Improvement Plan for Sachin G.I.D.C.

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Abstract

India is among one of the developing countries, which is achieving positive balance on economy from their population growth.The movement of goods within urban areas is vital since cities are the centre of economic and social life. The sustainability of cities cannot be viewed without considering the role of goods transport. As population keeps on increasing needs for the change arises. This paper focuses on one such urban area (Sachin GIDC) which needs to be managed as per the requirements. Sachin GIDC is one of the growing area in the form of industrial development. Increasing trips and freight among the major routes on Sachin GIDC has contributed to economic growth and development of the country. So needs arise to provide freight facility planning or management, which can be helpful in fulfilling present and future needs.

Keyword- Freight Transport, Improvement Measures, Freight Facility Planning

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I. INTRODUCTION

The movement of goods is very important and vital because India has witnessed rapid 'economic' growth in the last two decades. The sustainability of cities cannot be viewed without considering the role of goods transport. Freight transportation is a major factor contributing to economic growth and development of any country. Generally the freight planning process involves stages of data collection, freight demand forecast and freight facility planning. Freight transportation includes the movement of a wide variety of products, from raw materials to finished goods, from comparatively low value-to-weight commodities such as coal, grain, and gravel to high value-to-weight items such as computer parts and pharmaceuticals etc. with transport system, infrastructure and urban planning. The main part of urban goods movement can be considered at different scales like reliability of the different logistic chains, local traffic growth, local traffic congestion, urban centres economic support, environmental nuisances (noise, pollutant emissions), urban logistic centres optimal location, greenhouse gas saving, but also urban spread effects and changes in the consumer behaviour, among others.

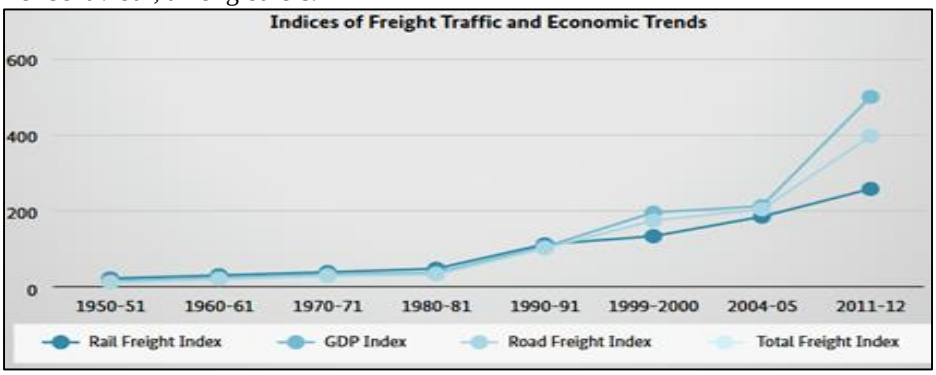

Fig. 1: Performance of total freight traffic as well as traffic moved by rail and road with respect to India's GDP (NTPDC, 2014)

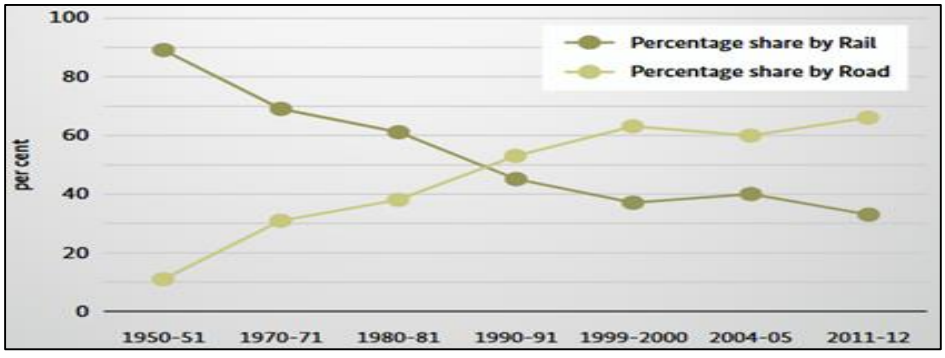

Fig. 2: Comparison of Freight Traffic carried by rail and road (NTPDC, 2014)

A. Growing importance of road transport

- Though the Indian domestic market is served by wide variety of transport modes like road transport as well as rail transport but road transport sector is emerged as dominant segment from last few decades. The reasons of goods movement by road ways are ease accessibility, its operational flexibility and its reliability.

B. Aim of the project

- Development of advance plan for Freight Movement ofSachin GIDC.

C. Objectives of Project

- To provide an appropriate plan for freight transport planning and management.
- To serve as guide for effective planning, designing and management of urban freight system.
- To improve overall urban freight operational efficiency.

D. Scope of the project

- To prove easiness to planners and consultants involved in preparation related strategic planning.
- To act as a guide of management plans.

II. STUDY AREA PROFILE

A. Introduction

Freight traffic in city is a function based on city size and economic activities. GIDC has been created for securing the orderly establishment and organization of industries in industrial areas and industrial estates in the state. G.I.D.C is one of the important corporation in Gujarat for goods movement including raw material as well as finished materials or products.

In Gujarat total numbers of G.I.D.C estates are 202 in which 190 are in function and 12 are under developing and planning. Zone wise distribution of G.I.D.C as below.

Saurashtra and Kutch	*72*
Central Gujarat	*54*
Ahmedabad and North Gujarat	*51*
South Gujarat	*25*

In which 135 G.I.D.Cs are less than 50 hectares, 16 are 50-100 hectares, 34 are 100-500 hectares and 17 are more than 500 hectares.

- Sachin G.I.D.C a major contributor of freight transportation

Among all the G.I.D.C we select Sachin G.I.D.C as our study area. Sachin GIDC is the industrial corporation which consists around 2400 smaller to larger industries as well as factories. Around 749.35 hectare area is acquired for Sachin GIDC. Sachin GIDC consists total 1557 plots and 1553 plots are allotted for working purpose. This GIDC mainly consists dying mill, chemical factories, engineering manufacturers, embroidery, wooden and weaving factories.

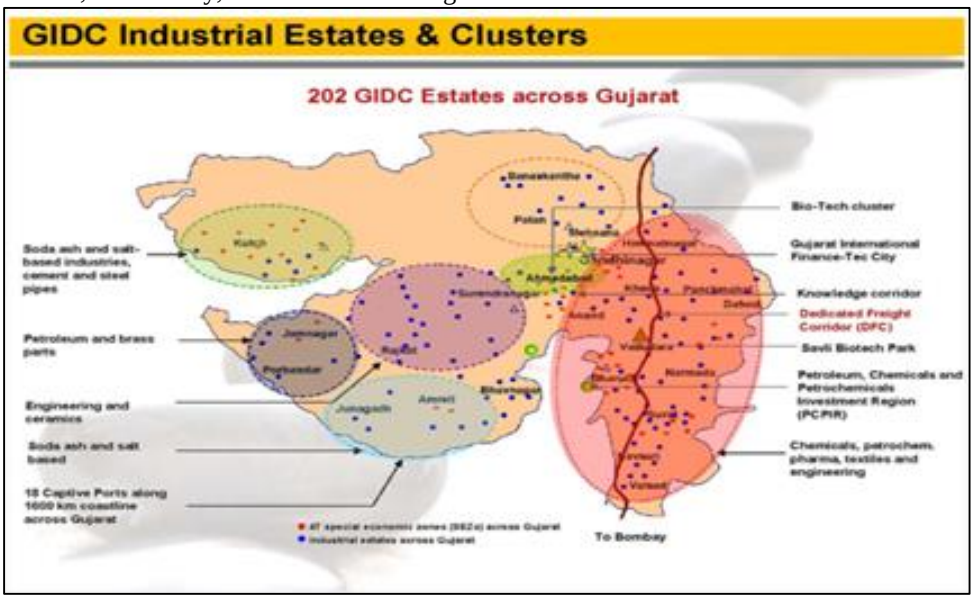

Fig. 3: Geographic spread and cluster of GIDC

Fig. 4: Map of Sachin GIDC

- Problems Which has been observed & Discussed with the users are mentioned below

1) Road way facilities are very poor, it requires adequate maintenance.
2) Fire station is not sufficient at present scenario for GIDC area
3) No ware house facilities are available at most of the company or at centre of GIDC.
4) No transit facility like rickshaw stand available.
5) No parking for loading and unloading of truck.

Type of industries	*No. of industries*
Dying mill	*75*
Chemical factories	*45*
Engineering manufacturing	*125*
Embroidery	*150*
Wooden based	*20*
Weaving industries	*2000*

Table 1: No.of Industries with their type at Sachin G.I.D.C

III. POSSIBLE MANAGEMENT SOLUTION FOR ABOVE PROBLEMS

A. Roadway Designing and Improvement

Fig. 5: Existing Roadway Condition at Sachin G.I.D.C

Existing roadway consists of flexible pavement which is in severe condition at present. For construction of roadways there are two possible ways,

1) Rigid Pavement 2) Flexible Pavement

Preference shall be given to flexible pavements because of low initial cost and due to movement of heavy trucks rigid pavements is not preferable. At present, study area consists of 12 km road available which is utilized for major travelling purpose.

Type of Surface	*Thickness*	*Cost*	*Per unit (sq.m)*
GSB	*250mm*	*Rs.300*	*Per sq.m*
WBM	*225mm*	*Rs.180*	*Per sq.m*
PC	*20mm*	*Rs.90*	*Per sq.m*
			Total = Rs.750 Per Sq,m

Table 2: The construction cost of pavement

- Flexible pavement design and cost of construction per Km.

The design of flexible pavement depends upon the CBR value of the sub grade and number of commercial vehicle per day. Design life of rural road is 10 years, during this period road may require some repairable work and maintenance. A typical pavement composition based upon SP: 20-2002 and its cost for rural road is given below.

Description	*Cost*
Reconstruct the Pavement Surface	*Around 2.5 crore*
Repair the Pavement surface (Pothole repair)	*Around 2 lacs*
Renewal of wearing course (Every 5 years)	*Around 42 lacs*

Table 3: Construction Cost of Different operation

The cost above 3.75m wide road pavement will about 21 lakh per Km.

- Maintenance Cost of Flexible Pavement

Surface renewals are to be provided as per NRRDA (National Rural Road Development Agency) guidelines once in 5 year of 20mm PC. The cost of repair of flexible pavement as per NRRDA is 14000 per year. For Sachin G.I.D.C at present we can either reconstruct the entire road or we can just repair the pavement, the cost analysis is given below as per mentioned above.

B. Fire Station Management

Generally the minimum dimension required for fire station is 4125 sq.m around 55m. of width to 75m. of length. At present scenario the dimension is 3360 sq.m around 60m.of length and 56m.of width, which is less than the minimum requirements. Also there is lack of availability of air compressor station and training room.

Fig. 6: Existing fire station condition

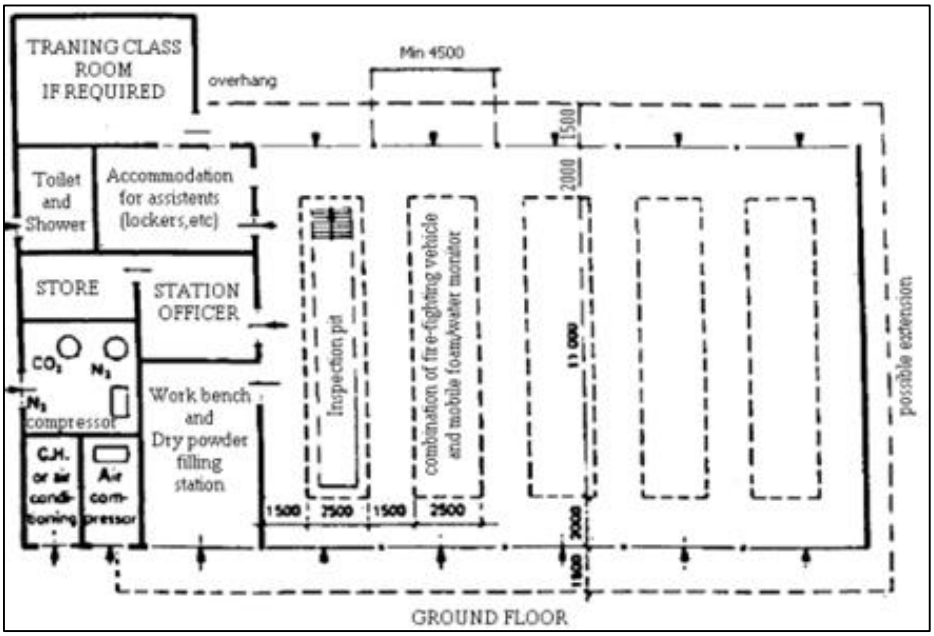

Fig. 7: Typical layout of fire station

- The following building spaces are required:

1) Offices for fire master and his staff.
2) Work bench, fire extinguishers and emergency equipment testing and servicing facilities.CO_2, N_2 transfer charging unit and air compressor.
3) Training room for 20 men and accommodation for rest room, locker, and dining room.
4) Store room &Control room.

C. Warehouse Management

1) Layout and Segmentation

In selected study area one of the major issue is availability warehouse. Though Warehouse layout or design is a highly important factor in creating an effective and efficient operation. If the layout of a warehouse is designed poorly and lacks efficiency, two of the areas that are likely to suffer due to absence of warehouse.

- Fulfilment area
- Dispatch area

The warehousing space norms in kg/sq.m for selected commodities as per Central Warehousing Corporation are given below:

Commodity	*Space (kg/sq. m)*
Hardware and building material	*1054*
Iron and Steel	*904*
Timber, machinery, auto parts, textiles, chemicals & fertilisers	*968*

Table 4: Space Required for Commodity
[Source: URDPFI (Urban & Regional Development Plans Formulation & Implementation) Guidelines (2014)]

Fig. 8: Existing warehouse condition

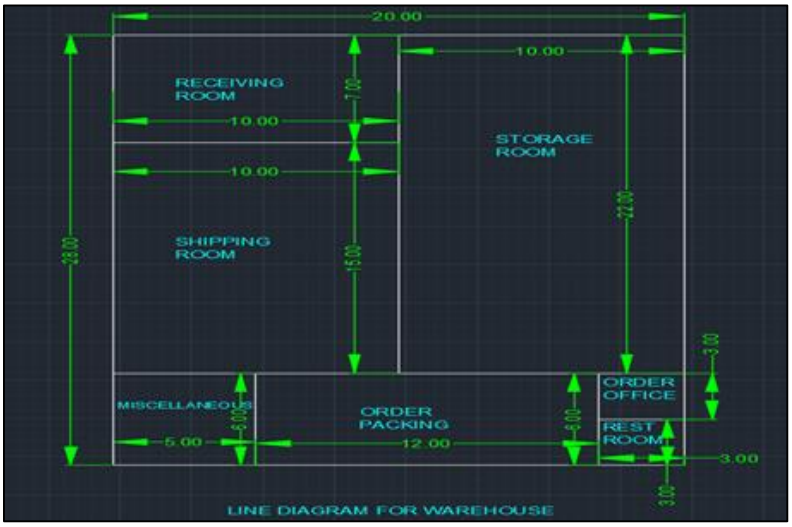

Fig. 9: Typical layout of warehouse

The type of layout which is given to the future industrial purpose is given above.

D. Transit Facility Management

The transit facility for the workers as well as labors like rickshaw stand is not available as in proper way. Many of the rickshaw stand in unplanned manner.


Fig. 10: Existing public transportation condition

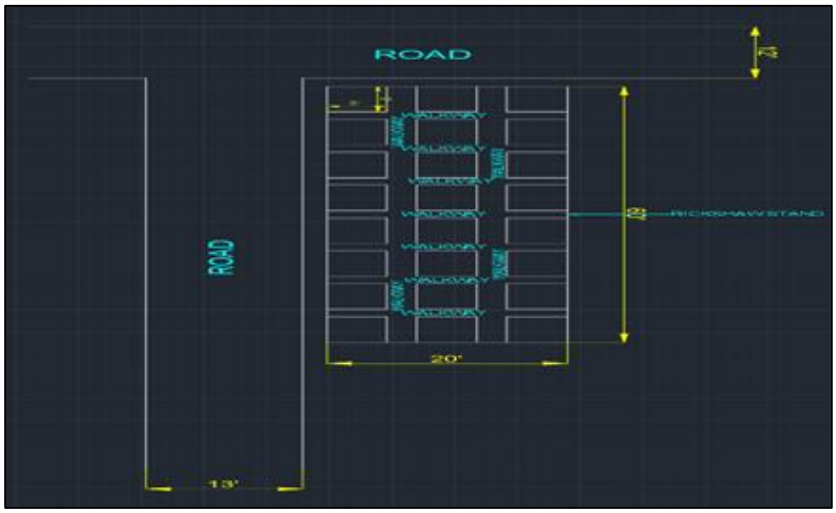

Fig. 11: Layout Design for rickshaw stand

According to visual inspection and survey conducted the basic layout prepared for rickshaw stand which is as above. The basic dimension of rickshaw is 2.7 m in length, 1.5 m in width (Source: Passengers Auto rickshaw manufactures and models in India).And as per the provided layout is suitable for 30-35 rickshaw.
As per the parking shed running price is 95/- per sq. feet (Source: Indiamart), the overall cost reaches to 1.52 lacs (shed for 20ft in width to 80ft in length).

E. Parking Management

The parking facility available at Sachin G.I.D.C for staff parking is almost sufficient for staff. The dimensions of the parking for car is 4.5 m width and 7.5 m length; and for car it is 7.5 m in width and 9 m in length.

Fig. 12: Existing Parking Condition

Fig. 13: Existing loading and

But the loading and unloading of trucks are not available for existing scenario.
As per the Department of planning & Development Ports, Customs the minimum size requirement for loading and unloading bay is 3m width and 12m length.

IV. WHERE TO IMPLEMENT THE DESCRIBED FACILITIES ?

As the area which has already keep developed cannot be modified according to requirements or needs. But the described facilities can be provided in the under developing area of Sachin G.I.D.C. The most suitable site for adopting this kind of facilities has shown below in map which is located at outer periphery of Sachin GIDC.

Fig. 14: Implementation Area

V. CONCLUSION

The users and stakeholders of GIDC can beneficially utilise the facility for future purpose. As a result Sachin GIDC freight sector can grow and support the sustainability of surrounding area which will be beneficial for economic growth of country.

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