Pre-Feasibility Report

NAME OF THE PROJECT- Consultancy services for preparation of DPR development of Economic Corridors, Inter Corridors and Feeder Routes to improve the efficiency of freight movement in India under Bharatmala Pariyojana (Lot-6/Package-4) - **Paniyala-Alwar-Barodameo** (Inter Corridor Route).

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
National Highways Authority of India

SUBMITTED BY

National Highways Authority of India
G- 5 & 6, Sector-10, Dwarka, Delhi, 110075

1.0 EXECUTIVE SUMMARY

The National Highways Authority of India (NHAI) has been entrusted with the assignment of consultancy services for preparation of DPR development of Economic Corridors, Inter Corridors and Feeder Routes to improve the efficiency of freight movement in India under Bharatmala Pariyojana (Lot-6/Package-4) - Paniyala-Alwar-Barodameo (Inter Corridor Route).

In pursuance of the above M/s. Chaitanya Projects Consultancy Pvt. Ltd. has been appointed as Consultant to carry out the feasibility study and the detailed project report for Paniyala - Barodameo section under Bharatmala scheme. The agreement has been signed on 26.08.2020.

The project stretch starts at Paniyala village in Jaipur district and ends at Barodameo in Alwar district. The length of the proposed alignment is approx. 86.1 km.

The proposed project is mostly green field alignment highway, and is proposed for 4/6 Lane with paved shoulder with NH configuration under Bharatmala scheme. The main objective of the proposed project is to give connectivity to between Ambala-Kotputli National Corridor & Delhi-Mumbai Expressway.

The project lays emphasis on development of these areas and make them available with the resources.

The proposed highway with new alignment has been envisaged through an area which shall have the advantage of simultaneous development as well as shall result in a shorter distance to travel. The junctions with existing road will be planned in the form of interchanges and flyover to ensure uninterrupted flow of traffic.

The proposed highway would act as the prime artery for the economic flow to this region. It will enhance economic development, provide employment opportunities to locals, strengthen tourist development, ensure road safety, and provide better transportation facilities and other facilities such as way side amenities. Vehicle operating cost will also be reduced due to improved road quality. The compensatory plantation and road side plantation shall further improve the air quality of the region.

a. SALIENT FEATURES OF THE PROJECT

Project name	Preparation of DPR development of Economic Corridors, Inter Corridors and Feeder Routes to improve the efficiency of freight movement in India under Bharatmala Pariyojana (Lot-6/Package-4) - Paniyala-Alwar-Barodameo (Inter Corridor Route). **Proposed Length:** 86.1 Kms. (approx.)
Location	The project stretch starts at Paniyala village in Jaipur district and ends at Brodameo village in Alwar district. The length of the proposed alignment is approx. 86.10 km.

Latitude & Longitude	Start Location: 27°46'59.28"N 76°13'54.38"E End Location: 27°29'7.87"N 76°50'39.83"E
Land use	Agricultural/ Built up/ Barren Land
Nearest railway station	There are 2 Nos. of Railway crossings at the draft chainage 57.040 and 61.700 respectively one with Northern-Western Railway (Rewari-Alwar section) and another with Northern-Central Railway (Alwar-Mathura section), Nearest Station is at Alwar (at 5 km distance).
Nearest Airport	Jaipur Airport is approx. 115 km and IGI Delhi Airport (Approx. 125 kr aerial)
Seismic Zone	Zone-III (As per 1893:2002)

b. PROPOSED PLANNING

Type of project	-	Inter Corridor Route (New)
Project cost	-	2876.42 Cr. (approx. incl. LA).
Project Length	-	86.10 km approx.

2.0 INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

a. IDENTIFICATION OF PROJECT PROPONENT

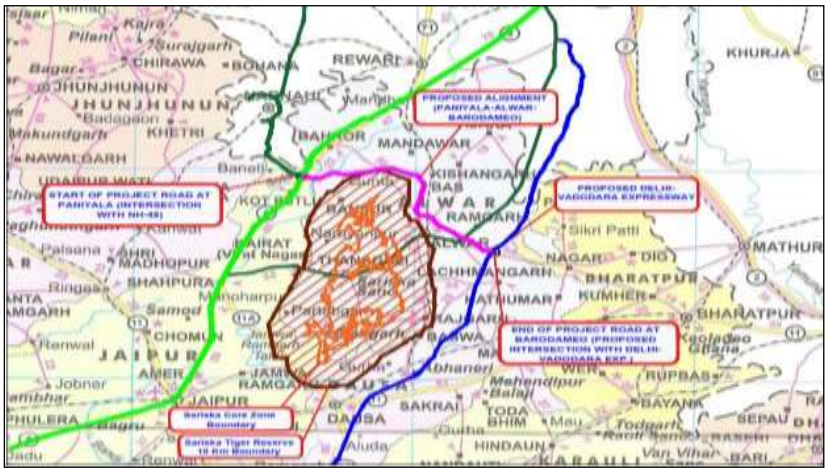
National Highways Authority of India (NHAI) has decided to develop Economic Corridors, Inter Corridors and Feeder Routes to improve the efficiency of freight movement in India under Bharatmala Pariyojana. The main objective of the proposed project is to give connectivity to between Ambala-Kotputli National Corridor & Delhi-Mumbai Expressway.

b. BRIEF INFORMATION ABOUT THE PROJECT

The proposed road has a total length of 86.10 km approx. The project stretch starts at Paniyala village in Jaipur district and ends at Brodameo village in Alwar district in the state of Rajasthan.

c. Location

The Location of the Project Road is shown below:



d. NEED FOR THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY OR REGION

The proposed project road is an inter corridor route which is planned to connect Ambala-Kotputli National Corridor & Delhi-Mumbai Expressway.

The proposed highway with greenfield alignment has been envisaged through an area which shall have the advantage of simultaneous development as well as result in a shorter distance to travel. The junctions with existing road will be planned in the form of interchanges and flyover to ensure uninterrupted flow of traffic.

The proposed road would act as the prime artery for the economic flow to this region. It will enhance economic development, provide employment opportunities to locals, strengthen tourist development, ensure road safety, and provide better transportation facilities and other facilities such as way side amenities. Vehicle operating cost will also be reduced due to improved road quality. The compensatory plantation and road side plantation shall further improve the air quality of the region.

e. DEMAND-SUPPLY GAP

The proposed highway is mostly green field alignment, and is proposed for 4/6 Lane with paved road. Vehicle operating cost will be reduced due to improved road quality and transportation will improve. It will help in development of the area and Rajasthan state.

f. IMPORTS VS. INDIGENOUS PRODUCTION

Import/Indigenous production does not apply in the present case.

g. EXPORT POSSIBILITY

Not applicable in the present case.

h. DOMESTIC/ EXPORT MARKETS

Not applicable in the present case.

i. EMPLOYMENT GENERATION

During the construction of the road project around 200 persons would be employed temporarily for a period of 2 years. However due to construction of toll plazas approx. 40 persons will be employed on permanent basis. Preference will be given to local people for employment. The Project will enhance economic development in the area through industrial growth, agricultural, and commercial development and consequent employment generation, savings in travel time & shall provide easy access to social infrastructure.

3.0 PROJECT DESCRIPTION

a. TYPE OF PROJECT INCLUDING INTERLINKED AND INTERDEPENDENT PROJECTS, IF ANY

The proposed project road is a inter corridor route which is planned to connect Paniyala village in Jaipur district and Brodameo village in Alwar district in the state of Rajasthan. It is a part of Bharatmala Pariyojana of NHAI.

b. LOCATION

The proposed road has a total length of 86.10 km approx. The project stretch starts at Paniyala village in Jaipur district and ends at Brodameo village in Alwar district in the state of Rajasthan.

c. DETAILS OF ALTERNATE SITES

Three alternative alignments have been considered after various discussion with Officials at NHAI(HQ). The final approved alignment option-2 is fixed as the alignment is more economical than other options, and less environmentally sensitive.

d. SIZE OR MAGNITUDE OF OPERATION

Length of the project: 86.10 Km approx. having proposed RoW of 60 m.

e. GEOLOGY

Geologically, of the project district is comprises precambrain metamorphic and igneous rocks, belonging to the Mangalwar complex of the Bhilwara supergroup (Archaean) and Raialo, Alwar and Ajabgarh Groups, in ascending order superposition, belonging to the Delhi super group (Lower to middle proterozoic) and post. Delhi igneous intrusive aluvium and Aeolian sediments mask the older formations. The Mangalwar complex comprising quartzite, mica schist, crystalline limestone, conglomerate and granite occur as isolated exposures in the southern part. These are unconformably overlain by the Raialo group comprising a predominantly calcareous formations with volcanic and subordinate quartzite.

f. PRODUCTION PARAMETERS

Not Applicable in the present context.

g. DESIGN PARAMETERS

The proposed road shall be constructed as per **IRC: SP: 84-2019, IRC: 37-2018, IRC: 58-2015, & IRC:112-2020** design standards. The width of RoW will be 60 m.

h. PROJECT DESCRIPTION WITH PROCESS DETAILS

The start point of the project road is at Paniyala Village (on NH-48, Delhi-Jaipur Highway) located in Kotputli, Jaipur district in state of Rajasthan (Design Ch. 0+000) and and passes through Nangal lakha, Malloobas, Dailawas, Ranoth, Mator, Barwara, Jatiyana, Raisees, Bagar Rajput-Sahajpur and Barodameo and ends at Barodameo in Rajasthan State Ch. 86.100 (on Delhi-Vadodara Expressway).

The major towns along the project road are Nangal lakha, Malloobas, Dailawas, Ranoth, Mator, Barwara, Jatiyana, Raisees, Bagar Rajput-Sahajpu are in Alwar District in the state of Rajasthan.

i. BLASTING

No blasting is proposed to be done.

j. RAW MATERIAL REQUIRED ALONG WITH ESTIMATED QUANTITY, LIKELY SOURCE, MARKETING AREA OF FINAL PRODUCT/S, MODE OF TRANSPORT OF RAW MATERIAL AND FINISHED PRODUCT

Materials requirement are approximately, Cement- 1683351 bags, Coarse Aggregate- 725692 cum, Fine Aggregate- 397049 cum, Steel- 28500 tonnes, Bitumen emulsion- 870 tonne, Bitumen- 13500 tonne, Borrow Earth- 2027350 cum, Fly Ash- 189260 Cum. EPC Contractor before the start of construction would assess the actual quantity required and take necessary approval, if required. However, Steel and Cement would be sourced from Authorized Vendor. Soil, Sand and Aggregate will be procured from operational licensed borrow areas and quarries located around nearby areas. If any new borrow area or quarry site require to be opened, requisite permission will be obtained from concerned department before extraction of materials.

k. RESOURCE OPTIMIZATION/ RECYCLING AND REUSE

National Thermal Power Corporation Limited, Jhajjhar (110 km), Harduaganj Thermal Power Plant, Aligarh (150 km) and Panipat Thermal Power Station, Panipat district (215 km) are falling within 300 km of proposed project alignment and the fly ash will be used from these power plants in the project depending upon their availability as per fly ash notification 2016 of MoEF&CC.

l. AVAILABILITY OF WATER ITS SOURCE, ENERGY / POWER REQUIREMENT AND SOURCE

• Water Requirement

The average water requirements is anticipated at 1250 KLD approx. during construction stage and will be extracted from local surface water/ground water sources.

• Power

Diesel generator and temporary from SEB will provide electricity required for construction equipment. Labour camps will be provided with LPG as fuel sourced from GOI authorized Supplier.

m. QUANTITY OF WASTES TO BE GENERATED (LIQUID AND SOLID) AND SCHEME FOR THEIR MANAGEMENT/ DISPOSAL

• Solid Waste Generation & its Disposal

Solid waste will be generated from construction camp and dismantling of existing structures. Unproductive/wastelands shall be selected for dumping sites away from residential areas and water bodies. The following precaution will be taken for disposal:

- Dumping sites must be having adequate capacity equal to the amount of debris generated.
- Public perception and consent from the village Panchayats has to be obtained before finalizing the location.
- Develop waste management plan for various specific waste streams (e.g., reusable waste,
- Organize disposal of all wastes generated during construction in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach.
- Segregate and reuse or recycle all the wastes, wherever practical.
- Prohibit burning of solid waste
- Collect and transport non-hazardous wastes to all the approved disposal sites. Vehicles transporting solid waste shall be covered with tarps or nets to prevent spilling waste along the route
- Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process.
- Provide refuse containers at each worksite.
- Request suppliers to minimize packaging where practicable.
- Place a high emphasis on good housekeeping practices.
- Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal

• Liquid Effluent

The sewage water generated in construction camp will be disposed through soak pits.

4.0 SITE ANALYSIS

a. CONNECTIVITY

It provides improved connectivity to major industrial areas along NH-48 with Agra, Mathura and Bharatpur.

Alignment commence from the junction at Paniyala (existing NH-48, Delhi Jaipur Expressway passing through outskirt area of Alwar through villages like- Beenjahera, Ukhlera, Kothiya, Mathooka, Jatiyana, Bagar meo etc and finally ends at Barodameo Village (intersection with Delhi-Vadodara Expressway).

b. LANDFORM, LANDUSE AND LAND OWNERSHIP

• Land Use

About 1 km of project road is in hilly to rolling area and the existing stretch traverse through thickly populated area so at sections with thick habitations green field alignment is proposed from Paniyala to Jugrawar and in the end, Project Stretch follows Existing SH-14 for around 3 km. Tentative locations of the major settlements are given below:

Table 3.1: Major Settlements

Sl.	Location	Side	Village Name
1	2+000	RHS	Beenjahera
2	3+750	RHS	Ukhlera
3	5+250	LHS	Kothiya
4	13+750	LHS	Dhakla/Goonta
5	14+250	LHS	Shahpur
6	16+750	LHS	Mathooka
		RHS	Fatehpur
7	23+000	LHS	Bawali ka bas
8	24+750	RHS	Bamanwas
9	25+250	LHS	Talwas
10	27+550	RHS	Kishorpura
11	29+750	LHS	Tatarpur coarahiya
12	32+000	RHS	Behroj
13	34+500	LHS	Jindoli
14	38+500	RHS	Chandoli
15	41+000	LHS	Bhandwara
16	42+750	RHS	Dilawarpur
17	44+000	LHS	Nangli Munshi
18	45+750	LHS	Kadooki

Sl.	Location	Side	Village Name
19	47+750	LHS	Jatiyana
20	51+250	LHS	Jahar Khera
		RHS	Raisees
21	53+250	LHS	Chandooki
22	56+000	LHS	Raybka
23	57+250	RHS	Loharwari
24	59+250	RHS	Choroti Pahar
25	63+000	LHS	Chaprada
26	65+000	LHS	Nangla Banjeerka
		RHS	Bagarmero
27	66+000	LHS	Nadka
28	70+500	RHS	Bagar Rajput
29	75+000	LHS	Senthli
		RHS	Ladpur/Naya Bas

c. TOPOGRAPHY

The entire project road lies in Plain/rolling and hilly terrain as tabulated below in Table 3.2.

Table 3.2 Terrain Classification

S.No	Locatio		Terrai
	From	To	
1	0.000	86.100	Plain/Rolling

e. EXISTING INFRASTRUCTURE & SENSITIVE ECOLOGICAL LOCATIONS

S. No	Areas	Name / Identity	Aerial distance (within15km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	No	The proposed alignment does not pass through Sariska WLS and is more than 10.50 km from the boundary of Sariska wildlife sanctuary
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	No	The proposed alignment is at an average distance of 1-50 kms from the Aravalli mountains and hence applicability of Aravalli hills notification is envisaged.
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Yes	The proposed alignment does not pass through Sariska WLS and is more than 10.50 km from the boundary of Sariska wildlife sanctuary
4	Inland, coastal, marine or underground waters	No	-
5	State, National boundaries	No	-
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	No	-
7	Defense installations	No	-
8	Densely populated or built-up area	Yes	Alwar– 3.5 km
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Yes	Temples: 2 nos. School/Colleges: 1 nos.
10	Areas containing important, high quality or scarce resources. (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	No	Not applicable
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	No	Not applicable
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions) similar effects	No	The area falls under seismic zone III which is categorized as moderate seismic zone.

a. SOIL CLASSIFICATION

Mainly three major types of soils viz. Lithosol & Regosol of hills, older alluvium and recent alluvium are found in the area. There is no perennial river in the district. The seasonal rivers, which flow through the district and carry the runoff from the hills are Sabi (Sahibi), Ruparail (Barah), Chuhar Sidh and Landoha

b. CLIMATIC DATA FROM SECONDARY SOURCES

The climate of the Project stretch is semi-dry, During the month of January, February and December you are most likely to experience good weather with pleasant average temperatures that fall between 20 °C (68°F) and 25 °C (77°F).

The maximum average temperature varies between 40 °C and the minimum averages 22 °C. Average annual rainfall of the area is about 722 mm (28.4 inch)per year.

c. SOCIAL INFRASTRUCTURE

The social infrastructure like educational facilities (primary and higher secondary schools, Degree College), drinking water supply, post office, public transportation are by and large are available in the study area.

PLANNING BRIEF

PLANNING CONCEPT

The state will have its own self-sustaining eco-system consisting of economic drivers through industrialisation, utility & logistic infrastructure, Social Infrastructure including education, healthcare and other public amenities. The highway is proposed to 4/6 lane highway as an effective means of transportation between the cities.

a. ASSESSMENT OF INFRASTRUCTURE DEMAND (PHYSICAL & SOCIAL)

Only basic infrastructure facilities are available in the vicinity of in the study area. The proposed road is essential for improving faster and economical transportation facilities in the Orissa state and other major cities in the country.

b. AMENITIES/FACILITIES

Office, Workshop etc.

Proper site services such as First Aid, Rest Shelter, toilet with soak pits & drinking Water will be provided to the workers.

Rest Shelter

Rest shelter along with first-aid station complying with all the provisions of State Rules shall be provided by project proponent.

Water Supply

Water will be supplied for human consumption, dust suppression and for plantation from surface water sources.

Power Supply

The power supply for project and construction camp will be done through D.G. Sets and State Electricity Board.

Transport of Men and Material

Employee will report to the duty on own means. The material from the site will be transported by trucks / tractor trolleys.

Communication

Mobile phones shall be used for communication.

Security Arrangements

Appropriate security arrangement shall be made.

5.0 PROPOSED INFRASTRUCTURE

a. CONSTRUCTION SITE

Temporary arrangements like site office, rest shelters, & approach roads etc. shall be provided. No permanent infrastructure is proposed.

c. RESIDENTIAL AREA

As the local person shall be employed, no residential building / housing are proposed. However, temporary construction camp will be established.

d. SOCIAL INFRASTRUCTURE

In-line with the Social Responsibility Activities at other operational sites, relevant developmental assistance shall be rendered depending on the local needs identified through studies.

e. CONNECTIVITY

It provides improved connectivity to major industrial areas along NH-48 with Agra, Mathura and Bharatpur.

Alignment commence from the junction at Paniyala (existing NH-48, Delhi Jaipur Expressway passing through outskirt area of Alwar through villages like- Beenjahera, Ukhlera, Kothiya, Mathooka, Jatiyana, Bagar meo etc. and finally ends at Barodameo Village (intersection with Delhi-Vadodara Expressway).

f. DRINKING WATER MANAGEMENT

Local Water supply is used for drinking purpose.

g. SEWERAGE SYSTEM

Soak pits shall be provided to workers camp & construction site.

h. INDUSTRIAL WASTE MANAGEMENT

Not applicable, as the activity will not be generating any industrial waste.

i. SOLID WASTE MANAGEMENT

No industrial solid waste will be generated. However, municipal / construction waste generated during construction will be disposed in environmental friendly manner.

6.0 REHABILITATION AND RESETTLEMENT (R&R) PLAN

The land acquisition for the proposed alignment is approximately 629 ha out of which majority is agricultural land, The land will be acquired as per procedure laid down in RFCT LARR Act, 2013.

7.0 PROJECT SCHEDULE & COST ESTIMATES

a. LIKELY DATE OF START OF CONSTRUCTION AND LIKELY DATE OF COMPLETION

Project will be started after getting requisite statutory clearances. A construction period of 2.0 years (2022, and 2023) has been envisaged with a phasing of 30%, 40% and 30% respectively.

b. ESTIMATED PROJECT COST ALONG WITH ANALYSIS IN TERMS OF ECONOMIC VIABILITY OF THE PROJECT

The total estimated project civil cost is approx. Rupees 1954 Crores.

8.0 ANALYSIS OF PROPOSAL

a. FINANCIAL AND SOCIAL BENEFITS WITH SPECIAL EMPHASIS ON THE BENEFIT TO THE LOCAL PEOPLE INCLUDING TRIBAL POPULATION, IF ANY, IN THE AREA

The new highway starts from its junction with NH-48 near Paniyala village, Kotputli, Jaipur passing Alwar city and terminating at its junction with Delhi Vadodara expressway (NH-148N) near Barodameo in the State of Rajasthan. The present project stretch starts at Paniyala village in Jaipur district and ends at Barodameo village in Alwar district. The length of the proposed alignment is approx. 86.10 km. The proposed highway with new alignment has been envisaged through an area which shall have the advantage of simultaneous development as well as shall result in a shorter distance to travel. The junctions with existing road will be planned in the form of interchanges and flyover to ensure uninterrupted flow of traffic.

The proposed road would act as the prime artery for the economic flow to this region. It will enhance economic development, provide employment opportunities to locals,

strengthen tourist development, ensure road safety, and provide better transportation facilities and other facilities such as way side amenities. Vehicle operating cost will also be reduced due to improved road quality. The compensatory plantation and road side plantation shall further improve the air quality of the region.