

Schedules

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

Schedule-A

(See Clause 2.1 and 8.1)

SITE OF THE PROJECT

- 1 The Site**
- 1.1 Site of the Two-Lane Project Highway shall include the land, buildings, Structures and road works as described in Annex-I of this Schedule-A.
- 1.2 The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.
- 1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.
- 1.4 The alignment plans of the Project Highway are specified in Annex-III. In the case of sections where no modification in the existing alignment of the Project Highway is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be modified.
- 1.5 The status of the environment clearances obtained or awaited is given in Annex-IV.

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

Annex – I

(Schedule-A)

Site

1. Site

The Site of the Two-Lane Project Highway comprises the section of National Highway 37 commencing from km 491.050 (Design km 490.800) to km 535.250 (Design km 534.800) i.e. Near Jhanji to Demow section in the State of Assam. The land, carriageway and structures comprising the Site are described below.

The project has been partially executed by previous Contractor and the details of the work done are mentioned in the subsequent paras. The Bidder shall verify the usability of existing works done by the previous contractor as per project specifications / requirements and any reworks / modifications shall be deemed to be included in the bid price. No additional payments whatsoever shall be made on account of the existing works.

2. Land

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

Existing Chainage (Km)		Existing ROW (in m)
From	To	
491.050	492.2	45.0
492.2	494.2	40.0
494.2	496.2	38.0
496.2	497.2	35.0
497.2	498.0	40.0
498.2	499.2	48.0
499.2	500.2	40.0
500.2	502.2	28.0
502.2	504.2	20.0
504.2	506.2	42.0
506.2	507.2	60.0
507.2	509.2	76.0
509.2	517.2	60.0
517.2	518.2	41.0
518.2	519.2	37.0
519.2	520.0	53.0
520.2	521.2	21.0
521.2	522.2	45.0
522.2	523.2	59.0

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Existing Chainage (Km)		Existing ROW (in m)
From	To	
523.2	524.2	20.0
524.2	524.4	22.0
524.4	525.0	0.0
525.0	528.0	12.0
528.0	530.0	11.6
530.0	532.0	12.0
532.0	534.0	35.0
534.0	535.0	39.0
535.0	535.250	40.0

Note: The Existing ROW is based on Village map/Revenue Map.

3. Carriageway

The present carriageway of the project highway is 2-lane. The type of the existing pavement is flexible. Details of carriageway & pavement are as under.

Existing chainage		Carriageway width in m (BT)	Earthen Shoulders	
From	To		Left	Right
491.05	492.2	7	1.5	1.2
492.2	493.2	7	1.0	1.0
493.2	494.2	7	2.0	1.4
494.2	495.2	7	1.5	1.5
495.2	496.2	7	0.6	0.7
496.2	497.2	7	1.0	1.0
497.2	498.2	7	1.5	1.2
498.2	500.2	7	1.0	1.0
500.2	502.2	7	1.0	0.7
502.2	504.2	7	1.0	1.0
504.2	505.2	7	1.5	1.0
505.2	506.2	7	2.0	1.4
506.2	508.2	7	1.5	1.2
508.2	510.2	7	1.8	1.1
510.2	512.2	7	1.0	1.0
512.2	513.2	7	1.5	1.5
513.2	514.2	7	1.0	1.0
514.2	515.2	7	1.5	1.1
515.2	516.2	7	1.7	1.2
516.2	517.2	7	1.5	0.8

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Existing chainage		Carriageway width in m (BT)	Earthen Shoulders	
From	To		Left	Right
517.2	517.8	7	1.9	1.2
517.8	519.2	7	1.5	1.5
519.2	520.2	7	1.7	1.2
520.2	521.2	7	1.7	1.5
521.2	522.2	7	1.5	1.2
522.2	523.2	7	1.0	1.2
523.2	524.2	7	1.5	1.0
524.2	524.8	7	1.5	1.5
524.8	526.0	7	1.5	1.0
526.0	527.0	7	1.5	0.9
527.0	528.0	7	1.5	0.8
528.0	529.2	7	1.0	0.7
529.2	530.0	7	1.8	1.2
530.0	531.0	7	2.0	1.1
531.0	532.0	7	2	1.5
532.0	534.0	7	1.8	1.3
534.0	535.25	7	1.5	1.1

The following works have been executed by the Previous Contractor. The Bidder shall verify the usability as per project specifications / requirements and any reworks / modifications shall priced the bid accordingly.

Sl. No.	Chainage		Side	Length	Emb Top
	From	To			
1	524+220	524+400	LHS	180	Complete
2	525+000	525+100	LHS	100	Partially Complete
3	525+160	525+300	LHS	140	Partially Complete
4	525+600	525+850	LHS	250	Partially Complete
5	525+850	526+200	LHS	350	Partially Complete
6	527+900	528+000	LHS	100	Complete
7	527+760	528+000	RHS	240	Complete
8	528+900	529+200	RHS	300	Complete
9	528+660	528+900	LHS	240	Complete
10	528+900	529+110	LHS	210	Complete
11	528+210	528+660	LHS	450	Complete
12	528+000	528+210	LHS	210	Complete
13	528+200	528+450	RHS	250	Complete
14	528+450	528+900	RHS	450	Complete

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15	528+000	528+200	RHS	200	Complete
16	529+300	529+500	LHS	200	Complete
17	529+570	529+800	LHS	230	Complete
18	529+800	530+000	LHS	200	Complete
19	529+200	529+520	RHS	320	Complete
20	529+650	529+840	RHS	190	Complete
21	530+000	530+260	LHS	260	Complete
22	530+050	530+250	RHS	200	Complete
23	530+250	530+400	RHS	150	Complete
24	530+400	530+600	RHS	200	Complete
25	531+550	531+780	LHS	230	Partially Complete
26	531+780	531+970	LHS	190	Partially Complete
27	532+100	532+220	LHS	120	Partially Complete
28	532+600	532+750	LHS	150	Partially Complete
29	532+300	532+600	LHS	300	Partially Complete
				6610	

Sl. No.	Chainage		Side	Length	Remarks
	From	To			
1	525+160	525+300	LHS	140	Sub Grade 1st Layer Completed
2	525+600	525+850	LHS	250	
3	528+900	529+200	RHS	300	
4	528+000	528+210	LHS	210	
4	528+200	528+450	RHS	250	
5	529+650	529+840	RHS	190	
6	530+050	530+250	RHS	200	
TOTAL				1540	

Sl. No.	Chainage		Side	Length	Remarks
	From	To			
1	524+220	524+400	LHS	180	Sub Grade Top Completed
2	525+000	525+100	LHS	100	
3	525+850	526+200	LHS	350	
4	527+760	528+000	RHS	240	
5	528+660	528+900	LHS	240	
6	528+900	529+110	LHS	210	
7	528+450	528+900	RHS	450	
8	528+000	528+200	RHS	200	
9	529+800	530+000	LHS	200	

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10	529+200	529+520	RHS	320
11	530+000	530+260	LHS	260
12	530+250	530+400	RHS	150
13	530+400	530+600	RHS	200
14	531+550	531+780	LHS	230
15	531+780	531+970	LHS	190
16	532+100	532+220	LHS	120
17	532+600	532+750	LHS	150
18	532+400	532+600	LHS	200
TOTAL				3990

4. Major Bridges

The Site includes the following Major Bridges:

Sl. No.	Existing Chainage (km)	Type of Structures			No. of Spans with span length in m	Width (m)
		Foundation	Sub structure	Super structure		
1	508.800	Well	RCC Wall	PSC I Beam (3 Girders)	4x39.89	11.4
2	523.660	Well	RCC Wall	PSC I Beam (3 Girders)	1x42.9+1x44.5 2+ 1x42.28	8.4

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

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

Sl. No.	Chainage (km)	Type of Structures		No. of Spans with span length (m)	Total Width (m)	ROB/ RUB
		Foundation	Super structure			
Nil						

6. Grade separators

The Site includes the following grade separators:

Sl. No.	Chainage (km)	Type of Structures		No. of Spans with span length (m)	Total Width (m)
		Foundation	Super structure		
Nil					

7. Minor bridges

The Site includes the following minor bridges:

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Sl. No.	Existing Chainage (km)	Type of Structures			No. of Spans with span length in m	Width (m)
		Foundation	Sub structure	Super structure		
1	491.125	Shallow	RCC Wall	Solid Slab	1x9.1	7.9
2	492.605	Shallow	PCC Gravity Wall	Solid Slab	1x6.5	7.9
3	493.860	Shallow	RCC Wall	Solid Slab	1x6.5+1x6.75	7.9
4	499.100	Shallow	PCC Gravity Wall	Solid Slab	1x6.0	7.9
5	500.800	Shallow	PCC Wall	Solid Slab	1x41.5	11.4
6	502.610	Shallow	PCC Gravity Wall	Solid Slab	9x2.5	8.4
7	517.300	Shallow	PCC Wall	Solid Slab	1x27.45+ 2x12.2	8.4
8	534.175	Shallow	PCC Gravity Wall	Solid Slab	1x6.5+1x6.75	8.4
9	535.110	Shallow	PCC Wall	Solid Slab	1x6.5+1x6.75	8.4

8. Railway level crossings

The Site includes the following railway level crossings:

Sl. No.	Existing Chainage (Km)	Number of Tracks	Remark
		Nil	

9. Underpasses (vehicular, non vehicular)

The Site includes the following underpasses:

Sl. No	Existing Chainage (Km)	Type of structure	No. of Spans with span length (m)	Width (m)
		Nil		

10. Culverts

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

The Site has the following culverts:

10.1 List of Pipe Culverts

Sr. No.	Existing Chainage	Design Chainage	Existing Type of Structure	Existing (m) Span Arrangement
		Nil		

10.2 List of Slab/Box/Arch Culverts

Sr. No.	Existing Chainage	Design Chainage	Type of Structure	Span Arrangement (No. x length x ht.) m	Width in m
1	496+863	496+513	Slab	1x4.5x3	11.3
2	497+641	497+273	Slab	1x4.5x2	11.8
3	505+796	505+420	Slab	1x4x3.5	12.1
4	506+231	505+853	Box	1x2x2	11.5
5	506+604	506+223	Box	1x2x2.5	11.3
6	507+882	507+503	Slab	1x4.5x3	11.4
7	509+576	509+202	Slab	1x3.6x3	11.4
8	510+027	509+653	Box	2x2.2x2.5	11.5
9	510+256	509+881	Box	1x2.2x3.2	11.3
10	511+276	510+903	Box	1x2.2x3.0	9.5
11	511+720	511+347	Box	1x2.2x3.0	9.6
12	512+226	511+850	Box	1x2x2	10.6
13	513+209	513+010	Box	1x2x2	10.1
14	514+012	513+629	Box	1x3x2.5	10.4
15	514+688	514+304	Slab	1x3x3.5	10.3
16	515+664	515+273	Box	1x1.5x3	10.4
17	520+752	520+320	Box	1x2.5x1.5	10.1
18	524+120	523+770	Box	1x3x3	10.2
19	524+960	52+410	Box	1x3x3.5	10.3
20	526+000	525+540	Slab	1x4x3	10.0
21	527+190	526+732	Box	1x1.8x1.5	10.1
22	529+930	529+470	Box	1x6x3	10.2
23	531+895	531+430	Box	1x6x3.5	10.0
24	532+486	532+013	Box	1x2x2.5	11.2

11. Bus Bays

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

The details of existing bus bays on the Site are as follows:

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

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. Road side drains

The details of road side drains are noted on the existing alignment; the maximum location has been open drain/line drain and in built-up location covered drain.

14. Major junctions

The details of major junctions are as follows:

S. No.	Existing Chainage	Design Chainage	Category of Road	Type of Junction	Remarks
1	517+000	516+600	Existing NH	3-Legged	End of Existing Sibsagar Bypass
2	534+020	533+560	ODR	4-Legged	Demow Junction

15. Minor Junctions

The details of minor junctions are noted below:

Sl. No.	Design Chainage	Side (Left/Right)	Carriageway Width in m	
			Left	Right
1	492+770	Left	4.25	-
2	493+340	Right	-	3.75
3	495+260	Right	-	3.50
4	495+515	Right	-	4.25
5	496+240	Right	-	4.00
6	497+825	Right	-	4.25
7	498+000	Left	4.00	-
8	498+380	Right	-	4.00

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Sl. No.	Design Chainage	Side (Left/Right)	Carriageway Width in m	
			Left	Right
9	499+560	Left	4.00	-
10	500+800	Left	3.75	-
11	500+940	Left	3.50	-
12	502+550	Left	4.00	-
13	504+500	Left	4.00	-
14	505+040	Right	-	5.50
15	506+770	Left	4.25	-
16	506+800	Right	-	4.00
17	507+150	Left	5.00	-
18	508+500	Both Side	3.75	3.75
19	509+670	Left	5.25	-
20	511+560	Right	-	4.00
21	513+300	Both Side	4.25	4.25
22	513+655	Both Side	3.50	3.50
23	518+500	Left	3.75	-
24	520+750	Left	5.50	-
25	521+850	Left	4.00	-
26	523+360	Left	3.50	-
27	524+100	Right	-	4.25
28	524+300	Left	3.50	-
29	526+240	Left	3.75	-
30	528+380	Left	4.00	-
31	528+730	Right	-	3.50
32	529+125	Right	-	4.00
33	530+850	Left	4.50	-
34	531+910	Left	5.50	-
35	533+443	Right	-	4.00
36	533+550	Both side	3.50	3.50
37	534+120	Right	-	4.50

16. Bypasses

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

The details of bypasses are as follows:

Sl. No.	Name of Bypass (town)	Chainage (km) from..... to	Length in km	Carriageway	
				Width (m)	Type
Nil					

17. Other structures

Nil

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

Annex II
(Schedule-A)

Dates for providing Right of Way

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

S. No.	From km to km	Length (in Km)	Width (m)	Date of providing ROW
1	2	3	4	5
i) Full Right of Way (full width) (a) Stretch 1	km 491.050 to 535.250 excluding Realignments	38.94	As per Existing ROW	At Appointed date
ii) Part Right of Way (part width) (a) Stretch 1	Toll Plaza at km 525.245	0.400	60m	At Appointed Date
iii) Balance Right of way (Width) (a) Stretch 1	Realignments	4.860	60m	After 150days from appointment date

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

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

Annex – III

(Schedule-A)

Alignment Plans

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

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

Annex – IV

(Schedule-A)

Environment Clearances

The expected dates of receiving the following environmental clearances are:

Final Environment clearance approval from MoEF has been accorded. However as per new MOEF guidelines, MOEF clearance for this project is not required.

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

Schedule B

(See Clause 2.1)

Development of the Project Highway

1 Development of the Project Highway

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

2 Rehabilitation and augmentation

Rehabilitation and augmentation shall include Four-Laning and strengthening of the Project Highway as described in Annex-I of this Schedule-B and in Schedule-C.

3 Specifications and Standards

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

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

Annex – I
(Schedule-B)

Description of Four Laning and strengthening

1. Widening of the Existing Highway

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

1.2 Width of carriageway

1.2 The paved carriageway shall be 17.5 (seventeen point five) metre wide excluding the median as per IRC: SP: 84-2014.

Provided that in following Built-up/urban stretches, the service road shall be provided with the main carriageway as per IRC: SP: 84-2014.

Sl. No.	Name of Township	Existing Chainage (km)		Design Chainage (km)	
		From	To	From	To
1	Amguri	491+250	491+750	491+000	491+500
2	Namdang, Gaurisagar	501+003	503+155	500+650	502+796
3	Balia Ghat	503+155	503+505	502+800	503+150
4	Vatiapar	505+043	505+873	504+700	505+500
5	Jengan – Katia Bagati	513+838	514+244	513+460	513+860
6	Demow	533+361	535+385	532+900	534+800

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

1.2.3 Design Chainage corresponding to Existing Chainage

Kilometre stones are existing in entire length of the project highway. It is called the “Existing Chainage”. During topography survey with Total Station, observations are made to these Km stones and after finalization of alignment by improving the existing geometry the chainage has been referred to “Design Chainage”. The relationship between the “Existing Chainage” and the “Design Chainage” as per field surveys of the location of existing Km stones using the total station for the “Project Highway” is given below.

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Existing Chainage (Km)	Design Chainage (Km)	Name of Place
492+000	491+735	
493+000	492+735	Phulpanisiga
494+000	493+717	
495+000	494+717	Gogurati
496+000	496+186 to 496+656 (Realignment)	Charing
497+000	497+000 to 497+560 (Realignment)	Alikguri
498+000	497+609	
499+000	498+657	
500+000	499+647 (500+600 to 500+974 (Realignment))	
501+000	500+760	Gaurisagar
502+000	501+651	
503+000	502+642	Rupahimukh
504+000	503+650 (504+870 to 505+500 (Realignment))	
505+000	504+659	Bhotiapar
506+000	505+621	Konwarpur
507+000	506+622	Konwarpur
508+000	507+623 (508+543 to 508+810 (Realignment))	Konwarpur
509+000	508+622	Konwarpur
510+000	509+628	Konwarpur
511+000	510+626	Konwarpur
512+000	511+626	
513+000	512+626	
514+000	513+620	
515+000	514+609 (515+570 to	

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Existing Chainage (Km)	Design Chainage (Km)	Name of Place
516+000	516+100 (Realignment))	Dorakappar
517+000	516+589	
518+000	517+581	Sangmai
519+000	518+579 (519+400 to 519+600 (Realignment))	Belbadi
520+000	519+569 (520+700 to 521+000 (Realignment))	
521+000	520+570	Sukhanpukdi
522+000	521+561	
523+000	522+560	
524+000	523+650	
525+000	524+450	
526+000	525+547	
527+000	526+542	
528+000	527+525 (528+400 to 528+900 (Realignment))	Rajmai
529+000	528+556	Rajmai
530+000	529+538	Rajmai
531+000	530+533	Lagubari
532+000	531+527	Demow
533+000	532+540	Demow
534+000	533+545	Demow
535+000	534+550	Demow
535+250	534+800 (End Point)	

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.

“Four Laning of Jhanjhi to Demow Section from Km 491.050 to Km 535.250 of NH-37 in the State of Assam under SARDP on Engineering Procurement & Construction (EPC) mode.”

2.2 Design Speed

The design speed shall be the minimum design speed of 80 km per hr for plain terrain except at the following location where design speed is restricted as given in the table.

Sl. No.	Chainage km Location	Minimum Design Speed in KMPH	Curve Type
1	500.809	80	RHC
2	502.106	80	LHC
3	502.457	80	RHC
4	508.151	80	LHC
5	508.652	65	RHC
6	509.582	80	RHC
7	517.287	80	LHC
8	522.997	80	LHC
9	523.483	80	RHC
10	533.598	80	RHC

2.3 Improvement of the existing Road Geometrics

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

Design Chainage in Km		Length in m	Type of deficiency	Remarks
From	To			
496+190	496+660	470	Curve Improvement	Gaga Ali Village
497+000	497+560	560	Curve Improvement	
501+800	502+400	600	Historical Bridge on Namdung River	
508+540	508+810	270	to follow existing alignment	Major Bridge
509+480	510+000	520	Curve Improvement	
515+570	516+100	530	Curve Improvement	Historical Jamunapar pond
519+400	519+600	200	Curve Improvement	
520+700	521+000	300	Curve Improvement	
526+700	527+460	760	Historical Thowra Dole Temple	
528+400	528+900	500	Curve Improvement	
532+750	532+900	150	Curve Improvement	

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2.4 Right of Way

The proposed ROW is 60.0m except at the following locations.

S. No.	Design Chainage in km		Proposed ROW (in meters)
	From	To	
1	514.290	514.970	40.00
2	514.970	515.100	23.50
3	515.100	515.400	40.00

2.5 Type of Shoulders

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

Sl. No.	Design Chainage (km)		Reference to cross section	Remarks
	From	To		
1	491+000	491+500	Figure 2.5/ 2.6	Amguri
2	500+650	502+796	Figure 2.5/ 2.6	Namdang, Gaurisagar
3	502+800	503+150	Figure 2.5/ 2.6	Balia Ghat
4	504+700	505+500	Figure 2.5/ 2.6	Vatiapar
5	513+460	513+860	Figure 2.5/ 2.6	Jengan – Katia Bagati
6	532+900	534+800	Figure 2.5/ 2.6	Demow

Note: For Figure 2.5 and Figure 2.6 refer Manual IRC: SP: 84-2014 of clause 2.16

- (b) In built-up section and approaches to grade separated structures, the shoulder should be paved in full width.
- (c) Earthen shoulders of 2m wide shall be covered with 150 mm thick compacted layer of granular material conforming to the requirements given in clause 401 of MORTH.
- (d) Design and specifications of paved shoulders and granular material shall conform to the requirement specified in paragraphs 5.9.9 and 5.9.10 of the Manual.

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2.6 Lateral and Vertical Clearances at Underpasses

2.6.1 Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per the paragraph 2.11 of the Manual.

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

Sl. No.	Existing Chainage	Design Chainage	Span (No. x length x ht.) in m	Minimum Length of RE wall	Remarks
1	491+450	491+200	1x12	350	VUP
2	501+165	500+920	1x12	550	VUP
3	505+408	505+060	1x12	550	VUP
4	514+043	513+659	1x12	350	VUP
5	534+016	533+557	1x12	570	VUP
6	502+910	502+550	1x7	350	PUP

Note: RE wall length includes wall in front of abutments.

2.7 Lateral and vertical clearance at overpasses

2.7.1 Lateral and vertical clearances at over passes shall be as per paragraph 2.12 of the Manual.

No overpass

2.7.2 Lateral clearance: The size of the opening at the overpasses shall be as follows:

S. No.	Location (chainage) From km to km	Number and length of spans	Remarks
Nil			

2.8 Service roads/ Slip Road

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

Sl No.	Existing Chainage		Design Chainage		Length (m)	Width (m)	Side
	From	To	From	To			
1	491+250	491+750	491+000	491+500	500	7.0	LHS & RHS

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Sl No.	Existing Chainage		Design Chainage		Length (m)	Width (m)	Side
	From	To	From	To			
2	501+003	503+155	500+650	502+796	2146	7.0	LHS & RHS
3	503+155	503+505	502+800	503+150	350	7.0	LHS & RHS
4	505+043	505+873	504+700	505+500	800	7.0	LHS & RHS
5	513+838	514+244	513+460	513+860	400	7.0	LHS & RHS
6	533+361	535+385	532+900	534+800	1900	7.0	LHS & RHS

2.9 Grade separated structures

2.9.1 Grade separated structures shall be provided as per paragraph 2.13 of the Manual. The requisite particulars are given below:

S. No.	Location of Structure	Design Chainage	Length (m)	Number and length of spans	Approach gradient	Remarks
			Nil			

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

Sl. No.	Location	Type of structure Length (m)	Cross road at			Remarks
			Existing level	Raised Level	Lowered Level	
Nil						

2.10 Cattle and Pedestrian Underpass/Overpass

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

Sl. No.	Existing Chainage	Design Chainage	Proposed span arrangement (No. x length x ht.) in m	width in m	Minimum length of RE wall
1	502+910	502+550	1x7.0x3.5	27.5	344

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2.11 Typical cross-sections of the Project Highway

Different type of cross sections for different segments of Four Lane stretch shall be developed as provided in ‘Manual of Specifications & Standard for Four Laning of Highways through Public Private Partnership’ (IRC:SP:84-2014) referred in Schedule D.

Design Km		Length in m	Widening Side/ Scheme
From	To		
490+800	491+000	200	Eccentric (LHS) widening
491+000	491+050	50	Left side widening with service road
491+050	491+350	300	VUPs/PUPs Approaches with RE wall and service road
491+350	491+500	150	Left side widening with service road
491+500	496+190	4690	Eccentric (LHS) widening
496+190	496+660	470	Realignment/Reconstruction Concentric Widening
496+660	497+000	340	Eccentric (LHS) widening
497+000	497+560	560	Realignment/Reconstruction Concentric Widening
497+560	500+650	3090	Eccentric (LHS) widening
500+650	501+170	520	VUPs/PUPs Approaches with RE wall and service road
501+170	501+800	630	Concentric widening with service road
501+800	502+400	600	Realignment with SR and covered drain
502+400	502+700	300	VUPs/PUPs Approaches with RE wall and service road
502+700	502+796	96	Right side widening with service road
Chainage Equation: New Chainage km 502.796 & Old Chainage km 502.800			
502+800	503+150	350	Right side widening with service road
503+150	504+700	1550	Eccentric (RHS) widening
504+700	504+850	150	Right side widening with service road
504+850	505+350	500	VUPs/PUPs Approaches with RE wall and service road
505+350	505+500	150	Right side widening with service road
505+500	507+800	2300	Eccentric (RHS) widening
507+800	508+540	740	Eccentric (LHS) widening
508+540	508+810	270	Realignment/Reconstruction Concentric Widening
508+810	509+480	670	Eccentric (LHS) widening
509+480	510+000	520	Realignment/Reconstruction Concentric Widening
510+000	513+100	3100	Eccentric (LHS) widening
513+100	513+460	360	Eccentric (RHS) widening

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Design Km		Length in m	Widening Side/ Scheme
From	To		
513+460	513+510	50	Right side widening with service road
513+510	513+810	300	VUPs/PUPs Approaches with RE wall and service road
513+810	513+860	50	Right side widening with service road
513+860	514+290	430	Eccentric widening (RHS)
514+290	514+970	680	Eccentric widening with Retaining wall on RHS (ROW 40m)
514+970	515+100	130	Eccentric widening with Retaining wall on Both side (ROW 23.5m)
515+100	515+400	300	Eccentric widening with Retaining wall on RHS (ROW 40m)
515+400	515+570	170	Eccentric widening (RHS)
515+570	516+100	530	Realignment/Reconstruction Concentric Widening
516+100	519+400	3300	Eccentric (LHS) widening
519+400	519+600	200	Realignment/Reconstruction Concentric Widening
519+600	520+700	1100	Eccentric (LHS) widening
520+700	521+000	300	Realignment/Reconstruction Concentric Widening
521+000	526+600	5600	Eccentric (LHS) widening
526+600	526+700	100	Eccentric (RHS) widening
526+700	527+460	760	Realignment/Reconstruction Concentric Widening
527+460	527+579	119	Eccentric (RHS) widening
Chainage Equation: New Chainage km 527.579 & Old Chainage km 527.500			
527+500	528+400	900	Eccentric (RHS) widening
528+400	528+900	500	Realignment/Reconstruction Concentric Widening
528+900	531+000	2100	Eccentric (RHS) widening
531+000	532+750	1750	Eccentric (LHS) widening
532+750	532+900	150	Realignment/Reconstruction Concentric Widening
532+900	533+300	400	Concentric widening with service road
533+300	533+820	520	VUPs/PUPs Approaches with RE wall and service road
533+820	534+350	530	Concentric widening with service road
534+350	534+800	450	Left side widening with service road
Total Design Length		44.075	

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3.0 Intersections and grade separators

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

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

(a) At-grade intersections

i) Major Junction

S. No.	Existing Chainage	Design Chainage	Category of Road	Type of Junction	Remarks
1	517+000	516+600	Existing NH	3-Legged	End of Existing Sibsagar Bypass
2	534+020	533+560	ODR	4-Legged	Demow Junction

ii) Minor Junctions

Sl. No.	Design Chainage	Side (Left/Right)	Carriageway Width in m	
			Left	Right
1	492+770	Left	4.25	-
2	493+340	Right	-	3.75
3	495+260	Right	-	3.50
4	495+515	Right	-	4.25
5	496+240	Right	-	4.00
6	497+825	Right	-	4.25
7	498+000	Left	4.00	-
8	498+380	Right	-	4.00
9	499+560	Left	4.00	-
10	500+800	Left	3.75	-
11	500+940	Left	3.50	-
12	502+550	Left	4.00	-
13	504+500	Left	4.00	-
14	505+040	Right	-	5.50
15	506+770	Left	4.25	-
16	506+800	Right	-	4.00
17	507+150	Left	5.00	-
18	508+500	Both Side	3.75	3.75
19	509+670	Left	5.25	-

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Sl. No.	Design Chainage	Side (Left/Right)	Carriageway Width in m	
			Left	Right
20	511+560	Right	-	4.00
21	513+300	Both Side	4.25	4.25
22	513+655	Both Side	3.50	3.50
23	518+500	Left	3.75	-
24	520+750	Left	5.50	-
25	521+850	Left	4.00	-
26	523+360	Left	3.50	-
27	524+100	Right	-	4.25
28	524+300	Left	3.50	-
29	526+240	Left	3.75	-
30	528+380	Left	4.00	-
31	528+730	Right	-	3.50
32	529+125	Right	-	4.00
33	530+850	Left	4.50	-
34	531+910	Left	5.50	-
35	533+443	Right	-	4.00
36	533+550	Both side	3.50	3.50
37	534+120	Right	-	4.50

(b) Grade separated intersection without ramps

Sl. No.	Location	Salient features	Minimum length of viaduct to be provided	Read to be carried over / under the structures
Nil				

4. Road embankment and cut section

- 4.1 Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/cuttings shall conform to the specifications and standards given in Section 4 of the Manual and the specified cross sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

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- 4.2 Raising of existing road. The existing road shall be raised in the following section:

Design Chainage in km		Length in m	Remarks
From	To		
491+050	491+350	300	VUP
500+650	501+170	520	VUP
502+400	502+700	300	PUP
504+850	505+350	500	VUP
513+510	513+810	300	VUP
533+300	533+820	520	VUP

5.0 Pavement design

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

5.2 Type of pavement

Flexible pavement shall be adopted.

5.3 Design requirements

5.3.1 Design Period and Strategy

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

5.3.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the contractor shall design the pavement for design traffic of not less than 46 & 51 million standard axles (msa) from km km 491.050 to 535.250.

5.4 Reconstruction of stretches

The following stretches of the existing road shall be reconstructed. These shall be designed as new pavement.

Design Chainage in km		Length in m	Remarks
From	To		
496+190	496+660	470	
497+000	497+560	560	

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501+800	502+400	600	
508+540	508+810	270	
509+480	510+000	520	
515+570	516+100	530	
519+400	519+600	200	
520+700	521+000	300	
526+700	527+460	760	
528+400	528+900	500	
532+750	532+900	150	

6. Roadside drainage

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per section 6 of the Manual. Covered Drains and lined drain shall be provided in the following stretches.

Location of Covered Drain

Design Chainage in km		Length in m	Side
From	To		
491+000	491+050	50	Both Side
491+350	491+500	150	Both Side
501+170	501+800	630	Both Side
501+800	502+400	600	Both Side
502+700	502+796	96	Both Side
502+800	503+150	350	Both Side
504+700	504+850	150	Both Side
505+350	505+500	150	Both Side
513+460	513+510	50	Both Side
513+810	513+860	50	Both Side
532+900	533+300	400	Both Side
533+820	534+350	530	Both Side

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Design Chainage in km		Length in m	Side
From	To		
534+350	534+800	450	Both Side

Location of Line Drain

Design Chainage in km		Length in m	Side
From	To		
491+050	491+350	300	Both Side
500+650	501+170	520	Both Side
502+400	502+700	300	Both Side
504+850	505+350	500	Both Side
513+510	513+810	300	Both Side
533+300	533+820	520	Both Side

7. Design of structures

7.1 General

7.1.1 All bridges, culverts and structures shall be designed 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 Width of the carriageway of new bridges and structures shall be as follows:

All new structures shall be minimum carriageway as per Manual Fig. 7.2 and Fig. 7.3.

7.1.3 The following structures shall be provided with footpaths:

S. No.	Bridge at km	Utility service to be carried	Remarks
All New Bridges in built-up area shall have provisions for footpath			

7.1.4 All bridges shall be high-level bridges

7.1.5 Utility services to be carried over the structures

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The following structures shall be designed to carry utility services specified in the table below:

S. No.	Bridge at km	Utility service to be carried	Remarks
All New Bridges shall have provisions for utility services to be carried over			

7.1.6 Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections given in section 7 of the Manual.

7.2 Culverts

7.2.1 Overall width of all culverts shall be equal to the roadway width of the approaches.

7.2.2 Reconstruction of existing culverts:

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

Sr. No.	Existing Chainage	Design Chainage	Proposed Type of Structure	Proposed Span (m)	Total width in m
1	514+012	513+629	Box	1x3x2.5	4-lane

7.2.3 Widening of existing culverts

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

Sr. No.	Existing Chainage	Design Chainage	Proposed Type of Structures	Proposed Span (m)	Total Width in m
1	496+863	496+513	Slab	1x4.5x3	4-lane
2	497+641	497+273	Slab	1x4.5x2	4-lane
3	505+796	505+420	Slab	1x4x3.5	4-lane

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Sr. No.	Existing Chainage	Design Chainage	Proposed Type of Structures	Proposed Span (m)	Total Width in m
4	506+231	505+853	Box	1x2x2	4-lane
5	506+604	506+223	Box	1x2x2.5	4-lane
6	507+882	507+503	Slab	1x4.5x3	4-lane
7	509+576	509+202	Slab	1x3.6x3	4-lane
8	510+027	509+653	Box	2x2.2x2.5	4-lane
9	510+256	509+881	Box	1x2.2x3.2	4-lane
10	511+276	510+903	Box	1x2.2x3.0	4-lane
11	511+720	511+347	Box	1x2.2x3.0	4-lane
12	512+226	511+850	Box	1x2x2	4-lane
13	513+209	513+010	Box	1x2x2	4-lane
14	514+688	514+304	Slab	1x3x3.5	4-lane
15	515+664	515+273	Box	1x1.5x3	4-lane
16	520+752	520+320	Box	1x2.5x1.5	4-lane
17	524+120	523+770	Box	1x3x3	4-lane
18	524+960	52+.410	Box	1x3x3.5	4-lane
19	526+000	525+540	Slab	1x4x3	4-lane
20	527+190	526+732	Box	1x1.8x1.5	4-lane
21	529+930	529+470	Box	1x6x3	4-lane
22	531+895	531+430	Box	1x6x3.5	4-lane
23	532+486	532+013	Box	1x2x2.5	4-lane

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

Sl. No.	Design Chainage (km)	Proposed Type of Culvert	Span Arrangement No. x Length / No. x Dia (m)
Nil			

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

As per site condition,

Repairs/Replacement of railings/ parapets and any other defects noticed at the time of construction shall be undertaken by the contractor for all the retained culverts along with repair/construction of flooring and protection works.

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

7.3 Bridges

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

i) The existing bridges at the following locations shall be re-constructed as new structures.

a) Major Bridges:

Nil

b) Minor Bridges:

Sl. No.	Existing Chainage	Design Chainage	Proposed structural configuration	Proposed span arrangement (No. x L)
1	502.61	502.265	New 4-lane Bridge on MCW+ New 2-lane Bridge on service road on both side	1 x 21.710m
2	534.175	533.710	New 4-lane Bridge on MCW+ New 2-lane Bridge on service road on both side	1 x 12.460m

ii) The following narrow bridges shall be widened/Repairs and Strengthen :

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a) Major Bridges:

Sl. No.	Chainage (km)	Width (m)	Span Arrangement	Type of structure			Details of Repair
				Foundation	Sub structure	Super structure	
1	508.800	11.4	4 x 39.89 = 159.56m	Well	RCC walls type	PSC I-beam (3 girder)	Wearing coat, Bearings, Railings, Drainage spout and expansion gap need repair.
2	523.660	8.4	42.90 + 44.52 + 42.28 = 129.7 m	Well	RCC walls type	PSC I-beam (3 girder)	Wearing coat, Bearings, Railings, Drainage spout and expansion gap need repair.

Note: Widening of major bridges is not applicable due to RCC Box Girder type superstructure. However, Repairs and strengthening of existing major bridges.

b) Minor Bridges:

Sl. No.	Chainage (km)	Width (m)	Span Arrangement	Type of structure			Details of widening
				Foundation	Sub structure	Super structure	
1	491.125 (E) 490.875 (D)	7.9	1 x 9.1 = 9.1m	Open	PCC Wall	Solid Slab	Deck slab ,Approach slab substructure and foundation are required to be widened to the required overall Width (12m)
2	492.605 (E) 492.335 (D)	7.9	1 x 6.5 = 6.5m	Open	PCC Wall	Solid Slab	Deck slab ,Approach slab substructure and foundation are required to be widened to the required overall Width (12m)
3	493.860 (E) 493.593 (D)	7.9	6.50 + 6.75 = 13.25m	Open	RCC Wall	Solid Slab	Deck slab ,Approach slab substructure and foundation are required to be widened to the required overall Width (12m)

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Sl. No.	Chainage (km)	Width (m)	Span Arrangement	Type of structure			Details of widening
				Foundation	Sub structure	Super structure	
4	499.100 (E) 498.753 (D)	7.9	1 x 6.0 = 6.0m	Open	PCC Wall	Solid Slab	Deck slab ,Approach slab substructure and foundation are required to be widened to the required overall Width (12m)
5	500.800(E) 500.550 (D)	11.4	1 x 41.5 = 41.5m	Well	RCC Wall	RCC box girder	Widening not applicable but Repairing/ replacement are required for damaged bearings, railings, expansion joints, drainage spouts and wearing coat.
6	517.300 (E) 516.890 (D)	8.4	12.2 + 27.45 + 12.2 = 51.85m	Well	RCC Wall	RCC T-beam (3 girder)	Widening not applicable but Repairing/ replacement are required for damaged bearings, railings, expansion joints, drainage spouts and wearing coat.
7	535.110 (E) 534.658 (D)	8.4	6.50 + 6.75 = 13.25m	Open	PCC Wall	Solid Slab	Deck slab ,Approach slab substructure and foundation are required to be widened to the required overall Width (12m)

Note: Deck slab, Approach slab, substructure and foundation are required to be widened to the required overall Width (12m) for all above minor Bridges.

7.3.2 Additional new bridges

New bridges at the following locations on the Project Highway shall be constructed.

Major Bridge:

Sl. No.	Name of Bridge	Existing Chainage	Design Chainage	Proposed span arrangement (No. x l)	Remarks
1	Dikhow River	508.800	508.425	4 x 39.89 = 159.56m	New 2-lane Bridge
2	Dessang River	523.660	523.215	42.90 + 44.52 + 42.28 = 129.7 m	New 2-lane Bridge

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Minor Bridge:

Sl. No.	Existing Chainage	Design Chainage	Proposed span arrangement (No. x L)	Remarks
1	491.125	490.875	1 x 8.68m	New 2-lane Bridge
2	492.605	492.335	1 x 6.0m	New 2-lane Bridge
3	493.860	493.593	1 x 12.46m	New 2-lane Bridge
4	499.100	498.753	1 x 6.0m	New 2-lane Bridge
5	500.800	500.550	1 x 39.50m	New 2-lane Bridge
6	517.300	516.890	11.410 + 25.298 + 11.410 m	New 2-lane Bridge
7	535.110	534.658	1 x 12.460m	New 2-lane Bridge on MCW + New 2-lane Bridge on service road on both side

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

S. No.	Location at km	Remarks
“As per site condition and where ever technically feasible”		

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

S. No.	Location at km	Remarks
In all the retained bridges which are proposed for widening, railing/ parapets shall be replaced.		

- 7.3.5 Drainage system for bridge decks
An effective drainage system for bridge decks shall be provided as specified in paragraph 7.21 of the Manual.

- 7.3.6 Structures in marine environment

Nil

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7.4 Rail-road bridges

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 crossings, as per GAD drawings attached:

Sl. No.	Design Chainage (km)	Span Arrangement / length of span in m	Remark
		Nil	

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

Road under bridges

S. No.	Location of level crossing	Number and length of span
		Nil

7.5 Grade separated structures

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

Nil

7.6 Repairs and strengthening of structures

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

A – Bridges

i) Major Bridges

Sl. No.	Location of bridge (km)		Nature and extent of repairs/ strengthening to be carried out
	Existing Chainage (Km)	Design Chainage (Km)	
1	508.800	508.425	Repairing/ replacement are required for damaged bearings, railings, expansion joints, drainage spouts and wearing coat.

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Sl. No.	Location of bridge (km)		Nature and extent of repairs/ strengthening to be carried out
	Existing Chainage (Km)	Design Chainage (Km)	
2	523.660	523.215	Repairing/ replacement are required for damaged bearings, railings, expansion joints, drainage spouts and wearing coat.

ii) Minor Bridge:

Sl. No.	Existing Chainage (km)	Design Chainage (Km)	Details of widening
1	491.125	490.875	Deck slab ,Approach slab, substructure and foundation are required to be widened to the required overall Width (12m)
2	492.605	492.335	Deck slab ,Approach slab, substructure and foundation are required to be widened to the required overall Width (12m)
3	493.860	493.593	Deck slab ,Approach slab, substructure and foundation are required to be widened to the required overall Width (12m)
4	499.100	498.753	Deck slab ,Approach slab, substructure and foundation are required to be widened to the required overall Width (12m)
5	500.800	500.550	Repairing/ replacement are required for damaged bearings, railings, expansion joints, drainage spouts and wearing coat.
6	517.300	516.890	Repairing/ replacement are required for damaged bearings, railings, expansion joints, drainage spouts and wearing coat.
7	535.110	534.658	Deck slab ,Approach slab, substructure and foundation are required to be widened to the required overall Width (12m)

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B – ROB / RUB

S. No.	Location of structure (km)	Nature and extent of repairs/strengthening to be carried out
Nil		

C – Overpasses/Underpasses and other structures

S. No.	Location of structure (km)	Nature and extent of repairs/strengthening to be carried out
Nil		

7.7 List of Major Bridges and Structures

The following is the list of existing Major Bridges and structures:

Sl. No.	Name of Bridge	Existing Chainage	Design Chainage	Proposed span arrangement (No. x l)	Remarks
1	Dikhow River	508.800	508.425	4 x 39.89 = 159.56m	Widen (New 2-lane Bridge)
2	Dessang River	523.660	523.215	42.90 + 44.52 + 42.28 = 129.7 m	Widen (New 2-lane Bridge)

The following is the list of New Major Bridges and structures:

Sl. No.	Location		Remarks
	Existing Chainage (Km)	Design Chainage (Km)	
	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 Manual.
- 8.2 Specifications of the reflecting sheeting: As per the Clause 9.3 of the Manual of Specification and Standards.

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9. Roadside furniture

Roadside furniture shall be provided in accordance with the provisions of section 11 of the Manual.

9.1 Overhead traffic signs: location and size

5 Nos. overhead shall be provided excluding toll-Plaza locations.

10. Compulsory Afforestation

Total of 16,707 Nos. trees are identified to be affected in the proposed ROW.

11. Hazardous locations

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

S. No.	Location stretch from (km) to (km)	LHS/RHS
This shall be Provided at High Embankment and at Sharp curve locations.		

12. Special requirements for hill roads

Nil

13. Change of Scope

The length of structures and bridges specified hereinabove shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule B shall not constitute a Change of Scope, save and except any variations in the length arising out of a change of scope expressly undertaken in accordance with the provisions of Article 13.

Schedule – C

(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

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

- a) toll plaza[s];
- b) roadside furniture;
- c) pedestrian facilities;
- d) tree plantation;
- e) truck lay-byes;
- f) bus-bays and bus shelters;
- g) rest areas; and
- h) Others to be specified

2 Description of Project Facilities

Each of the Project Facilities is described below showing:

a) Toll Plaza:

1No. of toll plaza shall be provided at design chainage Km 525.245 (existing chainage Km 524.700). The number of lanes shall be 8 (Eight)

Specifications and other requirements of the toll plazas shall be strictly as per schedule “D”. Rigid pavement shall be constructed for the Toll Plaza area including the transition portion

Road side Furniture

- (i) Traffic Signs and Pavement Markings

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Traffic signs and pavement markings shall include road side signs, overhead signs, curve mounted signs and road marking along the project highway. The locations for these provisions shall be finalised as per manual.

- (ii) Concrete Crash Barrier, Metal beam crash barrier, Separators (MS railings) wherever required as per manual.
- (iii) Traffic Safety Devices wherever required
- (iv) Boundary Stones
- (v) Hectometer / Kilometer Stones
- (vi) Traffic Blinker Signal (L.E.D) shall be provided at all At-grade junctions, median opening, schools, hospitals, police station, places of worship and institutional buildings etc.
- (vii) Overhead signs: 5 Nos. (Excluding overhead signs at Toll Plaza location which are as given in Schedule D) shall be provided.

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

b) Pedestrian Facilities

The additional pedestrians facilities in the form of guard rails, footpath, lighting etc. shall be provided wherever required.

c) Landscaping and Tree Plantation

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

- Median
- Grade Separated intersections
- Entry and Exit ramp
- At grade islands of intersection locations
- Toll Plaza Area

(e) **Truck Lay-byes:** Truck Lay-byes shall be provided at following locations:

Sl. No.	Design Chainage	Side
1	517.150	Left

(f) **Bus-bays and Bus Shelter:** Bus-bays shall be provided at following locations:

Locations of Bus bays

Sl. No.	Design Chainage	Side	Name / Location
1	495.400	Both	Gogurali / Charing
2	501.450	Both	Gaurisagar
3	512.600	Both	Konwarpur
4	521.500	Both	Sukhanpukdi
5	528.900	Both	Rajmai
6	533.850	Both	Demow / Dihajan

(g) Others

1. Highway Lighting shall be provided as per schedule D (Manual of Specifications and Standard for 4-Laning of Highways) IRC: SP: 84-2014). However, the lighting in built up areas shall be provided in consultation with IE/Employer.

2. Highway Patrol

The Concessionaire shall provide Highway Patrol vehicles in adequate number as per manual and this agreement.

3. **Medical Aid Post:** As per Article 21.

4. Cranes

The Concessionaire shall provide one mobile Cranes having the capacity to lift a truck with a gross vehicle weight of 30,000 (thirty thousand) kilogram and such posts shall be located at the toll plaza location in consultation with the IC/Authority.

5. Traffic Aid Post

6. ECBs (Emergency Call Boxes)

ECBs (Emergency Call Boxes)_with loud speaker, micro phone, activation button with LED indicating conversation, shall be housed in a vandal proof casing and operate in full to play mode in noise level of upto 95 decibels within built diagnostic features for automatic detection in case of damage by

any object. Mobile communication system shall comprise the mobile radio base stations and control centre equipments. It shall have provision for mounted mobile set on ambulances, trains & patrolling vehicles. The system shall have the facility to connect mobile to mobile, mobile to controller, and controller to mobile along with the systems for waiting, holding and transfer of calls. The system shall use pair frequencies to be allotted to the concessionaire with the approval of wireless planning & coordination (WPC), Deptt. of Telecommunications and shall operate for full duplex mode.

Note: Provide adequate details of each Project Facility to ensure their design and completion in accordance with the project-specific requirements and the provisions of the Manual.

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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 Standards and Specifications for Four Laning Manual published by the Indian Roads Congress – IRC: SP: 84-2014

Note: Specify the relevant manual, specifications and standards

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Annex – I

(Schedule-D)

Specifications and Standards for Construction

1 Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Four-Laning of Highways published by IRC (referred to as “Manual” in this Schedule) 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

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.

Sr. No.	Clause referred in Manual	Item	Modified Provision
1	2.5.1	Kerb Shyness	Kerb Shyness shall be 0.25m.
2	2.12.2.3	Entry & Exit point	Provision of entry and exit ramps deleted. However, service road shall be connected by designing adequate weaving length.
3	7.15.1	Reinforced Earth retaining Structures	Reinforced earth retaining structures may be provided for height more than 6m also.
4	10.4.1	Toll Plaza Lanes	Toll Plaza shall be with 8 lanes

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