

# **Section 1**

## **General**

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**1.1** The scope of the work shall be as defined in the Concession Agreement. Two Laning/ Two Laning with Paved Shoulders of the Project Highway shall be undertaken and completed by the Concessionaire as per the Specifications and Standards set forth in this Manual.

**1.2** The Project Highway and the project facilities shall conform to the design requirements set out in this Manual which are the minimum prescribed. The project report and other information provided by the Government shall be used by the Concessionaire only for its own reference and for carrying out further investigations. The Concessionaire shall be solely responsible for undertaking all the necessary surveys, investigations and detailed designs in accordance with the good industry practice and due diligence, and shall have no claim against Government for any loss, damage, risk, costs, liabilities or obligations arising out of or in relation to the project report and other information provided by the Government.

**1.3** Alternative designs and Specifications for the pavement and structures (bridges, culverts, underpasses, subways, overpasses, road over/under bridges, retaining walls, reinforced earth walls etc.) may be adopted by the Concessionaire in accordance with design requirements set out in this Manual and three copies of each shall be sent to the Independent Engineer (the "IE") for review and comments, if any. In particular, such comments shall specify the conformity, or otherwise, of such designs and Specifications with the requirements specified in this Manual. The

conditions specified in subsequent para 1.13 may also be referred to.

**1.4** At least two weeks prior to commencement of the work, the Concessionaire shall draw up a Quality Assurance Manual (QAM) covering the Quality System (QS), Quality Assurance Plan (QAP) and documentation for all aspects of the bridge and road works and send three copies each to the IE for review. The class of quality assurance shall not be less than Q-3.

**1.5** The Codes, Standards and Technical Specifications applicable for the design of project components are:

- (i) Indian Roads Congress (IRC) Codes and Standards, as per Appendix-2.
- (ii) Specifications for Road and Bridge Works, Ministry of Shipping, Road Transport & Highways hereinafter referred to as MOSRTH Specifications.
- (iii) Any other standards referred to in the Manual and any supplement issued with the bid document.

**1.6** Latest version of the Codes, Standards, Specifications, etc. notified/published at least 60 days before the last date of bid submission shall be considered applicable.

**1.7** The terms 'Ministry of Surface Transport', 'Ministry of Road Transport and Highways' and 'Ministry of Shipping, Road Transport & Highways' or any successor or substitute thereof shall be considered as synonymous.

**1.8** The terms 'Inspector' and 'Engineer' used in MOSRTH Specifications shall be deemed to be substituted by the term "Independent Engineer" to the extent it is consistent with the provisions of the Concession Agreement and this Manual.

**1.9** In case of any conflict or inconsistency with the provisions of the applicable IRC Codes, Standards or MOSRTH Specifications, the provisions contained in this Manual and the Specifications and standards specified in this Manual shall apply.

**1.10** In the absence of any specific provision on any particular issue in the aforesaid Codes or Specifications read in conjunction with the Specifications and Standards contained in this Manual, the following Standards shall apply in order of priority:

- (i) Bureau of Indian Standards (BIS)
- (ii) British Standards, or American Association of State Highway and Transportation Officials (AASHTO) Standards, or American Society for Testing and Materials (ASTM) Standards
- (iii) Any other specifications / standards proposed by the Concessionaire and reviewed by the IE.

**1.11** All items of building works shall conform to State Public Works Department (State PWD)/Central Public Works Department (CPWD) Specifications for Class 1 building works and standards given in the National Building Code (NBC). To the extent, specific provisions for building works are made in IRC/MOSRTH/ State PWD specifications, the same shall prevail over the CPWD/NBC provisions. For this purpose, building works shall be deemed to include toll plaza complex,

road furniture, roadside facilities, landscape elements and/or any other works incidental to the building works.

### **1.12 Guidelines for Preparing Schedules of the Concession Agreement**

Certain paras (full or part) in Sections 1 to 14 of this Manual refer to the Schedules of the Concession Agreement. While finalizing the feasibility/project report for the Project Highway, and the scope of the project, each of these paras should be carefully examined and addressed by the Government with a view to making appropriate provisions in the Schedules of the Concession Agreement. (A list of the paras that refer to such Schedules has been provided at Appendix-1 for ready reference).

### **1.13 Alternative Standards and Specifications**

The requirements stated in the Manual for the design of the Project Highway are the minimum. The Concessionaire will, however, be free to adopt international practices, alternative specifications, materials and standards to bring in innovation in the design and construction provided they are comparable with the standards prescribed in the Manual. The Specifications and techniques which are not included in the MOSRTH Specifications/ IRC Specifications/State PWD Specifications shall be supported with authentic standards and Specifications like AASHTO, Euro Codes, British Standards and Australian Code etc. Such a proposal shall be submitted by the Concessionaire to the Independent Engineer for review and comments, if any. In case, the Independent Engineer is of the opinion that the proposal submitted by the Concessionaire is not in conformity with any of the international standards or codes, then he will record his reasons and convey the same to the Concessionaire for compliance. A record shall

be kept by the Independent Engineer, of the non-compliance by the Concessionaire of the minimum Specifications and Standards specified in the Manual and shall be dealt with in terms of the provisions of the Concession Agreement. The Concessionaire shall be responsible for adverse consequences, if any, arising from any such non-compliance.

#### **1.14 Design Service Volume and Carriageway Provision**

(i) Where initial traffic is comparatively low, two-stage capacity augmentation may be opted and specified in Schedule-B of the Concession Agreement. In the first stage, Two-laning (without paved shoulders) may be undertaken and further widening to Two-laning Plus (Two-lane carriageway with paved shoulders) undertaken in the second stage on the basis of the following criteria:

- (a) In case, the average daily traffic at the time of bidding is less than 8,000 PCUs in plain terrain or 6,500 PCUs in rolling terrain, initially 2-lane wide carriageway with granular shoulders may be provided as per Para 2.5.2(ii).
- (b) The carriageway may be widened by providing 1.5 m wide paved shoulders on either side when the average daily traffic exceeds 10,000 PCUs in plain terrain or 8,000 PCUs in rolling terrain on the basis of the twelve months' average in an accounting year. The paved shoulders shall be provided within six months from the close of the accounting year in which average daily traffic exceeds the specified value. The crust thickness and composition in the widened portions (paved shoulders) shall be the same as in the main carriageway. (Refer to para 5.9.9).

(ii) In case the average daily traffic at the time of bidding is more than 10,000 PCUs in plain terrain or 8,000 PCUs in rolling terrain, widening to Two laning Plus (Two lane carriageway with paved shoulders) may be undertaken straightaway and specified in Schedule-B of the Concession Agreement.

(iii) In case the average daily traffic at the time of bidding is in the range of 8,000 to 10,000 PCUs in plain terrain or 6,500 to 8,000 PCUs in rolling terrain, the Government will decide as to whether adopt two-stage capacity augmentation or prescribe Two-laning Plus straightaway and specify the same accordingly in Schedule-B of the Concession Agreement.

(iv) The design service volume of a 2-lane highway is given in Table 2.8.

**1.15** Before taking up any construction or maintenance operations like widening, strengthening, resurfacing, repairs etc., the Concessionaire shall first work out a plan to ensure the following:

- (i) Safety of traffic during the period of construction and the reduction of potential delays to road users.
- (ii) Safety of the workers engaged in construction.
- (iii) The arrangement for traffic during construction shall conform to the requirements of Clause 112 of MOSRTH Specifications. The Concessionaire shall furnish and erect the barricades, traffic signs and markings, arrangements for adequate lighting, equipment and flagman etc. as required in accordance with IRC:SP:55.

The Concessionaire shall communicate the proposal for safety of traffic and workers during construction to the Independent Engineer for review and comments, if any.

**1.16** The Concessionaire shall set up an adequately equipped field laboratory for testing of materials and finished products as prescribed in Clause 121 of MOSRTH Specifications. It shall make necessary arrangements for additional/confirmatory testing of any materials/products for which facilities at site laboratory are not available.

#### **1.17 Review and comments by Independent Engineer**

In cases where the Concessionaire is required to send any drawings or documents to the Independent Engineer for review and comments, and in the event such comments are received by the Concessionaire, it shall duly consider such comments in accordance with the Concession Agreement and Good Industry Practice for taking appropriate action thereon.

#### **1.18 Definitions and Interpretation**

**1.18.1** All the obligations of the Concessionaire arising out of the provisions of this Manual shall be subject to, and shall conform to the provisions of the Concession Agreement.

**1.18.2** The rules of interpretation as specified in Clause 1.2 of the MCA shall apply mutatis mutandis to this Manual.

**1.18.3** The definitions contained in the Model Concession Agreement for Public Private Partnership in State Highways ("the MCA"), as published by the Planning Commission, Government of India shall apply to the provisions of this Manual unless the context otherwise requires. Terms or words not defined herein shall be governed by the definitions contained in the IRC Standards, unless the context otherwise requires.

**1.19** This Manual is for Two-laning (with or without paved shoulders) of the Project Highway.