

# **Specifications and Standards for State Highways**

## **Two Laning/Two Laning plus Paved Shoulders**

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# The DRILL

- Task entrusted to Indian Roads Congress (IRC)
- (Manual part of MCA)
- IRC : A body of professional Engineers in the highway sector (govt. private, academia and research)
- Process
  - Group of Experts (Base Document)
  - Project Preparation Committee
  - General Standards & Specifications Committee
  - Executive Committee
  - IRC Council
  - Secretary General IRC authorised to finalise

# General

- **Basically, current IRC standards, but Concessionaire free to innovate in Design, Construction**
- **Only minimum design requirements stipulated**
- **Project specific requirements to be given in Schedules of CA by the government.**
- **Land to be provided by government**
- **IE to review designs, drawings and indicate non-conformance to requirements for rectification of defects and deficiencies.**
- **Safety of traffic and workers in construction zones**

# Phased Development Approach

- **Minimum 7 years before second stage**
- **If initial traffic less than 8000 PCUs/day in plains – Two Lane (with granular shoulders)**
- **If initial traffic more than 10000 PCUs/day in plains – Two Lane with 1.5m wide paved shoulders**
- **If initial traffic 8000-10000 PCUs/day in plains – choice left to state government.**
- **Section through built up area to be 4-lane**

# Geometric Design Features

- **Design speeds(100, 80, 50, 40 km per hour) and geometric features as per IRC standards.**
- **Ruling design speed to govern unless site conditions restrictive**
- **Roadway 12m in plain terrain/rolling and 10 m in mountainous/steep**
- **Shoulders to be fully paved in built-up area.**

# Design Service Volumes of 2-Lane Highways in PCUs per day

| <b>Terrain</b>                   | <b>Without Paved<br/>Shoulders</b> | <b>With Paved<br/>Shoulders</b> |
|----------------------------------|------------------------------------|---------------------------------|
| <b>Plain</b>                     | <b>15000</b>                       | <b>18000</b>                    |
| <b>Rolling</b>                   | <b>11000</b>                       | <b>13000</b>                    |
| <b>Mountainous<br/>and Steep</b> | <b>7000</b>                        | <b>9000</b>                     |

# Intersections, Interchanges

- **Locations, layout to be specified by government.**
- **General principles as per IRC standards.**
- **Grade separators when project highway intersects a road carrying traffic more than 15000 PCUs/day.**

# Road Embankment and Cuttings

- Raising, if required, to be specified by government.
- Smooth vertical profile while approaching structures.
- For new roads, bottom of subgrade 1.0m above HFL.
- No borrow pits within ROW or along the road
- Subgrade material not less than 7 CBR.
- Proper drainage arrangements.

# Pavement Design

- **Basically Flexible Pavements**
- **If CC pavement, to be specified by government as a deviation together with maintenance requirements**
- **New Pavement: Minimum design period 15 years. However, initial bituminous binder/wearing courses can be for minimum 8 years.**
- **For strengthening of existing pavement: Min design period 8 years for initial overlay and 5 years for subsequent overlay.**

# Structures

- **Width of structure upto 60 m length, equal to roadway**
- **Width of structure beyond 60 m length = 7.5m unless specified otherwise (footpath to be specified by Employer. Raised. 12m)**
- **ROB/RUBs unless specified otherwise**
- **Bridges/culverts which are distressed to be reconstructed and specified**
- **Retain existing sound bridges with 7.5 m carriageway**

# Traffic Control Devices, Roadside Furniture, Safety Works

- **As per IRC standards. They are in conformity with UN International Conventions**
- **Retro reflection requirements as per latest instructions/revision by MOSRTH.**

# Toll Plazas

- **General Layout given**
- **Number of toll booths to increase with traffic growth and peak hour factor**
- **Semi-automatic facilities as minimum**
- **Land by government. Concessionaire can be asked to procure on behalf of government.**

# Landscaping and Tree Plantation

- **Minimum number for compensatory afforestation to be specified by government**
- **Guidelines for planting given. Minimum distance from centre line of extreme traffic lane – 10 to 12 m (future widening to 4-lane be considered).**
- **Regular trimming, minimum 6m vertical clearance in non-urban areas.**

# Project Facilities

- **Pedestrian facilities**
- **Street Lighting**
- **Truck Lay byes**
- **Bus shelters, bus bays**
- **Cattle crossings**
- **Traffic Aid Posts**
- **Medical Aid Posts**

**If and where specified by government**

# Knowledge Management: R & D Thrust Areas

- **Capacity and Design Service Volumes**

- Two Lane

- Four Lane

- Six Lane

|                |
|----------------|
| <b>With</b>    |
| <hr/>          |
| <b>Without</b> |

- Paved Shoulders

- Service Roads

- **Type and width of Paved Shoulders on two, four and six lane highways**
- **Diagnosing health of existing bridges / culverts**
- **Predicting rate of deterioration of pavements**
- **Permanent Traffic Counts and Axle Load Surveys**
- **Wealth of data in DPRs/PPRs**
- **MOSRTH seized of these GAPS. Time Bound Action needed**

**Thank You**