चेक लिस्ट क्रमांक संख्या 8

प्रोजेक्ट पर विस्तृत टीप संगलन है

1. Executive Summary

1.1 Brief of the project

The Ministry of Road Transport and Highways (MORTH), Government of India through National Highways Authority of India (NHAI), has decided to do the widening and rehabilitation of existing Champa to Urga section of NH-149B from two lane road to four lane road, under NH (O) in the state of Chattisgarh on Hybrid Annuity Mode. The project road is a section of newly declared National Highway – 149B as per the Gazetted notification, dated 21 March 2014, which notifies that the project road i.e. NH-149B is also one of the newly declared National Highway which starts from Saragaon near Champa and terminates in Urga (40.000 Km) in the State of Chattisgarh.The project road is a part of existing SH-09 Road.

In pursuance of the above, Dhruv Consultancy Services Pvt. Ltd. has been appointed as Consultants to carry out the consultancy services for Project Management Phase-I including preparation of Detailed Project Report for up-gradationof NH-149B of Champa-Urga sectionfrom two lane to four lane configuration in the State of Chhattisgarh. The project road is a part of existing SH-09.The Contract Agreement was signed on 3rd June 2015. The Commencement of services had taken place on the fifteenth day after signing the contract agreement i.e. on 18th of June 2015.

1.2 Project Road

The project road is a section of newly declaredNH-149B which starts from existing Km 91.000 of NH-49 (Old NH-200) near Saragaon village and terminates at existing Km 29.000 of SH-09 (NH-149B) near Urga village. Total existing length of the project road is 40.000 km. The entire existing stretch has carriageway width of two lane.

The project road passes through the two districts of Chhattisgarh State which are Janjgir Champa and Korba. The existing project road is having a length of 40.000 Km which starts from existing Km 91.000 of NH-49 (Old NH-200) near Saragaon village and terminates at existing Km 29.000 of SH-09 (NH-149B) near Urga village. The existing width of carriageway is 7m for almost entire length of the project road. The formation width of existing road varies from 10–12m with earthen shoulders on both sides. The embankment height of the project road varies from 0.25m to 0.30m and the road condition is fair to Poor. The existing road has maximum commercial traffic which originates from nearby industrial areas or mines. The horizontal alignment of the existing project road is fair to poor but it needs some improvements at various locations to meet the requirements as per IRC standards. The vertical alignment of the project road is fair to poor but it needs improvements due to deficiencies at locations of structures.

1.3 Alignment

Since, the existing road from Champa to Urga is in poor condition and poor geometry, once the project road is improved according to National Highway Standards, it will provide shortest connectivity to Korba and will also be advantageousfor the traffic bound to Bihar. Due to limited existing ROW, densely built-up area, to avoid huge R&R and LA cost and as 60% of traffic is moving towards Raigarh, therefore, bypass is required for Champa to Korba section to shortening the existing road length with improved geometry according to National Highway Standards. The proposed alignment has been finalized in consultation with the State Government of Chhattisgarh.

1.4 Construction Packaging

The existing project road is divided into two packages for construction purposebut this Detailed Project Report (DPR) pertains to only package-1 (From design chainage km 0+000 to km 36+000) as detailed in **Table 1.1**below:

Table 1.1: Summary of Packages

S.No.	Description	Total Length of Package
Package-1	From Champa to Urga (0+000 to 36+000)	36.000 Km
Package-2	From Urga toKatghora (36+000 to 80+295)	44.295 Km
Total Length		**80.295 Km**

1.5 Start & End of the Project

Package-I starts from Design ChainageKm 0+000 (Junction with NH-49) near Saragaon village and ends at Design ChainageKm 36+000 near Urga Village in the State of Chhattisgarh as shown in **Figure 1.1** below.

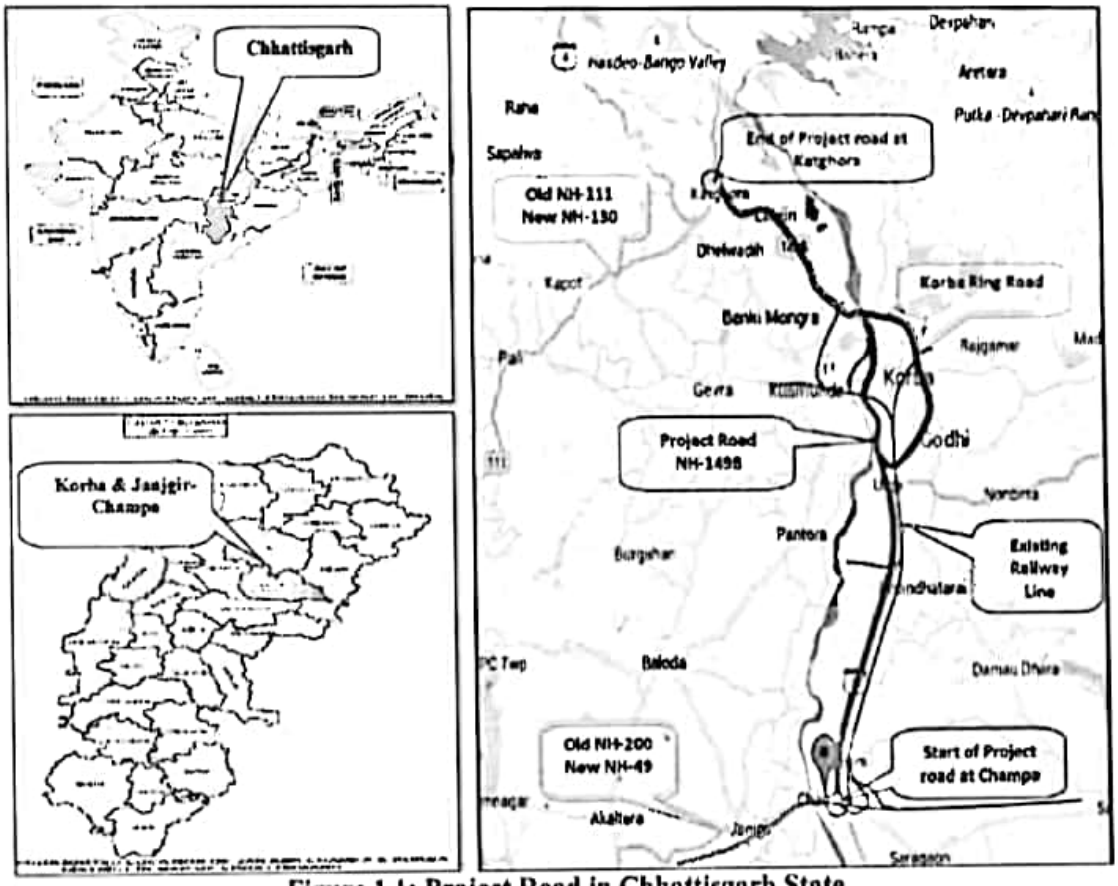

Figure 1.1: Project Road in Chhattisgarh State

1.6 Traffic

The present trafficscenario along the project road in each sections is given in **Table 1.2** below:

Table 1.2: Summary of Present Traffic

Location	Section	In Vehicle		In Vehicle		PCU
		Truck	Car	Fast	Slow	Total
Location 1	Champa-Barbaspur	1509	1471	8632	430	11601
Location 2	Barbhaspur-Hasdeo	420	287	1970	158	3188
Location 3	Korba-Katghora	1299	1994	7948	453	10641

Expected trafficscenario on the proposed alignment is given in **Table 1.3**below:

Table 1.3: Summary of Expected Normal Tollable Traffic in ADT

2020	2030	2040	2045
10899 PCU	18631 PCU	29598 PCU	36890 PCU

1.7 Brief Salient Features

The salient features of the proposed project road are given in **Table 1.4** below:

Table 1.4: Salient Features

Description		Remarks
Alignment		
Proposed length	36.000 km	
Lane Configuration		
4 - Lane	36.000 km	
Bridges		
Minor	13 Nos.	
Grade Separated Structures		
ROB	4 Nos.	
VUP	5 Nos.	
Flyover	1 Nos.	
Elevated road	3 Nos.	
Culverts		
Box	51 Nos.	
Junctions		
At Grade Intersection	3.0 Nos.	
Toll Plaza	01 No.	At Km 16+250
Bus Bays	14 Nos.	
Truck Lay Bye	01 No.	At Km 1+300

1.8 Environmental Clearance

As the length of the project road is less than 100 km, environmental clearance is not required as per MoEF circular published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section(ii)dated 22.08.2013.

1.9 Forest Clearance

Throughout the length of project road of package-I, total Revenew forest landworked out to be **4.493Hectare**. As the area of the forest land is less than 5 Hectare, clearance will be taken from the Government of Chhattisgarh.

1.10 Status of Land Acquisition

The land acquisition plan along with '3a', '3A'and '3D' has been prepared and submitted. The details are given in Table 1.5B below:The '3a', '3A' and '3D' have been published on internet site i.e. "Gazette of India".

According to comments received vide letter no. 26011/1/2019/PD-BSP/Champa-Katghora/3269 on dated 08.02.2019 the length of elevated road has been minimized. Therefore the additional land will be required as under table 1.5A.

Table 1.5A: Summary of Land Acquisition

S.No.	Design Chainage		Length	Land width already acquired	proposed Land width to be acquired	Area (in Ha.)
	From	To				
1	22+350	22+725	375	32	45	0.488
2	27+200	27+425	225	32	45	0.292
Total additional land will be required						0.78

Table 1.5B: Summary of Land Acquisition

S.No.	Particulars	Area (in Ha.)
1	Private land to be acquired	147.811
2	Govt. owned land for which no compensation is to be paid	19.288
3	Forest Land	4.493
4	Total Land Area to be Acquired	171.592

1.11 Schedule of Rates

The estimate has been prepared based on prevailing SOR of PWD, Government of Chhattisgarh with effect from 1st January 2015. This SOR has been followed after the instructions of Regional Officer (RO), NHAI.

1.12 Design of Pavement

The flexible pavement has been proposed for the entire stretch except at Toll Plaza area where Rigid Pavement has been proposed. The pavement has been designed by considering the designed traffic of 100 million standard axles (MSA) as per axle load survey. The details of proposed flexible and Rigid pavement are given intable 1.6A below.

Description	Main Carriageway	Service Road	Toll
Number of standard axles (msa)	100	10	-
Effective CBR in percentage (%)	10	10	10

Description		Main Carriageway	Service Road	Toll
Pavement composition	BC	50	30	-
	DBM	130	50	-
	WMM	250	250	-
	GSB	200	200	150
	PQC	-	-	300
	DLC	-	-	150
Pavement thickness in mm		630	530	600

1.13 Proposed Underpass/Flyovers/Elevated Roads

The details of proposed Underpass/Flyovers/Elevated roads are given in **Table 1.6** below:

Table 1.6: Summary of Underpass/Flyover/Elevated road

S. No.	Design Chainage (km)	Width (m)	Length of Spans (m)	Remarks
1	9+350	2x10.5	1x14	On Champa Bypass
2	12+500	2x10.5	1x14	Near Farswarani Village
3	18+460	2x10.5	1x14	Near Kothari Village
4	20+150	2x10.5	1x14	Near Nawalpur Village
5	35+010	2x10.5	1x14	On Urga realignment
6	0+475	1x10.5	1x15+1x30+1x15	Saragaon
7	22+880	2x10.5	As per Design	Madwarani village
8	27+475	2x10.5	As per Design	Barpali village
9	32+060	2x10.5	As per Design	Lanco Power Plant

1.14 Proposed Bridges

The details of proposed bridges along the project road are given in **Table 1.7** below:

Table 1.7: Summary of Bridges

S. No.	Existing Chainage	Design Chainage	Exist. Span Arrangement	Prop. Span Arrangement	Prop. Configuration	Proposal	Remarks
1	-	12+085	-	1x42	4 lane	New construction	-
2	7+425	14+170	1x8	1x10	4 lane	Reconstruction	-
3	8+325	15+060	4.5+10.5+4.5	1x21	4 lane	Reconstruction	-
4	12+300	19+145	2x3+ 1x2.3	1x10	4 lane	Reconstruction	-
5	13+950	20+695	2x3.8	1x10	4 lane	Reconstruction	-
6	14+625	21+370	3x4.0	1x15	4 lane	Reconstruction	-
7	15+000	21+730	3x4.0	1x15	4 lane	Reconstruction	-

S. No.	Existing Chainage	Design Chainage	Exist. Span Arrangement	Prop. Span Arrangement	Prop. Configuration	Proposal	Remarks
1	-	12+085	-	1x42	4 lane	New construction	-
8	15+950	22+680	1x6.0	2x6	4 lane	Reconstruction	-
9	17+750	24+560	2x4.8	3x10	4 lane	Reconstruction	-
10	18+125	24+865	3x7.5	1x25	4 lane	Reconstruction	-
11	18+575	25+305	1x1.2	1x10	4 lane	Reconstruction	Culvert Upgradation
12	18+725	25+457	1x4.25	1x10	4 lane	Reconstruction	Culvert Upgradation
13	26+400	33+200	2x6.5+1x6.7	3x10	4 lane	Reconstruction	-

1.15 Summary of Proposed TCS Schedule

Various TCS have been proposed for the proposed alignment and the summary of which are given in **Table 1.8** below:

Table 1.8: Summary of TCS Schedule

Type of TCS	Length (m)	Remarks
TCS 1	10540	Realignment / Bypass
TCS 2	12789	Widening
TCS 3	1907	Existing with SR
TCS 4	870	4-Lane Elevated Road
TCS 5	2775	App of Elevated
TCS 6	70	4-Lane VUP
TCS 7	2530	App of VUP
TCS 8	630	Bridge, 4-Lane ROB, 2-Lane ROB
TCS 9	2629	App of ROB
TCS 10	60	2- Lane Flyover
TCS 11	600	APP of Flyover
Toll Plaza	600	-

1.16 Financial analysis

The financial analysis are carried out, it can be seen that the Project is not financially viable with the given Cost Estimates and Traffic assumptions. Accordingly it has been decided to construct the project in Hybrid Mode of Implementation.

1.17 Abstract of cost

SUMMARY OF COST		
Name of Road: Champa to Katghora NH-149B		
Proposed length: 36 Km		
Bill No.	Description	Item Pric
1	SITE CLEARANCE	
2	EARTHWORKS,EROSION CONTROL & DRAINAGE	
3	SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS	67.532
4	BASES AND SURFACE COURSES (BITUMINOUS)	124.277
5	CEMENT CONCRETE PAVEMENTS	0.000
6	GEOSYNTHETICS AND REINFORCED EARTH	70.095
7	TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES	14.315
8	STRUCTURE	259.506
9	PROTECTION WORKS	8.515
10	TOLL PLAZA	15.000
11	JUNCTION IMPROVEMENT	3.370
I	**Total (A)**	610.98
	LENGTH OF THE PROJECT ROAD	36.00
	COST Cr.Per Km length	16.97
II	The issue of escalation for year 2016-17 has been discussed with CE,NH,PWD,NH Div.Govt. of CG till date they are not adding any escalation with SOR 2016-16	-
III	Contingencies @ 1% of civil cost (I+II)	6.11
IV	Tota EPC Cost (I+II+III)	617.09
v	IC/Pre-opertive expense @ 1% of Total EPC Cost (IV)	6.17
VI	Finance charges @ 2% of debt amount upto EPC cost of Rs.500 crores,@ 1.5% for EPC cot more than Rs.500 crores and less than Rs.1000 crores,@ 1% for EPC cost more than Rs.1000 crores	9.26
VII	Intrest during construction period @ 10.1% per annum on Debt	26.01
VIII	Centagest over EPC cost (V+VI+VII)	41.44
IX	Estimated Project Cost (IV+VIII)	658.53
	Total Capital Cost (Crore)	658.53

1.18 Conclusion Recommendation

1.18.1 General

The project road alignment from district Champa to Urga is presently 2 Lane road in the State of Chhattisgarh. Maximum traffic plying on this road originates from district Korba i.e. starting from Korba mining or industrial zone to either Champa or district Kathgora. In rare c
running from Champa to Kathgora or Kathgora to Champa.

1.18.2 Lane Configuration

Based on the lane capacity analysis results, the project road requires 4 lanes from Champa to Urga (design chainage from km 0.000 to km 36.000) with paved shoulder for capacity augmentation and efficient movement of traffic up to project common concession period of 30 years i.e. horizon year 2045.

1.18.3 Local Improvement

Existing alignment of the project road is improved as per the standards specified in 4 Lane Manual. As land acquisition is compulsory, the improvement is done for the desirable condition and it is recommended to provide radius of minimum 400 m wherever improvement of curves required.

1.18.4 Realignment

At some locations where local improvement is not possible due to R&R and other social issues, study for alternative options has been made at those locations and it is recommended to go for suggested options as given below:

Urga Realignment

Due to built-up section on the existing road and limited existing ROW, we have proposed realignment on the Urga section of the project road to bypassing the built-up section. The Urga realignment will start from design chainage km 33+850 and shall end at design chainage km 36+000 (Total Urga Realignment Length is 2.150 km).

1.18.5 Bypass

Champa Bypass

Existing project road is starting from Champa Railway Station, where congested township exists with limited existing ROW. A level crossing is also existing there. Therefore, widening of road at this location to four lane is not possible as R&R and other social issues make it difficult. Therefore, it is proposed to provide a bypass at this location so as to avoid this existing congested area. Further, more than 60% of traffic is travelling from Korba to Raigarh, therefore, the bypass alignment is recommended in comparison of other options. The Champa bypass will start from design chainage km 0+000 and will end at design chainage km 12+400 (Total Champa Bypass Length is 12.400 km).

1.18.6 Pavement Option Study

The pavement option study has been presented in Final Feasibility Report in tabular form giving economic comparison of both types of pavements after considering initial cost, annual and periodic

maintenance cost, fuel saving, VOC, interest rate on initial extra investment, renewal cost, total savings etc.

But, as per the discussion with Regional Officer (RO) Chhattisgarh in a meeting held on 17 February 2018, it was finally decided to provide the flexible pavement over the entire stretch of proposed road of package-I (From km 0+000 to km 38+150) except at Toll Plaza.

1.18.7 Financial Analysis

From the mentioned analysis in chapter 9, it can be observed that the project is not financially viable with the given Cost Estimates and Traffic assumptions. Accordingly, Government has gone for Hybrid Annuity Mode of Implementation as per the advice of the Government Board.

The fee as notified as per Concession Agreement shall be livable till the end of the Concession Period and after Concession Agreement is over, the fee shall be collected by the executing authority at a reduced rate of 40% of the fee on the date of transfer of section of Project Highway, bridges and bypasses to be revised annually in accordance with the Fee Collection Rules.

1.18.8 Packaging

The project road is proposed to be constructed within 24 months with strategic planning. It is recommended to construct the project road (From design chainage km 0+000 to km 38+150) through single stage with one construction package as given below. The construction has been considered to commence from 2019. The estimated basic cost is given below in **Table 10.2.**

i) Champa to Urga (Design Chainage from km 0.000 to km 36.000).

Table 9.1: Estimated Basic Cost

Proposed Section	Proposed Length (km)	Estimated Project Cost (Crore)
Champa to Urga	38.150	576.11

2. Project Background

2.1 Background

The Ministry of Road Transport and Highways (MORTH), Government of India through National Highways Authority of India (NHAI), has decided to undertake the widening and rehabilitation of existing Champa to Urga section of NH-149B from two lane road to four lane road, under NH (O) in the state of Chhattisgarh on Hybrid Annuity Mode. The project road is a section of newly declared National Highway - 149B as per the Gazetted notification, dated 21 March 2014, which notifies that the project road i.e. NH-149B is also one of the newly declared National Highway which starts from Saragaon near Champa and terminate in Urga (36.000 Km) in the state of Chattishgarh.

This is one of the 24 roads for which consultants have been engaged for preparation of Detailed Project Report (DPR). This detailed project report is prepared for Package-I for the existing length of the project road which is 40.000 km.

The National Highways Authority of India (NHAI) 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 for two to four-laning with paved shoulder configuration. NHAI has engaged Dhruv Consultancy Services Pvt. Ltd as Technical Consultants for carrying out the Detailed Project Report and render consultancy services for proper structuring and implementation of project on Hybrid Annuity Mode for Champa-Urga section of NH-149B in the State of Chhattisgarh.

The main objective of the consultancy service is to establish the technical, economic and financial viability of the project and prepare detailed project report for rehabilitation and up-gradation of the existing 2 lane road to 4 lane configuration.

2.2 Scope of Service Project Road

As far as possible, the widening/improvement work to 4-lanes shall be along the existing alignment in the built-up section, and the land acquisition is necessary to develop the 4-lane road as per NH standards along the existing road having inadequate width and where provisions of short bypasses, service roads, alignment corrections, improvement of intersections are considered necessary and practicable and cost effective. However bypasses proposals should also be considered, wherever in urban areas, improvement to 4 lanes of the existing road is not possible. The consultant shall furnish land acquisition details as per revenue records/maps for further processing.

The Consultant shall study the possible locations and design of toll plaza. Wayside amenities required on tolled highway shall also be planned. The local and slow traffic may need segregation from the main traffic and provision of service roads and fencing may be considered, wherever necessary to improve efficiency and safety.

The general scope of services is given in the sections that follow. However, the entire scope of services would, inter-alia, include the items mentioned in the Letter of Invitation and the TOR. The Consultant will also make suitable proposals for widening/improvement of the existing road 2 lane to 4 lane configuration and strengthening of the carriageways, as required at the appropriate time to