

SUMMARY OF THE PROPOSALS

Name of Work – Detailed Project Report for Improvement Two Laning with paved shoulder of stretch from Bikramganj – Dawath – Maliyabagh – Nawanganar – Dumraon of NH– 120 (Ch. 201.665 to Ch 245.665) in the State of Bihar. (Excluded Area Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665))

The National Highway Division, Gaya Bihar has decided to Concentric Up-gradation Widening and strengthening work of existing Two Laning with paved shoulder of stretch from Bikramganj – Dawath – Maliyabagh – Nawanganar – Dumraon of NH– 120 (Ch. 201.665 to Ch 245.665) **excluding Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665)** in the state of Bihar. The implementation of rehabilitation and up-gradation of this part to be taken under the control of Road Construction Department N.H. Division Gaya. The project Section Bikramganj - Dumraon under consideration from Ch. 201.665 to Ch 245.665, starts at Junction of SH–12 & SH–15 at Bikramganj and passes through important township /habitations Bikramganj, Naranpur, Dawath, Maliyabagh & Kawai, Rupaspur, Navanagar, Basudewa, Athar Arazi, Koran Sarai, Dumraon, Bhojpur and & and terminates Km Ch. 245.665 at Dumraon on NH-922 in Bhojpur district.

The total length of the project road is 36.965 km per D.P.R. Total length of the project road from Km Ch. 201.665 to Km Ch. 245.665 is passing under the administrative boundary of Rohtas and Buxar Forest Division, Bihar. National Highway Division has to upgrade the existing road to 2-Lane with paved shoulders configuration in the public interest. Improvement of Project Highway as per the applicable IRC codes needs to be widened. There is no reserve forest near the project road, however some sections of the road have been designated as notified protected forest by Govt. of Bihar attached as Annexure-II. Proposal involves felling of trees from the existing plantation which is notified as protected Forest and approx. 40.01 Ha. Forest land will be affected. **Total Forest Area Diversion in Rohtas (18.87 Ha) + Buxar (22.14 Ha.) = 41.01 Ha.**

- I. Total length: - 36.965 Km (from Km. Ch 201.665 to Ch.245.665, except excluded area Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665)).
- II. Carriageway width: - 7.0 m.
- III. Existing RoW: - 20 to 30 m.
- IV. No of Bridges:- There are 2 major bridges falls in the project section. These bridges are in good condition, so these are proposed to be retained. There are total 07 minor bridges proposed on the project road. 3 nos bridges are having clear deck width of 7.0 m. These minor bridges are not in good condition and substructure is made of brick masonry, so these are proposed to be reconstructed. Total 3 nos vented causeway are falling in this road, these are proposed to be reconstructed.
- V. Total 23 Nos. of Hume Pipe Culverts, and 33 Nos. of Slab Culverts is falling in the project section
- VI. There is two Major Junction fall in the project section of Bikramganj – Dumraon. A number of minor roads Jn. (32 Nos.) are meeting in this project road at different locations throughout the project section from Ch. 201.665 to Ch 245.665. These minor junctions comprise of adjoining feeder roads and village roads connected with this road at different locations. These roads are generally 3.0/5.5 m. wide.

- VII. CBR of existing soil: - Since the present case is widening of highway in terms of paved shoulder & strengthening of existing pavement. For widening portion subgrade earth of good quality will laid so that 8% CBR of subgrade is achieved. As per field and laboratory data CBR of existing section is 5%. So for design purpose CBR of existing has been taken 5%.
- VIII. Traffic: - Design Traffic for Project Section has been taken as 6894 commercial vehicles per day and Average vehicle damage factor of 4.5 has been adopted as per clause 4.4.3 of IRC: 37-2018. The data adopted is projected for the design life of road as per clause 4.6 of IRC: 37.
- IX. Existing Crust thickness: - GSB is 600 to 635 mm and WMM is 250 mm.

Pavement Design: -

- (i) Widening portion: - In view of present Traffic Scenario and available Right of Way, it has been decided to go for Concentric Up-gradation Widening and strengthening work of existing Two Laning with paved shoulder of stretch from Bikramganj – Dawath – Maliyabagh – Nawanagar – Dumraon of NH-120 (Ch. 201.665 to Ch 245.665) **excluding Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665)** in the state of Bihar.

Design of Flexible Pavement Widening / Paved Shouldering

For widening of existing two-lane highway with paved shoulder and strengthening overlay, Flexible & Rigid Pavement has been proposed in length of project Section.

Sub Grade: Since the present case is widening of highway in terms of paved shoulder & strengthening of existing pavement. For widening portion subgrade earth of good quality will laid so that 8% CBR of subgrade is achieved. As per field and laboratory data CBR of existing section is 5%. So for design purpose CBR of existing has been taken 5%.

Design of Flexible Pavement for Paved Shoulder Work (New Construction) in Project section

100mm (GSB First Layer) over subgrade earth and 100 mm second layer as Drainage Layer will be provided, hence total thickness of GSB will be 200 mm in crust portion. Over GSB 250 mm WMM will be overlaid. On WMM 50 mm BM will be provided (which will be equivalent to 35 mm DBM to match the existing layer of DBM) for widening portion and second layer of 55 mm DBM will be laid throughout existing and widening portion, hence total equivalent thickness of DBM in widening will be 90 mm. Over DBM layer 30 mm BC will be overlaid on full carriageway width.

- (ii) Overlay portion: - The required Overlay Thickness = 189.4 mm. of Bituminous Macadam. In Terms of DBM & BC the required overlay Thickness is = $0.70 \times 189.4 = 132.5$ mm. Say 135 mm.

As per above data 135 mm overlay is required on the existing pavement. There is 50 mm DBM on existing surface and according to IRC 37 2018 for 20 MSA and 8% effective CBR, provision of BC is 30mm. Hence Quantity of DBM to be overlaid is 55 mm (135-50 (existing DBM) - 30(Proposed BC).

Major Bridge: There are 2 major bridges falls in the project section. These bridges are in good condition, so these are proposed to be retained.

Minor Bridge: There are total 07 minor bridges proposed on the project road. 3 nos bridges are having clear deck width of 7.0 m. These minor bridges are not in good condition and substructure is made of brick masonry, so these are proposed to be reconstructed. Total 3 nos vented causeway are falling in this road, these are proposed to be reconstructed.

Project road from Bikramganj – Dawath – Maliyabagh – Nawanagar – Dumraon of NH- 120 (Ch. 201.665 to Ch 245.665) excluding Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665) is an existing highway section of National Highway-120 with double lane road configuration in the state of Bihar. Government of India has decided to upgrade the project stretch for better connectivity to people in order to improve the condition of the road transport network of the state and contribute to its economy development.


The National Highway Division, Gaya Bihar has decided to Concentric Widening and strengthening work of existing 2-Lane section to 2-Lane with Paved shoulder and strengthening work from Km. 201.665 to Ch 245.665 excluding Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665) km of NH-120. (Bikramganj to Dumraon) in the State of Bihar. The implementation of rehabilitation and up-gradation of this part to be taken under the control of Road Construction Department N.H. Division Gaya.

The project road section of Bikramganj to Dumraon of National Highway -120 traverse through built-up area but avenue plantation of existing road has been declared as Notified Protected Forest by the Government of Bihar under the Forest (Conservation) Act. 1980. Therefore Forest Clearance to be accorded from Ministry of Environment Forest & Climate change, Government of India for felling of trees under Notified Protected Forest Land.

The project will not generate directly employment opportunities to people but it can arise opportunity of employment in the future construction work of project road will be awarded to employment in the future. Contractor will hire some skilled and non-skilled persons as per the requirement of construction work.

A total of 40.01 Ha. Forest land will be affected under the jurisdiction of Dist. Rohtas (18.87 Ha) and Dist. Buxar (22.14 Ha.) Forest Division, Bihar is required for rehabilitation and up-gradation of existing road to 2-lane with paved shoulders configuration, to cater the better traffic facility as per the Indian Road Congress (IRC) guidelines.

Total Cost of the project is 194.46 Crores. Alignment has been designed carefully for the requirement of forest area.


Executive Engineer
N.H. Division, Gaya

Executive Engineer
N.H. Division, Gaya

Date:- 10.06.2020

Place:- Gaya