JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

"A REVIEW STUDY ON IMPORTANCE OF ROAD INFRASTRUCTURE FACILITIES"

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ABSTRACT

A nation's development is significantly influenced by its transportation system. Transportation promotes economic growth, offers a wide range of options, social development, industrial and agricultural development, and political development. It also aids in mass production and price stability. The population of India's urban areas has been growing exponentially in recent years, which has resulted in a considerable rise in the demand for transport services. In large cities, the conventional transit infrastructure is overburdened, creating numerous difficulties. Managing the growing traffic is a major issue everywhere in the world. Since the earliest major human settlements, traffic and urban communities have coexisted, compelling people to assemble in huge urban areas and resulting in the requirement for urban mobility.

Keywords

Public transport, Sustainable transportation, Road Infrastructure, Easy mobility

Objective of Study

To review different road infrastructure facilities & its importance for creating sustainable transportation mode.

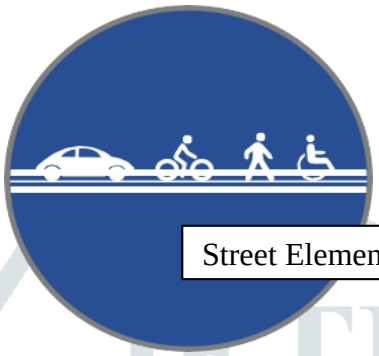
Introduction

A vital component of daily living are roads. For efficient flow of products and services, the road infrastructure should be able to offer daily commuters simple and convenient transportation. Employment rises as connectivity improves. Motorways and other major highways can speed up and cut down on the cost of moving goods and services.

A good road network that is easily accessible boosts social and commercial activity. Scientific research demonstrates the full value of investments in road infrastructure. The general quality of life is aided by improved road infrastructure. Modern society relies heavily on its road system for connecting people. Increasing access to services including healthcare, education, and others.

Road Infrastructure Facilities

All people should be able to move safely, smoothly and conveniently



Street Elements

Footpath – clear walkway

Cycle Track

Bus Stop

BRTS Lane

Shoulders

Carriage way

Parking

Make streets safe, clean, attractive and comfortable for people to walk and drive

Safety Elements

Streets to reduce impact on natural and built environment. To have green streets in the city.

Multi-Utility Zone

Pedestrian Crossings
Traffic calming measures
Speed breakers
Traffic Signal
Central median
Railing
Street lights
Signage, markings

Plantation
Utility and Services
Storm water management
Public toilet
Garbage Containers

Need of the Study

- In India, 426 deaths were reported per day in 2021.India has 3% of the world's vehicles, but shockingly, 12% of all reported road fatalities worldwide occur there.
- Mumbai is the city with the largest traffic volume, followed by Bengaluru, New Delhi, and Pune.
- An important factor in a nation's economic and social development is its road system. India's road system requires the kind of road network that is environmentally friendly, easy and convenient to travel on, and has a minimal chance of accidents.
- Road infrastructure development has been found to have a positive impact on economic growth, job reaction, and social development. It can also improve access to education, healthcare, and other essential services. Additionally, road infrastructure development can lead to reduced transportation costs, increased trade, and improved connectivity between regions.
- Lack of road infrastructure can lead to isolation and limited connectivity between regions, which can have social and economic consequences.
- Poor road infrastructure can lead to increased accidents and fatalities, as roads may not be properly maintained or designed.

Literature Review

Stephen Gibbonsa in their study have used empirical methods were used to measure the intensity of accessibility of different locations. This review paper estimate the effect of road infrastructure on Industrial development & employment growth. It shows increase in 1% of accessibility increases 0.3%-0.5% of employment in Britain.

Simone Porru had studied that increase in demographic situation of a city, it is necessary to develop a smart & convenient mobility. Developing a mobility is a opportunity for increase in employment & Development of a city. It also shows the challenges faced like data collection, land acquisition, usability.

Bhanu Kireeti Chanda have discussed that before selecting the BRTS route the visual survey is a important. The corridor was divided into 4 parts to study its homogenous section. Survey was carried out on PCU (Passenger car unit). Daily traffic survey was also carried out to know its future usage probability.

Sai Deepthi Bhogaraju studied, IOT & AI can be used for road infrastructure to develop a software to detect potholes and damaged roads. In this designing of roads to prevent accidents, control traffic, quick movement of emergency vehicles using 360° cameras, machine learning, AI, IOT.

Alexey Finogeev had studied, a system that is designed to collect & process data on road incidents from photo-radar complexes. It can help to identify the most incidental areas & fix the issues.

Lijun Sun in his study shows the use of modular pavement instrumented with distributed optical fiber. The pavement is equipped with self water jet cleaning & self snow melting mechanism. The pavement is instrumented with power cables & sensors to monitor temperature, traffic flow & axle load.
Hamid Fekri Azgomi had made a study to go through the concept of smart city & smart community. Some recent work on traffic control & autonomous vehicle were presented. Complex path planning framework was discussed as our future challenges for smart cities.
Aleksander Orlowskia had shown an indicator which will evaluate the level of 'Smart Mobility' solutions implemented in cities has been developed & should be made public. It is based on the analysis of 108 factors concerning issues with the scope of transport infrastructure, information infrastructure, mobility methods and vehicles used.

Major Findings

- A better road network leads to improved traffic flow and traffic safety.
- The use of satellite data is growing in importance for improving analysis and update of the current road network.
- The economic and social development of a country is influenced by its transportation infrastructure.
- Accessible roads reduce travel time and boost commuters' mobility.
- It will be difficult for emergency vehicles to reach if there is no accessible mobility.

Suggestions

For regular commuters, a good road infrastructure can increase safety & convenience. At significant intersections, traffic lights must be erected. Street lights can be powered by solar-paneled poles. Regular maintenance must be performed on time. Planting vegetation in the median can aid in obstructing vehicles coming from the other side's high beams. Infrastructure for roads can be more effective and efficient by using new road components.

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