	31000	8	
2	Transverse Marking			
a)	TM-04	5.5	20	
3	Hazard Marking		NIL	
4	Block Marking		NIL	
5	Arrow Marking		NIL	
6	Directional Marking		NIL	
7	Facility Marking		NIL	
8	Center Line		NIL	
9	Traffic Lane Lines	31000	4 (MCW), 1 (Each Dumbell), 1 (Ramp Each), 1 (SR each)	
10	No Overtaking Lines	NA	NA	
11	Warning Lines		NIL	
12	Border or Edge Lines	31000	4 (MCW), 2 (Loop Each), 2 (Ramp Each), 2 (SR each)	
13	Longitudinal Markings for Undivided Roads		NIL	
14	Longitudinal Markings for divided Roads	Nil		Traffic & Border or Edge Lines
15	Longitudinal Markings For Ramps/Slip Roads/One Way Streets	6147		Traffic & Border or Edge Lines
16	Stop Line	5.5	28	
17	Give Way Lines	5.5	28	
18	Diagonal Markings		7	
19	Chevron Markings		14	
20	Continuity Line		14	
21	Word Messages		13	
22	Lane Change		52	
23	Merging/Diverging Markings	4650	21	
24	Hatch Markings		NIL	
25	Raised Profile Edge Lines		NIL	

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26	Lane Reduction Narrowing Situations and Transitions (lane Balancing)	NIL		
27	Directional Arrows			
28	Mandatory Turn Arrows	NA	NA	
29	<b>Guidance Arrows</b>			

S. No.	Item	Unit		Remarks
		Length (m)	Number	
30	Deflection Arrows	NA	NA	
31	Bifurcation Arrows	NA	NA	
32	Arrows on Side Road Approaches		13	
33	Arrows on Main Road Approaches		54	
34	Word Messages	NIL		
35	Yellow Box Markings	NA	NA	
36	Ghost Island	NA	NA	
37	Marking for Speed Breakers	NA	NA	
38	Pedestrian Crossing		13	
39	Markings when highway passes through settlement fig 9.4 of IRC SP 87	NA	NA	
40	Transverse Bar Markings	10.5	52	
41	Bus bay Marking			
42	Truck Lay-by Markings		NA	
43	Toll Plaza Marking			Should be as per Fig.-12.5 IRC 35-2015.
44	School Zone Markings	NA	NA	
45	Object Markings within Carriageway Objects Markings Adjacent to Carriageway	NIL		
46	Objects Markings Adjacent to Carriageway	NIL		
47	i. Subway Piers, Abutments, Culverts Head Walls, Concrete Barrier	NIL		
48	ii. Electrical Poles	NA	NA	
49	iii. Guard Rails	NA	NA	
50	iv. Trees	NA	NA	
51	v. Krebs	NA	NA	
52	Directional Markings as per Annexure: A 6 (DM-01)		4	

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53	Facility Markings as per Annexure A.7 of IRC 35		4	
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**Note:** The locations of the marking shall be finalized in consultation with IE/ NHAI, as per site requirement.

#### 2.4. Road Delineators

S. No.	Item	Number/ Length (m)	Remarks
1	Roadway Indicators	1280	
2	Median Marker on Median/RCC Barrier (Clause 4 of IRC 79 2019)	11186	
3	Object Markers	NA	
4	Flexible Object Markers (Clause 6 of IRC 79 2019) i. On Metal Beam Barrier ii. On Toll Booth Toll Island iii. On Entry/Exit of Tunnel iv. On Exit from Main carriageway	i. NA ii. 26 iii. NA iv. NA	
5	Solar Blinkers on Median Opening, on exit from main carriageway and traffic islands of grade separated intersections	36	

**Note:** The locations of the Road Delineator shall be finalized in consultation with IE/NHAI, as per site requirement.

#### 2.5. Reflective Pavement Markers & Solar Studs

The Prismatic Retro-Reflective type conforming to ASTM D-4280 Pavement Markers & Solar Power Studs on Highway shall be provided in accordance with Schedule - D.

S. No.	Item	Number	Location	Remarks
<b>A. — For 6 Lane Projects</b>				
1	White Colour one coloured face Road Studs	6711	Traffic lane line & center of carriageway	Uni-directional carriageway
2	Red Colour one coloured face Road Studs	4756	Left hand edge of the carriageway, entry to truck lay	
3	Yellow / Amber Colour one coloured face Road Studs	3893	bye I bus bay, start of service road, chevron/diagonal markings on gorge Median side edge line, zebra crossing	
4	Green Colour one coloured face Road Studs	132	Lay byes, left hand side of the carriageway in case of multi-lane divided carriageways, crossable continuous line like in acceleration/deceleration lanes involving lane changing	

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**Note:** The locations of the Road Studs shall be finalized in consultation with IE/ NHAI, as per site requirement.

## 2.6. Traffic Impact Attenuators

**2.6.1 Provide Impact Attenuators in Gore Areas, it shall be self-restoring confirming to section 10.6 of IRC SP 99 i.e., Manual of Specifications and Standards for Expressways at following locations**

S. No.	Item	Chainage / Number	Remarks
1	On flyover/grade separated structure at exit from main carriageway	4	
2	On Island of Toll Plaza	16	
3	Any other location which Safety Hazard	NIL	

## 2.6.2 Providing End Terminals

Provide End Terminals P-4 type confirming to EN 1317-4 to Parapet Walls of Culverts, Structures ends for the safety of approaching traffic etc.

S. No.	Item	Chainage / Number	Remarks
1	Culvert Ends	NIL	
2	Structures Ends	NIL	
3	Any other location which Safety Hazard	NIL	

## 2.7. Boundary wall and Fencing

Boundary wall shall be provided along the entire length on either side (including transverse requirements at structure locations) as per the detail given below in accordance with Circular RW/NH-24036/27/2010-PPP. Road boundary walls shall be provided at the boundary on both sides of the right of way available under the control of the Authority, except at ingress and egress points. The boundary walls shall be of reinforced cement concrete as per figure enclosed as Annexure IV of Schedule C.

S. No	From Km	To Km	Side	Length in Km.	Remarks
1.	116+000	147+000	Both Sides	31	As per TCS drawing

At all CD structure locations, the boundary wall shall be discontinued by turning and joining it with the wing/return wall to allow crossing through these structures during dry seasons.

In case of Pre-cast panel fencing, provide cast in situ coping beam on top of fencing. provide detailed drawings as Annexure IV of Schedule-C.

## 3. Operation and Maintenance centers

There shall be operation and maintenance center(s) as per Clause 12.15 of Schedule-D, either near the toll plaza location or at any other location along the Project Highway, as identified by the

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Concessionaire. The minimum land for O & M center shall be 2000 sq.m and shall be acquired by the Concessionaire at his own cost and risk. Dedicated operation and maintenance center shall be provided in accordance to Schedule D.

#### 4. Way side Amenities / Service Areas/Rest Area

S. No	Item	Design Chainage (Km)	Side	Remarks
1	Way side Amenities-1	83+071	Double Trumpet (RHS)	Tentative area= 02 Hac.

The Site needs to be levelled/ graded for the whole of Way side Amenities area and boundary wall of the height of 1.5m as per drawing given in Annexure-IV of Schedule-C shall be constructed along the periphery of the area.

#### 5. Truck lay-byes:

5.1 The truck lay-bye shall be provided at below given location and as per the design mentioned in Schedule-D.

Sr No	Design Chainage	Side	Remarks
1	118+600	Both	

5.2 Toilet block along with Janitor room on each Truck Lay bye shall be provided. The toilet block shall consist of at least 1 block for bathing, at least 2 fixtures each for urinals, WC and wash basin. There shall be 24-hour lighting facility in toilet block. These toilets facilities must be functional round the clock including proper maintenance. For arrangement of water, 1 no. of boring along with water pump shall be provided to keep the toilet clean. For upkeep and maintenance of Toilet, 3 Safai wale (1 in each 8-hour shift) shall be engaged and is in the scope throughout contract period.

#### 5.3 Truck Lay Bye Pavement: Provide pavement composition as follows:

Pavement Composition	Minimum Crust Thickness(mm)
Subgrade	Same As MCW
Granular Sub-Base (GSB)	
Cement Treated Base Layer (CTB)	
Crack Relief Layer (CRL/AIL)	
DBM	
BC	

#### 6. Bus Bay and Bus shelter:

Provision of Bus Bay and bus shelter on highways as per IRC 80: 2022 including paving of layby, signs, markings, speed calming measures, drainage, lighting etc., in built-up areas, intersections of NH/SH/MDR and roads leading to large settlements is as follows:

6.1. Bus Bays with tapers shall be provided along with passenger's shelters shall be constructed at the following locations:

Sr. No.	Design Chainage (Km)		Entry Taper Length	Bus Bay Length	Exit Taper Length	Remark
	Left	Right				



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NIL
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**6.2. Kerb Side Bus Stop with Pedestrian shelter shall be provided at the following locations.**

Sr. No.	Design (Existing) Chainage (Km)		Pedestrian Shelter	Remark
	Left	Right	Length	
NIL				

**6.3 Bus Bay Pavement: Provide pavement composition as follows:**

Pavement Composition	Minimum Crust Thickness(mm)
Subgrade	Nil
Granular Sub-Base (GSB)	
Cement Treated Base Layer (CTB)	
Crack Relief Layer (CRL/AIL)	
DBM	
BC	

## 7. Pedestrian Facilities

Pedestrian Facilities shall be provided in accordance with the Manual of Specifications and Standards as referred in Clause 9.8 of Schedule D and IRC 103:2022. This shall consist of footpath (sidewalks), pedestrian guard rails and pedestrian crossing.

The details are as mentioned below:

S. No.	Pedestrian facilities	Chainage		Side	Remarks
		From	To		
1	Pedestrian guardrails shall be 150 mm from Carriageway/Paved Shoulder i. Hazardous Locations on Straight Stretches ii. At Junctions/Intersections iii. Schools iv. Bus Stop/Railway Stations v. Overpass, Subway vi. Central Reserve	NIL			
2	Footpath paving including fixing of Tactile pavers	NIL			
3	Pedestrian Crossing i. With Zebra Marking ii. With Tabletop Crossing iii. At Intersections iv. At Schools	NIL			

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## 8. Highway Lighting

The street light poles shall be 1 piece, continuous-tapered, octagonal poles and shall be manufactured from one length of steel sheet, formed in continuous tapered tube, with one continuous arc-welded vertical seam. The minimum wall thickness for lighting poles shall not be less than 4 mm. The Bottom Diameter shall be minimum 175 mm. The Top Diameter shall be minimum 75 mm. The door on window of pole shall be antitheft. All electrical cable should be concealed. All electrical lighting fixtures shall be LED. The fixtures shall be concealed except on poles. Lighting poles shall be fixed on outer side of steel/concrete barrier. The lighting shall be providing at the following locations:

No.	Lighting facilities	Chainage		Side	Lighting Source: Electricity Board/ Generator/Solar
		From	To		
1	Toll Plaza area: The lighting in and around toll plaza, toll booths, office building, on the approach road, etc. shall be as per Section 12 of the Manual. In addition to at least two high mast light shall be provided on either side of toll plaza	02 Nos on either side of each Toll Plaza at Km 83+071 & Km 88+928 -The High mast to be provided at 500 m distance from toll Plaza on either side with Double Arm of 30m Height with minimum power of 350 Watts and minimum illumination of 40 Lux.			Electric Board
2	Rest Areas: The entire Rest areas shall be provided with lighting with average illumination to 40 Lux	4 Nos High Mast with Double Arm of 30m Height with minimum power of 350 Watts and minimum illumination of 40 Lux.			

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3	Truck lay-bye: The entire area of truck lay-byes and 50m length of the project highway on its either side shall be illuminated at night to provide an average illumination of 40Lux. Suitable designed electric poles having aesthetic appeal and energy saving bulbs (LED) may be used to provide required illumination. Alternatively, photo voltaic lamps may be used	Nil	
4	<b>Bus Bay &amp; bus shelter locations:</b> The entire bus bay & bus shelter area shall be provided with Lighting (Average illumination of 40Lux.).	NIL	
5	<b>Grade separated structures, interchanges, flyovers, underpasses (vehicular/ pedestrian) and</b>	Details Shown in Annexure-V of Schedule-C.	Electric Board

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No.	Lighting facilities	Chainage		Side	Lighting Source: Electricity Board/ Generator/Solar
		From	To		
	<b>Vehicle overpasses:</b> Lighting requirement shall be as per section 12 of the manual. The top and underside of the grade separated structures including service road/ slip road, interchange area at the ground level up to 50m beyond the point from where flaring of the main carriageway takes place shall be provided with lighting. Also, on all legs of at grade interchange/ crossings the lighting shall be provided 50m beyond the point of Centre on all legs. The minimum illumination shall be 40 Lux., at the extreme edge of the Highway	High mast with Double Arm of 30m Height with minimum power of 350 Watts and minimum illumination of 40 Lux.			
6	<b>Built-up sections</b> on the project highway both in the median of main carriageway and on the service roads on both sides	NIL			
7	On Median Openings provide 1 no. high mast lighting of 25m height	NIL			
8	On Major Bridges and its approaches higher than 3m	Nil			

Note:

- All lighting systems shall be maintained for the entire Maintenance period. The concessionaire shall bear all costs of procurement installation, running and operation costs of all the lighting, including cost of energy consumption as per manual specified in Schedule D (Refer NHAI circular no 2.1.70/2024 dated 25.01.2024). The provision with regards to lighting/energization for the ATMS shall be as indicated in Clause 12 of the Schedule-C.
- The lighting source indicated above is the primary source to be ensured by the Contractor. However, backup/standby arrangement with DG sets etc. shall be ensured by the Contractor as per provisions of the IRC: SP: 87-2019.
- Lighting arrangements are to be provided on the median with 12m height and pole to pole distance of 30m with a minimum illumination of 40 lux and as per design requirements for the entire project stretch.

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## 9. Rainwater Harvesting

The provision of rainwater harvesting shall be provided at every 500m staggered in the entire project length and shall be executed as per requirement of IRC SP: 42-2014 and IRC SP: 50-2013. Additionally, wherever urban drains are provided, which do not have a definite outfall for discharge of water, at such location one pit for rain water harvesting shall be provided along the side drains at the lowest point! where the water stagnates. The type and location of rain water harvesting is as follows:

S. no.	Rain water Harvesting Type	Chainage	Side	Depth of Recharge Structure
1	Type 4 confirming to clause 10.7.5 of IRC SP 42	As per Drainage Design, Plan and Profile drawing no volume IX. And clause no. 10.7.3 (fig- 10.6) of IRC SP-42-2014 to be followed. (53 No's)  @500 m staggered in the entire project length- Both side		Up to 500mm below water table  As per Fig.10.6 of IRC SP 42

Note: - The ground details and other pertinent details shall be assessed by the Contractor and the design and drawing as per applicable clause conforming to site requirements shall be submitted by the EPC Contractor to AE/Authority for approval.

## 10. Environmental Management Plan (Attach MOEF Mitigation Report in Draft DPR)

The Concessionaire shall implement the Environmental Management plan & action Plan for undertaking possible mitigation measures in accordance with environmental clearance accorded by Ministry of Environment and Forests and climate change. The conditions & directions stipulated by the MOEF shall be complied by the contractor/ concessionaire.

## 11. Land Scaping and Tree Plantation

The Concessionaire shall plant trees and shrubs of required numbers and types at the appropriate locations within Right of Way and in the land earmarked by the Authority for afforestation as per Schedule 0 at the following areas.

Sl. No	Types of Plantation	Location (Km)	Number of trees to be planted	Remarks
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1	Shrubs	In median except Structures+ First row from side of drain	1 row of 333 plants for the median of 2-3 meter at every km and 2 rows of 333 plants each (staggered) for the median of 3 meter and more	Ornamental type plantation shall be provided
2	Land Scaping	O & M Centers,	Landscaping plans will be submitted by the	The number of Ornamental ty

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Sl. No	Types of Plantation	Location (Km)	Number of trees to be planted	Remarks
		Vacant land parcels, land within loops of flyovers, Toll Plaza building and, surroundings Vacant space below the flyovers	Concessionaire/Contractor which shall include ornamental trees decorative statues and landscaping	pe plantation and other things shall be decided on the basis availability of land.
3	Plantations	Available open land within ROW	1 row of 333 and 2 rows 666 plants on each side of project highway at every km.	Minimum –nos of trees 37495 of desired type in two rows per Km. @10 m c/c near edge of ROW on both side (As per Schedule D) preferably local varieties like mango, Neem, Seesham, Babul Peepal etc. shall be planted

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

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

## 12. Advanced Traffic Management System (ATMS)

The Concessionaire is required to design, install, operate and maintain Advanced Traffic Management System (ATMS) as part of the project facilities. Advanced Traffic Management System shall be provided as per standards and specifications specified in the manual and as per NHAI circular no. 11.53/2023 dated 10.10.2023 and shall be maintained throughout the concession period.

The ATMS components to be deployed shall inter alia include:

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

## 12.1. General

The ATMS Project shall broadly include the following sub-systems to be provided as per the standards & specifications mentioned in NHAI Policy Circular No. 11.53/2023 dated 10.10.2023

### 12.1.1. Video Surveillance System / Traffic Monitoring Camera System (TMCS)

### 12.1.2. Video Incident Detection System (VIDS)

### 12.1.3. Vehicle Actuated Speed Display System (VASDS)

### 12.1.4. Fixed and Portable Variable Message Sign (VMS) System

### 12.1.5. Communication Network with OFC Backbone

### 12.1.6. Common ATMS Command & Control Center near WSA location

### 12.1.7. Power Supply for Field Equipment as well as for ATMS Command & Control Center

### 12.1.8. Operation & Maintenance (O&M) of the entire ATMS Facility

### 12.1.9. Maintenance Vehicle

**12.2.** The requirements stated herein shall be construed as minimum requirement and meeting the respective requirements individually shall not relieve the Contractor from the responsibility. The entire system should function efficiently as an integrated solution during the entire O&M period.

### 12.1.1 Video Surveillance System I Traffic Monitoring Camera m (TMCS)

- (i) The system monitors vehicular and other road related activity along the highway stretch through PTZ Camera mounted on Poles. Generally, the camera should be placed at a distance not greater than 1 km so as to effectively monitor all the lanes of the entire stretch of Highway. In case certain stretches include regular curves, ramps etc. not allowing central line of sight, then additional TMCS camera shall be put to ensure effective surveillance of the entire stretch. The TMCS cameras should also be placed on the following Junctions below the Grade Separated Structure.
- (ii) The TMCS should also be provided at the following Junctions so as to monitor the traffic at the following junctions:

Sl. No.	Location (KM)	LHS/RHS/BHS	Remarks
The locations shall be finalized in consultation with the IE/NHAI and as per NHAI circular no. 11.53/2023 dated 10.10.2023			

### 12.1.2 Video Incident Detection System (VIDS)

The VIDS include Gantry Mounted ANPR Cameras, Overview Cameras and associated incident detection software system to effectively detect pre-defined actionable incidents which triggers enforcement and incident response system. The VIDS should also act as Automatic Traffic Counting and Classifying (ATCC) system. The VIDS should be provided at following locations:

Sl. No.	Location (KM)	Remarks	Availability of full Gantry**
The locations shall be finalized in consultation with the IE/NHAI and as per circular no. 11.53/2023 dated 10.10.2023			

### 12.1.3 Vehicle Actuated Speed Display (VASD) System



Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

The VASD system shall include gantry mounted Radar and Speed Display system for each lane to warn the road users of their speed. The system shall act as a Speed Calming Measure. VASD System should be provided at following locations along the Expressways:

Sl. No.	Location (KM)	Remarks	Availability of full Gantry**
The locations shall be finalized in consultation with the IE/NHAI and as per NHAI circular no. 11.53/2023 dated 10.10.2023			

#### 12.1.4 Variable Message Sign (VMS) System

The VMS shall provide road users advance information of road conditions ahead and shall be controlled from the local ATMS Control center. The VMS shall be installed at following locations:

##### 12.1.4.1 Fixed VMS

##### 12.1.4.1.1 Gantry (M Type)

Sl. No.	Location (KM)	Remarks	Availability of full Gantry**
The locations shall be finalized in consultation with the IE/NHAI and as per NHAI circular no. 11.53/2023 dated 10.10.2023			

##### 12.1.4.1.2 Cantilever (L Type)

Sl No.	Location (KM)	LHS/RHS/BHS	Remarks	Availability of Full Gantry**
The locations shall be finalized in consultation with the IE/NHAI and as per NHAI circular no. 11.53/2023 dated 10.10.2023				

##### 12.1.4.2 Portable VMS

The Contractor shall provide Trolley Mounted Portable VMS in consultation with IE/NHAI and as per NHAI circular no. 11.53/2023 dated 10.10.2023

#### 12.1.5 Communication Network with OFC Backbone

The entire Expressway stretch shall be provided with minimum 24 Core OFC Backbone as per the standards & specifications. The short haul connections like between field equipment to access points, access points to OFC backbone etc shall be done with minimum 12 Core cable. The OFC shall be laid strictly as per the Standards and Specification.

#### 12.1.6 ATMS Command and Control Center

The ATMS Command and Control Centre structure will be constructed by Civil Contractor of NHAI near WSA location. The ATMS Contractor shall set up and operate the ATMS Command and Control Center as per the Standards and Specification. The ATMS Contractor shall undertake any additional civil works, interior works, MEP works, for setting up the Command Center, including all additional related electrical, lighting, electrical connection, DG set, power backup, HVAC works, access control, building CCTV, PTZ cameras outside building, firefighting system, alarm, fire extinguishers, raised floor, housekeeping, building cleaning, maintenance, recurring charges including electricity bills, telephone bills, DG fuel, servicing, security.

#### 12.1.7 Power Supply for ATMS Command & Control Center and Field Equipment

The Contractor shall ensure 24x7 supply for the ATMS Command and Control Centre and Field Equipment

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with supply power from Electricity Department as primary source supported by UPS renewable power (solar etc) and DG Set of adequate capacity.

There shall be NO obligation of NHAI with regard to providing power/ electricity supply/connections for testing commission, operation & maintenance of any component of the ATMS. Further, the following points are to also be observed by the ATMS contractor:

- A. The Contractor shall perform all the necessary application procedures to the Power Company required for the power to be supplied to the Traffic Management Centre, Sub-Centre and the field equipment in their own name. All the expenses charged by Power Companies regarding such applications and execution of work shall be borne by the Contractor as part of the scope of this contract. Any damage to the highway during such execution of work shall have to be repaired by the ATMS Contractor to the pre-existing condition without any cost implications to NHAI.
- B. The Contractor shall make all necessary arrangements for the electricity needed for the execution of the Works and O&M period for the entire period of the Contract. In case electricity is not made available through electricity companies, alternate electricity arrangement such as through renewable energy/DG Set should be made by the Contractor. Under no circumstances NHAI shall grant an extension of time for achieving the milestones if the contractor is unable to make the electricity arrangement either for the execution of the work or for the O&M activities.
- C. The fixed charges, installation charges, recurring charges, electricity bill, DG set fuel, maintenance etc. for each field equipment, TMC, Control Centre, Sub-center, Contractor's site office., or any other facility being used by the Contractor under the scope of this Contract shall be in the scope of the Contractor only for the entire Contract period i.e. Design phase, procurement, installation, testing, trial-run, commissioning, operations, and maintenance period. The Authority shall not be responsible for any provision for power supply during implementation as well as operations and maintenance period.

#### **12.1.8 Operation & Maintenance (O&M) of the entire ATMS Facility.**

- A. The O&M period after the successful completion of works shall include Operation & Maintenance of the entire ATMS Facility as per the Service Level Agreement (SLA) with Qualified Manpower mentioned in Standards & Specifications including supply of adequate spares, parts, consumables and maintenance equipment required for the facility. The Contractor shall maintain required spare parts to maintain required service levels.
- B. The Contractor shall have sufficient infrastructure and capability to keep/store spares required for maintenances and will at all times during the contract period maintain sufficient inventory spares and consumables for Operating and maintaining the ATMS and to meet the Service Level requirements. Before the start of O&M Period, the Contractor shall deploy the O&M Personal mentioned at Appendix-C of Standards & Specification with prior approval of the Authority.

#### **12.1.9 Maintenance Vehicle**

The ATMS Contractor shall keep adequate numbers of dedicated vehicles (minimum 1 vehicle per 50km) to attend the maintenance requirement during the Operation & Maintenance period.

### **13. Highway Patrol Units**

Highway Patrol units shall be established and operate at toll plaza location as per Schedule D Clause 12.10 (strictly as per details mentioned in Annexure-C), which shall continuously patrol the highway in a stretch not exceeding 50 km (if the stretch is more than 50 km additional 1 number of patrol vehicle per 50 km or less shall be provided). The vehicle shall be brand new with fuel, driver, and insurance all-inclusive for the entire contract period. Highway Patrol units shall be fitted with GPS and GSM based vehicle tracker system.

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Highway Patrol Vehicles shall be stationed on layby constructed on Project Highway @ every 20 km of each Toll Plaza.

#### **14. Emergency medical services**

The Contractor shall, at its own cost, construct a medical aid post at each toll plaza with a minimum size of 5 x 5 sq. with a toilet (to be used for the patients of minimum size of 3 x3 sq.) and hand it over to the Authority, no later than 30 (thirty) days prior to PCOD/COD. The Medical Aid Post(s) shall be deemed to be part of the project and shall vest in the Authority. Medical Aid Post shall be set up at Administrative Block with round-the-clock services for victims of accidents on the Project Highway.

One number Ambulance shall be provided in a stretch not exceeding 50 km (if the stretch is more than 50 km additional 1 number of ambulances per 50 km or less shall be provided). The Ambulance shall be brand new with fuel, driver, medical staff and insurance all-inclusive for the entire contract period. Ambulance fitted with GPS and GSM based vehicle tracker system shall be provided to be integrated with the Video Incident Detection System with ATMS, as per Schedule

D, Clause 12.11 (strictly as per details mentioned in Annexure-D), along with all necessary manpower (including paramedical staff), medicines, equipment's etc. and shall be maintained in an effective manner throughout the contract period starting from the appointed date. Ambulance shall be stationed on layby constructed on Project Highway @ every 20 km of each Toll Plaza

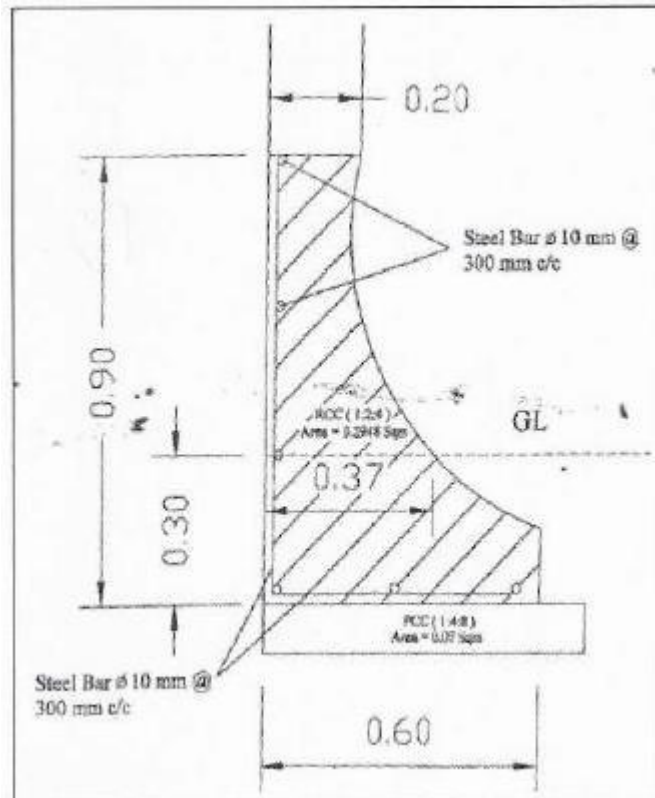
#### **15. Crane Service:**

Crane Service shall be provided on project highway, as specified in the manual Clause 12.12. One number crane shall be provided in a stretch not exceeding 50 km (if the stretch is more than 50 km additional 1 number of cranes per 50 km or less shall be provided). Crane having capacity of minimum 20T shall be made available. The crane shall be brand new with fuel, driver, and insurance all-inclusive for the entire contract period. Cranes shall be stationed on layby constructed on Project Highway @ every 20 km of each Toll Plaza.

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**Annexure-II Schedule C Standard Drawing for Toe Wall**



### Annexure-III Schedule C Standard Drawing for Toilet



Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

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## **SCHEDULE – D**

*(See Clause 2.1)*

### **SPECIFICATIONS AND STANDARDS**

#### **1. Construction**

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

#### **2. Design Standards**

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

Manual of Specifications and Standards for Six Laning of Highways by the Indian Roads Congress – IRC: SP: 87 - 2019.

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

## Annex - I

### (Schedule-D)

#### Specifications and Standards for Six-Laning

#### 1 Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Six-Laning of Highways (IRC: SP: 87-2019), referred to as the Manual, and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

#### 2 Deviations from the Specifications and Standards

- 2.1 The terms "Concessionaire", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively.
- 2.2 Notwithstanding anything to the contrary contained in the Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:

Sl. No.	Clause referred in Manual	Item	Design	Description of Deviation
1	2.17	Typical cross section	As per Schedule B	The Typical cross section shall be as given in Schedule B.
2	2.2	Design Speed	As per Schedule B	The design speed shall be as mentioned in Schedule B
3	2.12	Service Road / Slip Road	As per Schedule B	The location and width of service road /slip road shall be as given in Schedule B.
4	2.5.6	Median type	As per Schedule B	The median shall be flushed and shall as per Schedule B
5	2.6	Width of Shoulder	As per Schedule B	The width and type of Paved shoulder and earthen shoulder shall be as specified in Schedule B
6	-	6-lane structures (Only MJBR (except Ravines) and ROB)	As per Schedule B	All structures shall be of 6 -lane standards. The carriageway is being developed for 2 x3 lane Highway (i.e. 14m Carriage Way) while structures will be constructed for 2x3lane highway (with same surfacing and pavement as of 2x3 lane over structures) with Additional Footpath (i.e. 17.00m Deck Width) on MCW . Soft shoulder width near structure shall be flared in 1:30 taper to match 6

Development of 6 lane Greenfield access-controlled Indore Eastern Bypass starting from design km 113+000 near Simroi/Datoda village and ending at design km 139+630 near Nanded village (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 26.630 Km). & Rehabilitation & upgradation of existing NH-52 from Ex. km 18+000 near Khandwa Village to km 27+000 near Ahilyapur village from 4 lane to 6 lane configurations (Package – 2) of Indore district in the state of Madhya Pradesh on HAM Mode under NH(O). (Length – 9.000 Km). (Total Length 35.630 kms)

Sl. No.	Clause referred in Manual	Item	Design	Description of Deviation
				lane structures.
7	12.14	Advance Traffic Management System		NHAI/Policy Guidelines/ Standard Documents/2023 Policy Circular No.11.53/ 2023 dated 10th October, 2023 {Decision taken on E-Office File No. IHMCL/2023-24/ATMS (Comp. No. 224126)}
8	Section 12	Project Facilities		The project facilities and building structures shall be constructed in accordance to Annex III of this Schedule.
9	Clause 11.2 of IRC SP 84 & 87: 2019	Landscaping & Plantation	Entire Project Length	Shall be followed as per NHAI policy circular no. 7.4.7/2022 dated 12th July 2022.
10	Clause 11.2 of IRC SP 84 & 87: 2019	Setback distance of trees	Entire Project Length	Shall be followed as per NHAI policy circular no. 7.4.7/2022 dated 12th July 2022.
11	Clause 9.5 of IRC SP 87: 2019	Solar Power Road Markers	Entire Project Length	As per Schedule C
12	Clause 12.14 of IRC SP 87: 2019	ATMS	As per Schedule C	Functional and Technical Specifications Ref. No. NHAI/CO/ATMS/02-2021
13	-	Longitudinal Grade	-	Minimum gradient - 0.3%
14	IRC SP 42	Minimum Gradient for drainage for side drains	-	Minimum longitudinal gradient for drainage consideration is 0.1 % for both lined and unlined drains.
15		a) Road Embankment	-	a) The finished pavement profile for the total project length shall be designed so that in main carriageway, the bottom level of the sub grade always remains minimum 1.0m above the Highest Flood Level (HFL)/ High water table/ NGL/ Pond level, whichever is more, and for service road, top of subgrade is not less than 1.0m high above HFL/ High water table/ NGL /Pond level, whichever is



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Sl. No.	Clause referred in Manual	Item	Design	Description of Deviation
		b) Embankment Slope		more. b) The minimum side slope of 1V: 2H could be provided if found adequate from stability consideration. The embankment slope is envisaged to have Geo cells / stone or concrete block pitching/ turfing as protection for embankment height up to 6 m and for height more than 6m, stone or concrete block pitching / geo cells shall be provided, but for water front areas, such as river/ nala etc. only stone/concrete block pitching shall be provided.
16		Duct for utility services on structures		Carrying of various utilities over the structure shall be governed as per MoRT&H specifications.
17		Seismic Zone		Project Lies in the Project Stretch II and III but considered Seismic Zone III throughout the Project Stretch.
18		Alternate Design		i) The requirements stated in the or the Guidelines are the minimum. The Concessionaire may however adopt international practices, alternative specifications; materials and standards to bring in innovation in design and construction provided they are better or comparable with the standards prescribed in the "Manual" and the "Guidelines". The proposed alternative specifications and techniques, including those which are not included in the MoRTH/ IRC specifications shall be supported with authentic standards and specifications. The Typical cross-sections given in Schedule-B shall be adopted. ii) Alternative design for structures/ bridges can be adopted by Concessionaire in accordance with design requirements subject of review of the same by Independent Engineer/ Authority.
19	7.3	Width of structures		As provided in Volume IX of Schedule-B
20		Vertical Clearance at Structures		i) For Box Crossing , the minimum vertical clearance shall be 4.0m ii) 5.5m vertical clearance at LVUP locations is Required to cater to the local agrarian, Bus & overloaded tractors to cross under the proposed highway as per site requirements.

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Sl. No.	Clause referred in Manual	Item	Design	Description of Deviation
				iii) For VUP, the minimum vertical clearance shall be 5.5 m iv) For Flyover over NH/SH/MDR/ODR and Highway, the minimum vertical clearance shall be 5.50 m.
21		Design Life of Structures		All the components of structures shall be designed for a service life of 100 years except appurtenances like crash barriers; wearing surface; expansion joints and bearings. All the requirements to achieve durability and Serviceability shall be implemented in design; construction and maintenance.
22		Roughness		Roughness not more than 1800 mm/km for each lane as measured by laser profilometer.
23		Glare Reduction		Glare reduction devices are to be provided on horizontal curves of radius less than 4000m. In the double trumpet/ trumpet configuration interchange loops and on the roads connecting the two loops of double trumpet interchange, anti- glare screen shall be provided in the median

2.3 M/o RT&H circular no. RW/NH-34066/09/2017 S&R dated 21.07.2020 (regarding use of manufactured aggregates) shall be applicable on the project.

2.4 The contractor may be permitted to use waste plastic as per IRC: 98:2013 and Ministry's circulars dated 26.11.2019, 27.08.2019, 27.12.2016 & 09.11.2015 in consultation with IE.

2.5 As regards, the work of Utility Shifting, the relevant specifications, relevant rules, regulations and acts of Utility Owning Department/Agencies shall be applicable.

2.6 For specification for landscaping/tree plantation NHA policy circular no. 7.4.7/2022 dated 12.07.2022 will be applicable.

2.7 Contractor is encouraged to do value engineering in line with M/o RT&H circular dated 30.08.2022.

### 3 Specification for Landscaping and Tree Plantation

The provision of IRC:SP-21 are to be followed except that the first row of Avenue plantation should be 14m away from the centre line of the extreme traffic lane to allow recovery area for road safety concerns. Following guidelines are to be adhered to:

- (i) Site Preparation

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**(Clause 11.14 of IRC: SP: 21)**

- a. Digging of pits as per standard pit size of 60\*60\*60 cm.
- b. Filling Farm Yard manure and Fertile Soil.

(ii) Planting of Saplings

- a. Detailed information provided in IRC: SP: 21

(iii) Post-Planting Operations

**(Clause 11.20 of IRC: SP: 21)**

- a. Weeding & Hoeing, Watering, Maintenance, Fencing, Casualty Replacement etc.

(iv) Plantation Protection

**(Clause 11.15 of IRC: SP: 21)**

- a. Provision of chain link fencing, barbed wire fencing, iron fencing, individual iron trees guard fencing with wire mesh/ cement/ brick guard etc. as per the site requirement.

(v) Species-Matrix

**(Annexure A to F of IRC: SP: 21)**

- a. Details of plant species prescribed according to Agro-Climatic Zones in IRC:SP:21-2009

(vi) Survival % of Plantation

**(Clause 11.14 of IRC: SP: 21)**

- a. 90% for 1st and 2nd Row
- b. 80% for last Row

(vii) Height of the saplings at the time of planting

**(Clause 11.14 of IRC: SP: 21)**

- a. Ornamental Plants (Except Last Row) : 1.5 m to 2 m
- b. Shade plants (Last Row) : More than 2 m

(viii) Avenue plantation

**(Clause 11.14 of IRC: SP: 21)**

- a. Spacing between rows: 3 m

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b. Spacing between plant to plant

- i. 1st Row : 3 m
- ii. 2nd Row : 6 m
- iii. 3rd Row : 8-12 m

(ix) Median Plantation

**(Clause 11.19 of IRC: SP: 21)**

(x) Setback distance of trees

**(Clause 11.2 of IRC: SP: 84 & 87:2019)**

- a. Distance from centre line of extreme traffic lane : 14 m
- b. Turfing of grass is recommended in sections where the median width is less than 3 m by filling good quality soil up to 45 cm.
- c. One row of shrubs is recommended where median width is more than 3 m.
- d. For two rows, the shrubs should be planted on 4.5 to 5 m wide median at 3 m interval.
- e. There should be no plantation up to 1.5 m from the edge of median on both the sides.

**(xi) Activities Schedule for Avenue and Median Plantation (As per IRC: SP: 21, Table -5 at page no- 52 & 53)**

Year	Month	Activities to be done	
1st year	Jan-March	1	Surveying & cleaning of the area
		2	Digging of Pits
		3	Procurement of Angles iron and barbed wire (or other fencing material), and erecting the fence
2nd Year	April-June	1	Purchase of Farm yard manure
		2	Brick/iron etc. guard for 1st row
		3	Plantation along the Highway
		4	Filling up of pits with Farm Yard Manure and Soil
	July-August	1	Transportation of Plants
		2	Planting of Saplings
		3	Watering
		4	Weeding and Hoeing
	Sep-Nov	1	Weeding and Hoeing
		2	Watering 4 times a month

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Year	Month	Activities to be done	
	Dec-Feb	1	Weeding and Hoeing
		2	Maintenance
	March	1	Watering 4 times a month
3rd Year	April-June	1	Watering 6 times a month
	July-August	1	Casualty Replacement (20% of the total plants)
		2	Weeding
		3	Maintenance by Mali
	Sep-Nov	1	Watering 2 times a month
		2	Maintenance by Mali
	Dec-Feb	1	Maintenance by Mali
	March	1	Watering 4 times a month
		2	Maintenance by Mali
4th Year	April-March	1	Watering
		2	Casualty Replacement (10% of the total plants)
		3	Maintenance by Mali

**(3) Any other activities/schedule of operations which are not covered in the annexure will be carried out as per specifications in IRC: SP: 21.**

**(4) Avenue plantation for cross section with service road**

- Plantation and pruning of trees to be done in view of road safety as prescribed in IRC: SP: 21 guidelines.
- The concessionaire/ contractor shall appoint a Plantation Manager with adequate experience responsible for plantation. The CV of Plantation Manager shall be approved by the concerned Project Director.
- Plantation Scheme and Species proposed on the alignment shall be approved by the IE/AE in consultation with Project Director and Plantation Professionals engaged by NHAI.