

Role of IRC in Transportation Development of India: A Review

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Abstract: IRC (Indian road congress) is a semi official technical body, which may be recalled as one of the main recommendation made by the Jayakar committee. India road congress works in a close collaboration with road wing of the ministry of surface transport, government of India. Road wing of the ministry of Surface Transport handles the road matters of the Central Government. Now IRC has become an active body of national importance controlling specification, standardization, design, material used and construction of road and bridges. The focus of IRC is now shifted to the road user safety as India accounts 11 percent of the global road crashes. IRC has decided to take a step towards environment protection by using recycled waste and by minimizing the use of natural resources.

Key Words: IRC, road wing, Jayakar committee.

INTRODUCTION:

After the First World War, the number of vehicles using the roads increased and this demand the betterment of road network. This becomes the main reason of concern at that time so the Indian legislature took a big step by appointing a committee with Mr. M.R. Jayakar as Chairman in 1927. In 1928 Jayakar committee submitted their report with some recommendation. The main recommendation was to “Appoint a semi official technical body which will act as an advisory committee”. After the report submitted by the committee the central government consults the state governments, and then an inaugural meeting of highway engineers takes place at New Delhi in December, 1934. This meeting was attended by 73 Engineers from all parts of the India. This was the birth of the IRC. When the activities of the IRC started increasing, then it was registered as a permanent government committee in 1937. It was started with a membership of 73 in 1934, but now it has about 13,500 members from Central and State governments, Border road organization, Road research institute and also from private enterprise.

Indian road congress was constituted to provide a forum for the regular pooling of experience and ideas on all matters that are affecting the planning, construction and maintenance of roads in India. The IRC has played an important role in the formation of the three 20 years road development plans (Nagpur road plan, Bombay road plan and Lucknow road plan). The IRC publishes journals, research publication on various aspects of highway engineering. The technical activities of the IRC are mainly carried out by the Highway research Board and several committees and sub committees of expert in each subjects. Nagpur and Bombay road plan both was initiated by IRC and the Lucknow road plan was prepared by the road wing of the ministry of shipping and transport and was approved by the Council of the Indian road congress this document was released during 45th annual session and the Golden Jubilee celebration of the IRC in February 1985.

FUNCTION OF IRC:

Indian Road Congress is a body of professional highway engineers that provides the following services:

- ✓ It provides a channel for expression of collective opinion of its members for all matters affecting the planning, construction and maintenance of roads in India.
- ✓ It promotes the use of the standard specification and to propose specification.
- ✓ It provides the suggestion for the better methods of planning, designing, construction, administration and maintenance of roads.
- ✓ It conducts periodical meeting to discuss technical problems regarding roads and thus disseminate technical knowledge of experiences amongst highway engineers.
- ✓ It makes the laws for the development, improvement and protection of the roads.

- ✓ It furnishes and maintains libraries and museums for promoting and encouraging the science and practice of building, operation and maintenance of roads.
- ✓ It advice regarding education, experiment and research connected with roads.
- ✓ It publishes or arrange for the publication of proceedings, journals, periodicals, and other literature for the promotion of the objective of the IRC.
- ✓ It provides dimensions and weight of road vehicles, route marker signs for national highway and also types of stones for boundary walls.
- ✓ It recommends practice for the design and layout of cycle tracks.
- ✓ It also pays attention to the environment, cost of roads, road safety, sight distance, design speed, road drainage and width of the roads.

Everything from width of road to type of pavement, design speed, cross slope, stopping sight distance in hilly areas, ground level areas are fixed by the INDIAN ROAD CONGRESS.

Table.1 Standards Given by IRC

STANDARD	YEAR	TITLE
IRC 002	1968	ROUTE MARKER SIGNS FOR NATIONAL HIGHWAYS.
IRC 003	1983	DIMENSION AND WEIGHT OF ROAD DESIGN VEHICLES.
IRC 005	1998	STANDARD SPECIFICATION AND CODE OF PRACTICE FOR ROAD BRIDGES.
IRC 009	1972	TRAFFIC CENSUS ON NON URBAN ROADS.
IRC 007	1971	RECOMMENDED PRACTICE FOR NUMBERING BRIDGES AND CULVERTS.
IRC 011	1962	RECOMMENDED PRACTICE FOR THE DESIGN AND LAYOUT OF CYCLE TRACKS.
IRC 012	2009	GUIDELINES FOR ACCESS, LOCATION AND LAYOUT OF ROADSIDE FUEL STATIONS AND SERVICE STATION.
IRC 014	2004	RECOMMENDED PRACTICE FOR OPEN GRADED PREMIX CARPET.
IRC 015	2011	STANDARD SPECIFICATION AND CODE OF PRACTICE FOR CONSTRUCTION OF CONCRETE ROADS.
IRC 016	2004	STANDARD SPECIFICATION AND CODE OF PRACTICE FOR PRIME AND TACK COAT.
IRC 019	2005	STANDARD SPECIFICATION AND CODE OF PRACTICE FOR WATER BOUND MACADAM.
IRC 020	1966	RECOMMENDED PRACTICE FOR BITUMINOUS PENETRATION MACADAM
IRC 025	1967	TYPE DESIGN FOR BOUNDARY STONE.
IRC 028	1967	TENTATIVE SPECIFICATION FOR THE CONSTRUCTION OF STABILIZED SOIL ROADS WITH SOFT AGGREGATE IN AREAS OF MODERATE AND HIGH RAINFALL.
IRC 031	1969	ROUTE MARKER SIGNS OF STATE ROUTES.
IRC 032	1969	STANDARD FOR VERTICAL AND HORIZONTAL CLEARANCES OF OVERHEAD ELECTRIC POWER AND TELECOMMUNICATION LINES AS RELATED TO ROADS.
IRC 034	2011	RECOMMENDATION FOR ROAD CONSTRUCTION IN AREAS AFFECTED BY WATER LOGGING, FLOODING AND SALTS INFESTATION.
IRC 037	2012	TENTATIVE GUIDELINES FOR THE DESIGN OF FLEXIBLE PAVEMENT.
IRC 041	1997	GUIDELINES FOR TYPE DESIGNS FOR CHECK BARRIERS.
IRC 043	1972	RECOMMENDED PRACTICE FOR TOOLS, EQUIPMENT AND APPLIANCES FOR CONCRETE PAVEMENT CONSTRUCTION.
IRC 050	1973	RECOMMENDED DESIGN CRITERIA FOR THE USE OF CEMENT MODIFIED SOIL IN ROAD CONSTRUCTION.
IRC 053	2012	ROAD ACCIDENT RECORDING FORMS.
IRC 054	1974	LATERAL AND VERTICAL CLEARANCES AT UNDERPASSES FOR VEHICULAR TRAFFIC.
IRC 056	2011	RECOMMENDED PRACTICE FOR TREATMENT OF EMBANKMENT AND ROADSIDE SLOPES FOR EROSION CONTROL.
IRC 060	1976	TENTATIVE GUIDELINES FOR THE USE OF LIME FLY ASH CONCRETE AS PAVEMENT BASE.

IRC 062	1976	GUIDELINES FOR CONTROL OF ACCESS ON HIGHWAYS.
IRC 066	1976	RECOMMENDED PRACTICE FOR S.D ON RURAL HIGHWAYS.
IRC 073	1990	GEOMETRIC DESIGN STANDARDS FOR RURAL HIGHWAYS.
IRC 080	1981	TYPE DESIGN FOR PICK UP BUS STOP ON RURAL HIGHWAYS.
IRC 082	1982	CODE OF PRACTICE FOR MAINTENANCE OF BITUMINOUS SURFACES OF HIGHWAYS.
IRC SP 061	2004	AN APPROACH DOCUMENT ON WHOLE LIFE COSTING FOR BRIDGES IN INDIA.
IRC SP 066	2005	GUIDELINES FOR DESIGN OF CONTINUOUS BRIDGES.
IRC SP 074	2007	GUIDELINES FOR REPAIR AND REHABILITATION OF STEEL BRIDGES.
IRC SP 083	2008	GUIDELINES FOR MAINTENANCE, REPAIRS AND REHABILITATION OF CEMENT CONCRETE PAVEMENTS.
IRC SP 088	2010	MANUAL OF ROAD SAFETY AUDIT.
IRC SP 093	2011	GUIDELINES ON REQUIREMENTS FOR ENVIRONMENTAL CLEARANCE FOR ROAD PROJECTS.
IRC SP 098	2013	GUIDELINES FOR THE USE OF WASTE PLASTIC IN HOT BITUMINOUS MIXES.
IRC SP 100	2014	USE OF COLD MIX TECHNOLOGY IN CONSTRUCTION AND MAINTENANCE OF ROADS USING BITUMEN EMULSIONS.

HIGHWAY RESEARCH BOARD:

This board was set up by Indian Road Congress in October, 1973 with a motto to provide proper direction and guidance to road research activities in India. The board is expected to act as a national body for coordination and promotion of highway research. The highway research board has recommended suitable financial allocation of research by central and state government and has chosen high priority research scheme for being taken up first.

The objectives of IRC highway research board are:

- ✓ To co-ordinate and conduct correlation services.
- ✓ To channelize consultative services.
- ✓ To collect and make conclusion on the results obtained on research work.
- ✓ To judge the nature and extent of research work required.
- ✓ To correlate research information from various organization in India and abroad with a view to exchange publication on roads.
- ✓ To sponsor basic research through universities and research organizations.

There are three committees under HRB, namely;

1. Committee for identification, monitoring and research application (IMRA).
2. Committee for accreditation of new material / techniques / technology / instruments etc.
3. Committee on pilot projects to introduce innovations and support innovative ideas in the road sector.

The Committee for accreditation of new material and techniques is composed of road and bridge experts from CENTRAL ROAD RESEARCH INSTITUTE (CRR), MINISTRY OF ROAD TRANSPORT AND HIGHWAY (MORTH), NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI), NATIONAL RURAL ROAD DEVELOPMENT AGENCY (NRRDA), CENTRAL PUBLIC WORK DEPARTMENT (CPWD), BORDER ROAD ORGANIZATION (BRO), MILITARY ENGINEERING SERVICE (MES), STATE PWD'S, HIGHWAY RESEARCH STATION (HRS), IIT DELHI, IIT ROORKEE, NATIONAL HIGHWAYS BUILDERS ASSOCIATION AND CONSULTING ENGINEERING ASSOCIATION OF INDIA (CEAD).

The expert committee would examine the proposal, obtain further information, if necessary and give its decision.

SOME OF THE DATA GIVEN BY IRC:

1. WIDTH OF VEHICLE
No vehicle shall have a width exceeding 2.5 m.

2. HEIGHT OF VEHICLE

No vehicle other than a double Decker bus shall have a height exceeding 3.8 m for normal application and 4.2 m when carrying freight containers. Double Decker buses may however have a height not exceeding 4.75 m.

3. LENGTH OF VEHICLE

- The maximum overall length of a single unit truck, exclusive of front and rear bumpers, having two or more axles, shall be 11 m.
- The maximum overall length of a single unit bus, exclusive of front and rear bumpers, having two or more axles shall be 12 m.
- The maximum overall length of a truck-tractor semi-trailer combination, exclusive of front and rear bumpers shall be 16 m.
- The maximum overall length of a truck-trailer combination, exclusive of front and rear bumpers, shall be 18 m.
- No combination of vehicles shall comprise more than two vehicles.

Table.2 Design Speed for Urban Roads

CLASSIFICATION ON THE BASIS OF URBAN ROADS	DESIGN SPEED IN Km/hour
Aerial roads	80
Sub-aerial roads	60
Collector roads	50
Local streets	30

Table.3 Width of Carriageway

CLASS OF ROAD	WIDTH (m)
Single lane without curbs	3.50
2-lane without curbs	7.00
2-lane with curbs	7.50
3-lane with or without curbs	10.5-11.00
4-lane with or without curbs	14.00
6-lane with or without curbs	21.00

Table.4 Safe Stopping Sight Distance

SPEED(Kmph)	SAFE STOPPING SIGHT DISTANCE (m)
30	30
50	60
60	80
80	120

Table.5 The Passenger Car Unit factors recommended by IRC

VEHICLE TYPE	PCU FACTOR
Two wheeler	0.50
Three wheeler	0.75
Car/jeep	1.00
Van/Tempo	1.00
Mini bus	1.50
Standard bus	3.00
LCV	2.00
2xAxle/3x axle Rigid Truck	3.00
Tractor	3.00
Tractor Trailer	4.50

NEW INITIATIVES OF IRC:

Government of India has declared the current decade as the decade of innovation for inclusive growth and the U.N has declared this decade as the “Decade of action for road safety 2011-2020”. So we can say now the whole focus is shifted to road safety and providing more facilities to the road user. The data itself says that India alone accounts for 11 percent of the global road crashes. In the year 2013, India has about half a million road accidents resulting in 137,572 fatalities and 4,90,000 serious injuries. This means one fatality on our roads every four minutes. The total economy loss due to road accidents is equals to the 4% of GDP of India and that’s truly describe the road facilities and traffic management system in India need to improve. IRC has published “Guidelines for variable Message signs” for assessing accident potential and safety performance and also organized an international conference on “ Road safety scenario in India and way forward” with the support of union ministry of road transport and highways, World Road association, on 29,30th November, 2014. IRC has published a manual on road safety under IRC 088 named ROAD SAFETY AUDIT:

ROAD SAFETY AUDIT:

- a) Minimizing the likelihood of crashes occurring through safety-conscious planning and design.
- b) Ensuring that, if a crash occurs, then the likelihood of the injury is minimized (such as provision of anti-skid surfacing and crash barriers).
- c) Ensuring that safety related design criteria (e.g. critical sight distances) have been met.
- d) Managing risks, such that the risk of major safety problems occurring is less than the risk of minor problems occurring.
- e) Reducing the whole-life cycle costs of a design (unsatisfactory designs are expensive to correct after they are built).
- f) Minimizing the risk of crashes on the adjacent road network (particularly at intersections) as well as on the new road scheme.
- g) Enhancing the importance and relevance of road safety engineering in highway design work and to enhance consideration for the safety of all categories of road users in all new and existing schemes.

IRC has now decided to introduce cleaner, less polluting construction, use recycled waste and minimize the use of natural resources for the environment. IRC has decided to use plastic waste in bituminous mixes in an environment friendly technology. IRC has also decided to use fly ash in road embankment. Now IRC has also decide to recycle and reclaim the valuable aggregates and bitumen found from the failed and damage bituminous pavement and use them in construction instead of dumping them in the land, this is another big step towards environment protection .

CONCLUSION:

IRC is playing a very important role in the development of transportation system in India. IRC is now working to introduce new techniques that will be environmental friendly in order to manage plastic waste (a worst non biodegradable and toxic waste) and fly ash. They are also working to improve road user facilities and trying to introduce new technologies that will decrease the number of accidents hence decrease in number of fatalities and injury by provision of anti-skid surfacing and crash barriers.

The length, width, height of the vehicle, width of carriageway, design speed, safe stopping sight distance, curbs, design of road, material used while construction, cross slope, pattern everything is decided by IRC.

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