A REVIEW ON ROAD INFRASTRUCTURE DEVELOPMENT FOR NORTH ZONE OF SURAT CITY

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Abstract: India's urban population has growth rate of nearly 32% in last decade. The city of Surat is a fast-growing industrial city becomes the 9th largest city of the India as per JNNURM (Jawaharlal Nehru National Urban Renewal Mission). The present population is approximate 58 lakh including floating population. Urban communities and traffic have created connected the hand-in-hand since the earliest large human settlements and forcing inhabitants to congregate in large urban areas and in turn implementing need of urban transportation. In present paper various vehicular growth and composition, road network, traffic characteristics of Surat are discussed keeping in view the present scenario. This paper focuses on road infrastructure facilities towards comprehensive approach of Surat city to ensure better civic service level. This study throws some light on Road facilities like pavement material, plantation along the road, marking, sign boards, and other elements of road. In this paper review has been done conducted on a review of road infrastructure development for north zone of Surat city.

Keywords - Road infrastructure facilities, Planning of road, Development of the road, Transportation, Landscape

I. INTRODUCTION

"The image of city" considers the city form and its elements like roads, edges, nodes, landmarks, element intersection and integration with each other. Planners would generally consider the road as the skeleton structure of a city. An optimum circulation network gives an efficient and economical planning perspective. The entire infrastructure network also follows the road network.

Urban road enhancement is the most difficult and complex part of advancement for planners and creators, where a major role is to incorporate the network investment so as to achieve balanced and desirable improvement. Socio-economic is road play a key role in communities, agriculture, industries, exchange, services and other major segments of country's economy, which they all depend to a larger extent on the effective availability of the road network.

The role of urban designer, endeavoring to project a vision that is not just his own subjective idea of tomorrow but something that will provide for the varied physical and emotional needs of all citizens. This needs some kind of a brief in terms of human specifications, not perhaps in terms of "what do people want?' as they tend to like what they know. It explains some ideas for human specification expressed in elementary form such as Hygienic cities, Safe cities, Functional cities, Continuous cities, balanced cities and Beautiful cities. It also explains the concept in detail of each element e.g. in functional cities, they must be made efficient, not only for the need of today but also for future.

1.1 Road Infrastructure Facilities

Road landscape is essential for better aesthetic looks, controlling the pollution which in turn helps in better climate control, it can also be beneficial as a sound and wind barrier, trees utilized in this activity can also completely stop or partially diffuse unnecessary light.

Streets in our cities should be representative of our lifestyle and culture. Their designs need to respond to the multitude of activities and functions that streets perform. Modern streets also carry a number of infrastructure services such as water, sewer, stormwater, electrical, and telephone lines. The design of underground utilities needs to be coordinated with the surface layout and functioning of a street. Therefore, it is critical that streets are designed properly and in adequate detail.

This facility aims that the design of beautiful, safe, walkable, and livable streets. In this research it is identified that the different functions of streets and its components are to be designed so that it gives sufficient movement for the users. By designing streets and intersections, one can get the information of different types of elements of street at different intersection. The overview of the activities as exposed in figure that are undertaken as a part of the overall process of street design.

1.2 Different types of Facilities

There are the different types of road facilities like street elements, safety elements, and multi utility zone. All the facilities mention in fig. 1.

Figure 1 Different type of road infrastructure

II. OBJECTIVES OF STUDY

- To study existing road infrastructure and their issues from literature.
- To analysis road infrastructure facilities of north zone for Surat city.

III. NEED OF STUDY

North zone roads, being a major linkage between Katargam to Amreli Diamond sector and Katargam to ved road incorporates the inadequate fixed facilities, the varied flow entities and the poor control system in a view to cater to the existing demand which increases day by day. Now, roadside development and encroachment will make this condition worse and thereby creates a need to focus on the prevailing conditions of traffic generation in a context to formulate the proposal which is not only to fulfill the present needs but also withstand to the future requirement seeing the growth of the city.

IV. LITERATURE REVIEW

Frasandy Sartika Rahman, et al. (2018) In that Paper **"An Influence of The Development of Outer Ring Road Gorontalo"** Dissatisfaction of land owners of lowland and plantation estates and rejected due to livelihood concerns is lost and to buy replacement land will not be affordable anymore with the price of surrounding land. GORR improvement is a street foundation that brings land work change, land value and in indirectly way affects the socio-economic condition of society. The outcome express that the largest land change work was productive land of mixed and wetland gardens, with an increase in qualities ranging from 3 to 4 multiple times.

Ramakrishna Nallathiga (2017) In this paper **"The Hyderabad Outer Ring Road (HORR) Project: A Case Analysis of the Project and Its Success"** mention the successfully complete the Hyderabad City. This paper is an attempt to make an analysis of project success by performing a detailed case study of Hyderabad Outer Ring Road (HORR) Project. The salient features of HORR project are discussed in details in terms of project scope, structure, finance and implementation. The case analysis reveals that the HORR project, in spite of its good conception on strategic and technical grounds, met with implementation difficulties that affected project success, in terms of the conventional measures of time, cost and quality.

Kenya urban roads authority (2013) In that report **"Nairobi outer ring road improvement"** stated that The Nairobi Outer Ring Road Project is an improvement of an arterial road in the city of Nairobi, designed as a congestion-relief highway. Nairobi East and Nairobi North the project road is 13km long and the Nairobi country population is esteemed of at least 2.2 million representing some 70% people. The are the Different beneficiaries incorporate clients of real city associating arterial roads of Nairobi-Thika highway, Northern Bypass, Mombasa Road, Easter Bypass and on to the Jomo Kenyatta International Airport(JKIA).

D. B.L Bong, et al.(2009) this paper "Automatic Road Network Recognition and Extraction for Urban Planning" There are different uses of road map in Daily activities but however it is hard to build and update a road map whenever point there are changes. For this research work satellite images are use. A Hybrid Simple Colour Space Segmentation and Edge Detection (Hybrid SCSS-EDGE) calculation was developed to extract roads automatically from satellite images are use. For extracting road network accurately, satellite image must be analysis. In this study cases, the road regions are separated dependent on colour space components and edge details of roads.in addition, edge recognition method is applied to furthersift through the non-road regions.

The separated road regions are approved by using a segmentation method. These outcome results are profitable for building road map and detecting the changes of the current road database.

M. L. Gadd (1997) That paper **"Road network planning towards a comprehensive approach"** presented the concept of planning all roads in urban network including local road to meet traffic flow and vehicle type is being discuss in this paper therefore not only capacity and safety objective but also minimum environmental condition are achieved. This paper also describes about present policies and methods of road network planning. Three matrices are included: 1) Representing the polices choice for traffic controlling, 2) being derived in discussion officers and govt. authority, 3) For the selection of appropriate traffic control and controlling measures.

Dinesh Mohan, el al. (1999) In this paper **"Sustainable Transport Systems Linkages between Environmental Issues, Public Transport, Non-Motorized Transport and Safety"** we talk about a some of the issues concerning public transport, safety and the environment. We represent that excepts if the requirements of non-motorized methods of traffic are met it will be practically difficult to design any sustainable transportation system for urban areas. we demonstrate that pedestrians, bicyclists and non-motorized rickshaws are the most basic elements in mixed traffic. In the event that the infra-structure design does not meet the requirements of these elements all modes of transport operate in sub-optimal conditions. Figuring of risk per trip or over a period of time is very difficult. There are not very many few studies available that evaluate risk over a whole trip.

V.A.T. Eppell (2001) That paper **"A Four Level Road Hierarchy for Network Planning And Management"** Stated that road hierarchy is a means for characterizing each roadway as far as its function with the end goal hat fitting target for that roadway can be set and appropriate structure criteria can be executed. The Four level road hierarchy as per Eppell Olsen & Partners depends vastly on the land use of the area. This area can be termed as a "Block". This block is surrounded on all sides by arterial roads or other natural boundary like river, valley, etc. Sub arterial roads connect the collector street to the arterial roads, while the lowest level of road: local street, provides the traffic with door to door access. The application of four level hierarchy is in the area of planning, access management, congestion management, safety, environment.

V. MAJOR OUTCOMES

- Better and increased accessibility, mobility and social interaction with the community.
- Land acquisition for the HORR project met with difficulties and, therefore, it suffered from huge delays and large cost overruns.
- Better road network results in increased traffic safety and reduction in congestion.
- Satellite data is being increasingly used for better analysis and updating of existing road network.
- Good road facilities provide to make a combatable to movement of vehicle and aesthetic view of road.

VI. STUDY AREA PROFILE

6.1 Location of Surat

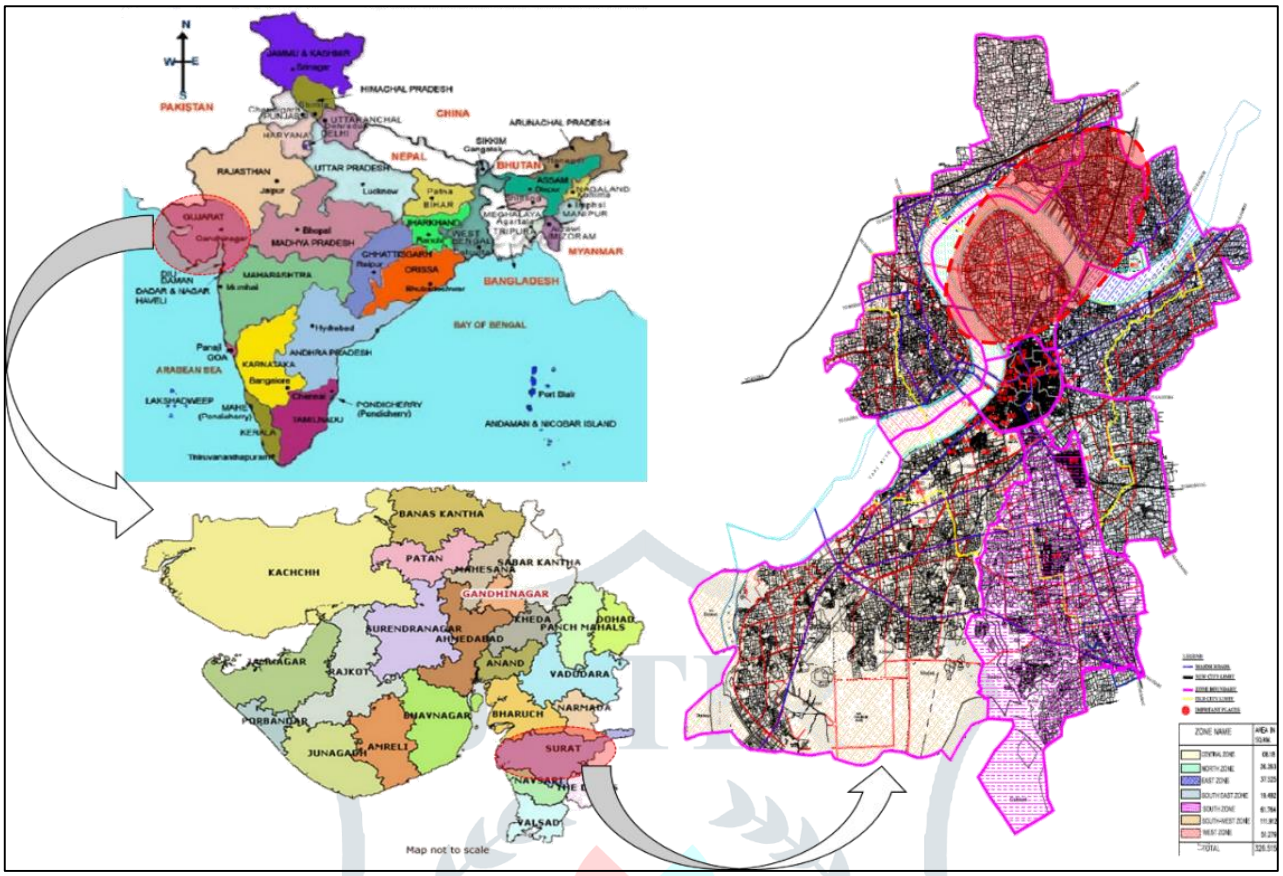

Figure 2 Location of Surat

Surat is Located in Gujarat district. There is Shown in Fig 2. There Government type is Surat municipality corporation. And also selected the north zone map in fig 3 and it details shown in below:

Surat City Area: 326.52 sq. km. (Present)

Population (2011 census): 4462002

North Zone Area: 36.363 sq. km. (Present)

Population (2011 census): 705163

Road Length: 529.71km

Figure 3 North of Surat city

6.2 Issues and challenges

The area had narrow roads since the past, however, in spite of that, BRTS lane was constructed along the route. This results in increase in traffic in the area.

Ved is heavily industrialized. Lots of textile and embroidery mills present here and hence presents an important source of employment. But the condition of access road is very poor and narrow and gets congested regularly at the main road junctions.

Amaroli is suburb of Surat city. Most of the people living here regularly commute to Ved and Katargam. And currently there exists a single bridge for point of access to Ved and Katargam, this results in congestion in the morning and evening peak hours.

Today Katargam has one of the best developed area in Surat city and also boasts of Diamond Industries. It is home to the upper middle class of the city's residents. It was a Nagar Panchayat in 1970s but was amalgamated in Surat Municipal Corporation. Due to the development of Diamond Industries in the town it spurred growth in population and its population is around 0.7 million as of 2008 estimates. Maximum congestion during morning hours due to the diamond trade prominent in the area.

VII. CONCLUSION

Enforcement of urban design through landscaping, Paving materials, street furniture and hoardings creating an aesthetic. Good quality of road construction most requisite for safe, free and comfortably movement. Pavement should be designed considering

soil characteristic and other all technical measures. A proper signal timings and phases are to be calculated for major intersection to minimize delay and to maximize intersection capacity. For signal planning solar system should be used for energy saving purpose.

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