

SHREM FINANCIAL PRIVATE LIMITED

Four Lanning of Guna-Biora Section of NH-3 from Km.322.100 to Km.426.100 in the State of Madhya Pradesh under NHDP Phase IV to be executed on BOT(Toll) Mode on DBFOT Basis.

TECHNICAL DUE DILIGENCE REPORT



FEBRUARY, 2021

SUBMITTED BY



RUKY PROJECTS PRIVATE LIMITED Hyderabad – 500 072 www.rukyprojects.com



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TECHNICAL DUE DILIGENCE

REPORT

TABLE OF CONTENTS

СНАРТ	ER 1. INTRODUCTION	. 5		
1.1	General	5		
1.2	The Project Data	7		
1.3	Scope of Consultancy Services	7		
СНАРТ	ER 2. PROJECT DESCRIPTION & TECHNICAL DETAILS	. 9		
2.1	Salient Features of the Project	9		
2.2	Typical Cross Section (TCS) Schedule	9		
2.3	Road Side Drainage	14		
2.4	Service Roads	14		
2.5	Bypass/Realignment	15		
2.6	Intersections	15		
2.7	Grade Separated Structures and underpasses	17		
2.8	Road Over Bridge (ROB)	17		
2.9	Pavement and carriageway details	18		
2.10	Summary of Structures	18		
2.11	Toll Plazas	18		
2.12	Rest areas	18		
2.13	Truck lay byes	19		
2.14	Bus bays/Bus shelters	19		
2.15	Other Project Facilities Provided as per Schedule C of CA	20		
СНАРТ	ER 3. ROAD INVENTORY & PAVEMENT CONDITION	21		
3.1	General	21		
3.2	Road Inventory	21		
3.3	Pavement Condition	22		
3.4	Pavement Condition Survey	22		
СНАРТ	ER 4. INVENTORY AND CONDITION OF STRUCTURES	25		
4.1	General Assessment and Condition of the structures	25		
4.2	Inventory of Structures	25		
4.3	Details of Major Bridges	25		
4.4	Details of Minor Bridges	26		
4.5	Details of Flyover/Underpass	29		
4.6	Details of Culverts	30		
СНАРТ	ER 5. PAVEMENT DESIGN VALIDATION AND OVERLAY SCHEDULES	33		
5.1	General	33		
5.2	Pavement design	33		
5.3	Overlay during operation and maintenance	36		
5.4	Maintenance/ Overlay schedule	36		
СНАРТ	ER 6. SAFETY AUDIT OF ROAD	37		
6.1	General	37		
6.2	Road Safety Audit	37		
6.3	Conclusion	39		
CHAPTER 7. TOLL PLAZA & HTMS				
7.1	General:	40		
7.2	Tolling Equipment and Control Room Equipment	40		
. =		-		

Mrow XX

TECHNICAL DUE DILIGENCE Т

R	EF	0 0	R.
	_	-	•••

7.3	Vehicles	41			
СНАРТ	ER 8. TRAFFIC CENSUS AND TOLL REVENUE	42			
81	Traffic Census	42			
8.2	Tollable Traffic at both Toll plazas	42			
8.3	Toll Revenue Calculations	43			
СНАРТ	ER 9. OPERATION AND MAINTENANCE	46			
9 1	General	46			
9.1	Inspection	46			
9.3	Operations	46			
9.4	Operation of Toll Plazas	47			
9.5	Maintenance of Project road	47			
9.6	Review of Test Reports	48			
9.7	O&M Forecast	49			
СНАРТ	ER 10. REVIEW OF CONCESSION AGREEMENT	50			
10.1	Scope of Work (Article 2)	50			
10.2	Letter of Award	50			
10.3	Conditions precedent (Article 4)	50			
10.4	Major Obligations of the Concessionaire (Clause 5.1)	50			
10.5	Obligations relating to the Competing Roads (Clause 6.3)	51			
10.6	Performance Security (Article 9)	51			
10.7	Provisional Completion Certificate (Clause 14.3)	51			
10.8	Completion Certificate (Clause 14.4)	51			
10.9	Commercial Operation Date (COD) (clause 15.1)	51			
10.10	Change of scope (Article 16)	51			
10.11	O&M Obligations of the Concessionaire (Clause 17.1)	52			
10.12	Maintenance Requirements (Clause 17.2)	52			
10.13	Maintenance Manual (Clause 17.3)	52			
10.14	Maintenance Programme (Clause 17.4)	52			
10.15	Damages for breach of Maintenance Obligations (Clause 17.8)	52			
10.16	Monthly status reports (Clause 19.1)	53			
10.17	Monthly Fee Statement (Clause 19.5)	53			
10.18	Concession Fee (Article 26)	53			
10.19	Toll fee (Clause 27.1.1)	53			
10.20	Change In Law (Article 41)	53			
CHAPT	ER 11. INSURANCE	54			
11.1	Details of Insurance	54			
CHAPT	ER 12. CONCLUSION	55			
12.1	General	55			
12.2	Pavement Condition	55			
12.3	Condition of Structures	55			
12.4	Project Facilities	55			
12.5	12.5 Koad satety				
12.6	I RATTIC GROWTN	55			
12./	Iviaintenance	55			
12.8	chinoRne	22			



TECHNICAL DUE DILIGENCE

REPORT

LIST OF FIGURES

Figure 1.1: Project Location Map	6
Figure 2.1: Typical Cross Section for new construction without service road (TCS-1)	9
Figure 2.2: Typical Cross Section for left side widening without service road (TCS-3)	10
Figure 2.3: Typical Cross Section for right side widening without service road (TCS-4)	10
Figure 2.4: Typical Cross Section for ghat section (TCS-5)	10
Figure 2.5: Typical Cross Section for concentric widening with both side service road with PUP (TCS-6)	10
Figure 2.6: Typical Cross Section for right side widening without service road (TCS-9)	10
Figure 2.7: Typical Cross Section for CUP/PUP with both side service road 2.5m median (TCS-9A)	11
Figure 2.8: Typical Cross Section for concentric widening with both side service road (TCS-11)	11
Figure 2.9: Typical Cross Section for left widening with both side service road (TCS-13)	11
Figure 2.10: Typical Cross Section for concentric widening without service road (TCS-14)	11
Figure 2.11: Typical Cross Section for 3 lane flyover left side widening with service road (TCS-18)	11
Figure 2.12: Typical Cross Section for 3 lane flyover left side widening with service road (TCS-18A)	11
Figure 2.13: Typical Cross Section for 6 lane of PUP/CUP without service road (TCS-19)	12
Figure 2.14: Typical Cross Section for PUP/CUP without service road (TCS-19A)	12
Figure 2.15: Pictorial Diagram of TCS Lengths.	14
Figure 2.16: Service Road	15
Figure 2.17: Bus bays Km. 229+700	20
Figure 3.1: Photographs of the Road Project	22
Figure 3.2: Representative Photos of Pavement Condition	24
Figure 4.1: Overall view of the major bridge	26
Figure 4.2: Representative photos of Minor Bridges (Km. 289+963)	28
Figure 4.3: Representative photos of Flyovers/Underpass	30
Figure 6.1: Representative photos during road safety audit	39
Figure 7.1: Representative Photos of Toll Plazas	41

LIST OF TABLES

Table 1.1: Project Data	7
Table 2.1: Salient Features	9
Table 2.2: TCS Schedule	12
Table 2.3: Service road details	14
Table 2.4: List of Bypasses	15
Table 2.5: List of Realignments	15
Table 2.6: List of Major Junctions	15
Table 2.7: List of Minor Junctions	16
Table 2.8: List of Grade separated structures	17
Table 2.9: Details of Proposed Pedestrian Underpasses / Cattle Underpasses	17
Table 2.10: Summary of Pavement and Carriageway Details	18
Table 2.11: Summary of Structures	18
Table 2.12: List of rest areas	18
Table 2.13: List of Truck lay byes	19
Table 2.14: List of Bus bays/shelters	19
Table 3.1: Road Inventory	21
Table 3.2: Pavement Condition Classification	22
Table 3.3: Pavement condition summary	23
Table 4.1: List of Structures	25
Table 4.2: List of Major Bridge	26
Table 4.3: List of Minor Bridge	26
Table 4.4: Inventory of Underpass	29
Table 4.5: List of Slab/Box Culverts	30
Table 4.6: List of Pipe Culverts	31
Table 5.1: Pavement Design summary	33



TECHNICAL DUE DILIGENCE

REPORT

Table 5.2: Rigid Pavement Design for Toll Plaza	
Table 5.3: Real Time Traffic From COD & Project Traffic Current Years For CMSA (TP1:Pagara)	
Table 5.4: Real Time Traffic From COD & Project Traffic Current Years For CMSA (TP-2: Jogipura)	35
Table 6.1: Referred IRC Publications	
Table 6.2: Road safety audit summary	
Table 7.1: List of Equipment at Toll Plaza and Control Room	40
Table 7.2: List of Vehicles	
Table 8.1: Year wise Traffic (Vehicles) Details as per Toll plaza Data	42
Table 8.2: Summary of 2020-21 Tollable traffic at Toll Plaza	
Table 8.3: Details of Projected traffic	
Table 8.4: Details of Toll Revenue inputs	43
Table 8.5: Details of Toll Rates at each Toll Plaza	44
Table 8.6: Details of Toll Revenue for both Toll Plaza Estimated (in Rs. Million)	44
Table 9.1: Schedule and status of for Periodic Maintenance	48
Table 9.2: Proposed Plan for Future Operation & Maintenance Cost (In Crores)	49
Table 11.1: Insurance Details	54

LIST OF ANNEXURES

Annexure 1: Pavement Condition	
Annexure 2: Condition of Bridges/Underpass	62
Annexure 3: Condition of Culverts	64
Annexure 4: Toll Revenue Calculations	67
Annexure 5: Operation & Maintenance cost	71
Annexure 6: Letter of Award	77
Annexure 7: Provisional Certificate	79
Annexure 8: Completion Certificate	
Annexure 9: Insurance	
Annexure 10: Change of Scope	91





CHAPTER 1. INTRODUCTION

1.1 General

JALPA DEVI TOLLWAYS LIMITED (herein after referred to as the "Concessionaire") had augmented the existing two lane road "Guna - Biora" (SH-15) in the state of Madhya Pradesh, in accordance with the provisions of the Concession Agreement (CA) executed with National Highways Authority of India (herein after referred to as the "Authority") on 21st September, 2015 by four laning on design, build, Finance, operate and transfer (BOT-Toll).

Project road starts at Km. 332+100 Near Guna (design chainage Km. 97+700) and ends at Km. 426+100 Near Biora (design chainage Km. 191+200) on NH-3. It is situated in central part of Madhya Pradesh and passes through settlements namely, Umariya, Ruthiyai and Binaganj. Project location map is provided at **Figure 1.1**.

SHREM TOLLWAYS PRIVATE LIMITED (STPL) acquired JALPA DEVI TOLLWAYS LIMITED vide agreement dated 18.07.2018.

SHREM FINANCIAL PVT LTD (SFPL) appointed RUKY Projects Pvt. Ltd. as consultant for detailed Technical Due Diligence services of the above Road Project to know-how the present condition of Carriageway and Structures, probable costs of Operations and Maintenance during balance Concession period, additional road safety requirements if any and to review the traffic potential and to estimate the projected Toll Collection etc.



REPORT



Figure 1.1: Project Location Map

1.2 The Project Data

S No.	Particulars	Details		
1	Name of the project	Four Laning of Guna- Biora Section of NH-3 from Km. 332+100 to Km. 426+100 in the state of Madhya Pradesh under NHDP Phase IV to be executed on BOT(Toll) Mode on DBFOT		
2	Road Type	National Highway		
3	Name of the Authority	National Highways Authority of India		
4	Name of the Concessionaire	Jalpa Devi Tollways Ltd		
5	Name of the EPC Contractor	Dilip Buildcon Limited		
6	Date of LOA	29.06.2015		
7	Date of Agreement	21.09.2015		
8	Design Length as per Schedule B of CA	93.5 Kms.		
9	Actual Length Constructed	93.5 Kms.		
10	Project Lane Configuration	Four lane with paved shoulder		
11	EPC Cost	1012.90 Cr.		
12	Nature of contract	BOT (Toll)		
13	Toll collected by	The Concessionaire		
14	Concession Period	26 years from the Appointed Date		
15	Appointed date	07.09.2016		
16	Concession End Date	06.09.2042		
17	Construction Period	910 days from the Appointed Date		
18	Schedule Completion Date	05.03.2019		
19	Date of issuance of Provisional Certificate (Commercial Operation Date)	18.06.2018 for 90.0 Kms. length		
20	Date of issuance of Completion Certificate	15.09.2018		

Table 1.1: Project Data

1.3 Scope of Consultancy Services

The scope of work includes providing Technical Due Diligence of the Project Highway and providing estimate of the anticipated maintenance works. Scope of the work as defined in the consultancy work order is listed below:

- Review of various contractual documents
- Collection of historic/past toll revenue data
- Collection of historic/past classified Traffic data from toll plaza and to estimate the projected traffic to arrive at revenue projections.
- Carryout detailed assessment of pavement condition and propose maintenance plan along with BOQ.
- Review of latest FWD/BI test report

- Carrying out inventory & condition survey of all elements of road like embankment slope, plantation, road furniture, tolling system etc., of the project.
- Carrying out inventory & condition survey of all structures (Major Bridges, Minor Bridges, ROB, RE Wall, Flyovers, VUPs, PUPs, Culverts etc.), suggest any rehabilitation & maintenance requirements along with BOQ.
- Carryout review of tolling system to evaluate the efficiency and functionality of tolling system and to identify and give suggestions to improve if any setbacks in the system.
- Carryout out road safety audit on Project highway and provide suggestions for improvement.
- Assess and Provide BOQ and cost estimate for routine & periodic maintenance including O&M.
- Review of punch list items, NCR's to identify any uncompleted works as on date of submission of report.
- Review of validity of insurance and statutory compliances related to Project.
- Review of correspondences exchanged between parties on contract related issues and claims etc.
- Submission of detailed report on technical due diligence of the project.

CHAPTER 2. PROJECT DESCRIPTION & TECHNICAL DETAILS

2.1 Salient Features of the Project

The salient features of the Project as per schedule B and Schedule C of Concession Agreement (CA) including Change of scope are listed in the following Table.

S. No.	Particulars	As per Schedule B of CA	As per COS	As per Site
1	Total Length (Four lane)	93.5 Kms.		93.5 Kms.
2	Realignment/Bypass	06/02 Nos.		06/02 Nos.
3	Toll Plaza	02 Nos.		02 Nos.
4	Bus Bays / Bus Shelters	22 Nos.		22 Nos.
5	Truck Lay Bays	2 Nos.		2 Nos.
6	Rest Area	1 Nos.	-1 Nos.	Nil
7	Major Junction	07 Nos.		07 Nos.
8	Minor Junctions	34 Nos.		34 Nos.
9	ROB	Nil		Nil
10	Level Crossing	Nil		Nil
11	Major Bridges	04 Nos.		04 Nos.
12	Minor Bridges	34 Nos.		34 Nos.
13	Flyovers	02 Nos.		02 Nos.
14	VUP/PUP/CUP	12 Nos.		12 Nos.
15	Box/ Slab Culverts	18 Nos.		18 Nos.
16	Pipe Culverts	73 Nos.		77 Nos.
17	FOB	2 Nos.		2 Nos.
18	Tunnels	2 Nos.		2 Nos.

2.2 Typical Cross Section (TCS) Schedule

The Concessionaire followed the Typical Cross Section shown below and TCS Schedule as given in Table 2.2 below as per Schedule B of CA during the Construction.



Figure 2.1: Typical Cross Section for new construction without service road (TCS-1)





Figure 2.2: Typical Cross Section for left side widening without service road (TCS-3)



Figure 2.3: Typical Cross Section for right side widening without service road (TCS-4)



Figure 2.4: Typical Cross Section for ghat section (TCS-5)



Figure 2.5: Typical Cross Section for concentric widening with both side service road with PUP (TCS-6)



Figure 2.6: Typical Cross Section for right side widening without service road (TCS-9)





Figure 2.7: Typical Cross Section for CUP/PUP with both side service road 2.5m median (TCS-9A)



Figure 2.8: Typical Cross Section for concentric widening with both side service road (TCS-11)



Figure 2.9: Typical Cross Section for left widening with both side service road (TCS-13)



Figure 2.10: Typical Cross Section for concentric widening without service road (TCS-14)



Figure 2.11: Typical Cross Section for 3 lane flyover left side widening with service road (TCS-18)











Figure 2.14: Typical Cross Section for PUP/CUP without service road (TCS-19A)

TCS Schedule is provided below.

S.	Existing Ch	Existing Chainage (Km.) Design Chainage (Km.)		Length	ТУРГ	
No.	From	То	From	То	(Kms.)	TTPE
1	332+100	332.+800	97+700	98+400	0.70	TCS-4
2	332+800	334+310	98+400	99+840	1.44	TCS-3
3	334+310	335+210	99+840	100+740	0.90	TCS-19A
4	335+210	335+770	100+740	101+300	0.56	TCS-3
5	335+770	339+080	101+300	104+350	3.05	TCS-5
6	339+080	340+100	104+350	105+350	1.00	TCS-3
7	340+100	341+300	105+350	106+350	1.00	TCS-1
8	341+300	342+570	106+350	107+640	1.29	TCS-3
9	342+570	343+310	107+640	108+340	0.70	TCS-19A
10	343+310	344+250	108+340	109+300	0.96	TCS-3
11	344+250	347+100	109+300	111+500	2.20	TCS-1
12	347+100	347+240	111+500	111+620	0.12	TCS-3
13	347+240	347+920	111+620	112+300	0.68	TCS-19A
14	347+920	348+590	112+300	112+978	0.68	TCS-3
15	348+590	349+200	112+978	113+578	0.60	TCS-Proposed Toll plaza
16	349+200	350+820	113+578	115+200	1.62	TCS-3
17	350+820	351+500	115+200	115+850	0.65	TCS-4
18	351+500	355+500	115+850	119+900	4.05	TCS-11
19	335+500	355+900	119+900	120+300	0.40	TCS-14
20	355+900	358+920	120+300	123+350	3.05	TCS-4
21	358+920	360+230	123+350	124+660	1.31	TCS-3
22	360+230	360+770	124+660	125+200	0.54	TCS-19A

Table 2.2: TCS Schedule

Shrow XX

TECHNICAL DUE DILIGENCE REPORT

S.	Existing Ch	ainage (Km.)	Design Cha	inage (Km.)	Length	ТУРГ
No.	From	То	From	То	(Kms.)	ITPE
23	360+770	361+000	125+200	125+420	0.22	TCS-3
24	361+000	361+550	125+420	125+950	0.53	TCS-1
25	361+550	367+700	125+950	132+150	6.20	TCS-3
26	367+700	369+275	132+150	133+700	1.55	TCS-1
27	369+275	370+160	133+700	134+540	0.84	TCS-4
28	370+160	370+780	134+540	135+160	0.62	TCS-19A
29	370+780	375+340	135+160	139+700	4.54	TCS-4
30	375+340	383+480	139+700	147+860	8.16	TCS-3
31	383+480	384+100	147+860	148+500	0.64	TCS-19A
32	384+100	385+000	148+500	149+400	0.90	TCS-3
33	385+000	-	149+400	152+480	3.08	TCS-1
34	-	-	152+480	153+160	0.68	TCS-19A
35	-	390+330	153+160	155+150	1.99	TCS-1
36	390+330	394+000	155+150	158+800	3.65	TCS-3
37	394+000	395+640	158+800	160+450	1.65	TCS-6
38	395+640	400+160	160+450	164+897	4.45	TCS-3
39	400+160	400+760	164+897	165+497	0.60	TCS-Proposed Toll plaza
40	400+760	402+300	165+497	167+050	1.55	TCS-3
41	402+300	403+300	167+050	168+000	0.95	TCS-1
42	403+300	403+900	168+000	168+600	0.60	TCS-14
43	403+900	405+040	168+600	169+700	1.10	TCS-1
44	405+040	405+240	169+700	169+900	0.20	TCS-4
45	405+240	405+510	169+900	170+150	0.25	TCS-1
46	405+510	409+120	170+150	173+540	3.39	TCS-3
47	409+120	409+820	173+540	174+240	0.70	TCS-19A
48	409+820	416+370	174+240	180+800	6.56	TCS-3
49	416+370	416+670	180+800	181+100	0.30	TCS-4
50	416+670	417+300	181+100	181+740	0.64	TCS-19A
51	417+300	418+660	181+740	183+100	1.36	TCS-4
52	418+660	419+225	183+100	183+650	0.55	TCS-3
53	419+225	420+050	183+650	184+250	0.60	TCS-4
54	420+050	421+450	184+250	185+850	1.60	TCS-13
55	421+450	422+230	185+850	186+650	0.80	TCS-9A
56	422+230	425+100	186+650	189+500	2.85	TCS-3
57	425+100	426+100	189+500	191+200	1.70	TCS-18A





Figure 2.15: Pictorial Diagram of TCS Lengths.

2.3 Road Side Drainage

- To facilitate quick disposal of storm water from the Carriageway and to avoid accumulation of drainage from the Carriageway, RCC side drains are constructed along the main carriage way on both flanks at locations as specified in Schedule B of CA in strict adherence to the Standard Specifications set forth in Schedule D of CA.
- The Concessionaire has provided RCC covered drains with footpath in built up areas while earthen drains are in open and rural areas.

2.4 Service Roads

Service road shall be provided along the project road as per provisions of Schedule B of CA. the locations are given below.

S.	Existing Cha	inage (Km.)	Design Chai	nage (Km.)	Sido	Length				
No.	From	То	From	То	Side	(Kms.)				
1	351+500	355+500	115+850	119+900	Both	2*4.050				
2	394+000	395+640	158+800	160+450	Both	2*1.650				
3	420+050	421+450	184+250	185+850	Both	2*1.600				
4	421+450	422+230	185+850	186+650	Both	2*0.800				
5	425+100	426+130	189+500	191+200	Both	2*1.700				
	2*9.800									

Table	2.3:	Service	road	details
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Km. 250+140



Figure 2.16: Service Road.

2.5 Bypass/Realignment

There are 2 bypasses and 6 realignment proposed on the project road as per provisions of Schedule B of CA.

S.	Name of	Existing Chai	nage (Km.)	Design Chai	Length						
No.	Bypass	From	То	From	То	(Kms.)					
1	Ruthai	344+250	347+100	109+300	111+500	2.20					
2	Binaganj	385+000	390+300	149+400	155+150	5.75					
				Total Length		7.95					

Table 2.4: List of Bypasses

S.	Existing Chai	nage (Km.)	Design Cha	inage (Km.)		
No.	From	To	From To		Length (Kms.)	
1	340+100	341+300	105+350	106+350	1.000	
2	361+000	361+550	125+420	125+950	0.530	
3	367+700	369+275	132+150	133+700	1.550	
4	402+300	403+300	167+050	168+000	0.950	
5	403+900	405+040	168+600	169+700	1.100	
6	405+240	405+210	169+900	170+150	0.250	
			Total I	ength	5.380	

Table 2.5: List of Realignments

2.6 Intersections

As per provisions of Schedule B of CA, 7 Major Junctions and 34 Minor Junctions have been given. Details are given below.

S. No.	Existing Chainage (Km.)	Design Chainage (Km.)	Type of Junction	Remarks					
1	344+250	109+300	Y	Start of Ruthai Bypass					
2	347+100	111+500	Y	End of Ruthai Bypass					
3	385+000	149+400	Y	Start of Binagunj Bypass					
4	390+300	155+150	Y	End of Binagunj Bypass					

Table 2.6: List of Major Junctions

Shrow XX **TECHNICAL DUE DILIGENCE** REPORT

S. No.	Existing Chainage (Km.)	Design Chainage (Km.)	Type of Junction	Remarks
5	420+000	184+400	Y	Start of Biaora Bypass
6	421+800	186+200	+	NH-12 Crossing
7	425+250	189+700	Y	End of Biaora Bypass

S. No.	Existing Chainage (Km.)	Design Chainage (Km.)	Type of Intersection	Cross Road Leading to
1	339+350	104+653	Y	Gopi krisha - Dwar (L)
2	343+650	108+705	Y	To Railway St.
3	349+150	113+521	Y	Pagara (L)
4	351+800	116+139	Y	Vijaypur {R}
5	353+600	117+956	Y	Towards village
6	354+000	118+414	+	jama Masjid (L) Gail (R)
7	354+750	119+139	Y	Sada Colony, Lagho garh (L)
8	355+100	119+529	+	Radhagarh (L) Gail {R}
9	356+050	120+464	+	Radhagarh (L) Yamunapura {R}
10	360+700	125+109	Y	Avan Village {R)
11	365+450	129+886	Y	Narayanpura {R} Raghav Garh (Sugar Factory)
12	366+400	130+881	Y	Madhusudhan Garh (L)
13	369+600	134+05	Y	Khatriya (L)
14	372+700	137+038	Y	Towards village {R}
15	373+250	137+601	Y	Barhkheda Khurd {R}
16	376+350	140+668	Y	Kala Khejra Kalarani {L}
17	378+600	142+971	Y	Daidala {R}
18	385+150	149+592	Y	Jaisinghpura {R} Gail Tower
19	385+500	149+755	Y	Ledari Sirong (L)
20	386+750	151+072	Y	Bijnipura {R}
21	391+950	156+745	Y	Bhaswa (L)
22	393+700	158+51	Y	Chandola {R}
23	395+350	160+194	Y	Rajgarh (R}
24	397+950	162+584	Y	Nityakhedi (R}
25	405+000	169+643	Y	Kila Amargarh (R}
26	409+000	173+412	Y	Sinduriya {R}
27	410+300	174+726	Y	Kachri {R}
28	413+900	178+274	Y	Kilkheda {R}
29	419+350	183+805	+	Kalipith {R} BT Road (L)
30	419+850	184+284	Y	Biaora City (L) Railway Station {R}
31	420+150	184+594	+	Biaora City (L)
32	421+050	185+497	Y	Moya {R}

Table 2.7: List of Minor Junctions

TECHNICAL DUE DILIGENCE

S. No.	Existing Chainage (Km.)	Design Chainage (Km.)	Type of Intersection	Cross Road Leading to
33	422+350	186+777	Y	PWD Rest House (L)
34	425+750	190+213	Y	Balchiri (L)

2.7 Grade Separated Structures and underpasses

There are 2 no. Flyovers and 9 no. underpasses has been given as per provisions of Schedule B of CA.

S. No.	Location	Existing Chainage (Km.)	Design Chainage (Km.)	Structural Configuration	Structure Type	Span arrangem ent (M)	Width of Structure (M)
1	On NH-12 Intersection	421+800	186+215	New 6 Lane (Height 5.5m)	RCC Girder	1*15.6+ 2*21.6+ 1*15.6	2*14.5
2	On NH-12 Intersection	425+500	190+25	New 3 Lane (Height 5.5)	PSC Girder	1*37+1*3 4+ 1*37	1*14.5

Table 2.8: List of Grade separated structures

Table 2.9: Details of Proposed Pedestrian Underpasses / Cattle Underpasses

S. NO	Existing Chainage (Km.)	Design Chainage (Km.)	Name of intersecting Roads	Structural Configuration	Structure Type	Span (M)	width of Structure (M)
1	334+650	100+187	_	New 6lane (Clear Height 4.0m)	RCC Single Box	1*7	2*14.5
2	343+000	108+032	Dheri Gaon	New 6lane (Clear Height 4.0m)	RCC Single Box	1*7	2*14.5
3	347+500	111+896	_	New 6lane (Clear Height 4.0m)	RCC Single Box	1*7	2*14.5
4	360+500	124+936	Avan Village	New 6lane (Clear Height 4.0m)	RCC Single Box	1*7	2*14.5
5	370+500	134+83	_	New 6lane (Clear Height 4.0m)	RCC Single Box	1*7	2*14.5
6	383+800	148+167	_	New 6lane (Clear Height 4.0m)	RCC Single Box	1*7	2*14.5
7	Binaganj	152+821	_	New 6lane (Clear Height 4.0m)	RCC Single Box	1*7	2*14.5
8	409+500	173+788	Sinduriya	New 6lane (Clear Height 4.0m)	RCC Single Box	1*8	2*14.6
9	417+000	181+436	_	New 6lane (Clear Height 4.0m)	RCC Single Box	1*7	2*14.5

2.8 Road Over Bridge (ROB)

ROB is not proposed in the project road as per provisions of Schedule B of CA.

2.9 Pavement and carriageway details

Summary of Pavement Details is given below:

Table 2.10: Summary of Pavement and Carriageway Details

S. No.	Description	Flexible (Kms.)	Rigid (Kms.)	Remarks
1	4 Lane with paved shoulder	82.50	1.20	TCS-1, 3, 4, 5, 14,
-	without service road		-	19A & Toll plaza
2	4 Lane with paved shoulder	0.80		TCS-6, 9A, 11, 13
Z	with service road	9.80		& 18A
3	Total Length of the Project	92.30	1.20	
TYPE OF				
4	New Alignment & Reconstruction	22.60	1.20	
5	Widening with strengthening	69.70		
6	Total Length of the Project	92.30	1.20	

2.10 Summary of Structures

Summary of Structures as per provisions of schedule B of the CA is given below.

S. No.	Description	Major Bridges	Minor Bridges	Hume Pipe Culverts	Box/Slab Culverts	Fly Overs	VUP/PUP /CUP	Remarks
1	Retained							
2	Widening			7	10			
3	Reconstruction			7	8			
4	New	4	34	63		2	12	
5	R & R	1 on RHS	17 one C/W					
	Total	4	34	77	18	2	12	

Table 2.11: Summary of Structures

2.11 Toll Plazas

- There are two toll Plazas on the project road at Km. 113+278 & Km.165+197.
- Each side of toll plaza comprises of 5 lanes.
- List of tolling equipment provided at site is furnished in the Detailed Report.

2.12 Rest areas

As per provisions of Schedule C of CA rest areas is provided at 1 location. Details are provided below.

S. No.	Existing Chainage (Km.)	Design Chainage (Km.)					
1	371+650	135+978					

Table 2.12: List of rest areas

2.13 Truck lay byes

As per provisions of Schedule C of CA truck lay byes are provided at 2 locations. Details are provided below.

S. No. Existing Chainage (Km.)		Design Chainage (Km.)	Side
1	343+500	108+550	Both Side
2	381+425	145+800	Both Side

Table	2.13:	List o	t Truck	lav byes

2.14 Bus bays/Bus shelters

As per provisions of Schedule C of CA bus bays/shelters are provided at 22 locations. Details are provided below.

S. No.	Existing Chainage (Km.)	Design Chainage (Km.)	Side
1	334+200	99+732	Both Side
2	338+200	103+506	Both Side
3	344+000	109+026	Both Side
4	347+250	111+620	Both Side
5	350+250	114+630	Both Side
6	353+225	117+627	Both Side
7	354+875	119+265	Both Side
8	360+975	125+356	Both Side
9	365+175	129+615	Both Side
10	367+675	132+121	Both Side
11	370+850	135+230	Both Side
12	374+750	139+091	Both Side
13	382+625	147+005	Both Side
14	384+850	149+250	Both Side
15	390+500	155+320	Both Side
16	394+325	159+140	Both Side
17	398+125	156+869	Both Side
18	400+925	165+673	Both Side
19	403+775	168+463	Both Side
20	416+725	181+157	Both Side
21	419+650	184+083	Both Side
22	425+700	190+028	Both Side

Table 2.14: List of Bus bays/shelters





Figure 2.17: Bus bays Km. 229+700.

2.15 Other Project Facilities Provided as per Schedule C of CA

- Road side furniture: Sign Boards Kilometer stones, Road Marking and object/hazard markers are provided in accordance with IRC-SP: 84-2014.
- Traffic safety devices: W Beam Crash barriers, parapet walls are provided as per the provisions of Schedule C of CA.
- Landscaping: Provided at Toll Plaza location and being maintained
- Tree Plantation: Tree plantation is provided on both sides of the Project Corridor all along the way and is being maintained.
- Medical Aid Post: Provided at Toll Plaza location and is operational
- Highway Lighting: Highway lighting is provided at Toll Plaza and is functional.

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CHAPTER 3. ROAD INVENTORY & PAVEMENT CONDITION

3.1 General

Road Inventory and pavement condition surveys were carried out by a team of Engineers and the features noted at site are presented in the sections provided below.

Project road starts at Km. 332+100 Near Guna (design chainage Km. 97+700) and ends at Km. 426+100 Near Biora (Design chainage Km. 191+200) on NH-3. It is situated in central part of Madhya Pradesh and passes through settlements namely, Umariya, Ruthiyai and Binaganj. However, during implementation stage due to change in NH number from NH-3 to NH-46 for continuity of NH chainage it is observed that all Km stones are fixed with new project chainages i.e. starts at Km. 223+000 and ends at Km. 317+000. Accordingly, site inventory conducted based on new chainages found at site.

3.2 Road Inventory

Inventory of the project road was carried out physically and the same is summarized in the following table. Few representative photographs are presented below.

S. No.	Features	Remarks	
1	Terrain	Plain and rolling Terrain	
2	Land Use	Agriculture and forest	
3	Two lane length	93.5 Kms.	
4	Earthen shoulder	1.0 m to 1.5m Width on site	
5	Junctions	41 Nos.	
6	Toll Plazas	At Km. 113+278 (Design Chainage) & Km. 165+197 (Design Chainage)	
7	Sign boards	Sign boards are provided as per Highway requirements	
8	Road Markings	Lane markings are provided as per Highway requirement	
9	Bus Bays /shelters	6 Nos.	
10	Highway Lighting	Provided as per requirement	
11	Avenue plantation	Provided	

Table	3.1:	Road	Inventory
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Figure 3.1: Photographs of the Road Project

3.3 Pavement Condition

Pavement condition survey was carried out on the project road based on observations supplemented by simple measurements. The criteria adopted for the classification of condition of the pavement is as per 4.2.1 of IRC 81-1997.

Classification	Pavement condition
Good	No cracking, rutting less than 10mm
Fair	No cracking or cracking confined to single crack in the wheel track with rutting between 10mm and 20mm.
Poor	Extensive cracking and/or rutting greater than 20mm sections with cracking exceeding 20% shall be treated as failed.

Table 3.2: Pavement Condition Classification

Assessment of the condition of Pavement surface is a key component of infrastructure asset management. The information used across a wide range of business processes which includes: Monitoring the performance of the road; Predicting future pavement conditions and assessing long term needs; Identifying rehabilitation and maintenance treatment options; investigate causes of pavement deterioration and evaluating specific treatment options; The purpose of the pavement condition survey is to provide a more accurate and detailed investigation of the pavement deterioration in order to assist in determining appropriate rehabilitation treatments.

3.4 Pavement Condition Survey

The survey on general pavement condition was primarily undertaken by means of slow drive- over survey, and supplemented with measurements wherever necessary. Pavement assessment was



done with the help of simple instruments using measuring tape, Straight edge. It was carried out to quantify pavement deficiency on a representative basis. Aspects of pavement condition assessment include surface defects, rut depth, cracking, potholes, patched areas, shoulder conditions etc. An overall assessment of performance serviceability of the road was also done to rate the existing pavement and shoulder condition qualitatively.

The pavement condition was measured under the following sub-heads:

- Shoulder- (Composition/Condition)
- Riding Quality (Good/Fair/Poor/Very Poor)
- Pavement Condition-
 - Cracking (% of Surface area)
 - Ravelling (% of Surface area)
 - Potholes (% of Surface area)
 - Patching (% of Surface area)
 - Rut depth (Moderate 10 to 20 mm & Severe >20 mm)
 - Pavement edge drop (mm)
- Road Side Drain (Non-Existing/ Partially Functional/ Functional)

Upon verification of the Pavement condition in the above said manner, it is observed that the Pavement condition of Project road is fair. The field measurements of the Pavement Condition survey are tabulated in the standard proforma as per IRC: SP-19 and is given in **ANNEXURE 1**. The summary of Pavement condition is given below.

Table 3.3: Pavement condition summary							
Site Cha	inages	Longth (Kmg)	Condition				
From (Km.)	To (Km.)	Length (Kms.)	Condition				
223+000	317+000	94.000	Fair				



Km. 227+200

Km. 233+300

Stren TECHNICAL DUE DILIGENCE REPORT



Km. 247+300



Km. 261+300



Km. 290+300





Km. 314+500Km. 318+500Figure 3.2: Representative Photos of Pavement Condition.

CHAPTER 4. INVENTORY AND CONDITION OF STRUCTURES

4.1 General Assessment and Condition of the structures

Inspection of existing structures on the project section was carried out, detailed inventory and condition is examined during the site visit as per the guide lines provided in IRC SP: 52-1999 & IRC SP: 35-1990.

4.2 Inventory of Structures

There are 04 Nos. Major Bridge, 34 Nos. Minor Bridges, 12 Nos. Underpasses, 02 Nos. Flyovers ,77 Nos. Pipe culverts and 18 Nos. Slab/ Box culverts are there along this project road

S. No.	Type of Structure	Numbers
1	Major bridges	04
2	Minor Bridge	34
3	PUP/CUP	12
4	Flyovers	02
5	Pipe culverts	77
6 Slab/Box Culverts		18

Table 4.1: List of Structures

The major bridges of superstructure are of RCC/PSC I Girder resting on RCC wall type/Circular piers and abutments with open foundation. The minor bridges of superstructure are RCC solid slab/RCC Box type/ RCC/PSC I Girder and the substructures are of PCC/RCC conventional wall type supported on open foundations. Detailed inventory and condition survey of bridges are given in **ANNEXURE 2.** The culverts observed along the project road are mainly of two types viz. pipe culverts and RCC slab/box culverts. Structural condition of most of the culverts is fair except in few locations. Detailed inventory and condition survey of culverts are given in **ANNEXURE 3.**

4.3 Details of Major Bridges

The total length of the major bridge at Km. 234+951 is 150.0m with 5 spans. The superstructure consists of PSC Girder. Each pier and whereas abutment is regular RCC wall/Circular type abutment. Open foundations have been constructed for all piers and abutments. Superstructure is seated on Elastomeric bearings. Expansion joints are of Strip seal type. RCC railings/Crash barrier have been provided on both sides of the deck.

The total length of the major bridge at Km. 257+942 is 278.0m with 9 spans. The superstructure consists of RCC/PSC Girder. Each pier and whereas abutment is regular RCC wall/Circular type abutment. Open foundations have been constructed for all piers and abutments. Superstructure is seated on Elastomeric bearings. Expansion joints are of Strip seal type. RCC railings/Crash barrier have been provided on both sides of the deck.

The total length of the major bridge at Km. 293+929 is 98.7m with 3 spans. The superstructure consists of PSC Girder. Each pier and whereas abutment is regular RCC wall type/Circular abutment. Open foundations have been constructed for all piers and abutments. Superstructure is seated on Elastomeric



bearings. Expansion joints are of Strip seal type. RCC railings/Crash barrier have been provided on both sides of the deck.

The total length of the major bridge at Km. 310+744 is 101.6m with 4 spans. The superstructure consists of RCC/PSC Girder. Each pier and whereas abutment is regular RCC wall type/Circular abutment. Open foundations have been constructed for all piers and abutments. Superstructure is seated on Elastomeric bearings. Expansion joints are of Strip seal type. RCC railings/Crash barrier have been provided on both sides of the deck.

S. No.	Chainage (Km.)	Span (m)	Total Length of Bridge (m)					
1	234+951	5x30.0	150.0					
2	257+942	2x20+7x34	278.0					
3	293+929	3x32.9	98.7					
4	310+744	4x25.4	101.6					

Table	4.2:	List	of	Mai	ior	Bridge
TUNIC	 .	LIJU	U 1	IVIU		Diluge

The condition of the superstructure and substructure is good. Certain minor maintenance operations such as quadrant pitching, reflector plates, drainage spouts and strip seal expansion joints are to be carried out.



Figure 4.1: Overall view of the major bridge

4.4 Details of Minor Bridges

There are 34 minor bridges in the project stretch. The type of superstructure for minor bridges is RCC solid slab, RCC Box type & RCCI Girder and the substructure is PCC/RCC conventional wall type supported on open foundations. Expansion joints are buried type/Strip seal and bearings are tar paper and elastomeric bearings. RCC crash barriers are provided on all structures.

S. No.	Chainage (Km.)	Span (m)	Total Length of Bridge (m)	Description		
1	226+094	2x5.0	10	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.		
2	230+216	3X18.5	55.5	It has RCC I Girder. It has RCC crash barrier, bituminous wearing coat & Strip seal expansion joints.		
3	235+261	1X30.0	30	It has PSC I Girder. It has RCC Railing,		

Table 4.3: List of Minor Bridge

Shrow XX **TECHNICAL DUE DILIGENCE** REPORT

S. No.	Chainage (Km.)	Span (m)	Total Length of Bridge (m)	Description
				bituminous wearing coat & Strip seal expansion joints.
4	237+524	1x9.0	9	It has RCC Slab type structure. It has RCC Railing, bituminous wearing coat, buried type expansion joints.
5	237+937	2x8.8	8.8	It has RCC Slab type structure. It has RCC Railing, bituminous wearing coat, buried type expansion joints.
6	238+639	1x9.0	9	It has RCC Slab type structure. It has RCC Railing, bituminous wearing coat, buried type expansion joints.
7	238+639	2x3.50	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat
8	240+715	3x9.0	27	It has RCC Slab type structure. It has RCC Railing, bituminous wearing coat, buried type expansion joints.
9	245+053	3x12.5	37.5	It has RCC Slab type structure. It has RCC Railing, bituminous wearing coat, buried type expansion joints.
10	245+807	4x4.5	18	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
11	249+196	2x5.50	11	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
12	250+570	2x16.0	32	It has RCC I Girder. It has RCC crash barrier, bituminous wearing coat & Strip seal expansion joints.
13	255+499	2x13.8+1x24.4	51.6	It has RCC I Girder. It has RCC crash barrier, bituminous wearing coat & Strip seal expansion joints.
14	262+322	1x7.0	7	It has RCC Slab type structure. It has RCC Railing, bituminous wearing coat, buried type expansion joints.
15	262+538	1x10.4	10.4	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
16	265+530	1x11.0	11	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
17	267+054	2x8.5	17	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
18	269+304	2x7.4	14.8	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
19	270+019	1x10.85	10.85	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
20	271+197	2x8.6	17.2	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
21	272+657	2x27.7	55.5	It has PSC I Girder. It has RCC Railing, bituminous wearing coat & Strip seal expansion joints.



S. No.	Chainage (Km.)	Span (m)	Total Length of Bridge (m)	Description
22	276+213	4x6 0	24	It has RCC Box structure. It has RCC
~~~	270-215	+70.0	27	Railing, bituminous wearing coat.
23	276+381	3x6 0	18	It has RCC Box structure. It has RCC
	2707001			Railing, bituminous wearing coat.
24	278+557	3x6.7	20.1	It has RCC Box structure. It has RCC
				Railing, bituminous wearing coat.
25	278+949	4x7.5	30	It has RCC Box structure. It has RCC
				Railing, bituminous wearing coat.
26	280+885	1x12.6	12.6	It has RCC Box structure. It has RCC
		_	_	Railing, bituminous wearing coat.
27	283+323	1x9.5	9.5	It has RCC Box structure. It has RCC
				Railing, bituminous wearing coat.
20	207 002	2.6.0	4.0	It has RCC Slab type structure. It has
28	287+083	3x6.0	18	RCC Railing, bituminous wearing coat,
				buried type expansion joints.
20	280,062	1,46,7	67	It has RCC Slab type structure. It has
29	289+903	1X0.7	0.7	seat buried type expansion joints
				It has PCC Slab type structure. It has
20	201+244	1,15.0	15	RCC Pailing bituminous wearing cost
30	291+244	1/13.0	15	huried type expansion joints
				It has RCC Slab type structure. It has
31	299+404	2x16 5	33	RCC Bailing bituminous wearing coat
51	2331404	2/10.5	33	buried type expansion joints
				It has RCC Slab type structure. It has
32	308+274	2x16.0	32	RCC Railing, bituminous wearing coat.
				buried type expansion joints.
				It has RCC Box structure. It has RCC
33	310+564	1x7.6	7.6	Railing, bituminous wearing coat.
	244 217	1.0.0		It has RCC Box structure. It has RCC
34	311+847	1x9.0	9	Railing, bituminous wearing coat.



Figure 4.2: Representative photos of Minor Bridges (Km. 289+963).

# 4.5 Details of Flyover/Underpass

There are 12 Underpasses & 2 Flyovers in the project stretch. The type of superstructure for underpass/Flyover is RCC I Girder/RCC Box type and the substructure is PCC/RCC conventional wall type supported on open foundations. Expansion joints are buried type/Strip seal and bearings are tar paper and elastomeric bearings. RCC crash barriers are provided on all structures.

S. No.	Chainage (Km.)	Type of Structure	Span (m)	Total Length of Bridge (m)	Description
1	311+256	Flyover	2x15.6+2x21.6	74.4	It has RCC I Girder type. It has RCC crash barrier, bituminous wearing coat, Strip seal expansion joints, elastomeric bearings.
2	315+291 F	Flyover	2X37.0+1x34.0	108	It has PSC I Girder. It has RCC crash barrier, bituminous wearing coat & Strip seal expansion joints, elastomeric bearings.
3	244+576	VUP	1x25.0	25	It has PSC I Girder. It has RCC crash barrier, bituminous wearing coat & Strip seal expansion joints, elastomeric bearings.
4	255+935	VUP	1x12.0	12	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
5	259+926	VUP	1x12.0	12	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
6	309+601	VUP	1x12.0	12	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
7	225+301	PUP/CUP	1x7.0	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
8	232+911	PUP/CUP	1x7.0	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
9	237+091	PUP/CUP	1x7.0	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
10	250+153	PUP/CUP	1x7.0	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
11	273+147	PUP/CUP	1x7.0	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
12	277+851	PUP/CUP	1x7.0	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
13	298+791	PUP/CUP	1x7.0	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
14	306+101	PUP/CUP	1x7.0	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.

#### Table 4.4: Inventory of Underpass

Strent TECHNICAL DUE DILIGENCE REPORT



Km. 311+256Km. 315+291Figure 4.3: Representative photos of Flyovers/Underpass

#### 4.6 Details of Culverts

The culverts observed along the project road are mainly of two types' viz. RCC Slab/Box culverts and Pipe culverts. The condition of culverts is generally good. For some of the pipe culverts vegetation and vent cleaning is required. In general, the condition of all the structures is found satisfactory. The detailed condition of the same are given the following sections.

#### 4.6.1. Slab/Box Culverts

There are 18 Nos. of slab/Box culvert in the project stretch. The details of the culverts are as given below.

S. No.	Chainage (km.)	Span (m)	Vent Size (m)				
1	224+900	1x3.0	1.6				
2	226+912	1x3.0	2.47				
3	231+970	1x2.0	1.5				
4	238+839	1x3.0	1.5				
5	242+534	1x2.0	1.5				
6	273+479	1x4.5	2.47				
7	282+856	1x2.0	1.5				
8	284+738	1x5.5	4.2				
9	286+083	1x3.75	2.8				
10	287+986	1x5.2	3.8				
11	288+706	1x5.0	1				

#### Table 4.5: List of Slab/Box Culverts

S. No.	Chainage (km.)	Span (m)	Vent Size (m)
12	293+231	1x2.5	1.5
13	295+641	1x2.0	1.5
14	312+499	1x2.0	2.2
15	313+044	1x2.6	2.3
16	313+354	1x5.0	2.5
17	314+356	1x2.8	3.0
18	314+583	1x3.0	2.2

# 4.6.2. Condition of the Slab/Box Culverts:

The general condition of above Box/slab culverts is good. Maintenance is to be carried out before monsoon for vent clearance, Protection works etc.

# 4.6.3. General Description of the Pipe Culverts

There are 77 Nos. of pipe culverts in the project stretch. The details of the culverts are as given below.

S. No.	Chainage (Km.)	Span (m)	SI. No.	Chainage (Km.)	Span (m)
1	223+510	1x1.2	40	266+881	1x1.2
2	224+205	1x1.2	41	267+481	1x1.2
3	226+524	1x1.0	42	270+455	1x1.2
4	227+838	2x1.2	43	271+041	1x1.2
5	228+199	2x1.2	44	272+115	1x1.0
6	228+746	1x1.2	45	273+155	1x1.2
7	229+031	1x1.2	46	274+646	1x1.2
8	229+801	1x1.2	47	275+506	1x1.2
9	231+501	1x1.2	48	275+855	1x1.2
10	232+271	1x1.2	49	277+196	1x1.2
11	233+351	1x1.2	50	278+012	1x1.2
12	234+605	1x1.2	51	278+349	1x1.2
13	235+533	1x1.2	52	279+281	1x1.2
14	235+931	1x1.2	53	279+841	1x1.2
15	236+521	1x1.2	54	280+706	1x1.2
16	240+201	1x1.2	55	283+441	1x1.2
17	241+688	1x1.2	56	285+741	1x1.2
18	244+032	1x1.2	57	286+741	1x1.2
19	244+931	1x1.2	58	287+241	1x1.2
20	245+932	1x1.2	59	288+338	1x1.2
21	246+810	1x1.2	60	290+041	1x1.2
22	247+861	1x1.2	61	291+461	1x1.2

Table 4.6: List of Pipe Culverts

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S. No.	Chainage (Km.)	Span (m)
23	248+746	1x1.2
24	249+451	1x1.2
25	250+835	1x1.2
26	251+091	1x1.2
27	252+987	1x1.2
28	253+971	1x1.2
29	254+767	1x1.2
30	255+221	1x1.2
31	255+341	1x1.2
32	257+081	1x1.2
33	257+496	1x1.2
34	258+846	1x1.2
35	259+651	1x1.2
36	261+270	1x1.2
37	262+833	1x1.2
38	263+331	1x1.2
39	265+991	1x1 2

SI. No.	Chainage (Km.)	Span (m)
62	292+911	1x1.2
63	296+701	1x1.2
64	297+227	1x1.0
65	297+650	1x1.0
66	298+811	1x1.2
67	300+031	1x1.2
68	300+271	1x1.2
69	302+667	1x1.0
70	303+041	1x1.2
71	306+641	1x1.2
72	307+486	1x1.2
73	309+590	1x1.0
74	310+341	1x1.2
75	311+264	1x1.2
76	314+813	1x1.2
77	315+201	1x1.2

#### 4.6.4. Condition of the Pipe Culverts

The general condition of above pipe culverts is good. Maintenance is to be carried out before monsoon for vent clearance, Protection works etc.

The culverts are in fair condition and can be retained in the present condition with following repairs/rehabilitation measures.

- Chocked culverts must be cleared.
- Debris and garbage near outside the vents must be removed.
- Slope protection works must be repaired / provided.

# **CHAPTER 5. PAVEMENT DESIGN VALIDATION AND OVERLAY SCHEDULES**

#### 5.1 General

Review of Pavement design report includes providing insights on design life of pavement, crust thickness, history of overlays on the existing pavement, pavement condition and CA provisions for the upcoming renewal cycles.

#### 5.2 Pavement design

The flexible pavement has low flexural strength and hence layers reflect the deformation of the lower layers / sub-grade on to the surface layer after the withdrawal of wheel load. In order to control the deflections in the sub-grade so that no permanent deflections result, the pavement thickness is so designed that the stresses on the sub-grade soil are kept within its bearing capacity. Loading of bituminous pavement requires the stiffest layers to be placed at the surface with successive weaker layers down to sub-grade.

The project road is already operational and the standards applicable during the design development phase of the project road are taken into account for this review. Therefore, the design of pavement has been validated based on IRC: 37-2001 publication while the current publication is IRC: 37-2018.

#### 5.2.1. Pavement design crust thickness

The new pavement shall be designed in accordance with the IRC:37. "Guidelines for the Design of Flexible Pavements". Rigid pavement shall be designed in accordance with the method prescribed in IRC:58. "Guidelines for the Design of Plain Jointed Rigid Pavements for Highways".

The project road has been divided into 2 sections i.e. HS-1 (from Km. 97+700 to Km. 145+400) and HS-2 (from Km. 145+400 to Km. 191+200). The design traffic as per traffic during design stage and design traffic as per CA is summarized below

#### **Review of Pavement Design**

As per the pavement design approved in the project, the following conclusions are given.

S. No.	Description/ Pavement layer	Design Parameters for Main carriageway *	Design Parameters for Service roads			
1	Eff. Sub Grade CBR (%)	11% for HS-1 & 13% for HS-2	9%			
2	Design Life (Years)	10 years for BT 25 years for Granular	23 years			
3	Design Traffic (MSA)	45 MSA for 10 years 185 MSA for 26 years	10 MSA			
4	Surface course (BC)	40 mm	40 mm			
5	Binder course (DBM)	90 mm	50 mm			
6	Base course (WMM)	250 mm	250 mm			
7	Sub Base course (GSB)	200 mm	200 mm			

# Table 5.1: Pavement Design summary

Note: *The effective CBR is 11% for HS-1 and 13% for Hs-, however the pavement crust has been proposed same for both homogenous sections
Details of Pavement design for Rigid Pavement are as follows:

_ . .

Description	Design/Adonted Thickness
CBR of sub grade	10 %
Design life in years	30
Commercial Vehicles per Day (CVPD)	5116
Pavement Quality Concrete (PQC) - mm	280
Dry Lean Concrete (DLC) - mm	150
Drainage Layer (GSB) - (mm)	150
Diameter of Dowel Bar (mm)	32
Length of Dowel Bar (mm)	450
Spacing of Dowel Bars (mm)	290
Diameter of Tie Bar (mm)	12 (Deformed)
Length of Tie Bar (mm)	640
Spacing of Tie Bars (mm)	710

The Pavement crust has been designed according to IRC specification and found in order, the adopted/ Constructed pavement layer thickness is adequately provided than actual/designed thickness.

#### 5.2.2. Validation of Pavement Design

The new pavement shall be designed in accordance with the IRC:37. "Guidelines for the Design of Flexible Pavements". Rigid pavement shall be designed in accordance with the method prescribed in IRC:58. "Guidelines for the Design of Plain Jointed Rigid Pavements for Highways".

Pavement design validation is carried out as per actual traffic from COD. As per IRC 37, Vehicle Damage Factor (VDF), Distribution of commercial vehicles and growth rate values are considered from pavement design report. Summary is given below.

			AADT in	Vehicles		CVPD	NACA	CNASA	Veer	Domorika
TEAR	LCV	Bus	2AT	3AT	MAV	(Veh.)	IVISA	CIVISA	rear	Remarks
2018	425	134	600	632	1106	2471	1.67	1.67	1	Actual
2019	453	141	635	672	1172	2620	1.77	3.44	2	Actual
2020	526	313	1460	1405	2501	5679	3.76	7.20	3	Actual
2021	559	329	1540	1489	2643	6001	3.98	11.18	4	Projected
2022	593	346	1625	1577	2792	6341	4.21	15.39	5	Projected
2023	630	364	1714	1671	2950	6700	4.45	19.84	6	Projected
2024	669	383	1809	1770	3117	7080	4.70	24.54	7	Projected
2025	710	403	1908	1876	3294	7481	4.97	29.51	8	Projected

Table 5.3: Real Time Traffic From COD & Project Traffic Current Years For CMSA (TP1:Pagara)

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VEAD			AADT in	Vehicles		CVPD	Μελ	CNASA	Voor	Pomarks
TEAR	LCV	Bus	2AT	3AT	MAV	(Veh.)	IVISA	CIVISA	rear	Remarks
2026	752	423	2008	1984	3472	7888	5.25	34.76	9	Projected
2027	797	445	2114	2098	3661	8317	5.53	40.30	10	Projected
2028	844	467	2225	2218	3860	8770	5.84	46.13	11	Projected
2029	895	490	2342	2346	4069	9247	6.16	52.29	12	Projected
2030	948	515	2464	2481	4290	9750	6.50	58.79	13	Projected
2031	1002	540	2589	2616	4513	10259	6.84	65.63	14	Projected
2032	1058	567	2720	2759	4748	10794	7.20	72.83	15	Projected
2033	1118	596	2857	2909	4995	11357	7.58	80.41	16	Projected
2034	1182	626	3001	3067	5255	11949	7.98	88.39	17	Projected
2035	1249	657	3153	3235	5528	12572	8.40	96.79	18	Projected
2036	1320	690	3312	3411	5815	13228	8.84	105.62	19	Projected
2037	1394	724	3479	3597	6118	13918	9.30	114.93	20	Projected
2038	1473	760	3655	3793	6436	14644	9.79	124.72	21	Projected
2039	1557	798	3840	3999	6771	15408	10.31	135.03	22	Projected
2040	1645	838	4034	4217	7123	16212	10.85	145.87	23	Projected
2041	1738	880	4237	4447	7493	17058	11.42	157.29	24	Projected
2042	1837	924	4451	4690	7883	17948	12.02	169.31	25	Projected

#### Table 5.4: Real Time Traffic From COD & Project Traffic Current Years For CMSA (TP-2: Jogipura)

VEAD			AADT in	Vehicles		CVPD	Μελ	CNASA	Voor	Pomarks
TEAR	LCV	Bus	2AT	3AT	MAV	(Veh.)	IVISA	CIVISA	rear	Remarks
2018	242	124	561	600	1077	2363	1.74	1.74	1	Actual
2019	258	131	594	638	1142	2505	1.85	3.59	2	Actual
2020	412	307	1356	1338	2404	5405	3.91	7.50	3	Actual
2021	438	323	1431	1418	2540	5711	4.13	11.63	4	Projected
2022	465	340	1509	1502	2684	6035	4.37	16.00	5	Projected
2023	493	357	1592	1591	2836	6377	4.62	20.62	6	Projected
2024	524	376	1680	1686	2996	6738	4.88	25.50	7	Projected
2025	556	396	1772	1786	3166	7120	5.16	30.66	8	Projected
2026	589	415	1865	1889	3338	7507	5.45	36.11	9	Projected
2027	624	436	1963	1998	3519	7916	5.75	41.86	10	Projected
2028	661	458	2066	2113	3710	8347	6.06	47.92	11	Projected
2029	701	481	2175	2234	3912	8801	6.40	54.32	12	Projected
2030	742	505	2289	2362	4124	9280	6.75	61.08	13	Projected
2031	784	530	2405	2491	4338	9764	7.11	68.18	14	Projected

# TECHNICAL DUE DILIGENCE REPORT

VEAD			AADT in	Vehicles		CVPD	NACA	CNASA	Veer	Domorka
TEAK	LCV	Bus	2AT	3AT	MAV	(Veh.)	IVISA	CIVISA	rear	Remarks
2032	829	557	2526	2627	4564	10273	7.48	75.66	15	Projected
2033	876	584	2654	2770	4801	10809	7.88	83.54	16	Projected
2034	926	614	2788	2921	5051	11373	8.29	91.83	17	Projected
2035	978	644	2928	3080	5314	11967	8.73	100.55	18	Projected
2036	1034	677	3076	3248	5590	12591	9.19	109.74	19	Projected
2037	1092	710	3232	3425	5881	13248	9.67	119.41	20	Projected
2038	1154	746	3395	3612	6186	13939	10.18	129.59	21	Projected
2039	1219	783	3566	3809	6508	14666	10.71	140.30	22	Projected
2040	1289	822	3746	4016	6846	15431	11.28	151.58	23	Projected
2041	1362	863	3935	4235	7202	16237	11.87	163.45	24	Projected
2042	1439	907	4134	4466	7577	17084	12.50	175.95	25	Projected

Based on the above actual traffic, estimated MSA for 10 years and 25 years are 40, 170 of TP1 respectively. Similarly estimated MSA for 10 years and 25 years of TP2 are 42, 175 respectively. Traffic considered in pavement design is more than estimated traffic based on actual traffic. Hence the pavement design adopted is found in order.

#### 5.3 Overlay during operation and maintenance

The pavement has been designed to cater traffic of 45 MSA and 185 MSA for a design life of 10 years for Bituminous layers (up to end of year 2027) and 25 years for granular layers respectively (up to end of year 2042), whereas the actual traffic is 40/42 MSA and 170/175 MSA for 10 years and 25 years respectively. This implies that pavement will be structurally adequate to cater the future traffic with periodic renewal carried out under the maintenance program.

However, it is recommended to carry out traffic survey, pavement condition and pavement strength evaluation before the end of Stage-I of design life (as per pavement design report) and prior to the end of concession period to evaluate the requirement of overlay.

# 5.4 Maintenance/ Overlay schedule

Periodic Maintenance includes Profile corrective course overlaid with the periodic renewal of the wearing course of BC. The detail maintenance schedule is summarized below.

Routine maintenance - Every year Periodic Renewal for Flexible Pavement – Proposed in the year 2024. Periodic Maintenance for Rigid Pavement – Re-texturing shall be done at least once in 10 years from construction. (As per IRC 58-2015).



#### CHAPTER 6. SAFETY AUDIT OF ROAD

#### 6.1 General

Road Safety Audit (RSA) is defined as "the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users".

Road Safety is a multi- sectorial and multi- dimensional issues. It incorporates the development and management of road infrastructure, provisions of safer vehicles, legislations and law enforcements, mobility planning, provisions of health and hospital services, child safety, urban land use planning.

A Key feature of a road safety audit is the use of a team of professionals with varied expertise. The team shall include highway safety engineers, highway design engineers, maintenance personal, and law enforcement. Additional specialties shall be added to the team as needed.

Central Road Research Institute (CRRI) has studied road safety elements extensively in the past and has come up with various manuals such as manual for safety in road design (1998), Road safety Audit Manual (2003) and Revised Road Safety Audit manual (2010). Indian Road Congress (IRC) has published Special provision SP-88, Manual on road Safety Audit. The methodology used for the design stage audit process is based on these manuals like Type Designs for Intersections on National Highways, 1992.

IRC Code No.	IRC Code Name
IRC: 35	Code of Practice for Road Markings
IRC: 38	Guidelines for Design of Horizontal curves for highways and Design tables
IRC: 67	Code of Practice for Road signs
IRC: 73	Geometric Design standards for rural highways (non-urban)
IRC:103	Guidelines for Pedestrian Facilities
IRC: SP-15	Ribbon Development along highways and its prevention
IRC: SP-23	Vertical curves for highways
IRC: SP-41	Guidelines on design of at-grade intersections in Rural and Urban areas
IRC: SP-55	Guidelines for safety in construction zones
IRC: SP- 88	Manual of Road Safety Audit

#### Table 6.1: Referred IRC Publications

#### 6.2 Road Safety Audit

During the site visit it is observed that all safety items are provided as shown in the following table

S. No.	Item Description	Status	Condition	
Road Fu	ırniture			
1	Sign Boards	Chevron Signs	Available as per site requirement	Good
		Village sign boards	Available as per site requirement	Good

Table 6.2: Road	l safety	audit	summary
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REPORT

S. No.	Item Description	Status	Condition		
		Information Poards	Available as per	Good	
			site requirement		
		Other Sign Beards	Available as per	Good	
		Other Sign Boards			
		Contry Sign Boords	Available as per	Good	
		Galitry Sigil Boards	site requirement		
n	Road Marking	Studs &Lane	Available as per	fair	
2	KUdu Ividi Kilig	marking	site requirement	Tall	
2	Metal Beam Crash	At High	Available as per	Eair	
5	Barriers	embankments	site requirement	Fair	

This Project Section is part of an important corridor. It is the Concessionaire's duty and responsibility to provide safe road for the commuters by assuring safe and hindrance free movement for both Traffic and Pedestrians along urban locations & habitations.



Km. 223+000

Km. 227+200



Km. 240+800

Km. 246+950



Km. 261+450

Km. 274+700

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Km. 286+550Km. 307+350Figure 6.1: Representative photos during road safety audit

# 6.3 Conclusion

Safety arrangements are made for road users along the Project road are found to be in conformity with project road requirements and good industry practice. However, a continuous monitoring on safety arrangements is highly appreciated during the maintenance period.

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### CHAPTER 7. TOLL PLAZA & HTMS

#### 7.1 General:

There are two toll Plazas on the project road at Km. 113+278 (Design Chainage) and Km. 165+197 (Design Chainage). Each side comprises of 4 normal lanes, 1 extra wide lane. The lane width in normal lanes was 3.2 m and extra wide lane was 4.5 m. The width of islands provided is 1.8 m. The single canopy is provided to cover the toll lanes. Toll plaza buildings are G+1 floor building which houses control room, UPS and Pantry.

#### 7.2 Tolling Equipment and Control Room Equipment

List of equipment provided at toll plaza and control room is given below.

S. No.	Name of Assets	Make	Units	TP-1	TP-2				
Admin	Building								
1	Main Server	Lenova	2	1	1				
2	24 Port Network Switch	D-Link	4	2	2				
3	INTERCOM "MASTER UNIT"	Aiphone	2	1	1				
4	NVR	HIKVISION	2	1	1				
5	LED TV	AOC/LG	4	2	2				
6	Surveillance Camera	HIKVISION	20	8	12				
7	Joystick		2	1	1				
8	Firewall System	Cyberroam	2	1	1				
9	GSM Modem		2	1	1				
10	Desktop Terminal	Dell/Lenova	26	16	10				
11	Canon Printer		8	6	3				
12	Scanner		4	2	2				
	Booth Equipment								
1	Combined Toll Lane Controller and AVC Controller	Metro	24	12	12				
2	MONITOR	Compaq	24	12	12				
3	CUSTMIZE KEYBOARD	CHERRY	24	12	12				
4	BARCODE READER	Symbol	24	12	12				
5	PRINTER	Epson	24	12	12				
6	INTERCOM "SALVE UNIT"	Aiphone	24	12	12				
7	WEB CAM	Logitech	24	12	12				
8	МВС	Metro	24	12	12				
9	BOOTH CAMERA	HIKVISION	28	18	18				
	Lane	Equipment							
1	Boom Barrier	Elka	24	12	12				
2	UFD		24	12	12				
3	Traffic Light		24	12	12				
4	LANE CAMERA	Vivotech	24	12	12				

#### Table 7.1: List of Equipment at Toll Plaza and Control Room

**TECHNICAL DUE DILIGENCE** 

REPORT

S. No.	Name of Assets	Make	Units	TP-1	TP-2
5	LPIC CAMERA	Vivotech	22	12	12
6	Sairan Alarm		24	12	12
7	OHLS		24	12	12
8	PTZ CAMERA (HIKVISION)	HIKVISION	4	2	2
9	WIM	ASBEE	20	10	10
10	SWB	Jyoti	4	2	2
11	Height Sensor Pair		24	12	12
12	RFID Reader	Zebra/Tag Master	20	10	10
13	RFID HHM Machine	Chainway	8	4	4
14	TMS HHM	Balaji	16	8	8

# 7.3 Vehicles

The list of vehicles, which were observed at site, for operation of Highway and Toll Plaza are presented below.

	Table 7.2: List of Vehicles										
S. No.	Vehicle Type	Make & Model	No.	VEHICLE Reg No	Other Material						
1	Patrol Vehicle										
	PAGARA TOLL	TATA CAMPER	1	MP 39 G 2840	WITHFIRE EXTINGUISHER 2 KG						
	JOGIPURA TOLL	TATA CAMPER	1	MP 39 G 2839	WITHFIRE EXTINGUISHER 2 KG						
2	Ambulance										
	PAGARA TOLL	MAHINDRA	1	MP 39 T 1270	OXYGEN CYLINDER 2 KG						
	JOGIPURA TOLL	MAHINDRA	1	MP 39 T 1275	OXYGEN CYLINDER 2 KG						
3	Crane										
	PAGARA TOLL	ASHOK LELYLAND	1	MP 04 HE 2173							
	JOGIPURA TOLL	ASHOK LELYLAND	1	MP 04 HE 2206							



Km. 113+278

Km. 165+197

Figure 7.1: Representative Photos of Toll Plazas

#### CHAPTER 8. TRAFFIC CENSUS AND TOLL REVENUE

#### 8.1 Traffic Census

In accordance with clause 22.1, the Concessionaire shall install, maintain and operate electronic/computerized traffic counters at each of the Toll Plazas and collect data relating to the number and types of vehicles using the Project Highway.

The Total traffic analysis and revenue calculations at the both toll plazas are replicated from the Traffic study report by Ramboll in month of February 2021.

The Concessionaire provided toll plaza wise details of 2020-21 based on the data available and the summarized AADT for the 2020-21 year is provided in **Table 8.1** below.

FY/Mode	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME	Total
TP01 at Pagara toll plaza								
FY21	3984	548	462	1357	1418	2534	3	10306
TP02 at Jogipura toll plaza								
FY21	3030	424	488	1178	1363	2409	3	8895

#### Table 8.1: Year wise Traffic (Vehicles) Details as per Toll plaza Data

#### 8.2 Tollable Traffic at both Toll plazas

The Tollable traffic Nos. at the both toll plazas are arrived based on the total traffic movement at both the toll plazas. The Summarized tollable traffic is presented in the below table:

FY/Mode	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME	Total
TP01 at Pagara toll plaza								
FY21	3369	521	437	1336	1380	2510	3	9555
TP02 at Jogipura toll plaza								
FY21	2709	409	464	1166	1342	2401	3	8493

#### Table 8.2: Summary of 2020-21 Tollable traffic at Toll Plaza

The figures shown in **Table 8.2** are actual tollable traffic (excluding exempted/non tollable traffic) based on which the toll revenue is collected.

Considering 2021 as the base year and traffic growth rates observed from Ramboll Traffic Survey Report, traffic projections for the balance concession period for both the toll plaza have been calculated and summarized below in **Table 8.3**.

#### Table 8.3: Details of Projected traffic

#### a) TP-1: Pagara toll plaza

FY Ending	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME	PCUs
2021	3,369	521	437	1,336	1,380	2,510	3	24,916
2025	4,886	613	541	1,628	1,544	3,114	4	30,978

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FY Ending	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME	PCUs
2030	7,048	728	661	2,013	1,746	4,033	5	39,572
2035	9,931	864	809	2,449	2,004	5,172	7	50,316
2040	13,227	983	946	2,852	2,224	6,323	8	61,260
2042	14,834	1,034	1,008	3,032	2,318	6,852	9	66,335

# b) TP-1: Jogipura toll plaza

FY Ending	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME	PCUs
2021	2,709	409	464	1,166	1,342	2,401	3	23,054
2025	3,929	481	574	1,414	1,499	2,973	4	28,510
2030	5,667	571	702	1,744	1,694	3,848	5	36,285
2035	7,986	679	858	2,122	1,945	4,935	7	46,015
2040	10,637	771	1,004	2,472	2,158	6,033	8	55,881
2042	11,929	812	1,069	2,628	2,250	6,538	9	60,446

# 8.3 Toll Revenue Calculations

The toll revenue for horizon year is calculated based on the input from the above data, actual toll rates collected on base year (2020-21) with calculated Traffic growth rates. The WPI growth and toll efficiency has been assumed 4% and 100% respectively and other inputs considered in revenue calculations is given in **Table 8.4**.

	Table 0.4. Details of Ton Revenue inputs									
Particular	Toll plaza 1	Toll plaza 2								
Location	Km. 113+278	Km. 165+197								
4 lane length in Kms.	51.7	41.8								
2 lane length in Kms.	0	0								
Agreement Date	21-09-2015	21-09-2015								
Appointed Date	19-03-2016	19-03-2016								
Concession period	26	26								
Commercial operation date	18-Jun-2018	18-Jun-2018								
Concession End Date	18-Mar-42	18-Mar-42								
Traffic study year	2020-21	2020-21								
Vehicle Type	AADT	AADT								
Car/Taxi/Van	3369	2709								
LCV	521	409								
Bus	437	464								
Truck (2-Axle)	1336	1166								
Truck (3-Axle)	1380	1342								
4 to 6 Axle	2510	2401								
Oversized Vehicle	3	3								

#### Table 8.4: Details of Toll Revenue inputs

The summarized Toll Rates for the both toll plazas used in toll revenue collection for year-wise is given in Table below:

# Table 8.5: Details of Toll Rates at each Toll Plaza

# a) TP-1: Pagara toll plaza

FY Ending	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME	Car Local
2021	70	110	230	230	250	360	440	275
2025	80	130	270	270	290	420	510	325
2030	100	160	330	330	360	520	635	400
2035	120	195	410	410	450	645	785	495
2040	150	245	510	510	555	800	970	615
2042	165	265	555	555	605	870	1060	670

# b) TP-1: Jogipura toll plaza

FY Ending	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME	Car Local
2021	60	95	195	195	215	305	370	275
2025	65	110	230	230	250	355	435	325
2030	85	135	280	280	305	440	540	400
2035	105	165	350	350	380	545	665	495
2040	130	205	435	435	470	680	825	615
2042	140	225	470	470	515	740	900	670

The split trip type based on the available toll data from Concessionaire is used to derive the annual toll collection for each plaza. The revenue estimated and presented below. Detailed toll revenue estimation is given in **ANNEXURE 4.** 

# Table 8.6: Details of Toll Revenue for both Toll Plaza Estimated (in Rs. Million)

Financial Year	Annual Revenue of TP1 (Km. 348+885)	Annual Revenue of TP2 (Km. 400+465)	Total (in mi.)
2020-21	670.445	532.844	1203.289
2021-22	779.017	621.322	1400.339
2022-23	863.869	685.037	1548.906
2023-24	927.812	740.000	1667.812
2024-25	1019.711	801.575	1821.286
2025-26	1111.037	876.500	1987.536
2026-27	1205.717	961.852	2167.569
2027-28	1329.353	1047.972	2377.325
2028-29	1465.294	1153.548	2618.842
2029-30	1605.289	1260.603	2865.893
2030-31	1740.217	1375.041	3115.259
2031-32	1914.871	1508.409	3423.279
2032-33	2089.688	1649.307	3738.995
2033-34	2292.409	1812.492	4104.900
2034-35	2512.280	1978.974	4491.254

Mrom XX **TECHNICAL DUE DILIGENCE** 

REPORT

Financial Year	Annual Revenue of TP1 (Km. 348+885)	Annual Revenue of TP2 (Km. 400+465)	Total (in mi.)
2035-36	2724.280	2154.305	4878.584
2036-37	2945.732	2314.566	5260.297
2037-38	3211.881	2518.738	5730.619
2038-39	3484.821	2727.348	6212.169
2039-40	3796.091	2989.819	6785.910
2040-41	4097.997	3231.273	7329.270
2041-42	4462.736	3498.821	7961.557



### **CHAPTER 9. OPERATION AND MAINTENANCE**

#### 9.1 General

As per Article 17 of CA, the Concessionaire will operate and maintain the Project roads by itself or through O & M Contractors and comply with specification and standards, and other requirements set forth in the Agreement, Good Industry Practice, Applicable Laws, applicable permits and manufacturer guidelines and instructions with respect to toll system.

#### 9.2 Inspection

Inspection system followed is illustrated as divided into the following 3 types.

- **Visual Inspection:** Visual inspections are done at frequent intervals, and are intended to determine any potential traffic hazards to the road user or hampering the aesthetics of the project stretch. Visual Inspections are meant to identify defects that constitute an imminent or immediate hazard to the public.
- **Detailed Inspection:** Detailed Inspections often require some measuring instruments, are done less frequently and are intended more towards determining performance and behavior of various elements. These inspections also indicate if there is any need for thorough inspections. Detailed inspections are carried out primarily to establish programs of periodic or major maintenance tasks, and enhancement requirements not requiring urgent execution
- **Thorough Inspection:** Thorough Inspections are aimed at finding the cause and remedy of specific problems and at specific locations. Specialist's inspections are required once in a while. Thorough Inspections shall be carried out with highly sophisticated instruments

The inspection procedures will assist in identifying the need for replacement or renewal under planned program of maintenance and rehabilitation. The elements viz. pavement, drainage, shoulders / slopes / Earthworks, structures and buildings are covered.

Maintenance program will be submitted to authority not later than 45 days prior to each accounting year.

#### 9.3 Operations

#### 9.3.1. Traffic Flow Operation & Traffic Management Plan

Following are the obligations of the Concessionaire for the regular and emergency operations of the Project road and Project Facilities.

- i. Permitting smooth and uninterrupted flow of traffic during normal operating conditions.
- ii. Functioning of the Toll System including charging and collecting the fees from the road user in accordance with the CA.
- iii. carrying out preventive and periodic maintenance of the Project road;
- iv. undertaking routine maintenance including prompt repairs of potholes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices;

**TECHNICAL DUE DILIGENCE** REPORT

- v. Undertaking major maintenance such as resurfacing of pavements, repairs to structures, and repairs and refurbishment of tolling system and other equipment;
- vi. Functioning of the lighting system;
- vii. Functioning of the Patrolling System
- viii. Functioning of rescue and medical aid services
- ix. Ambulance as and when required
- x. Functioning of the Project Facilities
- xi. Administrative, Operational and Maintenance Base Camp
- xii. Truck Lay byes
- xiii. Pickup Bus stops / Bus Bays
- xiv. protection of the environment and provision of equipment and materials therefor;
- xv. Operation and maintenance of all communication, control and administrative systems necessary for the efficient operation of the Project road
- xvi. complying with Safety Requirements in accordance with Article 18.

#### 9.4 Operation of Toll Plazas

There are two lanes in each direction operating at toll plaza, middle lanes are used by Car/LCV for collecting toll and extra wide lanes are utilized by wide vehicles like Bus/Trucks/Tractors and toll exempted vehicles. The cash collected is deposited on daily basis to the Escrow Account. In case of ETC system, Toll collection is connected with Network system and directly deposited into the Escrow account.

#### 9.5 Maintenance of Project road

The maintenance methodology and yearly maintenance programme will guide the Maintenance team to undertake the routine & periodic maintenance works of the Project Facilities. This programme is the basic indicator of the intended works to be carried out by the Maintenance Team over a period of one year.

Road maintenance can be carried out in four ways as listed below.

- i. Preventive Maintenance
- ii. Routine Maintenance
- iii. Periodic Maintenance
- iv. Special repairs

#### 9.5.1. Preventive Maintenance

Preventive maintenance is an organized, systematic process of applying a series of preventive treatments over the life of the pavement to minimize life cycle costs.

The strategy of applying periodic treatments at appropriate times in a pavement's life is economical than applying treatment at the end of pavement's life. Preventive maintenance is designed to retard pavement deterioration. Regular preventive maintenance will be carried out to ensure adherence to the Design Requirements and specifications throughout the Concession period.

The flexible pavement is in good condition and hence does not require any immediate or preventive interventions.

#### 9.5.2. Routine Maintenance

Routine maintenance, which involves repairing of cracks, replacement of safety girders along the highway, clearance of debris following accidents, ensuring functionality of sign posts, maintenance of a security set-up, and such other activities.

#### 9.5.3. Periodic Maintenance

In contrast to preventive maintenance treatments, periodic maintenance treatments are ideally applied on pavements to improve surface integrity and waterproofing, or to improve skid resistance, without increasing the strength of the pavement significantly. They are sometimes referred to as "functional overlays," as they are intended to restore or enhance the ability of the roadway to serve its purpose (function), but do not increase the load-carrying capabilities. If the pavement failure is more and demands for a "structural overlay" they are intended to increase load-carrying capabilities of the project road. The details of periodic maintenance schedule are given below.

Table 9.1: Schedi	lie and status of for Period	c Maintenance
	Calcal I. Sfaatstaa	C1 . 1

Description	Schedule of Major Maintenance	Status of Major Maintenance
1 st Periodic Maintenance	Overlay in the year 2024	Planned to execute
2 nd Periodic Maintenance	Overlay in the year 2030	Planned to execute
3 rd Periodic Maintenance	Overlay in the year 2036	Planned to execute
4 th Periodic Maintenance	Overlay in the year 2041	Planned to execute

#### 9.5.4. Special Repairs

The group of activities performed to restore the roadway following damage due to natural calamities such as heavy floods, sand storms, hurricanes, cyclones, earthquakes or landslides which shall be unpredictable. The affected Project road shall be rectified, and the system shall be restored to function as per programme prepared in consultation with Independent Engineer. Typical activities include,

- a. Culvert and bridge repairs
- b. Retaining wall repairs and construction;
- c. Construction of Diversions;
- d. Floodway repairs; and
- e. Flood damage restoration works, etc.

#### 9.6 Review of Test Reports

#### 9.6.1. Bump Integrator Test

Maintenance of road is dependent on several factors, one of which is the condition of Pavement surface. As such Roughness is the measurement of the riding quality, which in turn is the effect of total surface deterioration. Bump Integrator (BI) is one of the equipment needed for roughness measurement. The roughness of pavement surface is designated as uneven index value and expressed as surface roughness from which the condition of the road can be assessed.

The test was conducted in the month of September, 2020. As per Schedule K of CA, "If the stretch exceeds 3000mm in a KM shall be rectified". No stretch exceeds the permissible limit.



#### 9.6.2. Falling Weight Deflectometer (FWD)

The main objective of this study is to conduct Falling Weight Deflectometer (FWD) test for evaluation of strength (MR) of existing crust and propose overlay requirements, for strengthening of the road as per IRC: 115-2014- "Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique". Entire section (Km. 191.200 to Km. 97.700) of the project road has been considered as single homogeneous section. The FWD test was conducted in the month of March 2020. Based the FWD results the pavement performance is good, however 40 mm BC has been proposed for entire project to cater the further 50 MSA traffic. In the year 2021. CMSA from COD has reached 11.18 MSA and 11.63 MSA for HS-1 and HS-2 respectively.

#### 9.7 O&M Forecast

The O&M costs were estimated based on various parameters of CA, design reports and BBD/BI test results. The cost summary is given below, and detailed cost estimations are given in **ANNEXURE 5**.

Year	Routine maintenance	Incidental maintenance	Periodic / Major maintenance	Operation Expenses	Total cost per year
	( In crores)	( In crores)			
2020	1.417	0.604		8.45	10.47
2021	1.460	0.622		8.71	10.79
2022	1.504	0.641		8.97	11.11
2023	1.549	0.660		9.24	11.45
2024	1.595	0.680	49.61	9.51	61.40
2025	1.643	0.701		9.80	12.14
2026	1.692	0.722		10.09	12.51
2027	1.743	0.743		10.40	12.88
2028	1.795	0.766		10.71	13.27
2029	1.849	0.788		11.03	13.67
2030	1.905	0.812	109.61	11.36	123.69
2031	1.962	0.837		11.70	14.50
2032	2.021	0.862		12.05	14.93
2033	2.081	0.887		12.41	15.38
2034	2.144	0.914		12.78	15.84
2035	2.208	0.942		13.17	16.32
2036	2.274	0.970	130.21	13.56	147.02
2037	2.343	0.999		13.97	17.31
2038	2.413	1.029		14.39	17.83
2039	2.485	1.060		14.82	18.37
2040	2.560	1.091		15.27	18.92
2041	2.637	1.124	143.6	15.72	163.08
2042	2.716	1.158		16.20	20.07
2043	1.218	0.520		7.27	9.00
Total	47.213	20.131	433.03	281.57	781.94

Table 9.2: Proposed Plan for Future Operation & Maintenance Cost (In Crores)

### CHAPTER 10. REVIEW OF CONCESSION AGREEMENT

#### **10.1** Scope of Work (Article 2)

Article 2 provides the scope of work, which includes the following.

- Construction of the Project road on the Site set forth in Schedule-A and as specified in Schedule-B of CA together with provision of Project Facilities as specified in Schedule-C of CA, and in conformity with the Specifications and Standards set forth in Schedule-D of CA;
- Operation and maintenance of the Project road in accordance with the provisions of the Agreement;
- Performance and fulfillment of all other obligations of the Concessionaire in accordance with the provisions of the Agreement and matters incidental

#### 10.2 Letter of Award

After evaluation of the bids received, Authority will select one bidder considering their score in technical and financial bids. Further Authority will issue a Letter called LOA (Letter of Award) to the selected bidder requiring the execution of agreement within stipulated time. The issued LOA copy given in **ANNEXURE 6.** 

#### **10.3** Conditions precedent (Article 4)

#### Conditions precedent to be fulfilled by the Authority

- Providing adequate Right of Way
- Providing necessary approvals as per the Concession Agreement

#### Conditions precedent to be fulfilled by the Concessionaire

- Provide performance security to the Authority
- Executed and procured Escrow Agreement & Substitution Agreement
- Procured all applicable permits specified in Schedule E of CA
- Executed financing Agreements and delivering 3 copies of Financial Package
- Delivered to the Authority confirmation in original of the correctness of their representations and warranties set forth in Agreement and a legal opinion from the legal opinion from the legal counsel of the Concessionaire

#### **10.4** Major Obligations of the Concessionaire (Clause 5.1)

- The Concessionaire shall obtain necessary permits in conformity with the applicable laws
- Procure appropriate rights for obtaining materials
- Perform and fulfill its obligations under financing Agreements
- To make reasonable efforts to facilitate the acquisition of land required for execution
- Transfer the Project road upon termination of the Concession Agreement

#### **10.5** Obligations relating to the Competing Roads (Clause 6.3)

Neither Authority nor any Governmental Instrumentality shall construct the Competing Road before 10th Anniversary of the Appointed Date.

#### **10.6** Performance Security (Article 9)

- The Concessionaire shall submit the Performance security to the Authority within 180 days from the date of the Agreement,
- The Performance security shall remain in force and effect for a period of one year from the Appointed Date
- Performance Security shall be released upon the Concessionaire expending on Project Construction an Aggregate sum that is not less than 20% of the Total Project Cost.

#### 10.6.1. Tests (Clause 13.3)

For determining that the Project, conforms to the Maintenance Requirements, the Independent Engineer shall require the Concessionaire (Concessionaire shall in turn require the Contractor) to carry out, or cause to be carried out, tests specified by it in accordance with Good Industry Practice. One half of the costs incurred on such tests, and to the extent certified by the Independent Engineer as reasonable, shall be reimbursed by the Authority to the Concessionaire

#### **10.7** Provisional Completion Certificate (Clause 14.3)

• Upon completion of works in accordance with the specifications and standards set forth in the Schedule B, C and D of CA after determining the tests on completion successful the Independent engineer shall issue the Completion Certificate in the form set forth in Schedule J of CA. Provisional Completion Certificate given in **ANNEXURE 7**.

#### **10.8** Completion Certificate (Clause 14.4)

• Upon completion of Punch list items appended to the Provisional Completion Certificate within 90 days of issuance of Provisional Complete Certificate, Completion Certificate shall be issued to the Concessionaire. Completion Certificate given in **ANNEXURE 8**.

#### **10.9** Commercial Operation Date (COD) (clause 15.1)

- COD shall be the date on which the Provisional Completion Certificate is issued by the Independent Engineer.
- With COD the Project shall enter into commercial service and the Concessionaire is entitled to demand and collect Fee.

#### 10.10 Change of scope (Article 16)

Following Change of scope proposals were initiated during construction period and consented by the NHAI. Details are provided in **ANNEXURE 10.** 

#### 10.11 O&M Obligations of the Concessionaire (Clause 17.1)

- Permitting safe, smooth and uninterrupted flow of traffic on the Project road
- Collecting and appropriating the Fee
- Minimizing the disruption to traffic in the event of accidents
- Undertaking routine maintenance including prompt repairs of pot holes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices
- Undertaking major maintenance such as resurfacing of pavements, repairs and refurbishments of tolling system and other equipment
- Preventing any unauthorized use of the Project road.
- Protection of environment and provision of equipment and materials
- Complying with safety Requirements in accordance with the provisions of the CA.

#### **10.12** Maintenance Requirements (Clause 17.2)

The Contractor shall procure that at all times during the Operations period; the Project road conforms to the maintenance requirements set forth in Schedule K of CA (The "Maintenance Requirements").

#### 10.13 Maintenance Manual (Clause 17.3)

No later than 180 (one hundred and eighty days prior to the Scheduled Two Laning Date, the Contractor shall, in consultation with the Independent Engineer, evolve a repair and maintenance manual (the "**Maintenance Manual**") for the regular and preventive maintenance of the Project in conformity with the Specifications and Standards, Maintenance Requirements, Safety Requirements and Good Industry Practice, and shall provide 5 (five) copies thereof to the Authority and 2 (two) copies to the Independent Engineer. The Maintenance Manual shall be revised and updated once every 3 (three) years and the provisions of this Clause shall apply, mutatis mutandis, to such revision.

#### **10.14** Maintenance Programme (Clause 17.4)

- On or before COD and no later than 45 days prior to the beginning of each Accounting year during the Operation Period as the case may be the Concessionaire shall provide to the Authority and Independent Engineer its proposed annual Programme of preventive, urgent and the schedule maintenance.
- The Concessionaire has been submitting the Annual Maintenance Programme regularly as per the above clause.

#### 10.15 Damages for breach of Maintenance Obligations (Clause 17.8)

- In the event that the Contractor fails to repair or rectify any defect or deficiency set forth in the Maintenance Requirements within the period specified therein, it shall be deemed to be in breach of the Agreement and the Concessionaire shall be entitled to recover Damages, to be calculated and paid for each day of delay until the breach is cured, at the higher of the following.
- 0.5% (zero decimal five percent) of the Average Daily Fee, and



• 0.1% (zero decimal one per cent) of the cost of such repair or rectification as estimated by the Independent Engineer.

# **10.16** Monthly status reports (Clause 19.1)

During the Operation Period, the Contractor shall, no later than 7 (seven) days after the close of each month, furnish to the Concessionaire, the Authority and the Independent Engineer a monthly report stating in reasonable detail the condition of the Project including its compliance or otherwise with the Maintenance Requirements, Maintenance Manual, Maintenance Program and Safety Requirements, and shall promptly give such other relevant information as may be required by the Concessionaire, Independent Engineer or the Authority. In particular, such report shall separately identify and state in reasonable detail the defects and deficiencies that require rectification.

#### **10.17** Monthly Fee Statement (Clause 19.5)

During the Operations Period, the Contractor shall furnish to the Concessionaire and the Authority, if required by the Contractor, within 7 (seven) days of completion of each month, a statement of Fee substantially in the format set out in the Concession Agreement ("Monthly Fee Statement").

### **10.18** Concession Fee (Article 26)

- In consideration of the grant of Concession, the Concessionaire shall pay Concession Fee of Rs.1.00 per year during the Concession Period
- Concession Fee shall be paid in advance within 90 days of the commencement of the Accounting Year.
- Yearly the Concessionaire is paying the Concession Fee to the MPRDC.

#### 10.19 Toll fee (Clause 27.1.1)

Toll Fees shall be revised annually in accordance with Clause 27.2.1.

# 10.20 Change in Law (Article 41)

The Contractor acknowledges that the Contractor shall be responsible for any consequences arising from any Change in Law and the Contractor shall at its own costs and expenses, undertake the compliance with any such Change in Law, however, in the event any receivables are obtained by the Concessionaire from the Authority, towards the losses incurred by the Concessionaire on account of Change in Law, then the Contractor shall ensure that such receivables are passed to the Concessionaire.



# CHAPTER 11. INSURANCE

#### **11.1** Details of Insurance

As per clause 32.1 of the CA, the Concessionaire shall effect and maintain at its own cost during the Operation Period such insurances for such maximum sums as may be required under the Financing Agreements and the Applicable laws, and such insurances as may be necessary or prudent in accordance with Good Industry Practice. Insurance copies are provided in **ANNEXURE 9**. Accordingly, the Concessionaire has procured the following insurances for mitigating the risks

Name of	Insurance	Policy No	Effective	e Period	Description of the
the Policy	Company	POILCY NO	From	То	Property
Civil Engineering Completed Risk	National Insurance Company Ltd	321300441910001993	27.03.2020	26.03.2021	Road & Structure: Toll Building & Toll Booths, TMS, HTMS, Office &IT equipment, Electronic Equipment, Road Furniture, Fixtures, electrical Poles Lighting & Fittings, Sign boards & Safety Barrier
Policy Schedule for Money Insurance	The New India Insurance Co. Ltd	4501004819030000000 3	18.5.2020	17.5.2021	Money in safe(during and after business hours-Jogipura Toll Plaza
Policy Schedule for Money Insurance	The New India Insurance Co. Ltd	4501004820030000000 2	18.5.2020	17.5.2021	Money in safe(during and after business hours-Pagara Toll Plaza
Electronic Equipment Insurance Policy schedule	Oriental Insurance Company Ltd	171200/44/2021/51	7.10.2020	06.10.2021 7.9.2021	Electronic Equipment installed in the Project road
Employees Compensat ion Insurance Policy	HDFC ERGO General Insurance Company Ltd	3114203391761300000	18.5.2020	17.05.2021	All categories of Employees of the Contractor & sub- contractor engaged in the Project

Table	11.1:	Insurance	Details
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Strem X TECHNICAL DUE DILIGENCE REPORT

#### CHAPTER 12. CONCLUSION

#### 12.1 General

Based on detailed site inspection, review of various documents and reports as described in the preceding chapters technical over view of the Project is provided below.

#### **12.2** Pavement Condition

The Pavement condition for the overall project is good. RCC drains are constructed in Built up locations and earthen drains in rural locations which facilitates, effective drainage system along the project road. Shoulder condition is fair.

#### **12.3** Condition of Structures

General condition of Bridges is good. No major structural defects were noticed. General condition of Culverts is good. Observed vegetation growth in vents of Box and Hume Pipe culverts and they are being cleared during routine maintenance period.

#### **12.4** Project Facilities

There are two toll Plazas on the project road at Km. 113+278 and Km. 165+197. Toll plaza buildings are G+1 floor building which houses control room, UPS and Pantry. Bus bays are in fair condition. Medical Aid posts found functional. Avenue plantation and landscaping at Toll Plaza is provided and being maintained well. Highway lighting is provided at as per highway requirements and the same is found functional.

#### 12.5 Road safety

Pavement marking is in fair condition and number of sign boards are provided as per IRC SP 73. The condition of sign boards & other road appurtenances like metal beam crash barriers is fair.

#### **12.6** Traffic Growth

Based on real time, traffic data was extracted from Schedule N of CA, the traffic growth observed at toll plaza is good, whereas calculated growth rates are considered while evaluating forecast of traffic volumes.

#### 12.7 Maintenance

Routine maintenance is being carried out by O&M contractor effectively, based on documents reviewed, time to time observations made by client/Authority are being complied and no outstanding NCR's are to be attended as on date. Major maintenance (MM) /Periodic maintenance was carried recently and next MM is scheduled in the year 2024.

#### 12.8 Epilogue

The project is designed and constructed as per the stipulated specifications besides maintenance work, being carried out timely and effectively to keep the road in traffic worthy and safe at all times.

# **Annexure 1: Pavement Condition**

Condition: G=Good, F=Fair, P=Poor & VP=Very poor, Rutting: M=Moderate & S=Severe

Drain: LD=Lined open Drain, ULD=Unlined Drain, CD=Covered Drain, NO=No drain, PF=Partial Function, F= Functional

# LHS carriageway pavement condition survey data

Chainag	ge (Km.)			Pavement	Condition			Ridin	g Quality	Davoment	Should	ler		Road Side D	rain
From	То	Cracking (%)	Ravelling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (KMPH)	Condition (G/F/P /VP)	Edge Drop (cm)	Composition	Condition (G/F/P/VP)	Embankment Condition (G/F/P)	Type (LD/ULD/CD/NO)	Condition (PF/F)
223	224	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
224	225	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
225	226	0	0	0	0	М	0		F	0	PS	F	F	LD	F
226	227	2	0	0	2	М	0		F	0	PS	F	F	ULD	PF
227	228	0	0	0	0	S	0		F	0	PS	F	F	ULD	PF
228	229	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
229	230	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
230	231	0	0	0	0	S	0		F	0	PS	F	F	ULD	PF
231	232	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
232	233	0	0	0	0	М	0		F	0	PS	F	F	LD	F
233	234	0	0	0	0	М	0		F	0	PS	F	F	LD	F
234	235	3	0	0	0	М	2		F	0	PS	F	F	ULD	PF
235	236	0	0	0	0	М	8		F	0	PS	F	F	ULD	PF
236	237	0	0	0	0	М	0		F	0	PS	F	F	LD	F
237	238	0	0	0	0	М	0		F	0	PS	F	F	LD	F
238	239	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
239	240	0	0	0	0	М	2		F	0	PS	F	F	ULD	PF
240	241	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
241	242	0	0	0	0	М	0		F	0	PS	F	F	LD	F
242	243	0	0	0	0	М	0		F	0	PS	F	F	LD	F
243	244	0	0	0	0	М	0		F	0	PS	F	F	LD	F
244	245	0	0	0	0	М	0		F	0	PS	F	F	LD	F
245	246	2	0	0	0	М	0		F	0	PS	F	F	LD	F
246	247	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
247	248	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
248	249	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
249	250	0	0	0	0	М	0		F	0	PS	F	F	LD	F
250	251	0	5	0	0	М	5		F	0	PS	F	F	LD	F
251	252	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
252	253	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
253	254	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF

Chaina	ge (Km.)			Pavement	Condition			Ridin	ng Quality	Devement	Should	der		Road Side D	rain
From	То	Cracking (%)	Ravelling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (KMPH)	Condition (G/F/P /VP)	Edge Drop (cm)	Composition	Condition (G/F/P/VP)	Embankment Condition (G/F/P)	Type (LD/ULD/CD/NO)	Condition (PF/F)
254	255	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
255	256	0	0	0	0	М	3		F	0	PS	F	F	ULD	PF
256	257	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
257	258	0	0	0	0	М	2		F	0	PS	F	F	ULD	PF
258	259	0	0	0	0	М	0		F	0	PS	F	F	LD	F
259	260	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
260	261	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
261	262	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
262	263	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
263	264	0	0	0	0	М	2		F	0	PS	F	F	ULD	PF
264	265	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
265	266	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
266	267	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
267	268	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
268	269	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
269	270	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
270	271	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
271	272	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
272	273	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
273	274	0	0	0	0	М	0		F	0	PS	F	F	LD	F
274	275	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
275	276	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
276	277	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
277	278	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
278	279	0	0	0	0	М	0		F	0	PS	F	F	LD	F
279	280	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
280	281	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
281	282	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
282	283	0	0	0	0	М	0		F	0	PS	F	F	LD	F
283	284	0	0	0	0	М	0		F	0	PS	F	F	LD	F
284	285	0	0	0	0	М	0		F	0	PS	F	F	LD	F
285	286	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
286	287	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
287	288	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
288	289	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF



Chaina	ge (Km.)			Pavement	Condition			Ridir	ng Quality	Devenuent	Shoul	der		Road Side D	rain
From	То	Cracking (%)	Ravelling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (KMPH)	Condition (G/F/P /VP)	Edge Drop (cm)	Composition	Condition (G/F/P/VP)	Embankment Condition (G/F/P)	Type (LD/ULD/CD/NO)	Condition (PF/F)
289	290	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
290	291	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
291	292	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
292	293	0	0	0	0	М	0		F	0	PS	F	F	LD	F
293	294	0	0	0	0	М	3		F	0	PS	F	F	LD	F
294	295	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
295	296	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
296	297	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
297	298	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
298	299	0	0	0	0	М	0		F	0	PS	F	F	LD	F
299	300	0	0	0	0	М	0		F	0	PS	F	F	LD	F
300	301	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
301	302	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
302	303	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
303	304	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
304	305	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
305	306	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
306	307	0	0	0	0	М	0		F	0	PS	F	F	LD	F
307	308	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
308	309	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
309	310	0	0	0	0	М	0		F	0	PS	F	F	LD	F
310	311	0	0	0	0	М	0		F	0	PS	F	F	LD	F
311	312	0	0	0	0	М	0		F	0	PS	F	F	LD	F
312	313	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
313	314	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
314	315	0	0	0	0	М	0		F	0	PS	F	F	LD	F
315	316	0	0	0	0	S	0		F	0	PS	F	F	LD	F
316	317	0	0	0	0	М	0		F	0	PS	F	F	LD	F



#### RHS carriageway pavement condition survey data

Chaina	age (Km.)		•	Pavement	Condition			Ridir	ng Quality	Pavement	Shou	lder		Road Side Dr	ain
From	То	Cracking (%)	Ravelling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (KMPH)	Condition (G/F/P /VP)	Edge Drop (cm)	Composition	Condition (G/F/P/VP)	Embankment Condition (G/F/P)	Type (LD/ULD/CD/NO)	Condition (PF/F)
223	224	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
224	225	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
225	226	0	0	0	0	М	0		F	0	PS	F	F	LD	F
226	227	0	0	0	0	М	5		F	0	PS	F	F	ULD	PF
227	228	0	0	0	0	М	5		F	0	PS	F	F	ULD	PF
228	229	0	0	0	3	М	5		F	0	PS	F	F	ULD	PF
229	230	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
230	231	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
231	232	0	0	0	0	М	3		F	0	PS	F	F	ULD	PF
232	233	0	0	0	0	М	0		F	0	PS	F	F	LD	F
233	234	0	0	0	0	М	2		F	0	PS	F	F	LD	F
234	235	3	0	0	0	М	0		F	0	PS	F	F	ULD	PF
235	236	0	0	0	0	М	3		F	0	PS	F	F	ULD	PF
236	237	0	0	0	0	М	0		F	0	PS	F	F	LD	F
237	238	0	0	0	0	М	0		F	0	PS	F	F	LD	F
238	239	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
239	240	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
240	241	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
241	242	0	0	0	0	М	0		F	0	PS	F	F	LD	F
242	243	0	0	0	0	М	0		F	0	PS	F	F	LD	F
243	244	0	0	0	0	М	0		F	0	PS	F	F	LD	F
244	245	0	0	0	0	М	0		F	0	PS	F	F	LD	F
245	246	2	0	0	0	М	0		F	0	PS	F	F	LD	F
246	247	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
247	248	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
248	249	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
249	250	3	5	0	0	М	0		F	0	PS	F	F	LD	F
250	251	0	0	0	0	М	0		F	0	PS	F	F	LD	F
251	252	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
252	253	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
253	254	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
254	255	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
255	256	3	0	0	5	М	5		F	0	PS	F	F	ULD	PF
256	257	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
257	258	0	0	0	0	М	3		F	0	PS	F	F	ULD	PF



# Mren **

Chaina	age (Km.)			Pavement	Condition			Ridir	ng Quality	Pavement	Shou	lder		Road Side D	rain
From	То	Cracking (%)	Ravelling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (KMPH)	Condition (G/F/P /VP)	Edge Drop (cm)	Composition	Condition (G/F/P/VP)	Embankment Condition (G/F/P)	Type (LD/ULD/CD/NO)	Condition (PF/F)
258	259	0	0	0	0	М	2		F	0	PS	F	F	LD	F
259	260	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
260	261	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
261	262	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
262	263	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
263	264	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
264	265	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
265	266	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
266	267	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
267	268	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
268	269	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
269	270	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
270	271	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
271	272	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
272	273	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
273	274	0	0	0	0	М	0		F	0	PS	F	F	LD	F
274	275	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
275	276	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
276	277	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
277	278	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
278	279	0	0	0	0	М	0		F	0	PS	F	F	LD	F
279	280	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
280	281	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
281	282	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
282	283	0	0	0	0	М	0		F	0	PS	F	F	LD	F
283	284	0	0	0	0	М	0		F	0	PS	F	F	LD	F
284	285	0	0	0	0	М	0		F	0	PS	F	F	LD	F
285	286	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
286	287	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
287	288	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
288	289	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
289	290	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
290	291	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
291	292	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
292	293	0	0	0	0	М	0		F	0	PS	F	F	LD	F
293	294	0	0	0	0	М	0		F	0	PS	F	F	LD	F

# Mren **

Chaina	age (Km.)			Pavement	Condition			Ridir	ng Quality	Pavement	Shou	lder		Road Side Di	rain
From	То	Cracking (%)	Ravelling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (KMPH)	Condition (G/F/P /VP)	Edge Drop (cm)	Composition	Condition (G/F/P/VP)	Embankment Condition (G/F/P)	Type (LD/ULD/CD/NO)	Condition (PF/F)
294	295	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
295	296	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
296	297	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
297	298	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
298	299	0	0	0	0	М	0		F	0	PS	F	F	LD	F
299	300	0	0	0	0	М	0		F	0	PS	F	F	LD	F
300	301	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
301	302	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
302	303	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
303	304	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
304	305	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
305	306	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
306	307	0	0	0	0	М	0		F	0	PS	F	F	LD	F
307	308	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
308	309	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
309	310	0	0	0	0	М	0		F	0	PS	F	F	LD	F
310	311	0	0	0	0	М	0		F	0	PS	F	F	LD	F
311	312	0	0	0	0	М	0		F	0	PS	F	F	LD	F
312	313	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
313	314	0	0	0	0	М	0		F	0	PS	F	F	ULD	PF
314	315	0	0	0	0	М	0		F	0	PS	F	F	LD	F
315	316	0	0	0	0	М	0		F	0	PS	F	F	LD	F
316	317	0	0	0	0	М	0		F	0	PS	F	F	LD	F



# Mren **

Mrom X

TECHNICAL DUE DILIGENCE REPORT

S.	Chainage	Type of	Sub-	Super-	Wearing	Bearings	Quadrant	Тое
No	(Km.)	Structure	structure	structure	coat	Dearings	Pitching	wall
1	226+094	Minor Bridge	Good	Good	Good	-	Good	Good
2	230+216	Minor Bridge	Good	Good	Good	-	Good	Good
3	235+261	Minor Bridge	Good	Good	Good	-	Good	Good
4	237+524	Minor Bridge	Good	Good	Good	-	Good	Good
5	237+937	Minor Bridge	Good	Good	Good	-	Good	Good
6	238+639	Minor Bridge	Good	Good	Good	-	Good	Good
7	239+196	Minor Bridge	Good	Good	Good	-	Good	Good
8	240+715	Minor Bridge	Good	Good	Good	-	Good	Good
9	245+053	Minor Bridge	Good	Good	Good	-	Good	Good
10	245+807	Minor Bridge	Good	Good	Good	-	Good	Good
11	249+196	Minor Bridge	Good	Good	Good	-	Good	Good
12	250+57	Minor Bridge	Good	Good	Good	-	Good	Good
13	255+499	Minor Bridge	Good	Good	Good	-	Good	Good
14	262+322	Minor Bridge	Good	Good	Good	-	Good	Good
15	262+538	Minor Bridge	Good	Good	Good	-	Good	Good
16	265+53	Minor Bridge	Good	Good	Good	-	Good	Good
17	267+054	Minor Bridge	Good	Good	Good	-	Good	Good
18	269+304	Minor Bridge	Good	Good	Good	-	Good	Good
19	270+019	Minor Bridge	Good	Good	Good	-	Good	Good
20	271+197	Minor Bridge	Good	Good	Good	-	Good	Good
21	272+657	Minor Bridge	Good	Good	Good	-	Good	Good
22	272+657	Minor Bridge	Good	Good	Good	-	Good	Good
23	276+213	Minor Bridge	Good	Good	Good	-	Good	Good
24	278+557	Minor Bridge	Good	Good	Good	-	Good	Good
25	278+949	Minor Bridge	Good	Good	Good	-	Good	Good
26	280+885	Minor Bridge	Good	Good	Good	-	Good	Good
27	283+323	Minor Bridge	Good	Good	Good	-	Good	Good
28	287+083	Minor Bridge	Good	Good	Good	-	Good	Good
29	289+963	Minor Bridge	Good	Good	Good	-	Good	Good
30	291+244	Minor Bridge	Good	Good	Good	-	Good	Good
31	299+404	Minor Bridge	Good	Good	Good	-	Good	Good
32	308+274	Minor Bridge	Good	Good	Good	-	Good	Good
33	310+564	Minor Bridge	Good	Good	Good	-	Good	Good
34	311+847	Minor Bridge	Good	Good	Good	-	Good	Good
35	234+951	Major Bridge	Good	Good	Good	Good	Good	Good
36	257+942	Major Bridge	Good	Good	Good	Good	Good	Good

Annexure 2: Condition of Bridges/Underpass

Shrow

S. No	Chainage (Km.)	Type of Structure	Sub- structure	Super- structure	Wearing coat	Bearings	Quadrant Pitching	Toe wall
37	293+929	Major Bridge	Good	Good	Good	Good	Good	Good
38	310+744	Major Bridge	Good	Good	Good	Good	Good	Good
39	311+256	Flyover	Good	Good	Good	Good	-	-
40	315+291	Flyover	Good	Good	Good	Good	-	-
41	225+301	PUP/CUP	Good	Good	Good	-	-	-
42	232+911	PUP/CUP	Good	Good	Good	-	-	-
43	237+091	PUP/CUP	Good	Good	Good	-	-	-
44	244+576	VUP	Good	Good	Good	-	-	-
45	250+153	VUP	Good	Good	Good	-	-	-
46	255+935	PUP/CUP	Good	Good	Good	-	-	-
47	259+926	VUP	Good	Good	Good	-	-	-
48	273+147	VUP	Good	Good	Good	-	-	-
49	277+581	PUP/CUP	Good	Good	Good	-	-	-
50	298+791	PUP/CUP	Good	Good	Good	-	-	-
51	306+01	PUP/CUP	Good	Good	Good	-	-	-
52	309+601	VUP	Good	Good	Good	-	-	-

Shoom XX

**TECHNICAL DUE** 

**DILIGENCE REPORT** 

Project: Four Laning of Guna- Biora Section of NH-3 from Km. 332.100 to Km. 426.100 in the state of Madhya Pradesh under NHDP Phase IV to be executed on BOT(Toll) Mode on DBFOT

# **Annexure 3: Condition of Culverts**

#### Condition of Box/Slab culverts

S. No.	Chainage	Condition	Return wall	Quadrant pitching	Toe wall	Parapet wall
1	224+900	Good	Good	Good	Good	Good
2	226+912	Good	Good	Good	Good	Good
3	231+970	Good	Good	Good	Good	Good
4	238+839	Good	Good	Good	Good	Good
5	242+534	Good	Good	Good	Good	Good
6	273+479	Good	Good	Good	Good	Good
7	282+856	Good	Good	Good	Good	Good
8	284+738	Good	Good	Good	Good	Good
9	286+083	Good	Good	Good	Good	Good
10	287+986	Good	Good	Good	Good	Good
11	288+706	Good	Good	Good	Good	Good
12	293+231	Good	Good	Good	Good	Good
13	295+641	Good	Good	Good	Good	Good
14	312+499	Good	Good	Good	Good	Good
15	313+044	Good	Good	Good	Good	Good
16	313+354	Good	Good	Good	Good	Good
17	314+356	Good	Good	Good	Good	Good
18	314+583	Good	Good	Good	Good	Good

#### **Condition of Pipe culverts**

S. No.	Chainage	Hume Pipe	Head wall	Quadrant pitching	Toe wall
1	223+510	Good	Good	Good	Not visible
2	224+205	Good	Good	Good	Not visible
3	226+524	Good	Good	Good	Not visible
4	227+838	Good	Good	Good	Not visible
5	228+199	Good	Good	Good	Not visible
6	228+746	Good	Good	Good	Not visible
7	229+031	Good	Good	Good	Not visible
8	229+801	Good	Good	Good	Not visible
9	231+501	Good	Good	Good	Not visible
10	232+271	Good	Good	Good	Good
11	233+351	Good	Good	Good	Good
12	234+605	Good	Good	Good	Good
13	235+533	Good	Good	Good	Good
14	235+931	Good	Good	Good	Not visible
15	236+521	Good	Good	Good	Not visible

Shrow

S. No.	Chainage	Hume Pipe	Head wall	Quadrant pitching	Toe wall
16	240+201	Good	Good	Good	Good
17	241+688	Good	Good	Good	Good
18	244+032	Good	Good	Good	Good
19	244+931	Good	Good	Good	Good
20	245+932	Good	Good	Good	Good
21	246+810	Good	Good	Good	Good
22	247+861	Good	Good	Good	Good
23	248+746	Good	Good	Good	Good
24	249+451	Good	Good	Good	Good
25	250+835	Good	Good	Good	Good
26	251+091	Good	Good	Good	Good
27	252+987	Good	Good	Good	Good
28	253+971	Good	Good	Good	Good
29	254+767	Good	Good	Good	Good
30	255+221	Good	Good	Good	Not visible
31	255+341	Good	Good	Good	Not visible
32	257+081	Good	Good	Good	Good
33	257+496	Good	Good	Good	Not visible
34	258+846	Good	Good	Good	Good
35	259+651	Good	Good	Good	Good
36	261+270	Good	Good	Good	Not visible
37	262+833	Good	Good	Good	Not visible
38	263+331	Good	Good	Good	Not visible
39	265+991	Good	Good	Good	Good
40	266+881	Good	Good	Good	Good
41	267+481	Good	Good	Good	Good
42	270+455	Good	Good	Good	Not visible
43	271+041	Good	Good	Good	Not visible
44	272+115	Good	Good	Good	Not visible
45	273+155	Good	Good	Good	Good
46	274+646	Good	Good	Good	Good
47	275+506	NV		Good	Good
48	275+855	Good	Good	Good	Good
49	277+196	NV		Good	Good
50	278+012	Good	Good	Good	Good
51	278+349	Good	Good	Good	Good
52	279+281	Good	Good	Good	Good
53	279+841	Good	Good	Good	Good
54	280+706	Good	Good	Good	Good
55	283+441	Good	Good	Good	Good

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S. No.	Chainage	Hume Pipe	Head wall	Quadrant pitching	Toe wall
56	285+741	Good	Good	Good	Good
57	286+741	Good	Good	Good	Good
58	287+241	Good	Good	Good	Good
59	288+338	Good	Good	Good	Good
60	290+041	Good	Good	Good	Good
61	291+461	Good	Good	Good	Good
62	292+911	Good	Good	Good	Good
63	296+701	Good	Good	Good	Good
64	297+227	Good	Good	Good	Good
65	297+650	Good	Good	Good	Good
66	298+811	Good	Good	Good	Good
67	300+031	Good	Good	Good	Good
68	300+271	Good	Good	Good	Good
69	302+667	Good	Good	Good	Good
70	303+041	Good	Good	Good	Good
71	306+641	Good	Good	Good	Good
72	307+486	Good	Good	Good	Good
73	309+590	Good	Good	Good	Good
74	310+341	Good	Good	Good	Good
75	311+264	Good	Good	Good	Good
76	314+813	Good	Good	Good	Good
77	315+201	Good	Good	Good	Good



**DILIGENCE REPORT** 

# **Annexure 4: Toll Revenue Calculations**

### Toll Plaza-I & II:

1. Tollable Traffic considered for Toll Revenue in No.s (AADT):

	Traffic (AADT)	Traffic (AADT)					
venicie rype	Km. 113+778	Km. 165+197					
Car/Taxi/Van	3369	2709					
LCV	521	409					
Bus	437	464					
Truck (2-Axle)	1336	1166					
Truck (3-Axle)	1380	1342					
4 to 6 Axle	2510	2401					
Oversized Vehicle	3	3					

# Table-1: Details of Tollable Traffic (Base Year 2020-21)

#### 2. Traffic Growth Rates

#### Table-2: Details of Growth rates adopted

Vehicle Type	Cars	Bus	LCV	2-AT	3-AT	MAV
2022.00	12.00	8.50	5.10	7.50	4.90	8.20
2023-25	9.00	4.50	3.80	5.60	3.70	6.10
2026-30	7.60	4.10	3.50	4.60	2.80	5.60
2031-35	7.10	4.10	3.50	4.00	2.80	5.10
Beyond 2035	5.90	3.20	2.60	3.10	2.10	4.10

#### 3. Trip Distribution Ratio as per the Toll Data.

**Table-3: Details of Trip Distribution** 

A) TP-1: Km. 113+778 at Pagara for Base Year 2020-21 (in %)

Category	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME
Normal Toll	95.8	85.8	99.6	100.0	100.0	100.0	100.0
Daily Pass	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monthly Pass	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Local Personal Concessions	4.1	0.0	0.0	0.0	0.0	0.0	0.0
Local Commercial	0.0	14.2	0.4	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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Category	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME
Normal Toll	99.4	99.3	100.0	100.0	100.0	100.0	100.0
Daily Pass	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monthly Pass	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Local Personal Concessions	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Local Commercial	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

B) TP-2: Km. 165+197 at Jogipura for Base Year 2020-21 (in %)

#### 4. Toll Rates :

Table-4: Details of Toll Fee (Base Year 2020-21)

Vehicle Type	Km. 348+885	Km. 400+465
Car/Taxi/Van	70	60
LCV	110	95
Bus	230	195
Truck (2-Axle)	230	195
Truck (3-Axle)	250	215
4 to 6 Axle	360	305
Oversized Vehicle	440	370

Note: Local personal car passes: Rs.275

# Toll Plaza-1 Toll Revenue (in Rs. million per year):

Financial Year(FY)	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME	Total
2021	78.673	18.432	34.706	106.277	119.367	312.533	0.457	670.445
2022	92.943	20.436	40.589	123.142	134.734	366.640	0.533	779.017
2023	108.522	22.250	44.221	135.571	147.938	404.777	0.591	863.869
2024	118.648	24.086	48.229	145.723	154.905	435.566	0.655	927.812
2025	137.557	27.011	53.216	160.432	163.443	477.331	0.722	1019.711
2026	157.233	28.949	57.449	171.794	174.032	520.779	0.799	1111.037
2027	169.230	31.160	61.941	186.114	187.704	568.692	0.876	1205.717
2028	193.308	33.583	67.999	205.306	199.534	628.654	0.969	1329.353
2029	218.955	35.764	74.068	224.696	213.859	696.887	1.065	1465.294
2030	247.980	39.484	79.514	242.377	229.406	765.350	1.180	1605.289
2031	265.643	42.240	86.539	263.530	245.655	835.320	1.289	1740.217
2032	299.543	45.062	94.259	286.771	266.731	921.085	1.420	1914.871
2033	335.167	49.248	101.935	309.820	283.834	1008.130	1.553	2089.688
2034	375.282	53.804	111.769	339.396	306.015	1104.443	1.701	2292.409



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Financial Year(FY)	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME	Total
2035	419.394	57.264	120.772	366.377	329.215	1217.388	1.871	2512.280
2036	463.905	61.699	131.075	397.246	348.285	1320.030	2.040	2724.280
2037	509.559	66.215	139.609	422.690	373.693	1431.758	2.208	2945.732
2038	581.005	71.103	150.551	455.379	397.114	1554.337	2.393	3211.881
2039	637.285	76.199	162.051	489.690	421.353	1695.640	2.603	3484.821
2040	700.129	81.736	176.336	532.348	451.729	1850.981	2.834	3796.091
2041	764.107	87.051	188.598	568.816	480.673	2005.674	3.078	4097.997
2042	861.298	92.822	203.811	614.111	511.921	2175.426	3.346	4462.736

Toll Plaza-2 Toll Revenue (in Rs. million per year):

Financial Year(FY)	Car	LCV	Bus	2-axle Truck	3-axle Truck	MAV	O/size/HME	Total
2021	55.976	13.405	31.276	78.682	99.799	253.322	0.384	532.844
2022	66.134	14.868	36.716	91.515	113.007	298.625	0.456	621.322
2023	72.089	16.242	40.287	101.472	122.515	331.929	0.503	685.037
2024	85.355	17.748	44.225	109.380	128.972	353.764	0.555	740.000
2025	92.788	19.250	48.184	118.672	136.801	385.265	0.616	801.575
2026	107.515	20.827	52.341	127.615	143.974	423.549	0.680	876.500
2027	123.947	22.496	56.757	139.047	153.698	465.159	0.750	961.852
2028	133.737	24.317	61.616	151.675	164.302	511.498	0.827	1047.972
2029	153.073	26.106	66.427	164.304	177.465	565.266	0.906	1153.548
2030	174.998	28.056	71.712	178.227	188.618	617.989	1.003	1260.603
2031	187.429	30.117	78.651	195.286	203.435	679.030	1.094	1375.041
2032	213.124	32.377	84.883	210.558	219.534	746.729	1.204	1508.409
2033	240.277	35.715	92.456	229.121	235.142	815.279	1.316	1649.307
2034	270.879	38.162	100.758	249.456	252.086	899.701	1.451	1812.492
2035	304.614	40.736	109.586	271.051	269.794	981.609	1.585	1978.974
2036	338.871	44.441	118.262	292.228	287.118	1071.657	1.729	2154.305
2037	357.900	46.775	126.715	312.812	307.148	1161.343	1.872	2314.566
2038	396.242	50.657	135.932	335.240	328.712	1269.913	2.043	2518.738
2039	437.865	54.710	147.385	363.132	347.188	1374.859	2.211	2727.348
2040	503.701	57.698	159.868	393.507	371.248	1501.387	2.410	2989.819
2041	552.424	61.916	170.206	418.550	398.115	1627.438	2.623	3231.273
2042	606.690	66.480	183.460	450.703	422.899	1765.748	2.841	3498.821


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Financial Year(FY)	Total Revenue (Without	Total Revenue (With
ending March	POS & WIM)	POS & WIM)
2021	1203.289	1216.646
2022	1400.339	1415.883
2023	1548.906	1566.099
2024	1667.812	1686.325
2025	1821.286	1841.503
2026	1987.536	2009.598
2027	2167.569	2191.629
2028	2377.325	2403.713
2029	2618.842	2647.911
2030	2865.893	2897.704
2031	3115.259	3149.838
2032	3423.279	3461.278
2033	3738.995	3780.498
2034	4104.900	4150.465
2035	4491.254	4541.107
2036	4878.584	4932.737
2037	5260.297	5318.687
2038	5730.619	5794.229
2039	6212.169	6281.124
2040	6785.910	6861.233
2041	7329.270	7410.625
2042	7961.557	8049.931

# Toll Plaza-1 &2 Total Revenue (in Rs. million per year):

Note: The Total traffic analysis and revenue calculations at the both toll plazas are replicated from the Traffic study report by Ramboll in month of February 2021.



# Annexure 5: Operation & Maintenance cost

# Routine Maintenance cost for 1 year

S No.	Item		Unit	No	Frequency per year	Quantity	Rate	Amount	Remarks
1	General Cleaning in Carriageway & Shoulders Rural area	Monthly	Kms.	103.3	12	4	350	17,35,440	04 Nos. of Labour
2	General Cleaning in Carriageway & Shoulders Urban area	Twice in a month	Kms.	8.5	24	4	350	2,85,600	04 Nos. of Labour
3	Watering in Median Plants	Once in Week	Kms.	94.8	52	1	1939	95,58,494	01 Nos. of Labour
4	Watering in Avenue plants	Once in Week	Kms.	0	52	0	1939		
5	Median Maintenance (Grass cutting and plant trimming)	Once in Month	Kms.	94.8	12	0	21000		02 Nos. of Labour - 2 x 350 = 700 x 30 = 2,52,000
6	ROW Cleaning	Half yearly	Kms.	51.65	2	5	350	1,80,775	5 Nos. of labour per KM (50% of the Project length)
7	Cleaning of Culverts	Half yearly	Nos.	95	2	2	650	2,47,000	3 Nos. of Labour along with JCB or Excavator
8	Road Furniture Cleaning	Quarterly	Kms.	103.3	4	2	350	2,89,240	02 Nos. of Labour
9	Maintenance of Bus shelters	Monthly	Nos.	22	6	2	350	92,400	2 Nos./ Bus shelter/month
10	General Cleaning in Building & Facilities	Daily	Nos.	5.00	6	60	350	6,30,000	02 Nos. of Labour for 30 days
11	Bridges	Half yearly	Nos.	48	2	2	350	67,200	02 Nos. of Labour for removal of vegetation/ Structure
								1,30,86,149	

Doc No.RU-DD Report-Guna-Biora/01



**TECHNICAL DUE DILIGENCE REPORT** 

S No.	Item		Unit	No	Frequency per year	Quantity	Rate	Amount	Remarks
	EQUIPMENT SUPPLY								
1	TRUCK TIPPER 6-8 CUM CAPACITY	Monthly	Nos.	1	12	1	5000	60,000	Considered Rs5000/- maintenance
2	Water Tanker Cap 12 KL for Median	Monthly	Nos.	1.0	12	1	5000	60,000	Considered Rs5000/- maintenance
3	Tractor Mounted Water tanker Cap 6 KL for RoW	Monthly	Nos.		12		160000		(800000 is the cost of vehicle, considering 20% Rental per year) including maintenance
4	Mechanical Sweeper	Monthly	Nos.	1	12	1	62500	7,50,000	(2500000 is the cost of vehicle, considering 20% Rental per year) including maintenance
5	Grass cutter	Monthly	Nos.	1.0	12	0	12000	600	(12000/year)
6	Manhoise/ Skyscraper	Monthly	Nos.		12		400000		(2000000 is the cost of vehicle, considering 20% Rental per year) including maintenance
7	Bikes	Monthly	Nos.	3.0	12	0.200	2500	6,000	Per Supervisor/Per Month
8	Building Maintenance	Yearly			12	1			
9	Toll plaza AMC	Yearly	Nos.		12	2	5000	1,20,000	5000/month
								9,96,600	

1	Patrolling vehicle	Monthly	Nos.	12	2	5000	10000	Considered Rs5000/- maintenance
2	Ambulance	Monthly	Nos.	12	2	5000	10000	Considered Rs5000/- maintenance



**TECHNICAL DUE DILIGENCE REPORT** 

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: - Per toll plaza)

90,000

Total Routine Maintenance: 1,41,72,749.00

## Incidental cost for 1 year

S. No.	Item		Unit	No	Frequency	Quantity	Rate	Amount	Remarks
1	Road marking	Half yearly	Sq.m.	1	1	6430.46	516	33,18,119	5 % of Total Project length on B/S for 1 year
2	Carriageway Maintenance ( Pot Holes etc. )	Yearly	Sq.m	1	1	1475.68	168	2,47,914	2.5% of Flexible Pavement
3	Maintenance of Earthen Shoulder	Half yearly	Cu.m.	1	3	774.75	225	5,22,956	2.5% of total Shoulder length throughout the project
4	Sign Board	Quarterly	Km.	1	1	19	4000	76,000	2.5 % of Total sign boards per half year ( considered 750 Nos. )
5	МВСВ	Monthly	RMT			198	2400	4,75,200	2% of Total qty. per year - (considered 2400 per number)
6	Mile Stone (KM Stone/HM Stone	Quarterly	Nos.	103.3	4	52	2250	4,68,000	10 % of total stones per



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S. No.	ltem		Unit	No	Frequency	Quantity	Rate	Amount	Remarks
	/ ROW stone etc.)								year (unable to understand the backup)
7	ROW Fencing ( If available)	Quarterly	Kms.	0	4	0	1000		5 % of total ROW fencing per year
8	Kerb	Yearly	Kms.	187000	1	3740.0	250	9,35,000	1 % of total Kerbings per year
9	Electrical Poles	Yearly	Nos.	2673		80	55000		3 % of total poles per year
10	Replacement of Rigid pavement Panels	Yearly	Ls	1	1	0.00	4000		Considered 1% of the total volume
11	Providing Reinforced cement concrete crash barrier at the edges of the bridge structures constructed with M-40 grade concrete with HYSD-Fe 500 TMT reinforcement concrete per Rmt. conforming to IRC:21 and fixing with dowel bars 16 mm dia. to old concrete using epoxy grout as per drawing and Technical Specifications and as directed by the Engineer.	Yearly	RMT	0		0	3985		3% of Length replacement in every 5 years (Quantity to be estimated)
		Total am	ount for '	l Year				60.43.189	
		lotal amo	ount for :	L Year				60,43,189	

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S.NO.	PARTICULARS	Amount
1	Man Power	₹ 2,20,68,000
2	Fuel for Generator & Vehicles	₹ 4,49,88,000
3	Insurances	₹ 27,67,484
4	AMC	₹ 10,00,000
5	Electricity	₹ 1,32,00,000
6	Stationary	₹ 5,00,000
	Total Amount	₹ 8,45,23,484

Summary of Major Maintenance

Description	Due date	Base cost	Esc Period	Escallation Rate per Year	Cost of MMR on due date @ 3% Escalation	In crores
Date of Estimation	30-01-2021					
1st Major Maintenance - Highway	01-04-2024	45,26,78,236	3.20	3.0%	49,61,35,347	49.61
2nd Major Maintenance - Highways	25-05-2030	85,69,99,981	9.30	3.0%	1,09,61,02,975	109.61
1st Major Maintenance - Structures	23-05-2036	3,54,62,112	15.30	3.0%	5,17,39,222	5.17
3rd Major Maintenance - Highways	25-05-2036	85,69,99,981	15.30	3.0%	1,25,03,62,972	125.04
4th Major Maintenance - Highways	25-05-2041	85,69,99,981	20.30	3.0%	1,37,89,12,969	137.89
2nd Major Maintenance - Structures	22-05-2041	3,54,62,112	20.30	3.0%	5,70,58,539	5.71
		•		Total	₹ 4,33,03,12,023	433.03



S.		l lucit	OLIANITITY	DATE	
No.	DESCRIPTION	Unit	QUANTITY	KATE	AMOUNT
	Chapter 4. Pavement (Asphalt & Concrete)				
	Providing and applying tack coat with Rapid Setting Bitumen Emulsion using emulsion				
1	pressure distributor on the prepared bituminous/granular surface cleaned with mechanical			-	
	broom,Ref. to Technical specification 503.				
(a)	On Bituminous surface @ 2.0 kg to 3.0 kg/10 sq.m.	Sqm	19,67,574.50	14.00	2,75,46,043
	Providing and laying bituminous concrete using a batch type Hot Mix Plant using crushed				
	aggregates of size (table 500-17), premixed with VG Grade Bitumen and filler, transporting				
2	the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the	Cum		7.382.00	
	required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem			,	
	rollers, Pneumatic Tyre Rollers to achieve the desired compaction as per Technical				
	specification clause No. 507 and mix design conforming the IRC -111 and IRC 37.				
3	Micro sufacing	Sqm	19,67,574.50	185.00	36,40,01,283
	<u>Total</u>				39,15,47,326
	Chapter 9 Junctions, Traffic Signs Marking and Other Appurtenances			-	
	Providing and laying of cement concrete kerb without channel (M-20 Grade) over WMM				
1	foundation using kerb laying machine & proper curing complete, as per drawing & technical	Rmt		380.00	
	specification clause no.409, 1700 and as per the instructions of Employer's representative.				
	Providing and laying lane markings of hot applied thermoplastic compound 2.5 mm thick				
2	including reflectorizing glass beads @ 250 gms per sqm area, thickness of 2.5 mm is	Sam	1 28 609 25	466.00	5 99 31 911
2	exclusive of surface applied glass beads as per IRC:35. The finished surface to be level,	Sqiii	1,20,005.25	400.00	3,33,31,311
	uniform and free from streaks and holes, Ref. to Technical specification 803.				
3	Road Studs	Nos	2,180.00	550.00	11,99,000
	<u>Total</u>			-	6,11,30,911
	Grand Total				45,26,78,236

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## Annexure 6: Letter of Award

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण दूरभाष / Phone : 91-11-25074100/25074200 that / Fax : 91-11-25093507 / 25093514 (सड़क परिवहन और राजमार्ग मंत्रालय) National Highways Authority of India (Ministry of Road Transport and Highways) जी-5 एवं 6, सेक्टर-10, द्वारका, नई दिल्ली-110075 G-5 & 6, Sector-10, Dwarka, New Delhi-110075 Original NHAI/MP/BOT/Guna-Bioara/11012/02/2014 / 68307 29th June, 2015 To, M/s Dilip Buildcon Ltd Plot no. 5. Inside Govind Narayan Singh Gate, Chuna Bhatti, Kolar Road, Bhopal-462016 Four laning of Guna-Biaora section of NH-3 from Km 332.100 to Km 426.100 in the State of Madhya Sub: Pradesh under NHDP Phase-IV to be executed in BOT (Toll) mode on DBFOT basis.-LOA.

#### Ref : 1. NHAI's letter no. NHAI/MP/BOT/Guna-Biaora/11012/02/2014 dated 24.04.2015. 2. Your Bid submitted on 22.06.2015.

#### Sir,

Consequent upon NHAI's letter mentioned at reference no. 1, wherein you were informed of having been qualified in terms of the requirements of the Request for Qualification (RFQ) document and eligible to submit the Request for Proposal (RFP) in respect of the Project of "Four laning of Guna-Biaora section of NH-3 from Km 332.100 to Km 426.100 in the State of Madhya Pradesh under NHDP Phase-IV to be executed in BOT (Toll) mode on DBFOT basis" and considering your proposal in this regard submitted on 22.06.2015 vide Ref. 2, NHAI hereby accepts your proposal, quoting a grant amounting to Rs 27.00 Cr (Rupees twenty seven crores only) (i.e. 2.67% of TPC) as included in Appendix-1 of your Bid Document(i.e. Price Bid) and declares you as the "Selected Bidder" as per provision of RFP Documents. Please note that the amount of grant quoted by you shall be dealt in accordance with the provisions of RFP Documents. The Concession Period is 26 (Twenty Six) years including Construction Period of 910 (Nine Hundred Ten) days from the "Appointed Date".

In accordance with the clause 3.3.5 of the RFP document (Volume – I), you are requested to sign the duplicate copy of the LOA and return the same as your acknowledgment within 07(seven) days of receipt of LOA. Thereafter, you are required to execute the Concession Agreement within 45 (Forty Five) days from the date of issue of LOA as specified in clause 1.3 of RFP.

3. Further, as per RFP documents, you are required to incorporate a Special Purpose Vehicle (SPV) solely for the purpose of domiciling the project (the "Concessionaire"). The Concessionaire for due and faithful performance of its obligations during the Construction Period shall furnish a Performance Security by way of an irrevocable and unconditional Bank Guarantee of Rs. 50.65 Crores (Rupees Fifty Crores and Sixty Five Lakhs Only) within the period of the 180th day from the date of signing of the Concession Agreement. Till the time the Concessionaire provides NHAI with the Performance Security, the Bid Security shall remain in full force and effect (refer Clause 4.1.2 and Clauses of Article-9 of RFP–Vol-II).

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 You are required to comply with all the terms and conditions set forth in the RFQ and the RFP documents. In case of any default on your part, you shall be liable for action as stated in the Bid Documents.

Yours faithfully,

(Atul Kumar) Chief General Manager (Tech)

Copy to following for information:

- iii) RO Bhopal, E-2/167, Arera Colony, Bhopal
- iv) PD PIU Guna

## **Annexure 7: Provisional Certificate**

aarvee associates architects engineers & consultants pvt. ltd. An ISO 9001:2008 Certified Company

> Letter No. AA/HW/2040/18-19/1837 Date: 17th Junie, 2018.

To The Authorised Signatory, M/s Jalpa Devi Tollways Ltd., Village: Gader, District: Guna, Madhya Pradesh.

- Sub: Four laning of Guna Biaora section from Km 332.100 to Km 426.100 (Package-II) of NH-3 in the State of Madhya Pradesh to be executed on BOT (Toll) on DBFOT pattern under NHDP Phase-IV – Reg: Provisional Certificate – Issued.
- Ref: 1. RO, NHAI, Bhopal Letter No. NHAI/RO-MP/Guna/Conss./Guna-Biaora/2018/31519, dated 05.06.2018.
  - 2. Our Letter No. AA/HW/2040/18-19/1405, dated 30.05.2018.
  - Concessionaire's Letter No. Jalpa Devi/IE/GUNA-BIARO/BOT/2018-2019/926, dated 23.05.2018.
  - 4. Our Letter No. AA/IE/G-B/2040/18-19/716,dated 05.05.2018.
  - Concessionaire's Letter No. Jalpa Devi/IE/GUNA-BIARO/BOT/2018-2019/887, dated 20.04.2018.

#### Dear Sir,

Pursuant to the provisions of Clause 14.3.2 of the Concession Agreement and concurrence of Authority for issuance of Provisional Certificate for a part length of 90 km of the Project Highway, vide letter no. 31519, we are pleased to issue 'Provisional Certificate' upon substantial completion of part length of 90 km of the Project Highway, duly appended with the Punch List (List-A) containing the list of minor works to be completed within 90 days of issuance of Provisional Certificate and List-B, the works, to be taken-up as and when land is made available and to be completed within a reasonable time as assessed by the Independent Engineer.

We wish you all the best.



c. List-B

Copy to:

- 1. The General Manager-MP, NHAI HQ, Delhi.
- 2. The Project Director, PIU, NHAI, Guna.
- 3. The Authorised Signatory, M/s Jalpa Devi Tollways Ltd., Village: Gader, District: Guna.
- 4. The Team Leader, Aarvee Associates Architects Engineers & Consultants Pvt. Ltd., Guna.

Ravula Residency, Srinagar Colony Main Rd., Hyderabad – 500 089, India. Tel: +91-40-23737633.48483456; Fax: +91-40-23736277; email: aarvee@aarvee.net; web: www.aarvee.com CIN: U74200TG2005PTC045491

TECHNICAL DUE

## PROVISIONAL CERTIFICATE

- We, Aarvee Associates Architects Engineers & Consultants Pvt. Ltd., acting as Independent Engineer, under and in accordance with the Concession Agreement dated 21st Sep'15 (the "Agreement"), for Four-Laning of the Guna – Biaora section of NH-3 from Km 332.100 to Km 426.100 in the state of Madhya Pradesh under NHDP Phase IV to be executed on BOT (Toll) mode on DBFOT basis (the "Project Highway") through M/s. Jalpa Devi Tollways Limited, hereby certify that the Tests specified in Article 14 and Schedule-I of the Agreement have been undertaken to determine compliance of a part of the Project Highway (96.25%) with the provisions of the Agreement.
- 2. Construction Works that were found to be incomplete and/or deficient have been specified in the Punch List appended hereto, and the Concessionaire has agreed and accepted that it shall complete and/or rectify all such works in the time and manner set forth in the Agreement. (Some of the incomplete works have been delayed as a result of reasons attributable to the Authority or due to Force Majeure and the Provisional Certificate cannot be withheld on this account. Though the remaining incomplete works have been delayed as a result of reasons attributable to the Concessionaire), we are satisfied that having regard to the nature and extent of such incomplete works, it would not be prudent to withhold commercial operation of the Project Highway, pending completion thereof.
- 3. In view of the foregoing, we are satisfied that the Project Highway from Km 97.700 to Km 119.200, Km 120.000 to Km 130.600, Km. 131.300 to Km. 184.200 and Km 185.000 to Km 190.000 for an aggregate length of 90.000 km can be safely and reliably placed in commercial service of the Users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into commercial operation on this the 18th day of June 2018.

ACCEPTED, SIGNED, SEALED AND DELIVERED

For and on behalf of CONCESSIONAIRE by

(Signature)

Dileep Singh Project Manager M/s. Jalpa Devi Tollways Limited SIGNED, SEALED AND DELIVERED

For and on behalf of INDEPENDENT ENGINEER by



Vice President-Operations (Highways) Aarvee Associates Architects Engineers & Consultants Pvt. Ltd. 8-2-5, Ravula Residency Srinagar Colony Main Road Hyderabad

Shrow XX **TECHNICAL DUE DILIGENCE REPORT** 

	PUNCH LIST	(LIST)	(N.	
1.1	MINOR OUTSTANDING WORKS TO BE COMPLETED W	VITHI	N 90 DAYS	OF PROVISIONAL CERTIFICATE
1	Description of Item	Unit	Quantity	Remarks
	Slope Dressing with Turfing	Ĕ	14.642	At identified locations
		Ĕ.	14,350	Balance Drain to be constructed
	Earthen Drain	Enti	re Project ighway	Sectioning of Earthen Drain (Median and Sid drains) to proper dimensions.
	Replacement of damaged covers over lined drains	Rm	200	At identified locations
	Rectification of Line and Level of covers over I ned drains	R	800	At identified locations
	To rectify the median walls at 'Open to Sky' locations of structures.	No.	27	At locations of PUP/VUP/Minor Bridges
	Provide Covers at 'Open to Sky' locations in Medians	No.	10	At locations of PUP/VUP
	Installation of cantilever overhead sign boards	No.	4	1) Bypasses
0.00	Completion of Balance Works at Bus Shelter	No.	22 (BHS)	<ol> <li>Hand rail</li> <li>Litter Bins</li> <li>Prcper shade for passengers</li> <li>Balance Bus Shelters to be Constructed.</li> </ol>
	Protection works for structures	No.	10	List Enclosed
1.000	Provision of Saucer drain at RE wall	Ę.	6.03	At all RE wall Locations

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TECHNICAL DUE DILIGENCE REPORT

	PUNCH LIST	(LIST	(H-	
1 1	MINOR OUTSTANDING WORKS TO BE COMPLETED V	NTHI	N 90 DAYS	OF PROVISIONAL CERTIFICATE
10000	Description of Item	Unit	Quantity	Remarks
	Rectification of line and level of concrete crash barrier and Metal Beam Crash Barrier	Rm	1.931	At Identified locations
	Avenue Plantation in balance locations to be done and casualties to be replaced	No.	1720	Along the Project Highway
	Median Plantation in balance locations to be done and casualties to be replaced	No.	996	Along the Project Highway
	ROW Cleaning	Km.	21.740	Along the Project Highway
	Landscaping	Km,	39.000	At Median Openings.
11111	Vent Clearance and numbering of Structures	No.	137	At all MNBs/MJBs/Culverts
10000	Slope Protection works in high embankment locations	Rm	810	At identified locations
1 St 2	Road Boundary stones	No.	20	<ol> <li>Replacement / rectification of missing / damaged</li> <li>Painting in all the Bouncary Stones</li> </ol>
10.00	Provision of MBCB in locations of depressed rr edian	Km.	74,658	As per decision of Interpretation committee on BHS (if required). To be completed with reasonable time of decision.
	Balance works at Truck Lay Bye	No.	4	Water Supply connection
1	Footpath on Service Road	Km.	15.8	At Km. 115.850 to Km. 122.100 and Km.158.800 to Km. 160.453 (BHS)

TECHNICAL DUE

	PUNCH LIST	(LIST	(N-	
	MINOR OUTSTANDING WORKS TO BE COMPLETED M	VITHI	N 90 DAYS	OF PROVISIONAL CERTIFICATE
å	Description of Item	Unit	Quantity	Remarks
0	Rectification of RE Wall	Atio	dentified cations	
-	Extension and Painting of Kerb at Median Openings	No.	39	At a l median openings
2	Hand Rall on Major / Minor Bridges	Rm	4	At MJB at Km. 109.911, Km. 110.220, Km. 132.900 and Km. 168.888
3	Provision of MBCB/Kerb in depressed median at all VUP and PUP approaches	No.	4	Shall be completed within 30 days from PCOD
4	Crash Barrier indicators over concrete crash barrier	As	per Site uirement	At a I CCB and NJB locations alorg the Project Highway. (At Start, Middle and End Locations)
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## **Annexure 8: Completion Certificate**

achitects engineers & consultants pvt. ltd. An ISO 9001:2015 Certified Company

> Ref: AA/HW/2040/18-19/5368 Dated: 05th November 2018

To, The Project Manager, M/s Jalpa Devi Tollway Ltd., Village – Gader, P.O. Guna Cant., Tehsil & District - Guna (M.P) – 473 001.

- Sub: Four laning of Guna-Biaora section from Km. 332.100 to Km. 426.100 of NH-3(package-2) in the State of Madhya Pradesh to be executed on BOT (Toll) on DBFOT pattern under NHDP Phase-IV Reg: Issuance of Completion Certificate
- Ref: 1. Authority's Letter no. NHAI/RO-MP/Guna/Conss./Guna-Biaora/2018/32899, dated 03.11.2018.
  - Authority's Letter no. NHAI/PIU/Guna/Guna-Biaora/COD/2018/16617, dated 31.10.2018.
     Our Letter no. AA/HW/NHAI/2040/18-19/4983, dated 23.10.2018.
  - 4. Concessionaire Letter no. JalpaDevi/IE/GUNA-BIAORA/BOT/2018-19/1028, dated 10.10.2018.
  - 5. Concessionaire Letter no. JalpaDevi/IE/GUNA-BIAORA/BOT/2018-19/1025, dated 29.09.2018.
  - 6. Concessionaire Letter no. JalpaDevi/IE/GUNA-BIAORA/BOT/2018-19/1012, dated 14.09.2018.
  - 7. Concession Agreement dated 21st September 2015.

Dear Sir,

Pursuant to the provisions of Clause 14.2 of the Concession Agreement and upon concurrence of the Authority for issuance of Completion Certificate for the Project Highway, vide letter no. 32899, we are pleased to issue 'Completion Certificate' for the above Project Highway w.e.f. 15.09.2018.

As undertaken by you, vide letter no. 1028 cited, you will complete the COS works by the Scheduled Project Completion Date as per the COS Orders dated 20.12.2017 & 19.06.2018. In-case of failure to complete the same within the aforesaid timelines, you will be liable to pay damages, as per the provisions of Clause 12.4.2 of Concession Agreement. Further, you shall complete the hindered works expeditiously, as and when the same is cleared.

We wish you all the best in your future assignments,

With best regards, for Aarvee Associates Architects Engineers & Consultants Pvt. Ltd.

TAG K. V. S. Prasad Authorised Signator

Encl: Completion Certificate for the Project Highway

Copy to:

- 1. The Regional Officer, NHAI, Regional Office, Bhopal.
- 2. The General Manager-MP, NHAI HQ, Delhi.
- 3. The Project Director, PIU, NHAI, Guna.
- 4. The Team Leader, Aarvee Associates Architects Engineers & Consultants Pvt. Ltd., Guna.

Ravula Residency, Srinagar Colony Main Rd., Hyderabad – 500 082, India. Tel: +91-40-23737633, 48483456; Fax: +91-40-23736277; email: aarvee@aarvee.net; web: www.aarvee.com CIN: U74200TG2005PTC045491

**TECHNICAL DUE** 

DILIGENCE REPORT

## COMPLETION CERTIFICATE

- 1. We, Aarvee Associates Architects Engineers & Consultants Pvt. Ltd., acting as Independent Engineer, under and in accordance with the Concession Agreement dated 21st Sep'15 (the "Agreement"), for Four-Laning of Guna Biaora section of NH-3 from Km 332.100 to Km 426.100 in the state of Madhya Pradesh under NHDP Phase IV to be executed on BOT (Toll) mode on DBFOT basis (the "Project Highway") through M/s. Jalpa Devi Tollways Limited, hereby certify that the Tests specified in Article 14 and Schedule-I of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and we are satisfied that the Project Highway can be safely and reliably placed in commercial service of the Users thereof.
- It is certified that, in terms of the aforesaid Agreement, all works forming part of Four-Laning have been completed, except the works issued under COS and some works which are hindered, and as such the entire Project Highway was placed in commercial operations by 15th day of September 2018.

SIGNED, SEALED AND DELIVERED

For and on behalf of the INDEPENDENT ENGINEER by:

(Signature) os (1)

K V S Prasad Vice President-Operations (Highways) Aarvee Associates Axentects Engineers & Consultants Pvt. Ltd. 8-2-5, Ravula Residency Srinagar Colony Main Road Hyderabad

# **Annexure 9: Insurance**

ELI	Lonn	Long Service Services						and the second diversion of
Policy No	: 171:	200/44/2021/51		Prev Polic	cy No :			
Cover Note No	ER1	700203544		Cover Not	e Dt 💠	07/10/2020		
Insured's Code	: 116	613802		Issuing Of	fice Code	: 171200		
Insured's Name	: Jaip	adevi Tollways Lto	I. (GSTIN:	Issuing Of	fice Name	: CBU Vadodara	(GSTIN: 24AAA	CT06
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Tel /Fax /Email	: BHO	0RALA 462016		Tel /Fax /E	Email :	0265-2427075 / 02 171200@orientalir	265-2436654 /	
Agent/Broker I	Details							
Dev.Off.Code	:							
Agent/Broker	: LCO	000000179 (1149)	UNISON INSUF	RANCE BROK	ING SERV	ICES P LTD		
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Period of Insuran	ce : FR	OM 00:00 ON 07	/10/2020 TO MI	DNIGHT OF 06	8/10/2021			
Collection No & D		LINDCSH 3214	001027 - 13/10/	2020 GS		NO :2419569443	UIN :0	
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Section I : 1 Location of th 1 Location of th SI Descriptio No. Items 1 AS PER LIS Deductible / E Excess : (a) For equipmen 1) For PC : 5 2) For Equipm (i) Equipment (ii) Winche : : : : : : : : : : : : : : : : : : :	EEI - E ne Risk n of ST xcess fo t with va % of clai ment oth ent (othe ster Driv	EQUIPMENT : AS PER LIST Four Laning of Km 332.100 to in the state of Phase-IV to be DBFOT Basis MADHYA PR/ Manufacturer Name AS PER LIST or : AS PER LIST Iue upto Rs. 1 lake im amount subject er than PC : r than Winchester e and/or Hard Dis- rated document (P d will be sent by p g the Policy please 485.	RISK I ATTACHED f Guna- Biaora s o Km 426.100 Madhya Pradec e executed in BC ADESH - 47300 Year of Manufacture 2018 ATTACHED Continuum of I Drive and/or Ha c-10% of claim s c-10% of claim s colicy Schedule). ost.	DETAILS Dection of NH-3 sh under NHDF OT (Toll) Mode 1 Annual Maintenance Contract Rs.2500/- ard Diac)- 5% o amount subject .The No.	s i from on Identifica AS PER L f claim ame to a minim The Orien	tion No. Escalatio %	6,40,7 on Sum 1 6,40	5,692



**TECHNICAL DUE** 

**DILIGENCE REPORT** 

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**TECHNICAL DUE DILIGENCE REPORT** 

THE NEW INDIA ASSURANCE CO. LTD. (Government of India Undertaking)





POLICY SCHEDULE FOR MONEY INSURANCE

insured's	Name	1:	MS JALPA D	EV	1 10	LLWAYS LTD.			110				
		In	sured's Detai	18	_		-		ls	51	ing Office Deta	ils	
Custome	r ID	:	PO69450874					Office Code	_	÷	BHOPAL DO-1	(450100)	
Address			PLOT NO. 6, NARAYAN SI CHUNA BHA BHOPAL MA	INS NG TTI DH	SIDE IH G , KO	GOVIND ATE, LAR ROAD, PRADESH, 4820	16	Address			C.D.U I , BLC PARYAVAS BH BHOPAL,4620	ICK NO 3, IIND FLOOR, IAWAN, ARERA HILLS, 11	
Phone No		1.		-				Phone No		:	07554203271/	07554203272	
E-mail/Fa	x	:	db@dilipbuild	loar	1.00.	in, /		E-mail/Fax		:	nia.450100@ne 07554203274	windia.co.in /	
PAN No		:	AADCJ55280	3				S.Tax Regn. No		:	AAACN4165CS	57178	
GSTIN/UI	N	:	23AADCJ552	66	1ZT	/NA		GSTIN		:	23AAACN4165	C1ZZ	
		:						SAC		:	997139 (Other excl Ri)	non-life insurance services	
				-		P	olicy	Details					
Policy Nu	mber	1:	45010048200	30	0000	0001		Business Source (	Code	_			
Period of	Insurance	:	From: 18/05/ 17/05/2021 1	1:5	0 12	00:01 AM To: PM		Dev.Off. level/Broker/Corp. Agent/Web Aggreg	gator		GLOBAL INSU PRIVATE LTD 112700 AON C (SI00062348)	RANCE BROKERS . + (1D5140053) SLOBAL INSURANCE	
Date of P	roposal	:	18-May-20					Agent/Bancassura Specified Person	ince/	:			
Prev. Pol	icy no.	:	45010048190	30	0000	0003		Phone No		;	02261485661, 9819676655 / NA		
Client Ty	pe	:	Non-Corpora	le				E-mail/Fax		:	girish.prabhu@globelinsurance.co.in,		
Prer	mium(₹)	Γ	GST(T)	_		Total(₹)		Total (	tin w	01	rds)	Receipt No. & Date	
2	7500		4950			32450		RUPEES THIRTY-TWO THOUSAND FOUR HUNDRED FIFTY ONLY 7 - 18/05/2		4501008120000000056 7 - 18/05/20			
Location	n Details			:	JO DIS	GIPURA TOLL P	LAZA	VILLAGE JOGIPUR	RA PO	5	T KOTRA TEHSI	L CHACHODA	
Money in business	n safe (durin s hours)	g ar	nd after	:	70	00000							
Money I	n 1111	-		:	70	00000				-			
SECTION	V-1												
SI. No.			Sub Section	ons			Sing fc Tra	gle Carrying Limits Single Carrying Limits for - Cash/Coln/ avelers Cheques/ Bank drafts			s Single Carrying Limit for - Any other (Specify)		
1.	Section 1 A salaries and direct trans premises fr the bank by employee/ premises ow whilst there business ho locked safe premises. provide for from the pr	- M d otil it from y the s of r oth ours or l Che suc	oney for the her earning o om the bank the time the s insured or t the insured or the place of d til paid out p such cash s ocked strong ques drawn t h cash are co ses to the Ba	pay to cas he unt lisb rov hall provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provide provid	yme or pe the sh is auti il de burse ideo be ideo be red	nt of wages, etty cash in insureds is received at horized allivered at the ement and d that out of secured in on the insured to in transit		1500000			0	0	
2.	from the premises to t     Section 1 B - Money (o     above) in the personal     the authorized employ     in direct transit betwee     back of rest office and		From the premises to the Bank. Section 1 B - Money (other than described in 1A above) in the personal custody of the insured or the authorized employee/s of the insured whilst in direct transit between the premises and the				1500000			0	0		

Policy No. : 45010346203380003391 Document generaled by 37225 at 16/05/2020 15:16:41 Hours.

Regid. 6. Hoad Office: Now India Assurance Bidg. 67 N.G. Read, Fort, Munical 400 661, TOLL FREE No. 1 600 200 1415. 13 your grievente, Il any you may approach any one of the following offices -1. Petky issuing office 2. Regional effice. 1. Head officialin case, you are not satisfied with the endroses in mechanism; you may also approach insurance Ombudsman. For delate of cur office addresses and addresses of office of insurance Ombudsman, please visit our website http://wewindia.co.in.

Page 1 of 3

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TECHNICAL DUE DILIGENCE REPORT

roncy num	ber:		T (Burlonne Form	010355		
3213004419	10001993	व्यवसाय स्त्र	A /Business Source	6. 910335		
जारीकर्ता कार्यात	स्य/Issuing Office	<u>बकिरय</u> जैनल बाँ 91035500000	<u>रिण/Sales Channe</u> no1	Code:		
कार्यालय काड	Office Code: 321300	TR Name:	spire Insurance Br	okers Pvt		
कार्यालय पता । DIVISION !! R	Office Address: BHOPAL	Ltd - HO Con	act Number: 82919	914810		
Madhya Prade	sh - 462022.	गुम्म, सह दलाल कोड	/ Co Broker Code:			
State Code: 23. GSTIN: 23AAAC	Madhya Pradesh N9967E1ZB					
Contact Numb	er: 755 2682822	Customer	Care 1011 Free /	Number:		
Mobile Numbe	@nic.co.m f:	email:custo	mer.support@n	ic.co.in		
गुराहक का नाम LTD	/Customer Name: DBL	JALPA DEVI TOLLWA	AYS गुराहक अ 9701881	ाईडी /Customer ID: 845	पैस /PAN: AADCJ5526G	
पता/ Address: F	LOT NO-5, INSIDE GOV	IND NARAYAN SING	eH জীন /Pho	one:		
BHOPAL, Dist	ict: BHOPAL, State: MAL	HUPAL-462016, 0 DHYA PRADESH, PIN	li li			
452016. Colt 08252021	120		इ-मेल /E-	Mail:		
won, obsolded						
पॉलसि: 27/03 midnight of	12020 후 00:00 국 26/0 26/03/2021	3/2021 की मध्य रात्र	तिक पुरभावी /Poli	cy Effective from	00:00 hours, on 27/03/202	l0 to
utation	T/ Promium #7	5.01.680.00 #447	नोट संख्या और तथि	TO Cover MA		
20414	veremum (7	5,01,080.00	Note Number	and Date		
SG	ST/UTGST	6.75.151.00				
	IGST	0.00	त संख्या और =640	Proposal		
करला बाद 3	Flood Cess	¢ 0.00	Number	and Date 880020	0327087068 Dt. 27/03/2020	
कम:जीर	सरी_टीडीएस /	₹ 0.00				
Less	GST_TDS	1 9.99				
पुनर्पुरापुता या	गय सटामप	t 0.00 te	द संख्या और तथि।	Receipt 221200	811910007666 Dt 27/02/2020	
/Recoverable	Stamp Duty		Number	and Date 321300	0.1010001000 Dt. 27/03/2020	
		पछिली	पॉलसि संख्या और	समापुती		
কুল/To	tal Amount ₹8	8,51,982.00		নযিগি NA		
	and the second second	P	revious Policy Num	nber and		
(Rupees Eighty	Eight Lakh Fifty One Th	ousand Nine Hundred	Eighty Two Only.)	pry bale		
ocation:Guna-	Biaora section of NH-3, N	Adhya Pradesh Guna Description Of	a, Guna, 473001.	Sum Insured a		
Sr.No	Type of Risk	Risk	Zone	risk(?)	Excess(?)	
1	Roads	ROAD AND STRUCTURE	Zone IV	6,98,50,00,00	0.00 1.00.000.00	
		Toll Building &				
		HTMS, Office & It				
		Equipment,				
2	Roads	Equipment, Road	Zone IV	51,50.00.000	00 1 00 000 00	
		Furniture, Fixturs, Electrical Poles			1,00,000.00	
		Lighting & Fittings,				
		Signboard & Safety Barrier				
5.00	120020000000000000000000000000000000000	1998 1 1991				
लागू खंडो,पृष्ठांव Warrachu Pici	जी एवं वारंटी / Clauses,	Endorsements and V	Warranties Applic	able:Agreed Bank C	lause, Terrorism Damage Exc	lusion
FOLLOWING	ONDITIONS:	mage Clause, Policy i	s subject to following	ng conditions : POLI	CY IS SUBJECT TO THE	
1.Excess applic	able under the policy is:	(a) Upto SI of Rs 500	Cr = 10% of Cla	im subject to Minimu	um of Rs 5 lacs & (b) SI above	500 Cr
Excess.	<ul> <li>Turk of Claim subject t</li> </ul>	o Minimum of Rs 10 k	acs. Entire Road pa	ackage will be treate	d as One location for application	in of
2 Policy is Appl 3.No Coverant	cable for Roads & Road	side structures & Toll	plazas & Bridges &	Flyovers on Land.		
A.No Coverage	for Marine Vessel Impac	t Damage.				
a.c.ach 72 hour	period will be treated as	One occurrence/even	t for STFI & EQ for	application of Exce	55.	
Pri	nted on 27/03/2020	. 76160				
132.00	STREET STREET BY IL	10108			Page no:	1 0000
						(AT 2500
						A AN
						a Valanta and the
S. C.						



# HDFC ERGO General Insurance Company Limited



May 19, 2020

#### JALPA DEVI TOLLWAYS LTD

PLOT NO. 5, GOVIND NARAYAN SINGH GATE, CHUNA BHATTI, BHOPAL, BHOPAL, MADHYA PRADESH,482016.



Dear Customer,

#### Sub: Employees Compensation Insurance Policy No: 3114203391761300000

We thank you for having preferred us for your *Insurance* requirements. We at HDFC ERGO General Insurance believe "Insurance" as not only to be an assurance to indemnify in the event of unfortunate circumstances, but one that signifies protection and support, which you can count on when you need it most.

The Insurance Policy enclosed herewith is a written agreement providing confirmation of our responsibility towards you that puts insurance coverage into effect against stipulated perils.

Please note that the policy has been issued based on the information contained in the proposal form and / or documents received from you or your representative / broker.

Name of the Intermediary : GLOBAL INSURANCE BROKERS PVT LTD

Intermediary Code : 200113159601

Where the proposal form is not received, information obtained from you or your representative /broker, whether orally or otherwise, is captured in the policy document.

If you wish to contact us in reference to your existing policy and /or other general insurance solutions offered by us, you may write to our correspondence address as mentioned below. Alternatively, you may visit our website <a href="http://www.hdfcergo.com">www.hdfcergo.com</a>. To enable us to serve you better, you are requested to quote your Policy Number in all correspondences.

Thanking you once again for choosing HDFC ERGO General Insurance Company Limited and looking forward to many more years of association.

Yours sincerely,

Authorised Signatory

3114203391761300000

HDFC ERGO General Insurance Company Limited (Formely HDFC General Insurance Limited)
Registered & Corporate Office
Lat Floor, HDFC House, 165 - 166 Backbary Reclamation,
H. T. Perekh Marg, Churchgate, Murrobal - 400 020
LBS Marg, Br

Customer Service Address: D-301, Srid Floor, Eastern Business District (Magnet Mal), LBS. Marg. Bhandup (West), Mumbel - 400 078 Page 1 of 13

UN : IRDAN125P0017V02201112 | IRDA1 Reg No.146 | CIN : U86030MH2007PLC177117 Toll Fire Number: 1800.2700.700 et Mall), Telephone : +01.22.6936.3900 Fer: 61.22.6936.3690 Telephone : -ome@hdlorepic.com

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TECHNICAL DUE DILIGENCE REPORT

## HDFC ERGO General Insurance Company Limited

HDFC ERGO

Certificate of Insurance cum Policy Schedule



Employees Compensation Insurance

Insured Name	JALF Num	PA DEVI TOL	LWAYS LTD (PAN 526G)	Busines	OTHERS	
Correspondence Address	PLO	T NO. 5, GO DESH,46201	/IND NARAYAN SINGH GATE, 8.	CHUNA BHATTI, BHC	PAL, BHOPAL, MA	DHYA
Mobile	Pł	hone	E Mail		Policy Issuance Date	19/05/2020
Period of Insurance	From	Date & Time	18/05/2020 00:01 AM	To Date & Time	17/05/2021 Mid	Inight

LAW

The Policy covers Liability of the Insured under the following Law(s) shown as covered, subject to claim being otherwise admissible as per terms, conditions and exclusions of the Policy and subject to Limit of Indemnity as stipulated against each Law:

Sr. No.	Law	Limit of Indemnity
a.	Employee's Compensation Act, 1923 and subsequent amendments thereof prior to the date of issue of this Policy	Subject otherwise, to the terms, conditions & Exclusions of the Policy, the amount of liability incurred by the Insured
b.	Common Law	Subject otherwise, to the terms, conditions & Exclusions of the Policy, the amount of liability incurred by the Insured, but not exceeding:-
		a) Limit Per Employee for any number of accidents during Period of Insurance 옷 Unlimited
		b) Limit Per Accident for any number of Employees ₹.Unlimited
		<ul> <li>c) Aggregate Limit for all accidents and claims arising there from during the Period of Insurance Unlimited</li> </ul>

EC-13-0005				
3114203391761300000				Page 2 of 13
HDFC ERGO General Insurance Company Limited (Formerly HDF)	Ceneral Insurance Limited)	UIN : IRDA	N125P0017V02201112   IRDAI Reg No. 146   CIN	U66050MH2007PLC177117
Registered & Corporate Office 1st Floor,HDFC House, 185 - 186 Backbey Reclamation,	Customer Service Address D-301, 3rd Floor, Eestern Business District	(Magnet Mel),	Tol Free Number: 1900 2 Telephone : +91 22 6636 3600 Fax	2700 700 x 91 22 6638 3699

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Four-Li	aning of Guna-Biaora Section of the NH-3 from	m Km 332.100 to 420 DBFC	6.100 in the State of DT pattern.	Madhya Pradesh un	der NHDP Phase-IV	on BOT (Toll) on
		RA	<u>-01 Bill</u>			
PA 01 Pill	( COS – Order issued by PD, N	NHAI vide letter No. NH	AI/PIU/GUNA/NH-3/JD	TL/2017/14856, dated	20-12-2017)	
Total amou	nt based on works executed as on 25.12.2019					
					Amount Certified	
S.No	Description	(Rs)	Value of COS Amount Rounded Rs.	Cumulative (Rs)	Upto Previous bill (Rs)	During this bill (Rs)
110	Value of Work Done under Change Of Scope	17,048,543	17,048,543			
	CONSTRUCTION OF LINED DRAIN FROM 124+840		As per work done	1,691,994	-	1,691,994
1	125+510 ON RHS AND EXTESNTION OF SLIP ROAD		As per CA	-	-	-
	THE PROJECT HIGHWAY		Net COS	1,691,994	-	1,691,994
2	Gross Value			1,691,994	-	1,691,994
3	Recovery					
	Less:20% of gross amount recovered as paid in advance(-)			338,398.84	-	338,399
4	Net Gross Amount (2-3)			1,353,595	-	1,353,595
5	Deductions					
а	S.D.Retentaion Money 5% on Sr.No. 2			-	-	-
ь	Income Tax @ 2% on S.No .4			27,072	-	27,072
c	Labour Cess @ 1% on S.No .2			16,920	-	16,920
d	GST @2% (CGST 1% + SGST 1%) on S.No.2			33,840	-	33,840
6	Total Deductions (5 a+5 b+5 c)			77,832	-	77,832
7	Net Amount of Bill (4 – 6)			1,275,764	-	1,275,764
8	Add for releasing of SD amount recovered			-	-	-
9	Net Amount (7 + 8)			1,275,764	-	1,275,763.61

# Annexure 10: Change of Scope



Name of Work: Construction of Foot over Bridge at Km 159,300 (Penchi Village) ABSTRACT OF FOR AT Km 159+300- COS No. 12																
A Final	601			1												Period: 30.08.2020
5 No	Item Ref. No.	Description	Unit	NPPWD S08 w.c.l 05.06.2016	Ad p	er CA	As Per Revi	lation (CDS)	Executed Data	Amount (Rs.)	Executed I	Amount (Rs.)	Ogantity	Amount (Rs.)		Beamrks
1	123444	Earth work in excavation of foundation of structures as per- drawing and technical specification, including setting out, constructions of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material, as per relevant clauses of section 300 & 2000 in	Cum	52,00			297.409	15,464.80	259,950	13,517.40	•		259,950	13.517.40	Pg. No.	of MB Nu.
2	3.10	Earth filling in Ramp	Cum	144.00			35,100	5.054.40	160.044	23,046.31		•	160.044	23,046.31	Pg. No.	of MB No.
3	12.5-4	PCC-M125 leveling course-Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.	Cum	4,572.00			27.109	1,23,901.20	32.505	1,48,613.96 t		17	32,505	1,48,613.96	Pg, No.	of MB No.
4	12.8 G	M30 for Foundation-Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.	Cum	5,337,99			90,200	4,81,397.40	67,401	3,59,718.83			67.401	3,59,718,83	Fg. No.	cEMB No.
5	136-G	M30 for Sub-Structure- Plain/Reinforced cement concrete in sub- structure complete as per drawing and Technical Specifications	Cum	5,999,00			92,600	5,55,507.40	47.300	2,83,752.70			47,300	2,83,752.70	Pg. No.	of MB No.
6	1840	M30 For Super structure- Furnishing and Placing Reinforced/ Prestressed cement concrete in super-structure as per drawing and Technical Specification	Cum	6,458.00			135.700	8,76,358.60	196.469	12,68,798,03			196469	12,68,798.03	Pg. No.	af MB No.
7	42.31	Supplying, fitting and placing un-coated HYSD Fe-SOD bar reinforcement in foundation complete as per drawing and technical specifications	мт	49,081.00			7,300	3,58,291.30	12.927	6,34,477.76		-	12,927	6,34,477.76	Pg. No.	of MB Ne.
8	11.7	Supplying, fitting and placing on-coated HYSD Fe-S00 bar reinforcement in foundation complete as per drawing and technical specifications	мт	48,936.00		1	8,400	4,11,062.40					9.060	-		
9	14.2	Supplying, fitting and placing HYSD Fe-S00 bar reinforcement in super-structure complete as per drawing and technical specifications	мт	50,628.00			12.300	6,15,344.40	22.623	11,31,774.11			22.623	11.31.774.11	Pg. No.	ef MB Ne.
10	15.15	Elestomeric bearings	caem	0,78		-	17,449,000	13,603.20	17,440.000	13,603.20			17440.000	13,603.20	Fg. No.	of MB No.
11	M-Kate	GI Sheet covering for Roof	Sqm	500.00			764.900	3,82,450.00	763.250	3,81,625.00		-	763.250	3,81,625.00	Pg. No.	of MB No.
12	M-Rate	Flooring Tiles	Sqm	350.00			756.500	2,64,775.00	733.555	2,56,744.25		1	733.555	2,56,744.25	Fg. No.	of MB No.
13	8.25	Metal Beam Crash Barrier	Rm	3,406,00		-	88,000	2,99,728,00					0.000	-	Fg. No.	of MB No.
14	14.25	Structural Steel	kg	65,59			42,474,400	27,85,980.42	52,390,070	34,36,368,95		1.4	\$2390,070	34,36,368.95	rg. No.	61 MB NO.
		Sub total	-			100		71,88,911		79,52,040				79,52,040		
		Grand Total (I)-As per Revision						71,88,911	•	79,82,040	•		•	79,52,040		
						% age of Work	Done (Revision)									
						Amount	s per CA - Order									
						Amount A:	s per COS - Order	71,88,911		79,52,640				79,52,048	Amount C MB. No,	/O to Pg No. Of

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Four-	Laning of Guna-Biaora Section of the NH-3 fr	om Km 332.100 to 4	26.100 in the State o	of Madhya Pradesh	under NHDP Phase-I	V on BOT (Toll) on
		00	RA-01 Bill			
	( COS – Order issued by PD	, NHAI vide letter No. N	NHAI/PIU/GUNA/NH-3/	JDTL/2017/14856, date	ed 20-12-2017)	
Total a	mount based on works executed as on 25-12-2010					Km 1121050 (BUD)
Total a	mount based on works executed as on 25.12.2019				Amount Certified	Km 112+050 (POP)
S.No	Description	Value of COS ORDER (Rs)	Value of COS Amount Rounded Rs.	Cumulative (Rs)	Upto Previous bill	During this bill (Rs)
110	Value of Work Done under Change Of Scope	42,636,258	42,640,000		(13)	
			As per work done	7,850,425	-	7,850,425
1	Provision of service / slip road and RE wall on the approaches at PUP locations:(PUP at km112.050)		As per CA	-	-	-
			Net COS	7,850,425	-	7,850,425
2	Gross Value			7,850,425	-	7,850,425
3	Recovery					
	Less:20% of gross amount recovered as paid in advance(-)			1,570,085	-	1,570,085
4	Net Gross Amount (2-3)			6,280,340	-	6,280,340
5	Deductions					
а	S.D.Retentaion Money 5% on Sr.No. 2			-	-	-
b	Income Tax @ 2% on S.No .4			125,607	-	125,607
с	Labour Cess @ 1% on S.No .2			78,504	-	78,504
d	GST @2% (CGST 1% + SGST 1%) on S.No.2			157,009	-	157,009
6	Total Deductions (5 a+5 b+5 c)			361,120	-	361,120
7	Net Amount of Bill (4 – 6)			5,919,221	-	5,919,221
8	Add for releasing of SD amount recovered			-	-	-
9	Net Amount (7 + 8)			5,919,221	-	5,919,221

Authorised Signatory Jalpa Devi Tollway Pvt Ltd., Bhopal Team Leader

Aarvee Associates Architects Engineers & Consultants Pvt. Ltd.