

Construction of 6-Lane Greenfield spur from Delhi-Vadodara Greenfield expressway near Bandikui to Jaipur in Bharatmala Pariyojana Phase-I in the state of Rajasthan.

Pre-Feasibility Report

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NAME OF THE PROJECT-Construction of 6-Lane Greenfield spur from Delhi-Vadodara Greenfield expressway near Bandikui to Jaipur in Bharatmala Pariyojana Phase-I in the state of Rajasthan.



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 Rajasthan.

In pursuance of the above M/s. SA Infrastructure Consultants Pvt. Ltd. has been appointed as Consultant for preparation of DPR for "Construction of 6-Lane Greenfield spur from Delhi-Vadodara Greenfield expressway near Bandikui to Jaipur in Bharatmala Pariyojana Phase-I in the state of Rajasthan."

This part of highway starts at Delhi-Vadodara Expressway and terminates at Junction with Jaipur Ring Road & NH-21 from CH: 0+000 to 67+000 in the state of Rajasthan. The length of the proposed alignment is 67+000 km approx.

This is a green field alignment, access control and is proposed for 4-6-Lane. The main objective of the proposed project is to reduce the travel time from Delhi-NCR to Jaipur and Vadodara-Mumbai to Jaipur and to give fast connectivity to Jaipur.

The proposed access controlled 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. 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

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| Project name | "Construction of 6-Lane Greenfield spur from Delhi-Vadodara Greenfield expressway near Bandikui to Jaipur in Bharatmala Pariyojana Phase-I in the state of Rajasthan." Proposed Length – 67.000 Km |
| Location | The proposed highway starts from under construction Delhi-Vadodara Expressway (Ch. 168.550 at Village Shyamsingh pura near Bandikui) and terminates at Junction with Jaipur Ring Road & NH-21 at Bagrana Village Jaipur |
| Latitude & Longitude | Start Location: 26°58'49.98"N, 76°32'0.28"E. End Location: 26°52'41.41"N, 75°55'38.94"E |
| Land use | Agricultural land |

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| Nearest railway station | Stretch 1- Kolvagram (approx. 0.300 Km, aerial) |
| Nearest Airport | Stretch 1- Jaipur International Airport (Approx. 10.9 Km, aerial) |
| Seismic Zone | Dausa falls under seismic zone III (moderate damage risk zone) whereas Jaipur falls under zone II (low damage risk zone) as per Bureau of Indian Standards Map, 2002. |

b. PROPOSED PLANNING

| | | |
|-----------------|---|------------------------|
| Type of project | - | National Highway (New) |
| Project cost | - | 1370 Cr (approx.). |
| Project Length | - | 67.000 km approx. |

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 Rajasthan.

b. BRIEF INFORMATION ABOUT THE PROJECT

This part of highway starts at Delhi-Vadodara Expressway and terminates at Jaipur Ring Road from CH: 0+000 to 67+000 in the state of Rajasthan.

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

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 1000 persons would be employed temporarily for a period of 2 years. However due to construction of toll plazas approx. 200 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 of MoRTH.

b. LOCATION

This part of highway starts at Delhi-Vadodara Expressway and terminates at Jaipur Ring Road from CH: 0+000 to 67+000 in the state of Rajasthan. The length of the proposed alignment is 67+000 km approx.

c. DETAILS OF ALTERNATE SITES

Three alternative alignments have been considered:

Option 1: The proposed alignment option 1 (Yellow color), starting from Parli and terminating near Ghat ki Guni have length **59.00 kms**.

Option 2: The proposed alignment option 2 (cyan color), starting from Shyamsingh Pura and terminating near Bagrana village having length **67+000 kms**.

Option 3: The proposed alignment option 3 (Red color), starting near Shyamsingh Pura and terminate at Saipura having length **62+800 kms**.

d. SIZE OR MAGNITUDE OF OPERATION

Length of the project: 67.000 Km approx. having proposed RoW of 60 m.

e. GEOLOGY

Dausa - Geologically, most part of the district occupied by the Bhilwara Super Group rocks which consists of gneisses, schist and migmatites. These gneisses are overlain by rocks of Delhi Super group comprising Raialo and Alwar Groups. Raialo group of rocks represented by dolomite/marble are in the NW part of Dausa block in a small part. It is overlain by Alwar Group of rocks i.e. quartzite & schist. Alluvium and wind-blown sand occupy parts of the district within Mahwa and Lalsot blocks in the northeast and southwest of the district.

Jaipur - Geologically, the largest part of district is covered by thick mantle of soil, blown sand and alluvium. The area east and north of Jaipur is occupied by rocks of Delhi Super group, while the rocks of Bhilwara Super group are exposed in the south western part

f. PRODUCTION PARAMETERS

Not Applicable in the present context.

g. DESIGN PARAMETERS

The proposed road shall be constructed to IRC: SP: 87 -2019, “**Six Lane Manual of Specifications and Standards for highway**” design standards and as per NHA latest circular vide NHA/Bharatmala/EC/DPR/2016 Dt. 14.05.2018. The width of ROW will be 60 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 (MT) – 1329, Coarse Agg. (cum) 141492, Fine Agg.(cum) – 52055 Steel (MT) – 18938 Bitumen (MT) – 30679 Bitumen Emulsion

(MT) – 1853 Contractor/ concessionaire 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

Kanha Biofuel and Minerals (Jaipur) 19 Km, S, S Bricks Industry (Jaipur) 18 km, Shree Shyam Industries (Jaipur) 15 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 19434 KL 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 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 proposed highway starts from under construction Delhi-Vadodara Expressway (Ch. 168.550 at Village Shyamsingh Pura near Bandikui) and terminates at Junction with Jaipur Ring Road & NH-21 at Bagrana Village Jaipur from Design Ch: 0+000 to 67+000 of 67.000 km. The proposed alignment is connecting Delhi-Vadodara Expressway, Bhedoli, Dausa-Manoharpur Highway (Nh-148) near village Khuri khurd, Kanota, Jaipur-Agra Highway & Jaipur ring road near village Bagrana.

b. LANDFORM, LANDUSE AND LAND OWNERSHIP

• Land Use

The project area is mostly agricultural land.

• Land Ownership

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

TOPOGRAPHY

The project area is located in the state of Rajasthan. The topography in the proposed project area is mainly plain and rolling area. The areas have an elevation ranging from 150 m to 350 m.

c. 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 thereof (with approximate quantities/rates, wherever possible) with source of information data |
|--------|--|--------|--|
| 1. | Areas protected under international conventions, national or local legislation for their ecological, | No | NA |

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| | landscape, cultural or other related value | | |
| 2. | Areas which are important or sensitive for ecological reasons - Wetlands, water courses or other water bodies, coastal zone, biospheres, mountains, forests | Yes | Banganga Rivers– 2.85 km, S Forest 11.54 km N from the starting point Jhalana Reserve Forest 9 km W from the end point |
| 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 | Banganga Rivers– 2.85 km, S 02 Nos. (Seasonal) are crossing the proposed alignment. |
| 5. | State, National boundaries | Yes | - |
| 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 | Bagrana |
| 9. | Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities) | Yes | Rungta Hospital Jaipur 10 km W from end point Ashoka Health care 2.26 km SSW from starting point Government senior secondary school 1.48 km N from starting point. Radha Public School 2.23 W from end point Shri Krishna Mahavidhyalaya, Sikandra College 4.56 km, SSE from starting point. |

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| | | | Temple Thakur ji 1.71 km N from starting point. |
| 10. | Areas containing important, high quality or scarce resources. (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals) | No | Banganga Rivers– 2.85 km, S Forest 11.54 km N from the starting point Jhalana Reserve Forest 9 km W from the end point |
| 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 | Dausa falls under seismic zone III (moderate damage risk zone) whereas Jaipur falls under zone II (low damage risk zone) as per Bureau of Indian Standards Map, 2002. |

a. SOIL CLASSIFICATION

The variations in soil profile characteristics are much more pronounced because of the regional climatic differences. The soil of this zone has developed under semi-arid condition. The soil is sandy loam to clayey with normal reaction (pH from 7.8 to 8.5).

CLIMATIC DATA FROM SECONDARY SOURCES

Dausa –

The average Temperature of Dausa is around 26°C although it vary from around 15°C during winter (December) to 35°C during the summer (May). The hottest month of the year is May with temperature varies from 27.0°C to 44.3°C. The coolest month is of the year is December, with temperature varies from 4.0°C to 24.7°C.

Jaipur –

Jaipur is 442m above sea level. The prevailing climate in Jaipur is known as a local steppe climate. During the year there is little rainfall. The summers in Jaipur are very hot while winters are extremely cold. The maximum temperatures hover at 40 °C to 47 °C in May. Heat wave prevails for a few days in the season, when day temperature rises to 4 – 6 ° C above normal. The winter minimum temperatures remain about 4 – 9 °C and fall below zero deg. Or so when chilly wind (northerly) blow from Himalayan region. Mist and fog occur in the morning hours after passage of western disturbances.

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 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 industrialization, utility & logistic infrastructure, Social Infrastructure including education, healthcare and other public amenities. It will be connected with by a 6-lane access controlled highway as an effective means of transportation in Rajasthan 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 Delhi-NCR, Jaipur.

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 from under construction Delhi-Vadodara Expressway (Ch. 168.550 at Village Shyamsingh Pura near Bandikui) and terminates at Junction with Jaipur Ring Road & NH-21 at Bagrana Village Jaipur from Design Ch: 0+000 to 67+000 of 67.000 km. The proposed alignment is connecting Delhi-Vadodara Expressway, Bhedoli, and Dausa-Manoharpur Highway (Nh-148) near village Khuri Khurd, Kanota, Jaipur-Agra Highway & Jaipur ring road near village Bagrana.

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. 475 Ha. Approx. land. Approx. 40 nos. 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 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 being INR **1370** 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

This project starts from Delhi-Vadodara expressway (Chainage 168.550 village Shyamsingh Pura near Bandikui) Dausa district and terminates on Junction with Jaipur ring Road & NH-21 (Jaipur-Agra highway) Bagrana Village Jaipur in the state of Rajasthan under Bharatmala Pariyojana Phase-1 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 will reduce the travel time. The junctions with existing road will be planned in the form of interchanges and grade separated structure 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.