

Pre-Feasibility Report

NAME OF THE PROJECT- Construction of 2/4 laning road with paved shoulder and NH configuration from Gopalpur to Satpada, in the state of Odisha under Bharatmala Pariyojana.



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 Feasibility study and the Detailed Project Report for capacity augmentation to 2/4 laning road with paved shoulder and NH configuration from Gopalpur to Satpada, in the state of Odisha under Bharatmala Pariyojan to for improvement capacity of the highway, with enhanced safety features.

In pursuance of the above M/s. Chaitanya Projects Consultancy Pvt. Ltd. has been appointed as Consultant for preparation of DPR for development of Construction of 2/4 laning with paved shoulder NH configuration under Bharatmala scheme.

The project stretch starts at Gopalpur in Ganjam district and ends at Satpada in Puri district. The length of the proposed alignment is approx. 72.00 km.

The proposed project is mostly green field alignment highway, and is proposed for 2/4 Lane with paved shoulder NH configuration under Bharatmala scheme. The main objective of the proposed project is to reduce the distance and travel time and to give connectivity to remote area. 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	Construction of 2/4 laning road with paved shoulder and NH configuration from Gopalpur to Satpada, in the state of Odisha under Bharatmala Pariyojana. Proposed Length: 72.00 Kms.(approx.)
Location	The project stretch starts at Gopalpur in Ganjam district and ends at Satpada in Puri district. The length of the proposed alignment is approx. 72.00 km.
Latitude & Longitude	Start Location : 19°18'43 "N 84°57'20"E End Location: 19°40'56"N 85°27'48"E

Land use	Agricultural, and forest land
Nearest railway station	Puri Railway Station (approx. 2.7 Km, aerial)
Nearest Airport	Bhubaneshwar Airport (Approx. 44.0 Km, aerial)
Seismic Zone	Zone-III (As per 1893:2002)

b. PROPOSED PLANNING

Type of project	-	National Highway (New)
Project cost	-	659.00 Cr. (approx.).
Project Length	-	72.00 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 coastal highway in India under Bharatmala Pariyojana. The proposed coastal highway is planned to connect Gopalpur Port to Satpada in the state of Odisha

b. BRIEF INFORMATION ABOUT THE PROJECT

The proposed road has a total length of 72.00 km approx. The project stretch starts at Gopalpur in Ganjam district and ends at Satpada in Puri district in the state of Odisha.

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

The proposed National Highway is part of coastal highway which is planned to connect Gopalpur Port to Satpada in the state of Odisha.

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d. DEMAND-SUPPLY GAP

The proposed highway is mostly green field alignment, and is proposed for 2/4 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 Orissa state.

e. IMPORTS VS. INDIGENOUS PRODUCTION

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

f. EXPORT POSSIBILITY

Not applicable in the present case.

g. DOMESTIC/ EXPORT MARKETS

Not applicable in the present case.

h. 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 National Highway is part of coastal highway which is planned to connect Gopalpur in Ganjam district and Satpada in Puri district in the state of Odisha. It is a part of Bharatmala Pariyojana of MoRTH.

b. LOCATION

The proposed road has a total length of 72.00 km approx. The project stretch starts at Gopalpur in Ganjam district and ends at Satpada in Puri district in the state of Odisha

c. DETAILS OF ALTERNATE SITES

Two alternative alignments have been considered, option (i) is the Proposed alignment, on the left hand side of the proposed alignment, option (ii) is Proposed. The final alignment option (i) is fixed as the alignment length is less than other options, and less environmentally sensitive. However the alignments criss cross each other at various locations

d. SIZE OR MAGNITUDE OF OPERATION

Length of the project: 72.00 Km approx. having proposed RoW of 45 m.

e. GEOLOGY

The Geology of project state alignment comprises of rocks of Archaeans and Protezoic formation. Soil type basically comprises of Alluvial and Red soils. The terrain of the alignment is basically flat to undulating in nature and some watershed areas.

f. PRODUCTION PARAMETERS

Not Applicable in the present context.

g. DESIGN PARAMETERS

The proposed road shall be constructed to **IRC: SP: 73-2015, IRC: 37-2012, IRC: 58-2011, IRC:112-2011 “Manual of Specifications and Standards for Two laning of Highway with Paved shoulder”** design standards. The width of RoW will be 45 m.

h. PROJECT DESCRIPTION WITH PROCESS DETAILS

No process is applicable being a construction project.

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 Cement- 1402792 bags, Coarse Aggregate- 604744 cum, Fine Aggregate- 330874 cum, Steel- 23500 tonnes, Bitumen emulsion- 720 tonne, Bitumen- 11200 tonne, Borrow Earth- 1689460 cum, Fly Ash- 157718 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

Odisha Thermal Power Corporation Limited, Bhubneshwar (54 km), IMFA Thermal Power Plant, Cuttack (74 km) and Talcher Thermal Power Station, Talcher, Angul district (154 km) are falling within 300 km of proposed project alignment and the fly ash will be used 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 1050 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

The starting point of the proposed highway is approachable by road by NH-16 near Chhatrapur at approx. 4 kms and the end point of the alignment is approachable by road by NH – 203A near Bhramagiri in Orissa state.

b. LANDFORM, LANDUSE AND LAND OWNERSHIP

- **Land Use**

The project area is mostly agricultural, forest land.

- **Land Ownership**

The existing landuse around the proposed project primarily comprises of agricultural land both under private and government ownership and forest area under forest department.

TOPOGRAPHY

The project area is located in the state of Orissa. The topography in the proposed project area is mainly plain and rolling area. The areas have an elevation ranging from 3 to 15 m.

EXISTING LAND USE PATTERN

The existing landuse around the proposed project primarily comprises of agricultural land both under private and government ownership, and forest land.

e. EXISTING INFRASTRUCTURE & SENSITIVE ECOLOGICAL LOCATIONS

S. No	Areas	Name / Identity	Aerial distance (within 15km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Yes	Proposed alignment is passing through 7.0 km from boundary of Chilika wildlife sanctuary (Nalaban)
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Yes	The proposed alignment is crossing through CRZ I, II, III and CRZ IV areas at different chainage. Proposed alignment is passing through 7.0 km from boundary of Chilika wildlife sanctuary (Nalaban)
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Yes	Proposed alignment is passing through 7.0 km from boundary of Chilika wildlife sanctuary (Nalaban)
4	Inland, coastal, marine or underground waters	Yes	The proposed alignment is crossing through CRZ I, II, III and CRZ IV areas at different chainages. The proposed alignment is passing through three major water bodies/river: Tampara lake, Rushikulya River, Chilika Lake.
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	Puri – 40.00 km
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Yes	Temples: 15 nos. School/Colleges: 2 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

There are mainly three types of soils in the study area, which are Alfisols, Aridisols and Entisols. However, Ultisols occur over a small patch in the northwestern sector of the study area. Sandy soils around Chilika lake and in the coastal tract is found.

CLIMATIC DATA FROM SECONDARY SOURCES

There are three major seasons - Summer (March-June), Rainy Season (July-September) and the Winter (October-February). Odisha (Orissa) lying just South of the Tropic of Cancer, has a tropical climate. It is warm almost throughout the year in the eastern districts of Ganjam, Puri, and Khurda with maximum temperature hovering between 35-40° C and in winter, it is mildly cool. In the coastal districts, the climate is equable but highly humid and sticky. The summer maximum temperature ranges between 35-40° C and the low temperatures are usually between 12-14° C. Winter is not very severe except in some areas in Koraput and Phulbani where minimum temperature may drop to 3-4° C.

The average rainfall is 150 cm, experienced as the result of south west monsoon during July-September. The month of July is the wettest and the major rivers may get flooded. The state also experiences small rainfall from the retreating monsoon in the months of October-November. January and February are dry.

b. 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 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 2/4 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

The starting point of the proposed highway is approachable by road by NH-16 near Chhatrapur at approx. 4 kms and the end point of the alignment is approachable by road by NH – 203A near Satpada in Orissa state.

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 Project requires approx. 324 Ha. approx. land. Total 325 no. of structures are coming in the proposed RoW. 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 capital cost of proposed project is estimated to be INR 659.00 Cr approx.

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 proposed project starts at Gopalpur in Ganjam district and ends at Satpada in Puri district in the state of Orissa by the Government of India. 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.