Attachment-1 Project Brief

The Indian Academy of Highway Engineers (IAHE) has been entrusted with the assignment of Project Management Consultancy Phase I including preparation of Detailed Project Report of selected stretches/corridors of National Highways/ State Roads (New NH-320G) for Two/ Four laning with paved shoulder configuration.

The Project road started from Haat Gamhariya T-junction (Existing Chainage km 0+000) and ended at Kolebira T-junction (Existing Chainage km 180+000) in the State of Jharkhand.

For the convenience of construction, The DPR report of project has been further divided in to 4 packages

PACKAGE- I- From km 0+000 to km 43+000

PACKAGE- II- From km 43+000 to km 89+300

PACKAGE- III- From km 89+300 to km 122+700

PACKAGE- IV- From Existing chainage 122+700 (Design chainage 119+520) to Existing chainage 180+000 (Design chainage 176+310)

This report is prepared for PACKAGE- IV

Project Location

The project corridor is a State Highway (SH-4). It is located in Jharkhand state starts at Haat Gamhariya in West Singhbhum district, traverses through Haat Gamhariya taluka of West Singhbhum district which ends at Kolebira junction. The project road lies between latitude 22°15'38.2"N to 22°41'55.5"N and longitude 85°44'09.3"E to 84°41'34.9"E. The project corridor also connects the major urban centers of the region, viz. Jagannathpur,Baraiburu, Saddle, Manoharpur, Anandpur and Bano. It provides connectivity with NH-20 and NH-143.

Existing Project Road Feature

The Project road from Ghat bazaar to Kolebira is SH 4(Old SH-51) falls in the districts of Simdega in the state of Jharkhand. The approximate length of the project road is 56.790 Km.

A brief description of the salient features of this corridor is given in table below.

Table- 1 Project Summary

Length of the Project Road (Km)	56.790 km
Right of Way	25 m
Major Junctions	2
Minor Junctions	15
Major Bridges	1
Minor Bridges	17
Culverts	Total No. of culverts-132 Slab culvert-131, Pipe culvert-1
Level Crossings	1

Traffic (Base year)	2020

Table -2 Existing Built-Up Area

Sl.No.	Existing Chainage		Village Name
	FROM	TO	
1	125.000	125.200	SAUBERA VILLAGE
2	126.400	127.000	BOGURATOLI VILLAGE
3	127.600	128.800	HURPI VILLAGE
4	130.000	131.000	HATINGHORE VILLAGE
5	134.000	134.400	GARRA VILLAGE
6	135.800	136.200	LATAKEL VILLAGE
7	137.200	137.800	KONAROIA VILLAGE
8	138.600	139.000	SODA VILLAGE
9	139.600	140.200	PARO VILLAGE
1	140.200	141.000	NOMIL VILLAGE
1	142.000	142.400	BANKI VILLAGE
1	144.400	144.800	LOASOKRA VILLAGE
1	149.000	149.800	UKAULI VILLAGE
1	154.000	155.600	BANO VILLAGE
1	157.600	158.600	JARAKEL VILLAGE
1	160.400	162.200	LACHRAGARH VILLAGE
1	164.200	166.200	RAMJORI VILLAGE
1	167.600	168.600	KALHATOLI VILLAGE
1	168.600	169.200	DHOSIARI VILLAGE
2	174.000	174.600	RAISIA VILLAGE
2	176.400	177.000	BONGRAM VILLAGE
2	179.000	180.600	KOLEBIRA VILLAGE

Project Development Plan

The proposed improvement plans was laid in terms required lane configuration based on the findings and the potential of the project area to attract diversion from various corridors. All the improvement plans was prepared strictly adhering to the IRC guidelines prepared for public and private participation development of projects, any specific deviations such necessitates will be discussed with IAHE and MoRTH before they are put in the project design.

Structural proposal – The structure proposal was prepared on the structural soundness, the remaining life and future requirements. In general all submersible bridges will be replaced by high level bridges and all the pipe culverts will be replaced by box culverts as predominantly NP-2 has been used based on the earlier specification and project requirements.

The project improvement proposals identified for the project road are:

- Lane configuration (Two lane with paved shoulder)

- Typical cross section for Urban and Rural section of Two lane with paved shoulder
- Widening Schedules (Concentric widening)
- Proposals for CD Structures and other structures
- Project facilities like Bus bay, Truck lay bye, Rest area etc.,
- Bypasses for the major settlement where RoW for widening is not available

Table- 3 Traffic volume (AADT)

Categories	TVC Noamundi		TVC Barajamda		TVC Manoharpur		TVC Lachragarh	
	Vehicles	PCU	Vehicles	PCU	Vehicles	PCU	Vehicles	PCU
2W	1940	970	2483	1242	2838	1419	3204	1602
Auto Rick	26	26	26	26	345	345	592	592
Car/ Van/ Jeep	802	802	812	812	268	268	435	435
Mini Bus	16	24	16	24	15	22	18	28
Std. Bus	60	179	63	190	13	38	36	107
LCV	151	226	175	262	102	154	228	342
2-Axle Truck	230	690	531	1594	46	138	209	628
3-Axle Truck	281	842	764	2291	10	31	129	386
Multi Axle Truck	255	1149	754	3395	18	83	40	181
Agr. Tractor Without Trailer	1	2	1	2	2	3	2	3
Agr. Tractor With Trailer	7	31	7	31	37	166	95	430
Animal Drawn	4	24	4	24	0	0	0	0
Cycle	174	87	176	88	2612	1306	741	371
Cycle Rick	0	0	0	0	8	16	11	22
Motorised	**3768**	**4940**	**5632**	**9868**	**3695**	**2667**	**4989**	**4734**
Non-Motorised	**178**	**111**	**180**	**112**	**2620**	**1322**	**752**	**393**
Total	**3946**	**5051**	**5812**	**9980**	**6315**	**3989**	**5741**	**5127**

Table 4- Traffic projections

Year	Km 30+000 at Noamundi	Km40+000 at Barajamda	Km 96+000 at Manoharpur	Km 162+500 at Lachragarh	Average Traffic on Corridor (PCU)

Base Year -2017	**5053**	**9978**	**3987**	**5123**	**6035**
2020	5849	11551	4615	5931	6987
2025	7466	14742	5891	7569	8917
2030	9528	18815	7518	9660	11380
2035	12161	24013	9595	12329	14525
2040	15520	30648	12246	15735	18537
2045	19808	39115	15630	20083	23659
2050	25281	49922	19948	25631	30195

Widening Schedule & Geometry

Concentric Widening is followed at majority of the locations along the project road where as at realignment locations eccentric widening is adopted.Design speed of 100kmph and 80kmph has been maintained all through the project road. All the horizontal curves have been designed with a desirable minimum radius of 400m and 250m respectively.

In the following sections, where improvement of the existing road geometrics to the prescribed standards is not possible, the existing road geometrics shall be improved to the extent possible within the given right of way and proper road signs and safety measures shall be provided for safe regulation of fast moving, slow moving and pedestrian traffic:

At which location where minimum design speed (80 kmph) and minimum radius (250m) does not meet, this location has been given in Table 5

Table 5 Design Speed & Radius of Horizontal Curve

Sl. No.	Stretch/Design Chainages (from km to km)		Type of deficiency		Remarks
	From	To	Radius of curve	Design Speed	
1	123+675.398	123+828.846	250	65	Protected Forest & Ghat Section
	124+303.493	124+497.252			
3	149+992	150+095.409	150	65	"
4	150+136.807	150+296.235	150	65	"
5	150+621.922	150+770.924	150	65	"
6	150+773.409	150+869.854	150	65	"
7	150+954.384	151+068.322	150	65	"
8	151+074.926	151+158.688	200	65	"
9	151+631.504	151+914.757	125	50	"
10	151+950.252	152+108.609	100	50	"
11	152+127.713	152+329.950	200	65	"

Pavement Design

The proposed thickness of the different layers computed according to the guidelines of IRC: 58- 2015 and are presented in below.

Table 6 New Pavement Composition

Homogenous Section (Km)			C B R (%)	MSA		Recommended Overlay (mm)		Adopted Pavement Composition in Widening Position (mm)				S E C T I O N
From	To	Length (km)		Actual	Adopted	B C	D B M	B C	D B M	W M M	G S B	
122+700	180+600	57.9	10	18.58	20	40	60	40	80	250	200	HS-III

Structures Proposal

Table 7 Proposal for Major and Minor Bridge

Sr. No.	Type	Major Bridge	Minor Bridge	ROBs	VUPs	Total
1	New Construction	-	3	1	-	4
2	Reconstruction	-	14	-	-	14
3	Widening	-	-	-	-	-
4	Retained	1	-	-	-	1
	TOTAL	1	17	1	-	19

*New Construction due to Realignment/bypass

Table 8 Proposal for Culverts

Sr. No	Type	Slab/box/arch	Pipe	Total
1	New Construction	15	-	15
2	Reconstruction	61	-	61
3	Widening	55	-	46
4	Retained	11	-	11
	TOTAL	142	-	142

* New Construction due to Realignment

Junction Improvements

A total of 2 major junctions and 15 minor junctions have been proposed for improvement.

COST ABSTRACT SUMMARY		
	PKG IV Ex Chainage 122+700 to 176+300	
S.NO.	PARTICULARS	AMOUNT IN RUPEES
1	Site Clearance and Dismantling	14,287,033.67
2	Earth Work	136,931,040.84
3	Granular Base Course and Sub Base	334,574,170.05
4	Pavement (Asphalt & Concrete)	832,129,704.60

5	Construction of Culverts (Pipe/Box) - New, Widening & Reconstruction	444,727,213.00
6	Structures :- Major Bridge / Minor Bridge / Flyover / VUP / PUP / Repair & Rehabilitation	162,252,591.00
7	ROB	67,038,008.74
8	Drainage and Protective Works	236,549,735.06
9	Junctions, Traffic Signs Marking and Other Appurtenances	435,855,957.73
10	Traffic management during construction and Maintenance during construction	14,519,590.28
12	RE Wall / Retaining Wall	29,616,637.83
13	Horticulture	17,013,784.34
14	Project Facilities	19,106,291.32
15	Electrical Works	34,364,572.65
16	Repairs and Rehabilitation of existing Bridges	14,205,815.77
A	**CIVIL CONSTRUCTION COST (1 TO 16) (Excluding GST & Labour Cess)**	**2,793,172,147**
B	Add GST Charge @12% (A)	335,180,657.63
	Total(A+B)	3,128,352,804.52
D	Utility Relocation Cost	134,667,726.00
I	**CIVIL CONSTRUCTION COST (A+B+C+D)**	**3,263,020,531**
II	Escalation during construction @10% of Civil Cost (I)	326,302,053.05
III	Contingencies @2.8% of Civil Cost (I)	91,364,574.85
IV	Maintenance during DLP of 5 Years 0.25% for 1st & 2nd year 0.5% for 3rd & 4th year 1.0% for 5th year	81,575,513.26
V	Construction supervision @3% of Civil Cost (I)	97,890,615.92
VI	Agency Charge @3% of Civil Cost (I)	97,890,615.92
VII	Centages (II+III+IV+V+VI)	695,023,373.00
VIII	**Total Project Cost (I+VII)**	**3,958,043,904**

IX	Total Environmental Cost	55,863,443
X	Land acquisiion Cost	199,112,500
	Total capital Cost (VIII+IX)	4,213,019,846
	Say (Amount in crore)	421.30
	Cost per KM (Amount in crore)	7.42

Date: 22/11/2021

Place: - Gumla

(Vijay Kumar Sinha)
Executive Engineer
Nation Highway Division Gumla

Executive Engineer
National Highway Division
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Signature & Seal