

TRANSPORTATION ENGINEERING

DIPLOMA WALLAH

CIVIL

JHARKHAND UNIVERSITY OF TECHNOLOGY (JUT)

UNIT 01 :- Road Transportation – Surface Transportation

Indian Roads Congress (IRC) Formation and Objectives

- **Established:** In 1934, following the recommendations of the Jayakar Committee.
- **Primary Objectives:**
 - To develop standards, specifications, and codes of practice for road and bridge design, construction, and maintenance.
 - To promote research and development in road engineering. ○ To provide a platform for professionals to exchange knowledge and experiences.
 - To advise the government on matters related to road infrastructure.

Key Functions

- **Standardization:** IRC has developed over 275 standards, specifications, codes of practice, and manuals covering various aspects of road engineering, including materials, design, construction, and maintenance. (nbmcw.com)
- **Research and Innovation:** The IRC promotes the use of new and innovative materials and technologies through its Accreditation Committee. As of now, 234 new and innovative products, technologies, and machineries have been approved for trial use in road projects. (nbmcw.com)
- **Training and Capacity Building:** IRC organizes seminars, workshops, and conferences to disseminate knowledge and enhance the skills of professionals in the road sector.
- **Policy Advisory:** IRC provides technical advice to the government on roadrelated policies, legislation, and planning.

Jayakar Committee (Indian Road Development Committee)

Formation and Background

- **Established:** In 1927 under the chairmanship of M.R. Jayakar.
- **Context:** The committee was formed in response to the rapid growth in motor vehicle usage and the inadequate road infrastructure to support it.

Major Recommendations

1. **Centralization of Road Development:** The committee found that road development had surpassed the capacity of local governments and recommended that the central government take charge, considering it a matter of national interest. ([Testbook](#))
2. **Long-Term Planning:** Emphasized the need for a comprehensive 20-year road development plan to systematically address the country's infrastructure needs. ([Testbook](#))
3. **Central Road Fund:** Suggested the creation of a dedicated fund for road development, supported by additional taxes on motor fuels. ([Testbook](#))
4. **Indian Roads Congress (IRC):** Proposed the establishment of a technical body to set standards and guidelines for road construction and maintenance. ([Testbook](#))
5. **Research and Development:** Recommended the establishment of a research organization to develop new techniques and materials for road construction. ([Testbook](#))

Implementation

- **Central Road Fund:** Established in 1929, it has been a primary source of funding for road development projects.
- **Indian Roads Congress:** Formed in 1934, it has played a pivotal role in standardizing road construction practices and promoting research.
- **Research Organizations:** Institutions like the Central Road Research Institute (CRRI) were established to focus on road research and development.

Highway Alignment Definition

Highway alignment refers to the horizontal and vertical positioning of a highway on the ground. It involves determining the most suitable path for the road, considering various factors to ensure safety, efficiency, and minimal environmental impact.

Major Requirements

- **Safety:** Designing curves, gradients, and sight distances to minimize accidents.
- **Comfort:** Ensuring smooth transitions and minimizing abrupt changes in direction or elevation.
- **Cost-Effectiveness:** Selecting routes that minimize construction and maintenance costs.
- **Environmental Considerations:** Avoiding ecologically sensitive areas and minimizing environmental degradation.

Factors Affecting Highway Alignment

- **Geometric Design:** Includes considerations like curve radius, super elevation, and cross-section.
- **Traffic Volume:** Anticipated traffic loads influence the design and materials used.
- **Topography:** Natural landforms dictate the feasibility and cost of construction.
- **Land Use:** Existing and future developments impact the alignment choice.
- **Environmental Impact:** Assessment of ecological and social effects.

Steps in New Highway Alignment

1. **Surveying and Data Collection:** Gathering topographical, geological, and traffic data.
2. **Preliminary Design:** Developing initial alignment options.
3. **Detailed Design:** Finalizing the alignment with detailed drawings and specifications.
4. **Approval and Implementation:** Obtaining necessary approvals and commencing construction.

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