
NAME OF THE PROJECT- "Development of 4/6 lane (green field) access control expressway from Varanasi to Kolkata Package-II from Km 73.800 (near Rampur village) to Km 114.000 (near Tetarahar village) in the state of Bihar under Bharatmala Pariyojana Phase-II (lot-9 package-3).

भा रा रा प्रा
NHAI
भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
National Highways Authority of India

SUBMITTED BY

National Highways Authority of India

Dwarka, Delhi

1.0 EXECUTIVE SUMMARY

Ministry of Road Transport and Highways, Government of India, has decided to improve the efficiency of freight movement in India. National Highways Authority of India (NHAI) has been entrusted for preparation of DPR to improve the road networks in the state of Uttar Pradesh, Bihar, Jharkhand & West Bengal.

In pursuance of the above M/s. SA Infrastructure has been appointed as Consultant for preparation of DPR for development of Economic Corridors, Inter Corridors and Feeder Routes to improve the efficiency of freight movement in India under Bharatmala Pariyojana.

The proposed highway starts at village from Km 73.800 (near Rampur village) and ends at Km 114.000 (near Tetarahar village) in the state of Bihar.

This is a green field alignment, and is proposed for 6 -Lane. The main objective of the proposed project is to reduce the distance and travel time in Bihar state and to give connectivity to remote areas and major cities. The project lays emphasis on development of these areas and makes them available with the resources.

The proposed highway project 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.

a. SALIENT FEATURES OF THE PROJECT

Project name	Development of 4/6 lane (green field) access control expressway from Varanasi to Kolkata Package-II from Km 73.800 (near Rampur village) to Km 114.000 (near Tetarahar village) in the state of Bihar under Bharatmala

Development of 4/6 lane (green field) access control expressway from Varanasi to Kolkata Package-II from Km 73.800 (near Rampur village) to Km 114.000 (near Tetarahar village) in the state of Bihar under Bharatmala Pariyojana Phase-II (lot-9 package-3).**Proposed Length** – 40+200Km

	Pariyojana Phase-II (lot-9 package-3). **Proposed Length** – 40.200 Km
Location	The proposed highway starts at village from Km 73.800 (near Rampur village) and ends at Km 114.000 (near Tetarahar village) in Bihar. The approx. length of proposed alignment is 40.2 Km
Latitude & Longitude	Start Location : 24°56'25.80"N, 83°47'22.32"E End Location: 24°45'30.75"N, 84° 7'8.37"E
Land use	Agricultural land and Forest land
Nearest railway station	Kudra Railway station 12. 06 km N from the starting point Sasaram Railway Station approx. 23.32 Km NE from the starting point.
Nearest Airport	Gaya airport (Approx. 70 Km, aerial)
Seismic Zone	The area falls under seismic zone III which is categorized as moderate intensity zone.(As per 1893:2002)

b. PROPOSED PLANNING

Type of project - National Highway (New)

Project cost - 2500 Cr (approx.)

Project Length - 40.2 Km.

2.0 INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

a. IDENTIFICATION OF PROJECT PROPONENT

Ministry of Road Transport and Highways, Government of India, has decided to improve the efficiency of freight movement in India. National Highways Authority of India (NHAI) has been entrusted for preparation of DPR to improve the road networks in the State of Uttar Pradesh, Bihar, Jharkhand & West Bengal.

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b. BRIEF INFORMATION ABOUT THE PROJECT

The proposed highway starts at village from Km 73.800 (near Rampur village) and ends at Km 114.000 (near Tetarahar village) in Bihar. The approx. length of proposed alignment is 40.2 Km

c. NEED FOR THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY ORREGION

The proposed access controlled project 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.

d. DEMAND-SUPPLY GAP

This is a green field alignment, access control and is proposed for 4/6-Lane. Vehicle operating cost will be reduced due to improved road quality and transportation will improve. It will help in development of the state and the Nation.

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 365000 mandays will be requiring during construction phase and approx. 1000 persons or more would be employed temporarily for a period of 2 years. However due to construction of toll plazas approx. 100 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 project is independent project, and it is a part of the Bharatmala Pariyojana phase-II of MoRTH.

b. LOCATION

The proposed highway starts at village from Km 73.800 (near Rampur village) and ends at Km 114.000 (near Tetarahar village) in Bihar. The approx. length of proposed alignment is 40.2 Km.

Start Location: 24°56'25.80"N, 83°47'22.32"E

End Location: 24°45'30.75"N, 84° 7'8.37"E

c. DETAILS OF ALTERNATE SITES

Three alternative alignments have been considered: (Option-I on the left hand side of the proposed alignment Option II- Proposed alignment, and Option III is on the right hand side of the proposed alignment.

d. SIZE OR MAGNITUDE OF OPERATION

Total length of the project is 40.2 Km and proposed RoW is 90 m in non forest Area and 60 m in Forest area. Total land requirement will be approx. 345.3 ha out of which approx. 33 Ha is forest land and 312.3 Ha is Non forest land include agriculture and non agriculture land.

e. GEOLOGY

The proposed alignment falls in Rohtas and Aurangabad district of Bihar district is on Plain /Rolling terrain with mountains in some section is part of Vindhyan uplands is mainly composed

of Fluvio-marine deposits of probably the Cambrian age, which has been uplifted and peneplained several times.

f. PRODUCTION PARAMETERS

Not Applicable in the present context.

g. DESIGN PARAMETERS

The proposed road shall be constructed to IRC: SP: 84 -2014, **"Six Lane Manual of Specifications and Standards for highway"** design standards and as per NHAI latest circular vide NHAI/Bharatmala/EC/DPR/2016 Dt. 14.05.2018. The width of RoW will be 90 m in Non forest land and 60 m in Protected and Reserve Forest.

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 (MT)- 44500, Coarse Sand (cum)-430, Coarse Agg. (cum)- 244250, Fine Agg. (cum)- 488500, Steel (ton)- 1450, Bitumen (ton)- 1845000, Bitumen Emulsion (ton)- 489800, Borrow Earth/Fly Ash (cum)- 2298800. 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

NTPC and other Thermal Power Plant in along the proposed stretch 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 are anticipated at 1250 KLD approx. during construction stage and will be extracted from suitable surface sources (river/canals) or ground water after obtaining necessary permissions from the competent authority.

- **Power**

Diesel generator and State Electricity Board will provide electricity required for construction equipment. Labor camps will be provided with LPG as fuel sourced from GOI authorized Supplier.

m. QUANTITY OF WASTES TO BE GENERATED (LIQUID AND SOLID) AND SCHEMEFOR 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 Panchayat 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 proposed highway starts at village from Km 73.800 (near Rampur village) and ends at Km 114.000 (near Tetarahar village) in Bihar. The approx. length of proposed alignment is 40.2 Km. The Proposed alignment will be the section of Varanasi –Kolkata expressway and will connect following town with the stretch:

Kudra approx. 9.37 Km N from starting point.

Sasaram, Approx. 15 Km NE from end point.

Dehri approx. 17 km N from end point.

Tilouthu, Approx. 5 Km NE from end point.

Aurangabad Approx. 15 Km NE

b. LANDFORM, LANDUSE AND LAND OWNERSHIP

- **Land Use**

Total length of the project is 40.2 Km and proposed RoW is 90 m in non forest Area and 60 m in Forest area. Total land requirement will be approx. 345.3 ha. out of which approx. 33 Ha is forest land and 312.3 Ha is Non forest land include agriculture and non agriculture land**.**

- **Land Ownership**

The existing land use around the proposed project primarily comprises of agricultural land both under private and government ownership and Forest Land.

c. TOPOGRAPHY

Topography of the project area is situated in eastern India, covering much of UP, Jharkhand, Bihar and West Bengal is part of Gangatic flood plain and majorly chhotta Nagpur Platues. Its total area is approximately 65,000 km^2 (25,000 sq mi) and is made up of three smaller plateaus—the Ranchi, Hazaribagh, and Kodarma plateaus. The Ranchi plateau is the largest, with an average elevation of 700 m (2,300 ft). Much of the plateau is forested, covered by the Chhota Nagpur dry deciduous forests. Vast reserves of metal ores and coal have been found in the Chota Nagpur plateau. The Kathiawar peninsula in western Gujarat is bounded by the Gulf of Kutch and the Gulf of Khambat. The natural vegetation in most of the peninsula is xeric scrub, part of the Northwestern thorn scrub forests ecoregion

d. EXISTING LAND USE PATTERN

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

e. EXISTING INFRASTRUCTURE & SENSITIVE ECOLOGICAL LOCATIONS

S.No.	Information/Checklist confirmation	Yes/No	Details there of (with approximate quantities/rates, wherever possible) with source of information data
1	Areas protected under international conventions, national or local	Yes	Kaimur wildlife sanctuary within 10 km and crossing along the alignment.

	legislation for their ecological, landscape, cultural or other related value		
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Yes	**Water bodies crossing along the project alignment are:** Durgawati River Durgawati Distributary Belwai Nadi Dhansol Nadi Distributary Western son high level canal Dobha Nadi Belwai Nala Tutla Nala Son River Approx. 5.5 Km the proposed project passes through Protected Forest
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	No	NA
4	Inland, coastal, marine or underground waters	Yes	Rivers – 7 Nos. Nalahs/ Canals– 3 Nos. Ponds- 1 Nos. **Total –11 Nos.**
5	State, National boundaries	No	No
6	Routes or facilities used by the public	No	-

	for access to recreation or other tourist, pilgrim areas		
7	Defense installations	No	-
8	Densely populated or built-up area	Yes	Kudra approx. 9.37 Km N from starting point. Sasaram, Approx. 15 Km NE from end point. Dehri approx. 17 km N from end point. Tilouthu, Approx. 5 Km NE from end point.
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Yes	Along the proposed alignment primary health centre and primary school are established in every village.
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.

f. SOIL CLASSIFICATION

The variations in soil profile characteristics are much more pronounced because of the regional climatic differences. The common soils are red and yellow, fi ne loamy to clayey, non-calcareous with slight to moderate acidic in reactions. This soil exhibits a high percentage of acid-soluble ferric oxide and lower pH ranging from 5 to 6.8. The soils of the region mainly consist of components formed from disintegration of rocks and stones, and on this basis can be divided into: red soil, found mostly in the Damodar valley, and the Rajmahal area; micacious soil (containing particles of mica), found in Koderma, Jhumeritilaiya, Barkagaon, and areas around the Mandar hill; sandy soil, generally found in Hazaribagh and Dhanbad; black soil, found in the Rajmahal area; and laterite soil, found in the western part of Ranchi, Palamu and parts of Santhal Parganas and Singhbhum, and some higher parts of the plateau. The climate of Koderma is a transition type between the dry and moderately extreme climate of northern India and the warm, humid climate of the Bengal Basin. The laterite soil being acidic in nature is not suitable for traditional agriculture and is referred as user land.

g. CLIMATIC DATA FROM SECONDARY SOURCES

The mean temperature in December is 23 °C (73 °F). The nights are cool and temperatures in winter may drop below freezing point in many places. In April and May the day temperature may cross 38 °C (100 °F) but it is very dry and not sultry as in the adjacent plains. The rainy season (June to September) is pleasant. The Chota Nagpur Plateau receives an annual average rainfall of around 1,400 millimeters (55 in), which is less than the rain forested areas of much of India and almost all of it in the monsoon months between June and August.

h. 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.

i. PLANNING BRIEF

PLANNING CONCEPT

The state will have its own self-sustaining eco-system consisting of economic drivers through industrialization, utility & logistic infrastructure, Social Infrastructure including education,

healthcare and other public amenities. It will be connected with by a 4/6-lane access controlled highway as an effective means of transportation in Bihar state.

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 between the Uttar Pradesh, Bihar, Jharkhand and West Bengal state.

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 proposed highway starts at village from Km 73.800 (near Rampur village) and ends at Km 114.000 (near Tetarahar village) in Bihar. The approx. length of proposed alignment is 40.2 Km.

The Proposed alignment will connects following town and city as follows:

Kudra approx. 9.37 Km N from starting point.

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Tilouthu, Approx. 5 Km NE from end point.

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

Total length of the project is 40.2 Km and proposed RoW is 90 m in non forest Area and 60 m in Forest area. Total land requirement will be approx. 345.3 ha. out of which approx. 33 Ha is forest land and 312.3 Ha is Non forest land include agriculture and non agriculture land.

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 years (2022 and 2023) has been envisaged with a phasing of 40% and 60% 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 2500 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 highway starts at village from Km 73.800 (near Rampur village) and ends at Km 114.000 (near Tetarahar village) in Bihar. The approx. length of proposed alignment is 40.2 Km under Bharatmala Pariyojana" phase –II (Lot-9, Pkg-3) by the Government of India. The proposed access controlled project 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.