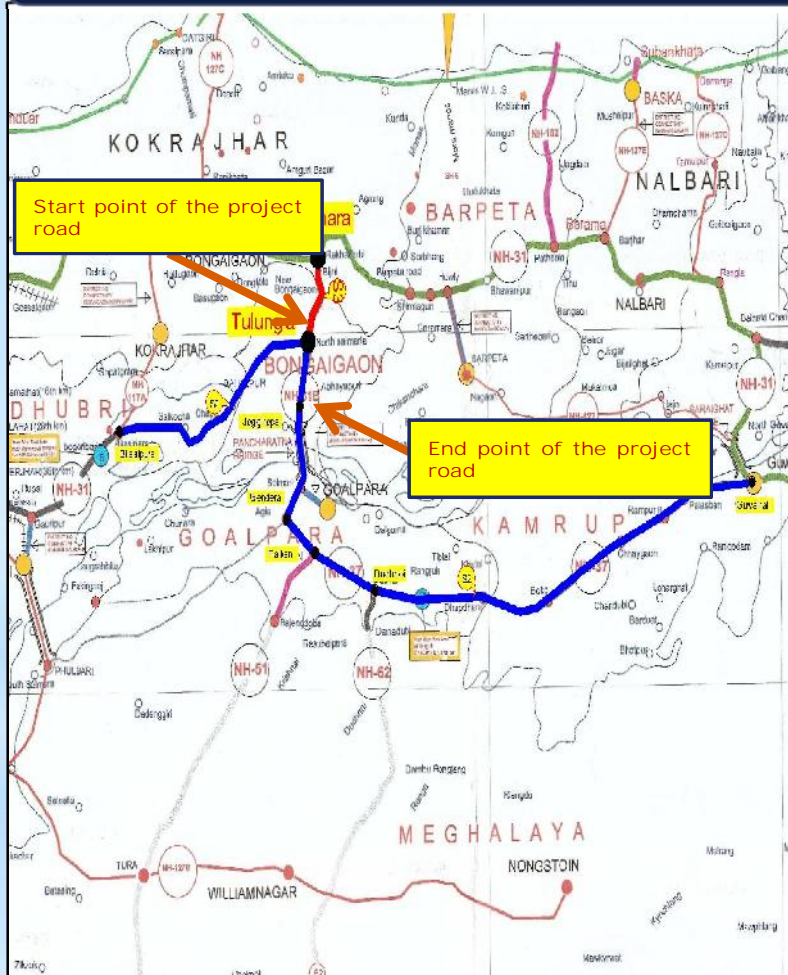


Consultancy Services for preparation of DPR for development of Economic Corridors, Inter Corridors and Feeder Routes to improve the efficiency of freight movement in India under Bharatmala Pariyojana (Lot-1) Package 1A (Hapachara – Tulungia Road (Length 14.000 km) in the State of Assam)

FINAL DETAILED PROJECT REPORT

VOLUME –V : TECHNICAL SPECIFICATION



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Technical Specification

1.1 General

The Technical specifications covering the materials and the workmanship aspects as well as method of measurements and payments are included in this section. These specifications cover the items of civil and non-civil works coming under scope of this document. All work shall be carried out in conformity with the same. The works shall be executed in accordance with good practices followed for achieving high standards of workmanship, thus ensuring safety and durability of the construction. All codes and standards referred to in these specifications shall be the latest there of unless otherwise stated.

1.1.1. Inclusive Documents

The provisions of special conditions of contract, those specified elsewhere in the tender document, as well as execution drawings and notes, or other specifications issued in writing by the Engineer shall form part of the technical specifications of this project.

The attention of the contractor is drawn to those clauses of codes which require supporting specification either by the Engineer or by 'Mutual agreement between the supplier and purchaser'. In such cases, it is the responsibility of the tenderer /contractor to seek clarification on any uncertainty and obtain prior approval of the Engineer before taking up the supply/construction. In absence of such prior clarification, the Engineer's choice/design will be final and binding on the contractor without involving separately any additional payment.

1.1.2. Defective Works

All defective works are liable to be demolished, rebuilt and defective materials replaced by the contractor at his own cost. In the event of such works being accepted by carrying out repairs etc. as specified by the Engineer the cost of repairs will be borne by the contractor.

1.2 Site Information

The information given hereunder and provided elsewhere in these documents is given in good faith by the Employer but the Contractor shall satisfy himself regarding all aspects of site conditions and no claim will be entertained on the plea that the information supplied by the Employer is erroneous or insufficient.

1.2.1 Location

The area in which the works are located is mostly Plain terrain.

The Project Road starts at Rakhaldubi (junction with NH-27) in Hapachara and passes through village / localities namely Rakhaldubi, Happachara, Garugaon-1, Garugaon-2, jiyaguri, Sidalsati, Kakaijana, Beltoli, Kadamtola and ends at Tulungia (junction with NH-17).



1.2.2 General Climatic Conditions

As the Brahmaputra flows in Assam the climate here is cold and there is rainfall most of the month. Geomorphic studies conclude that the Brahmaputra, the life-line of Assam is an antecedent river, older than the Himalayas. 35 and 38 degree Celsius in Summer & around 6 to 8 degree Celsius in Winter. Rainfall 2,818 mm average.

1.2.3 Seismic Zone

The works are located in Seismic Zone V as defined in IRC: 6-2000.

2. GENERAL REQUIREMENTS

The Technical Specifications in accordance with which the entire work described hereinafter shall be constructed and completed by the Contractor shall comprise of the following:

2.2 PART-I: General Technical Specifications

The General Technical Specifications shall be the "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (FIFTH REVISION, April 2013)", issued by the Ministry of Road Transport & Highways, Government of India and published by the Indian Roads Congress (IRC), with a cross reference to relevant Bureau of Indian Standards (BIS) for materials or other aspects not covered by the IRC.

2.3 Additional Technical Specifications

The Additional Specifications shall comprise of specifications for particular item of works not already covered in PART-I.

2.2.6. Additional Specifications

The following Appendices have been added to the "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS" (FIFTH REVISION, April 2013).

3. Appendix A-1 Specification for Passenger Shelter
4. Appendix A-2 Painting on Structures with Synthetic Enamel paints for Numbering & Span Details of Bridges / Culverts and water Proof Cement Paint for Parapet, Railing Kerb and Crash Barrier



ADDITIONAL TECHNICAL SPECIFICATION

Appendix A-1 :: SPECIFICATION FOR PASSENGER SHELTER

1. Scope

The work consists of providing passenger shelter including seating arrangement as per drawing.

2. Description

2.1 Passenger Shelter

It will be a permanent structure supported on R.C. columns at the corners and having sloped reinforced concrete slab with protrusions on all sides. Panel walls on three sides shall be built with brick jail of 125mm thick set in cement mortar 1:4 (1 part cement : 4 parts sand). It shall have seating arrangement with 100mm thick R.C. slab with raised back with atleast 1.5% reinforcement. The mix of concrete for seating slab and back shall be nominal one with 1:2:4 (1 part cement : 2 parts sand : 4 parts stone chips) and it will be finished with neat cement punning not less than 3mm thickness. The flooring shall be with 25mm thick I.P.S. flooring (1:2:4) over 100mm thick M-10 grade concrete. All walls, ceiling and roof top shall be finished with cement mortar (1:4). The exposed surfaces of the structure shall be painted with two coats of cement based paint of make and brand approved by the Engineer.

2.2 Raised Footpath

Raised footpath shall be constructed with one layer of Paver block laid over 100mm thick M-10 concrete. The joints of top layer of soling shall be filled up with cement mortar (1:3).

All works shall be done as per drawings.

3.0 Measurement for Payment

The passenger shelter shall be measured in number of finished constructed structure.

4.0 Rate

The Contract unit rate shall be payment in full for construction of the passenger shelter. Raised footpath, ground preparation etc. shall be considered as incidental to work.



Appendix A-2:: PAINTING OF STRUCTURES WITH SYNTHETIC ENAMEL PAINT FOR NUMBERING & SPAN DETAILS OF BRIGES / CULVERTS AND WATER PROOF CEMENT PAINT FOR PARAPET, RAILING, KERB AND CRASH BARRIER

1. Painting with Synthetic Enamel Paint

Materials

Synthetic enamel paint confirming to IS : 2932 of approved brand and manufacture and of the required colour shall be used for the top coat and an undercoat of ordinary paint of shade to match the top coat as recommended by the same manufacturer as far as top coat shall be used.

Painting on New Surface

Preparation of surface:

The surface shall be thoroughly cleaned and dusted off. All dirt, mortar droppings and grease shall be thoroughly removed before painting is started. The prepared surface shall have received the approval of the Engineer after inspection , before painting is commenced..

Application: The number of coats including the undercoat shall be as stipulated in the item.

(a) Under coat: One coat of the specified ordinary paint of shade suited to the shade of the top coat, shall be applied and allowed to dry overnight. It shall be rubbed next day with the finest grade of wet abrasive paper to ensure a smooth and even surface, free from brush marks and all loose particles dusted off.

(b) Top Coat: Two top coats of synthetic enamel paint of desired shade shall be applied after the undercoat is thoroughly dry. Additional finishing coats shall be applied if found necessary to ensure properly uniform glossy surface.

Lettering and Numbering on New Surface:

The letters and numbers for bridges/culverts span and number shall be as per IRC-7-1971. The size of area for painting shall be varied depend upon the numbers and letters. The background area and letters/numbers shall be painted with one prime coat (under coat) and two coats (top coat) of synthetic enamel paint.

Measurement for payment:

The painting of culverts /Bridges numbering and span arrangement shall be measured in number of each side facing traffic.

Rate:

Rate shall include the cost of materials, labour and other operation described above to complete set of letters and numbers required in each side facing traffic.



2. Water Proof Cement Painting

Material:

The water proof cement paint shall be (conforming to IS: 5410) of approved brand and manufacture.

The water cement paint shall be brought to the site of work by the contractor in its original container in sealed condition. The material shall be brought in at a time in adequate to suffice for the whole work or at least a fortnight's work, the material be kept in the joint custody of the Contractor and the Engineer-in-Charge. The empties shall not be removed from the site of work till the relevant item of the work has been completed and permission obtained from the Engineer-in-Charge.

Preparation of Surface:

For New work, the surface shall be thoroughly cleaned of all mortar dropping, dirt, dust, algae, grease and other foreign matter by brushing and washing. Pitting in plaster shall be made good and a coat of waterproof cement paint shall be applied over patches after wetting them thoroughly.

Preparation of mix:

Cement paint shall be mixed in such quantities as can be used up within an hour of its mixing as otherwise the mixture will set and thicken, affecting flow and finish, Cement paint shall be mixed with water in two stages. The first stage shall comprise of 2 parts of cement paint and one part of water stirred thoroughly and allowed to stand for 5 minutes. Care shall be taken to add the cement paint gradually to the water and not vice versa. The second stage shall comprise of adding further one part of water to the mix and stirring thoroughly to obtain a liquid of workable and uniform consistency. In all cases the manufacturer's instructions shall be followed meticulously.

The lids of cement paint drums shall be kept tightly closed when not in use, as by exposure to atmosphere the cement paint rapidly becomes air set due to its hygroscopic qualities.

In case of cement paint brought in gunny bags, once the bag is opened, the contents should be consumed in full on the day of its opening. If the same is not likely to be consumed in full, the balance quantity should be transferred and preserved in an airtight container to avoid its exposure to atmosphere.

Application:

The solution shall be applied on the clean and wetted surface with brushes or spraying machine. The solution shall be kept well stirred during the period of application. It shall be applied on the surface which is on the shady side of the building so that the direct heat of the sun on the surface is avoided. The method of application of cement paint shall be as per manufacturer's specification. The completed surface shall be watered after the day's work.

The second coat shall be applied after the first coat has been set for at least 24



hours. Before application of the second or subsequent coats, the surface of the previous coat shall not be wetted.

For the work, the surface shall be treated with three or more coat of waterproof cement paint as found necessary to get a uniform shade.

For old work, the treatment shall be with one or more coats as found necessary to get a uniform shade.

Precaution:

Water proof cement paint shall not be applied on surfaces already treated with white wash, colour wash, distemper dry or oil bound, varnishes, paints, etc. It shall not be applied on gypsums, wood and metal surfaces.

If water proof cement paint is required to be applied on existing surfaces previously treated with white wash, colour wash, etc., the surface shall be thoroughly cleaned by scrapping off all the white wash, colour was etc., completely. Thereafter, a coat of cement primer shall be applied followed by two or more coats of water proof cement paint.

Measurement for Payment:

The painting shall be measured in square metre of surface area treated.

Rate:

Rate shall include one prime coat and two coats of the paint over the prime coat including cost of all labour and materials involved in all operations described above.

