

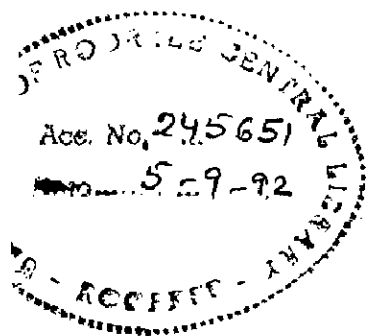
# PROBLEMS OF CENTRAL AREA OF WARANGAL CITY: STUDY AND PROPOSALS

## A DISSERTATION

submitted in partial fulfilment of the  
requirements for the award of the degree  
of  
MASTER OF URBAN AND RURAL PLANNING

By

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CHECKED  
1995



DEPARTMENT OF ARCHITECTURE AND PLANNING  
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MAY, 1992

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**CERTIFICATE**

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**CANDIDATE'S DECLARATION**


I hereby certify that the work which is being presented in dissertation entitled **The Problems of Central Area of Warangal City: Study and Proposals** in partial fulfilment of the requirement for the award of the degree of **MASTER OF URBAN AND RURAL PLANNING** submitted in the Department of Architecture and Planning, University of Roorkee, Roorkee is an authentic record of my own carried out for a period of eight months from August 1991 to April 1992 under the supervision of Mr. R. Shankar Reader. Department of Architecture and Planning, University of Roorkee, Roorkee, India.

The matter embodied in this dissertation has not been submitted by me for the award of any other degree or diploma.

Dated: May 15 1992

  
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This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

  
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(K.VIDYADHAR)

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## PREFACE

---

Central Area or the core or city centre is, generally, the problematic area of a city, which calls for immediate attention. Most of the central areas have serious problems today. Pollution, Congestion and deterioration of physical environment are eroding the fabric of central area of not only the metropolitan cities but also in smaller cities and towns.

At present, in India and abroad, several attempts have been made to understand the problems of Redevelopment of the central areas, in order to find the means and possibilities to create better living conditions. Still, the process to identify the best possible methods and means are being researched. Therefore, it is realised that the comprehensive knowledge about the complexity of the problems would be helpful in attempting any such Redevelopment problems.

This report consists of eight chapters. The first chapter describes the Introduction including, aims, objectives, scope and limits of the study. The second chapter describes the concepts and trends of central area. The third chapter describes the growth and location of Warangal city. The fourth chapter is concerned about the second objective, that is, Detail study of the Central Area. Then, the fifth chapter describes the Identification and analysis of problems of the study area. The

chapter. 6th is concerned with the Projections and Future needs for the Proposed Redevelopment Plan. (2001 A.D.) and The 7th chapter describes the Proposed Land Use and Circulation plan of central area of Warangal. Finally, the 8th chapter, deals with the fifth objective of this study project, describes modes and frame-work of the Implementation of the proposals. It also gives the conclusions and recommendations from whole study and analysis of the study area, in terms of Policies and guide lines. In addition to above mentioned chapters, The data, maps, figures and illustrations related to study and analysis have been incorporated, wherever it is felt necessary. Finally, bibliography, Photo graphic study and appendices have been included for more details and further information.

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# CHAPTER 1

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## CHAPTER - 1

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### INTRODUCTION

#### 1.1 Introduction to the Central Area :

The central area is the heart of the city, and main traffic arteries normally radiate or pass through it. Also it is the focal point of commercial activities of urbanised area, such as retail trade, offices, light manufacturing and entertainment and cultural activities.

The central area provides employment to people in shops and offices, in addition to having attractions which are special to the entire city and its people. It does not only have places, where people can spend their money but also provides human beings with a variety of outlets for the satisfaction of their social, cultural and recreational needs so that, life is enriched as well as made more comfortable. But due to unchecked and unplanned growth, these 'central area' functions have been adversely affected, giving rise to some of the most serious planning problems faced by the city.

The re-development of 'central areas' whether large or small is becoming an increasingly important issue, as they are invariably the worst problem areas of respective cities. This

calls for immediate and urgent attention, by way of study and proposals in the realms of urban planning and urban design within the prevailing planning conditions and context.

### 1.2 Warangal City :

Warangal is an ancient city as compared to most other cities of similar size in India. This city was founded in 12th century A.D. by the "Kakatiya Dynasty". Now it is the Headquarters of Warangal District, situated between North Latitude of 18 deg. and 79deg.4 ft. East longitude. It also connects the Hyderabad-Delhi, and Hyderabad-Madras trunk railway routes. It has an area of about 54.98 Sq.Km. Within municipal limits, and the population of about 4.85 lakhs according to the preliminary estimate of 1991 census. As this city as well as district being situated at a considerable distance from the sea coast, its climate generally tends to be dry and there is not much fluctuation in the mean daily temperature of various seasons. The normal annual rainfall of the district is 907.9 mm.

### 1.3 The problems of the Central Area of Warangal :

The 'central area' of Warangal city comprises of 4 complete wards and part of 16th ward of Municipality. It has an area of about 137.56 Hect. or 2.50% of the total area of city. And the central Area' has a population of about 47,2~~9~~<sup>9</sup> people, or 12.4% of the city population.

The central area of Warangal has been subjected to excessive pressure of growth of central activities, mainly commercial and light industries. Actually, the central Area functions have occupied the areas all along the roads in a ribbon development fashion. The growth of oil, rice, and saw mills, the growth of "Old Beet Bazar" and "Ellama Bazar" into whole sale markets and growth of repair, service and workshops etc. are the glaring examples manifesting of road encroachments.

The pressure of growth of commercial activities have resulted, in the conversion of residential lanes and coalies lanes converting residential buildings into shops, godowns, printing presses and host of other activities. The changing land/buildings use of Pinnavari Street and Vivekananda Swamy Road, Old Beet Bazar and Ellamma Bazar are examples of haphazard conversion of residential buildings into commercial ones. This process resulted in the increase of builtup are within the "central area", often in violation of development controls and building bye-laws. Consequently, the road network in the central area has become incapable, either of withstanding the pressure of growth or accommodating the required volume of traffic. Added to this are the problems of environmental pollution.

The Warangal Municipality and the Kakatiya Urban Development Authority are responsible for the planning and development programs, who have long been seized with the problems

of 'central area' of Warangal. It is with their enthusiasm and support for undertaking a study to understand the complexity of problems of "central area" and formulate bold and imaginative proposals that this is proposed as my thesis project.

#### 1.4 Aims and Objectives :

##### Aim :

The main Aim of this thesis is to study and assess the conditions and opportunities, which will make the "Central Area" of Warangal efficient, convenient and attractive so as to enable people to live, to work, and to move about more easily and more pleasantly than they are able to do now.

##### Objectives:

1. To understand the role, characteristics, problems, inter-relationship etc. of the Central Area of a city in general, through systematic study of available literature.
2. To make a comprehensive study of the socio-economic, Land use and built environmental conditions of central area of Warangal and identification of causes and impacts of the problems of central area. Particular emphasis will be given to the circulation within the "central area".
3. To have an assessment of the resources, potentials and parameters which would govern the planning and design proposals.

4. To make planning and design proposals for future to uphold and functions, the attractions of the "central area" through effective, convenient and comfortable arrangement of land-uses and built-environment components, within the broad scheme for over all development of the city.
5. To outline the strategies and frame-work for phase-wise implementation of the proposals.

#### 1.5 Scope and Limitations :

Though the problems of re-development of "central area" is more complex, the situation in the "Central Area" can be improved and opportunities for large scale re-development exist even today. And planners are being called upon to create whole new environments in many of the "Central Areas" of the world.

It is expected that the outcome of study would be useful in suggesting guide lines/policies regarding development and re-development of "Central Areas" of other cities. It is also intended, that this thesis work would prove to be an useful reference source for better comprehension of manifold aspects of "Central Areas" of similar cities in Indian context.

The master plan of Warangal city for the year 1991 as prepared in 1961 and approved in 1971. Since then, there has not been any work for the development of the city. The various planning data on Warangal city required for such an extensive

task has been out dated and poses severe constraints, within the availability of limited time and other resources, a comprehensive planning study for this purpose. Though, efforts will be made together with some upto date information on most relevant planning aspects, the bulk of the information would be necessarily based on the secondary sources. The absence of detailed upto date information on all aspects even for the 'Central Area' is bound to have its reflection on the extent and intensity of the coverage of the thesis work.

#### 1.6 Methodology :

1. The relevant literature study will be undertaken with the help of books, reports documents etc. available in the Library.
2. Relevant 'data' related to physical, socio-economic and Built-environment aspects of the "central area" will be collected through field surveys, photo surveys, interviews etc. and also from various organisations for secondary data.
3. The analysis of 'Data' obtained thus, will be done using appropriate analytical techniques. All necessary projections related to future requirements and conditions will be made through appropriate statistical methods..

4. The study and analysis will be depicted graphically the planning and design proposals will be made in terms of statements and graphic plans.



# CHAPTER 2

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## CHAPTER - 2

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### LITERATURE SURVEY

The Literature survey is undertaken in order to understand the problems, concepts related to the Central Area including the policies and the principles regarding the redevelopment of the Central Areas.

#### 2.1 Definition of the Central Area:

\*

The central areas usually the oldest part of the city and contains the buildings of historical and architectural importance. It is also the place in which one finds hotels, shops, cinema halls and many other shopping establishments. The central area is also a place which gives employment to the people in shops and offices. It is not only provide places where one can spend money, but also, provides human beings with a vareity of out lets for the satisfaction of thier needs so that life can be enriched as well as made more comfortable.

\* Jean Gotman, "The evolution of urban centrality" Journal of Ekistics, 233, ( Apr. 1975 ) pp. 220-221

Based on the characteristics of the central area mentioned above, the definition of the central area has been formed as under.

"The central area is defined as not only an oldest part of the town/city but also the main part of the town/city including the existing and newly designed centres (shopping and entertainment) and structural city units. It is the place, that which provides all socio-economic and cultural needs, connecting all municipal functions."

#### 2.1.1 City:

\*

The term city conveys, in fact, combines the characteristics of population size, density and governmental organization, that expresses both the administrative and political unit of the community and the presence in the urban place of economic and social activities not normally to be found in non urban places.

#### 2.1.2 Centrality:

The centrality means that all the urban institutions such as markets jewellery shops etc. are gathered at one place so the presence of these central area functions makes the place central.

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\* Jean Gotman, "The Evolution of Urban centrality" Journal of Ekistics, 233 (Apr, 1975) pp.220-221

## 2.2 The History and the Dynamics of the Central Area :

\*

In preindustrial world the origins of the central place belong to administrative, the market, and the religious functions. During the Greek period, the 'AGORA' or the town square was the Centre of social and business life around or near the temples, colonnaded porticos, administrative and public buildings . The palaces, assembly halls and stadium were one of the common features of every Greek town. The 'Agora' was usually located in the approximate centre of town plan, with the major east west and north south streets leading to it. It was designed to accommodate all the citizens who would have business in the marketplace or attend public functions in the adjacent public buildings.

Then, the Roman "Forum" corresponding to Agora in Greek city, was a central place used as a meeting place and market. For a small town a small "Forum" would suffice, but in larger towns several forums were needed though there was always one, of principal importance. When the town had grown from small beginning the forum was of irregular shape but when the towns

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\* Jean Gotman, "The evolution of urban centrality" Journal of Ekistics, 233, (Apr, 1975) pp.220-221

were newly founded, the forum has laid symmetrically on formal lines. All were designed to meet the requirements of the Roman citizens and with the surrounding buildings they reflect not only the religion, law and commerce of Rome but also the busy corporate life and Roman centres. but the industrial evolution shifted the focus of urban growth and urban centrality to the agglomeration of manufactures. In the industrial regions manufacturing location appeared to be the prime mover of urban growth and urban centrality. The people gathered around the manufactures to service the plants. The industries require services in variety of ways such as the machines of the producing plant had to be manned and serviced this was done by the production workers, similarly the plants also needed the service personnel, management and supervision of the whole process. Thus a varied work force gathered on the site, resided nearby and attracted retail shops, transport, offices, and recreational amenities and the general agglomeratrion increased the need for public service personnel for administration. The concentration of manufacturing has caused the large cities to multiply in size and number. It also delocalized and even degeneralized urban centrality, giving in the most cases a cosmopoliton network to rest upon.

In the twentieth century, technology again transformed the occupational structures of developing countries. It is beginning

to be so in developing countries. Altogether the concentration of manufactures has now lost its impact on urban centrality.

\*

The new "Centripetal forces" propel urban concentration in this modern post industrial stage. In order to identify these forces. There is a need of the following studies in rescuing the central areas.

1. The changes in the occupational structure,
2. The changes in urban land use,
3. The use and the design of buildings in Central Areas,
4. The networks of transport and communication.

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\* Jean Gotman , " The Evolution of urban Centrality" Jornal of Ekistics, 233, (Apr, 1975 )pp. 220- 221

## 2.3 CONCEPTS OF CENTRAL AREA:

### 2.3.1 Hierarchy:

According to Kristenson's theory, Central place is at the top in the hierarchy level and supplies the Goods to the other small centres. Similarly, the Central Area of Warangal has got the biggest wholesale markets related to the food grains, etc. which are the major suppliers of the goods to the other parts of the city.

### 2.3.2 Attraction:

The central area is a centre of attraction. It is the only place where people from many different groups characterized by age, income, education and life style, actually come together, where they can meet and look at each other. The attraction of the area lies in variation, complexity and broad specialization. Generally, a trip to the city centre consists of either visits to shops or visits to other activities. The diversion of city centre can be intensified by giving a number of non commercial activities.

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\* Allpass John, "The city centre for whom" Journal of Ekistics  
vol. 297 (Nov./Dec., 1982)

### 2.3.3 Land values :

The land values within an area depend on accessibility to the area as well as the attraction created by its functional and environmental capacity. The site value means high rents for business establishments followed by high land and property prices.

Rent levels are not only an expression of the fact that a land owner wants as high a rent as possible for his premises. The rent level is determined by the market with its external factor. Eg., shopping orientation or physical accessibility to the city centre, will result in alterations in rent levels.

Another factor in determining the property values is environment of the building. However, the change of the use and the improvement of the building standards are the factors, which influence the rent level. The site value decreases as one moves inwards into the property. If there is the possibility of opening the block and making the back building more accessible, then the site value will be increased. Along the shopping streets one finds a number of highly specialised establishments able to pay high rents for instance, exclusive fashion shops, Gold Jewellery shops etc. Similarly, the following are the shops with low capacity to pay rent. Book shops, traders, General stores etc. as per Kristenson theory.



#### 2.3.4 Location of activities:

The activities can be divided into groups according to their assumed needs of central location. The first and most relevant group is "Business establishments" needing central location due to their need for very frequent contacts with other business establishments and activities, such as (as per Kristenson theory) the management-coordination, central marketing for large enterprises, public administration, trades organisations, retail trade shops with selected goods, hotels, restaurants, and so on.

#### 2.4 PRINCIPLES OF CENTRAL AREA POLICY:

The following are the principles related to the Central area policy suggested by the Idea plan 77.

- \* That the future of the city centre shall primarily be based on the inhabitants' needs for such an area
- \* That the city centre shall be composed of sub-areas each with a different identity.
- \* That the existing historical buildings of the city centre shall be preserved and developed by cautious improvements.

\*Allpass John, "The city Centre for Whom" Journal of Ekistics . Vol. 297 (Nov./Dec., 1982)

- \* That the existing city centre shall be used and developed as regards buildings, parking grounds and traffic systems.
- \* That the variations in property values between different parts of the city centre shall be reduced.
- \* That a public plan for the renewal of the citycentre shall be created and that the renewal shall be organized and carried out by means of integrated public and private contributions.

#### 2.5. PRINCIPLES OF REDEVELOPMENT OF CENTRAL AREA:-

\*

The following principles have been suggested to follow before undertake any Redevelopment project.

1. The aim of any redevelopment must be to enable people to live to work, to play and to move about more easily and more pleasantly than they have been able to do in the past.
2. History has built city centres. All new developments must be sensitively and imaginatively related to our historical heritage, but it must also be designed in an uncompromisingly modern manner.

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\* Moffelt Noel, "Copenhensive redevelopment is a creative Art",  
Journal of ITPI vol. 49 (Feb., 1967).

3. New Scale is inevitable in city centre, with some very tall buildings, with wide streets and a huge volume of traffic, both vehicular and pedestrian.
4. Complete Vertical separation of pedestrian and vehicular movement is necessary.
5. No fast vehicle road should be permitted in city centres.
6. The street pattern should be based on future needs ( not on present ones) and no new street should be built or planned until a proper traffic survey is carried out.
7. Positive constructive planning is better than negative, restrictive planning;

#### 2.6 Some aspects of Central Area Redevelopment (A case study of Hanley, Staffordshire

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The problem of central area redevelopment is a very wide and complex problem, so it is highly essential to understand what is an academic approach, prior to any attempt at the formulation of redevelopment proposals. The study of Hanley, Staffordshire suggests that the following studies have to be undertaken before arrives at redevelopment proposal :

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\*Herbert. D.T., "Some aspects of central area redevelopment."

Journal of ITPI vol 49 (April, 1963), pp. 92-98

1. Firstly, the detailed study needs to be made of present day central area, e.g. land use pattern, net work, structural, locational characteristics and functions. So that, the clues to either to adopt or alter radically can be evolved.
2. The evolution of central areas is to be analysed, because this provides a means of understanding any natural trends which are at work as the different parts of the city has been developed for different reasons.

## 2.7 The existing conditions and the Planning key issues in Indian Context:

The following are the planning key issues which have been suggested based on the existing conditions of the Central Areas in Indian context.

### 2.7.1 Land \ Building use :

Dominantly mixed land/building use pattern of central areas makes it unsuitable for modern industrial facilities, highrise corporate complexes and plotted developments of residential apartments. Yet, the central area retains a focal position in the urban fabric as a source of revenue and as a nerve centre for

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\* Martyn. D., "Urban planning and Design : Some Planning key issues" Journal of Architecture + Design.Vol. VII ( Sept.&Oct., 1990). pp.66-69

activities. The major business that continues to flourish survives on its cultural and traditional value such as bazars. Also, a significant components of the area's existing economic activity is in the informal sector. Production, storage and service centres are located in close proximity, stimulating a flow of merchandise and wealth to complete the economic cycle. There is an ample stitistical data to prove that commercial activities have gradually been introduced in the residential areas, resulting in the latters larger scale conversion to commercial purposes property. Consequently, there is an increase in land value and traffic , and heavy stress on the holding capacity of service infrastructural facilities. Often a the affluent class along with the big business, moves out to the new developments primarily owing to the increasing congestion and environmental degradation, and also because of frequent out burst of communal violence.

#### 2.7.2 Circulation pattern :

In Indian central area, animals and automobiles share the right of way with human beings. Old cities were not designed for heavy traffic generating land uses so instead of rationalising the old city circulation system to meet the demands of free traffic flow. It is more sensible to adopt a traffic management strategy suited to the existing street net work.

The concept of pedestrianisation is worth serious consideration specially, in historic precincts. It provides not only a safety factor for both people and the built heritage. but also restores the legitimacy and celebration of street life in India.

### 2.7.3 Housing Stock:

The increasing commercialisation has destroyed the dwelling environment and sense of territory. An Indirect impact of this has been the steep rise in market price of land rise in built up areas ( density ) and finally rise in rents.

There is no doubt that maintaining rents at affordable levels has helped to stabilize the low income groups in pockets of the central area which would otherwise have been lost.

It is cruel irony that rent control has been responsible for both the survival of portions of housing stock and at the same time, for its obliteration owing to neglect over the past decades. So the rent control is obviously not a solution in itself. The management statement can be broken only by courageous action by Government aiming to solve the tenurial problem. Therefore, the issue of tenant must be incorporated in Housing Policy.

## 2.8 FINDINGS FROM LITERATURE SURVEY

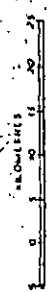
1. The study of existing land use pattern and evolution of the Central Area is essential.
2. The development of site must be related to the proper distribution of land uses in the Central Area as well as to traffic solutions. The development also has to be designed in relation to the surrounding areas so that it fulfills three dimensionally as well as in its functions.
3. Traffic problems can not be solved by one way streets, by linked traffic signals, by providing parking or by providing by pass roads as the people may not wish to by pass the central area. The traffic problems have to be related to the land use problems and solutions must be based on central area functions and what is happening and likely to happen in the rest of the catchment area.
4. American experience suggests that decentralization of many retail uses from central areas not only is inevitable but actually desirable in the cause of both convenience and better planning.
5. The diversity of the Central Area can be intensified by providing the commercial activities.

6. The City Centre must not functionally be looked up on as one big cake instead new sub-centres should be built up in the Central area to relieve central area congestion and strengthen the central areas through asset wide retail selection.

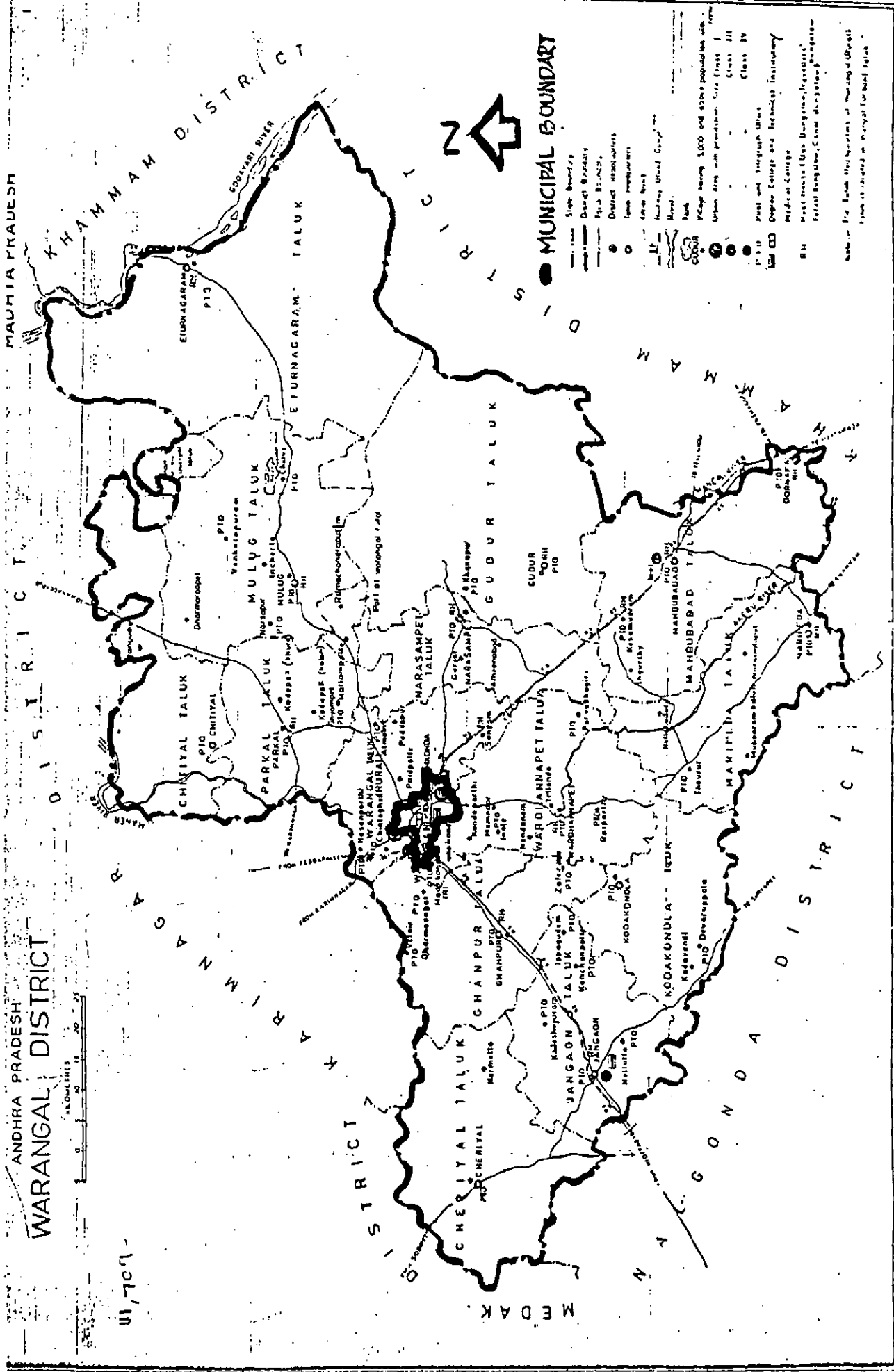


# CHAPTER 3

ANDHRA PRADESH  
WARANGAL DISTRICT



117091



WARANGAL CITY LOCATION

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## CHAPTER - 3

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### WARANGAL CITY AND ITS GROWTH

#### 3.1 Geographical and Climatic Setting :

Warangal District is bounded on the North by Karimnagar District, on the South by Nalgonda District on the East by Khammam District and on the South West by Medak district. It lies on the Deccan Plateau which is about 900 Feet above the mean sea level. Hills and Hillocks are scattered all over the District, famous among them being the Kandical Hills popularly known as eastern ghates.

Warangal lies 18 deg.-0'-4" North latitude and 79deg.-4'-28" East longitude. Its on the Madras-Delhi section of the south central railway at an altitude of about 900' above the mean sea level.

The Warangal district has variety of soils, comprising sandy loams with patches of shallow black cotton and at places even medium and deep black cotton soils, while the soil in the city consists of the loamy, clay loamy, sandy loamy black cotton and rocky soils.

The natural slope of the city for Warangal and Hanamkonda areas can be taken from South to North while Khazipet region slopes from North West to South East.

The wind direction in the city can be taken as from South to North, East to West, and North to South during the periods from January to May, June to September and October to December respectively.

### 3.2 History :

The history highlight the travels of development taking place from time to time in Warangal. Therefore, the history of Warangal can be traced in four stages as described in the following paragraphs.

#### 3.2.1 The Kakatiy stage (1260-1422) :

Warangal it self may not be very ancient but Hanamkonda and the legends surround it appear to link the area up with the great vishnukundins and others previous dynasties of the Bhuddist and Pre-Buddist period of the History. The district originally formed a portion of the ancient kingdom of the Andhra Kings, who ruled the whole Deccan. During the 8th century it was "ORUKAL" the capital of Yadava kings of Tuluva Andhras. For nearly 200 years from the middle of the 12th century it formed a part of the territories of the Kakatiyas or Ganapatis of Warangal. Proloraja said to have captured the chalukya king Taila III and won over

successfully against the other kings. His son Rudra I extended his possession while Raja Ganapati claims to have defeated the king of Kalinga, and to have had the kings of southern Gujarat and Bengal at his vassels ruling as far as the Nellore District of the present Andhra Pradesh. Ganapati was succeeded in about 1257 A.D. by his daughter Rudrama Devi who has been mentioned as the ruler of the country by the great traveller Marcopolo.

The Rajas of Warangal in the beginning were vassels of the Chalukya kings of Ganapathi, but in the eighth century A.D. when the latter dynasty became extinct and the sovereignty of the Deccan, passed to the Rastrakutas the Warangal kings assumed independence and the dynasty gradually rose into power. The first important king of the family was proloraja who ruled from 1150 to 1163 A.D. Proloraja was the father of Rudra Deva I, the founder of the well known Hanamkonda Thousand pillar temple. The fort of Warangal was founded by Kakatiya King Ganapati (1190 - 1200 to 1260 - 61) and was completed by his daughter Rudrama devi, who succeeded her father in the absence of a male issue. She built the outer massive mud wall which was commenced by her father. The outer wall is 72 feet wide and 56 feet high. This wall is said to have had a circumference of thirty miles. A large temple in the centre of the fort, which was presumably under construction has been excavated. The boundary of the original temple was marked by four elaborately carved gate ways

facing the four cardinal points. There are a number of temples dedicated to Narasimha Swamy, Padamakshi and Govindarajulu Swamy temple.

### 3.2.2 Transition Stage (1422-1725 A.D.) :

With the fall of Prataparudra into the hands of Mohammed Bin Tughluq in 1323, the kingdom of Warangal had seen decline and by 1430 A.D. it had completely lost its individuality during the reign of Allauddin Bahamani.

On the break up of the Bahamani kingdom, Warangal fell to the shape of Qutub Shahis of Golconda. Under the Qutub Shahi period Warangal remained as the second city of the kingdom. In 1687 when Golconda was captured by Aurangzeb, Warangal also automatically annexed to the kingdom of Delhi. Rohillakhan was entrusted with the administration of Golconda, and Hyderabad and later Mubarak Khan took place as subedar till 1724, when he was defeated and killed in Berar by Nizam-ul-Mulk Asif Jahi-I, who later declared himself independent of the kingdom of Delhi and rules the Deccan. Thus Warangal came under the way of the Nizams dominance.

During this period Warangal was divested the status of capital city, economy was disturbed and political ownership was unsettled. It then became the third city of the region. During this stage people began to settle down outside the fortress of

warangal. The carpet merchants settled in the place called Deshaipet, which now became famous for carpet Industry in Warangal. As the population expanding towards north-south and west, the Suburbs like Ramanna Pet, Rangashaipet and Laxmipur came into existence. Hamankonda had virtually become the greatest religious centre of the city. It gave impetus to settle down outside the fort of Warangal.

### 3.2.3 The Asif Jahi Stages (1725-1948) :

This period can be characterised in three distinct phases :

- i. Construction of Subedari buildings.
- ii. Construction of Railway Stations, and
- iii. Appearance of cotton mills.

During 1926, when Warangal was declared as the Head Quarters of Suba, the plan for constructing the Government Buildings was completed. In the wake of its constructions there came into existence around the buildings, a cluster of shops and dwelling houses. Another factor which contributed to the growth of the city was the constructions of Railway Stations connecting the Hyderabad-Delhi and Hyderabad-Madras during the last decade of 19th century. Within a course of twenty years a densely populated locality at Khazipet came into existence. The Azam Jahi Mills on east side of Central Area, the Rice Mills in the

South and the Oil Mills near north west boundary of fort. At the end of this period, the city limits were determined.

#### 3.2.4 Modern Stage (1948 onwards) :

Until the recent years the district was under Nizam Alikhan of Hyderabad. After the independence, the Government of India took police action against Nizam of Hyderabad, who refused to merge his area under the Andhra Pradesh State.

However, during 1920 transportation links were strongly established under Britishers. In the subsequent years Khazipet Junction has become an important nodal point. Strong road links were also formed connecting all adjoining district head quarters.

### 3.3 Demographic studies

In the present day context of town planning process demographic studies are very important. Any change in human population has impact on the land uses and demand and supply aspects of the city. Most of the urban population problems are related to uncontrolled growth of urban population. Study of town demography would help in planning for future as well as analysis of the existing problems.

#### 3.3.1 Population Growth :

Changes in the population of Warangal city from 1901 A.D. and onwards is given in Table No.3.3.1. This table reveals that, The population of Warangal city has grown from 10,487 persons in



1901 to 4,65,480 in 1991 with exception of the decade ending with 1921 when the great epidemic affected. The average decade growth is 74.38%. The growth is mainly due to its importance as a educational centre and due to the mounting activity of the road transport and commerce.

Table no.3.3.1

Population growth of Warangal City

| Year | Person   | Decade Variation | Percentage to Decade variations | Males    | Females  |
|------|----------|------------------|---------------------------------|----------|----------|
| 1901 | 10,487   | -                | -                               | 5,241    | 5,246    |
| 1911 | 48,342   | +37855           | +360.97                         | 24,664   | 23,678   |
| 1921 | 46,791   | - 1561           | - 3.21                          | 23,998   | 22,803   |
| 1931 | 62,119   | +15326           | + 32.76                         | 33,326   | 28,793   |
| 1941 | 93,808   | +30689           | + 49.40                         | 48,036   | 44,773   |
| 1951 | 1,33,130 | +40322           | + 43.45                         | 68,143   | 64,987   |
| 1961 | 1,56,106 | +22976           | + 17.26                         | 80,928   | 75,178   |
| 1971 | 2,07,520 | +51414           | + 92.93                         | 1,07,928 | 1,00,101 |
| 1981 | 3,35,150 | +127630          | + 61.50                         | 1,73,233 | 1,61,917 |
| 1991 | 4,65,480 | +130330          | + 38.89                         | 2,38,257 | 2,27,223 |

Source : Census 1981

### 3.3.2 Literacy.

Warangal city has many educational institutions and it is considered as one of the best educational centre in the Telangana region. The total number of literates in the city and Central area are given in table No. 3.3.2.

Table no 3.3.2

#### Literacy

| Discription                    | Year | No. of lit. | % to total |
|--------------------------------|------|-------------|------------|
| Literacy<br>in city            | 1971 | 128079      | 61.71      |
|                                | 1981 | 173244      | 69.69      |
| Literacy<br>in Central<br>area | 1971 | 18607       | 56.39      |
|                                | 1981 | 25122       | 60.88      |

Source : District census Hand Book,  
Warangal District 1971 and 1981

As seen from the above table , during last decade the literacy has increased in both the City and Central area. It is about 8%, of increase in the city and 4% in the Central area. The present percentage of Literacy in the city is 69.69%and the central area is 60.88%

### 3.3.3 Working Force

Warangal is famous for both trade and commercial activities and educational activities. Most of the workers are

# COMPARISON OF WORKING FORCE OF CENTRAL AREA (BETWEEN 1971 AND 1981)

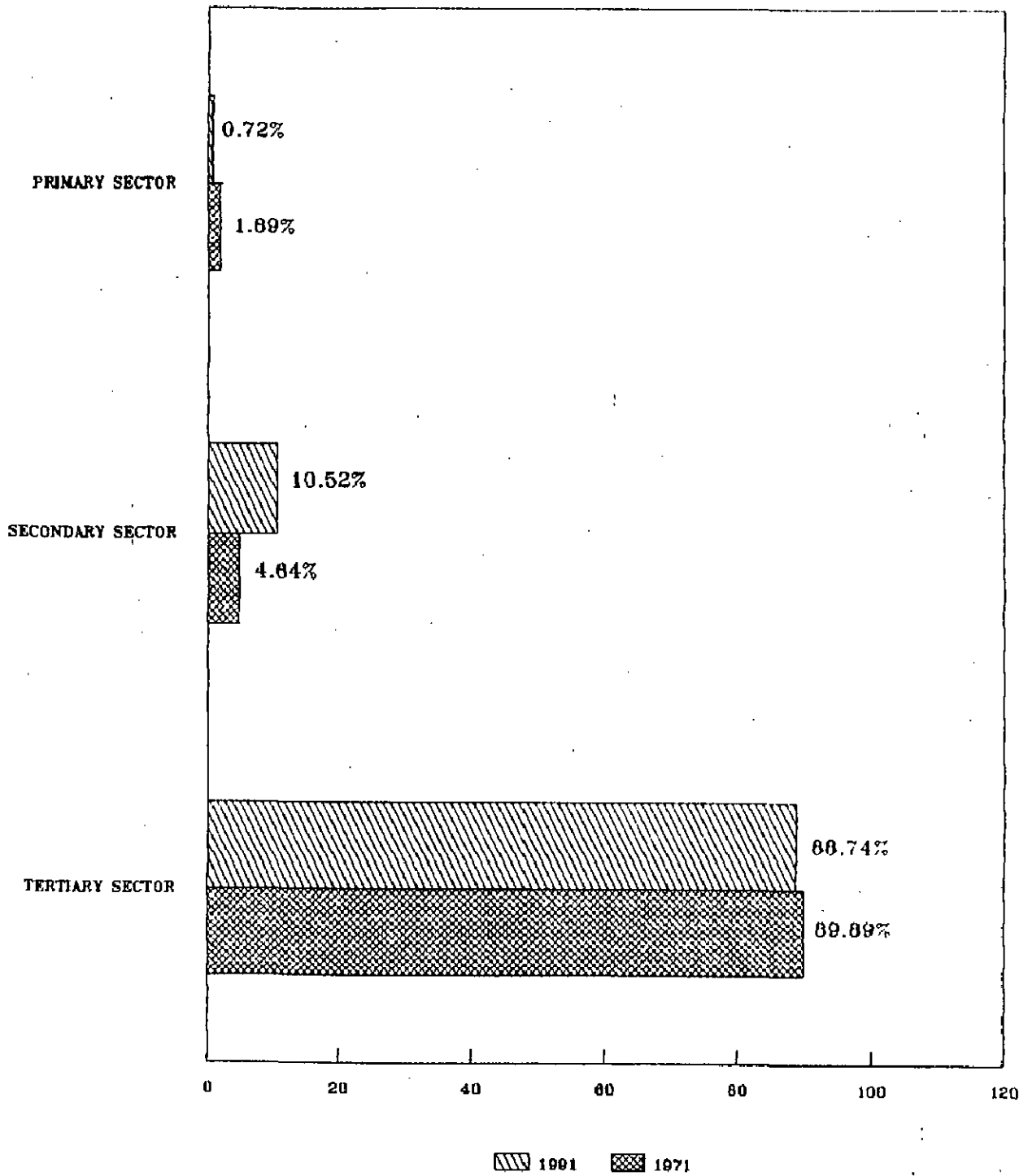


Fig. No: 3.3.3

Source : District Census Hand Book 1971 and 1981

involved in commercial and servicing activities as seen in the table below (3.3.3). The other workers category has the highest percentage (85.27%) of the total working population. (see Fig No.3.3.4). While the primary sector workers and house hold workers constitutes 7.89% and 6.43% of the total workers. During last decade , it is about 1% of increase in the other workers and it is about 0.29% of decrease in primary sector workers. It indicates that there is no significant change in the Working force.

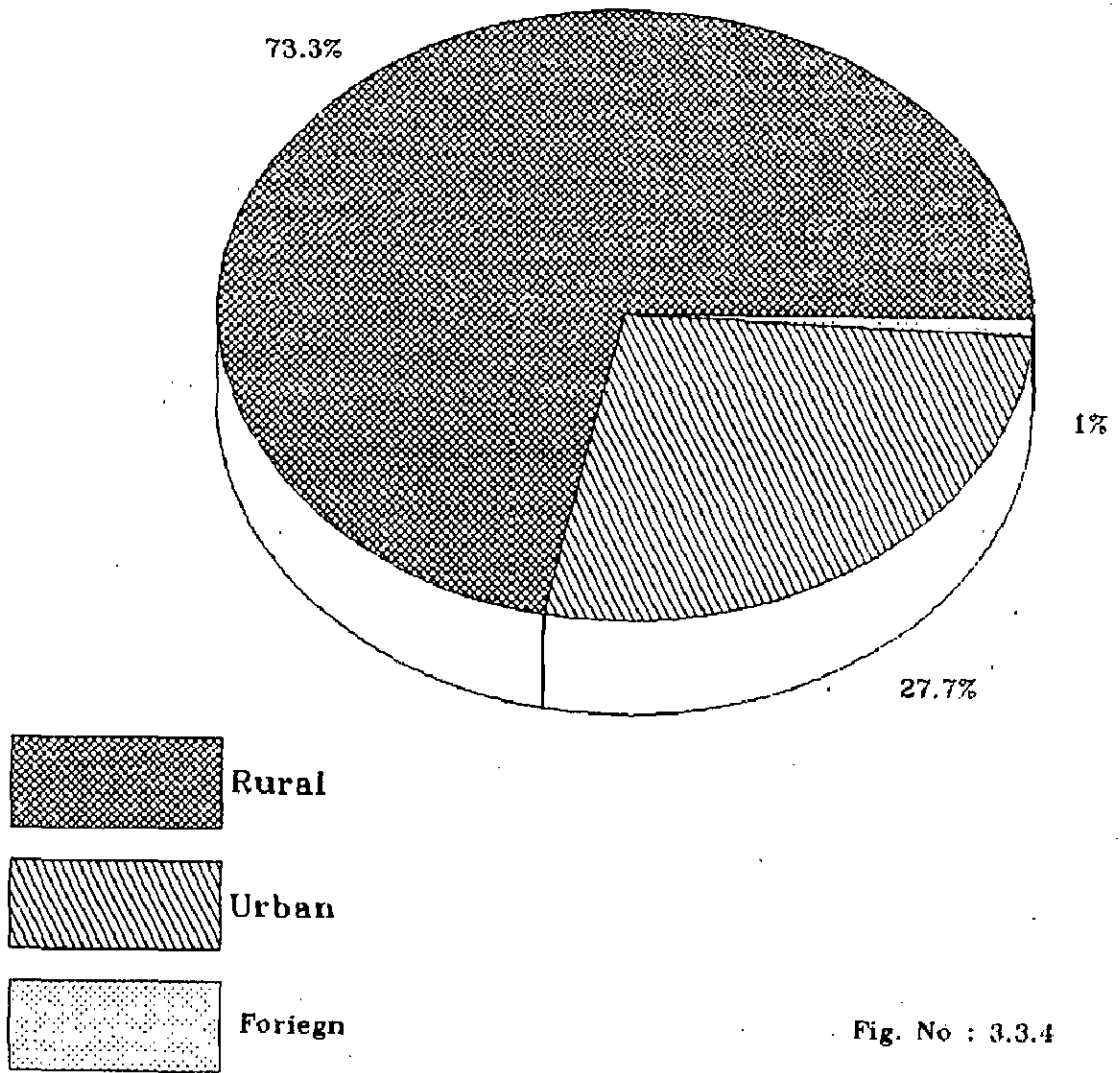
Table No.3.3.3.●

Distribution of working population in City

| Category             | 1971                |            | 1981               |            |
|----------------------|---------------------|------------|--------------------|------------|
|                      | No. of workers      | % to total | No. of workers     | % to total |
| Cultivators          | 2597                | 4.34       | 2440               | 3.09       |
| Agricultural labours | 2267                | 3.84       | 4565               | 4.80       |
| House hold Industry  | 4001                | 6.82       | 6502               | 6.43       |
| Other workers        | 49793               | 84.89      | 81059              | 85.27      |
| Total workers        | 58658               | 100.0      | 95061              | 100.00     |
| Total Non workers    | 148862<br>(in 1971) | 79.74%     | 20089<br>(in 1981) | 71.64%     |

Source :District census hand book 1971,1981.

# MIGRATION OF WARANGAL



Source : 1981 Census Report

#### 3.3.4 Migration :

There are three types of migrants who come into the city:

They are,

- i. From urban areas
- ii. From rural areas
- iii. Foreign

The maximum number of migrants are coming into the city from rural areas in search of jobs (see. Fig. No.3.3.4) Then from the urban areas for better employment opportunities. As Warangal consists many number of educational institutions of regional importance and other small scale industries, it is attracting the population from various places.

Warangal has got REC of regional importance one Medical College, one University and other private engineering Colleges and many number of Degree Colleges etc. are the major attractions of migrants.

# CHAPTER 4

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## CHAPTER - 4

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### CENTRAL AREA OF WARANGAL

#### 4.1 Location and Identification of the Central Area

The following are the general characteristics of the Central Area, which have been considered in its identification.

1. Central Areas are usually heavily congested and are normally old parts of the city.
2. Density of population is very high as compared to other parts of the city.
3. High land and rental values show an increase out of proportion to the change in land values in other parts of the city.
4. It is the area of traffic problems such as traffic concentration, bottlenecks, congestions, heavy volume etc.
5. It is focal point of the commercial activities, such as retail and whole sale trade, offices, light manufacturing etc.
6. The land use pattern of central areas is complicated pattern and it is the place of large number of blighted areas.



Based on the above factors or characteristics, the boundary of Central Area of Warangal has been identified as under :

The 'Central Area' of Warangal city comprises of four complete Municipal wards and a part of 16th ward of the city. (see Map No.4.1.1). The Central Area bounded by Mandi Bazar road and Ellamma Bazar road and its abutting development on the North side. The Station road connecting the Narasampet road forms the Eastern limit, which is along play ground of A.J. Mills and follows up to Railway Station (Warangal). The Railway line from station (Warangal) to railway gate situated in the old Beet bazar forms the southern limit and the Viveka Nanda road extending upto Matwada forms the western limit of the Central Area. Thus, the area of Central Area comes out to be 137.56 Hectares or 2.50% of the total area of the city and it has the population of 47,229 or 12.41% of the city population.

#### 4.2 Functions :

The functions of Central Area will be described in terms of administrative, commercial, religious and their location so that its importance will be evolved. The area reflects high intensity of development and concentration of higher order central activities. Identified Central Area functions are as under :

1. Whole-sale and assembly : located in 16th ward in  
ing market of commodities Girmajipet.
2. Whole-sale market : located in (Ramannapet)  
(grain and pulses (12th ward) Old'Beet  
drugs etc.) bazar and on both sides  
Vivekananda road.  
Drugs market located in  
Pinnavari street.
3. Business offices and : They are scattered along  
Banking institutions Jayaprakash Narayan Road  
and Rabindra Nath Tagore  
road.
4. House hold and service : Spread in whole of the  
industries and light Central Area. Most of  
industries. them oil and Rice Mills  
etc. located in the old  
Beet Bazar Area.
5. Civic health and educa- : One maternity hospital  
tional institutions situated in Girmajipet,  
one library is situated  
in 12th ward. The  
Ayurvedic medical college  
other educational insti-

tutions are dispersed in all places in Central Area.

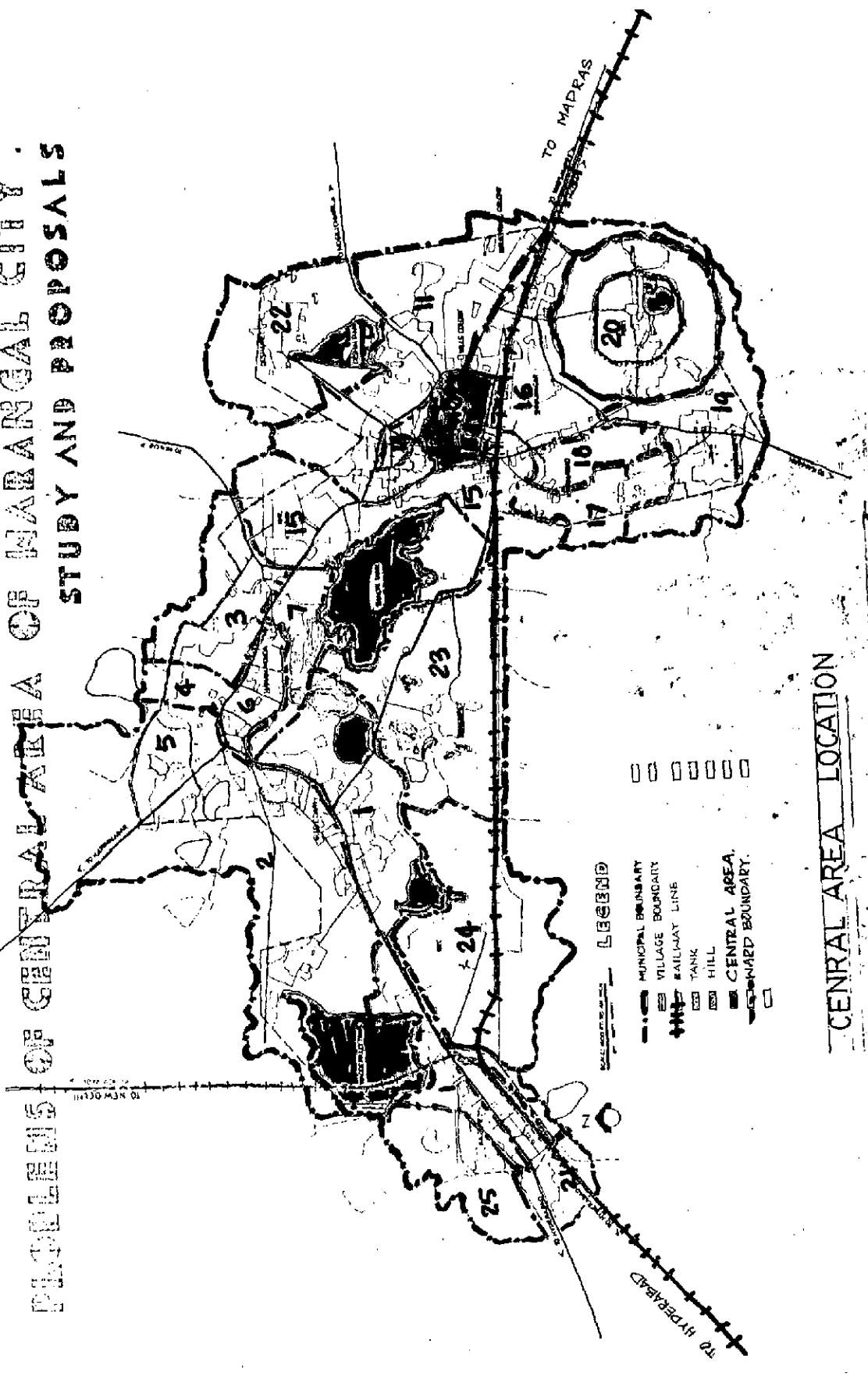
6. Transport

: There is one bus stand (Major) situated near railway station in Girmajipet. There are Lorry Transport service centres situated in old Beet bazar area.

7. Entertainment

: There are about four theatres

# PLANS OF CENTRAL AREA OF MARGAL CITY : STUDY AND PROPOSALS



- LEGEND**
- MUNICIPAL BOUNDARY
  - VILLAGE BOUNDARY
  - +++ RAILWAY LINE
  - TANK
  - ▒ HILL
  - ▒ CENTRAL AREA BOUNDARY

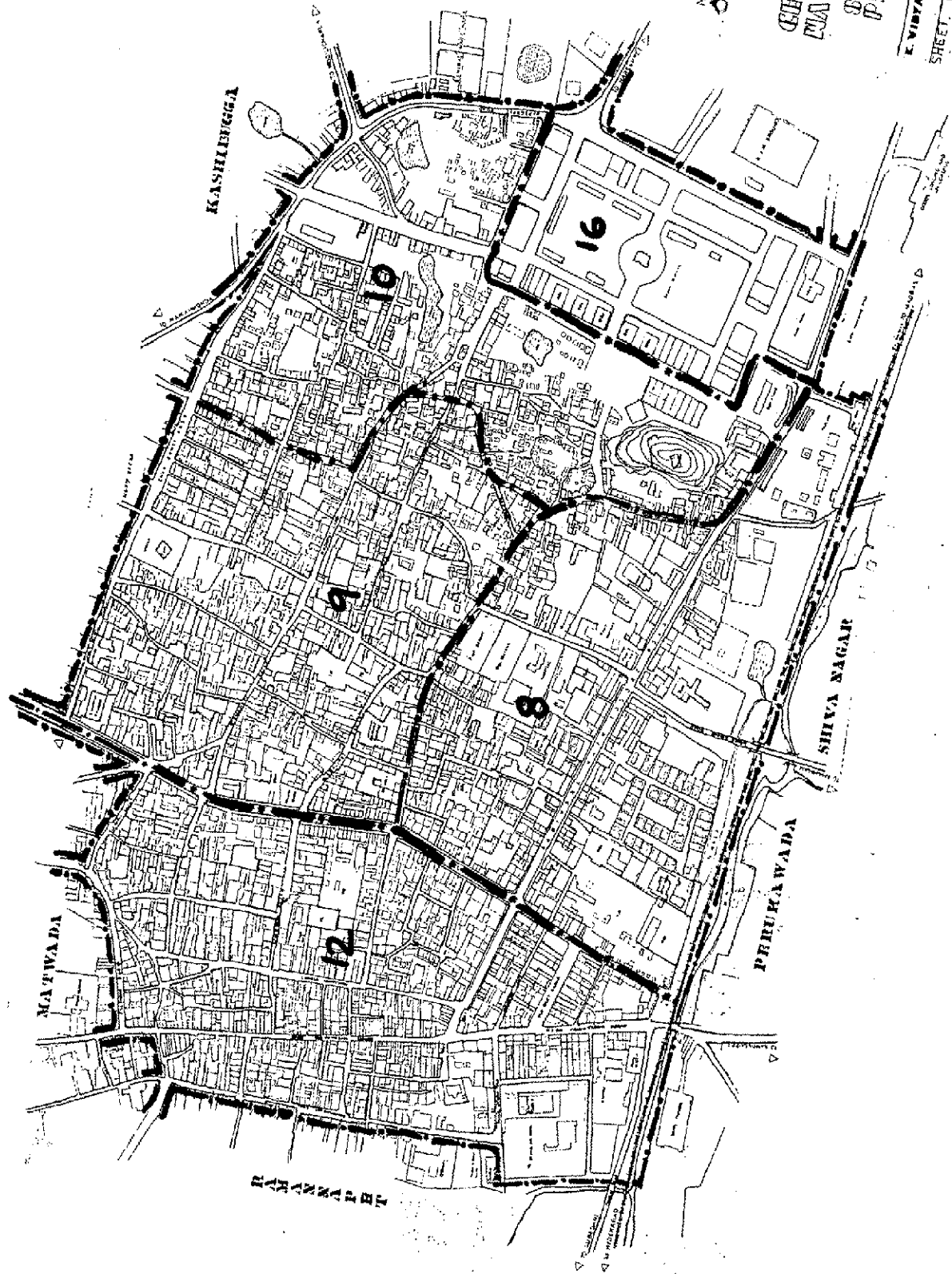
CENTRAL AREA LOCATION

DENSITY

| WARD      | NET | GROSS |
|-----------|-----|-------|
| 8TH WARD  | 534 | 150   |
| 4TH WARD  | 364 | 206   |
| 10TH WARD | 424 | 146   |
| 12TH WARD | 253 | 153   |
| 16TH WARD | 142 |       |

PROBLEMS OF  
CENTRAL AREA OF  
MADRAS CITY  
STUDY AND  
PROPOSALS

E. VIJAYARAO, C.E. (SUDR.)  
SHEET NO. 1  
1953-56  
MAP NO. 437



RAMANNA PET

### 4.3 Housing :

To study the housing conditions, it is necessary to study the concentration of population in a community. Population and housing are inter related factors. The concentration of population in Central Area of Warangal varies from part to the other. Comparing the densities (Ref. Table 4.3.1.1 & 4.3.1.2 ) of 1971 and 1981, we shall see how the density of populations and density of houses are related. Density of various wards of the Central Area is given in the table below (4.3.1.1) and see Map No.(4.3).

Table No. 4.3.1.1

Gross and net Density of Central Area : 1981

| Ward Area No. | No. of Houses | No. of H.H. | Persons | Males | Females | Gross Den. PPA | Net Res. Density PPA |        |
|---------------|---------------|-------------|---------|-------|---------|----------------|----------------------|--------|
| 8             | 79.01         | 1524        | 1530    | 8553  | 4434    | 4119           | 108.2                | 534.56 |
| 9             | 76.66         | 3064        | 3093    | 15818 | 7975    | 7843           | 206.33               | 383.39 |
| 10            | 77.50         | 1957        | 1978    | 11384 | 5332    | 5033           | 133.79               | 424.14 |
| 12            | 81.35         | 2263        | 2279    | 12485 | 6277    | 6208           | 153.47               | 253.91 |
| 16            | 33.19         | 59          | 59      | 10    | 4       | 6              |                      | 142.85 |
|               | 347.64        | 8867        | 8955    | 47221 | 24018   | 23203          |                      |        |

Source : Census 1981, Handbook of Warangal District.

**INFERENCES : (From the Above Table)**

1. Max. density is there in 8th ward, which is 524.31 persons/acre.
2. Next max. density is 384 persons per acre in 10th ward.
3. Eighty eight House-holds are living without own residences.
4. Total no. of house holds is 8955, total no. of houses is 8867,
6. House hold size is 5.2.

**Table No.4.3.1.2**

**Density of Central Area - 1971.**

| S.No. | Ward No. | Population | No. of Resd. | No. of H.H. | Area in Acr. | Gross density PPA |
|-------|----------|------------|--------------|-------------|--------------|-------------------|
| 1.    | 8        | 7189       | 1292         | 1472        | 79.01        | 90.9              |
| 2.    | 9        | 8832       | 1132         | 1600        | 76.66        | 115.2             |
| 3.    | 10       | 10384      | 1777         | 2324        | 77.58        | 133.8             |
| 4.    | 12       | 11549      | 2043         | 2176        | 81.35        | 141.96            |
| 5.    | 16       | -          | 52           | -           | -            | -                 |
|       |          | 37454      | 6296         | 7572        | 339.69       |                   |

Source : Census 1971, Handbook of Warangal District.

**INFERENCES : (From the Above Table)**

- \* Max. density 141.96 persons per acre in 12th ward.
- \* The tenth ward is the next max.(133.8 PPA) after the 12th ward

- \* The min. density(90.9) PPA is in 8th ward.
- \* It is estimated that about 133 HH are living without residences.

#### Comparison between 1981-71 :

- \* The total no. of houses is 6296 in 1971, Now it has been increased to 8867. It is estimated about 2571 houses or 28.9% of the total no. of houses have been constructed in a decade.
- \* While the 12th ward has got the max. density in 1971, 9th ward has got the maximum density in 1981, because about 1961 houses have been constructed only in 9th ward.
- \* The gross density has also increased from 120.46 to 150.43 persons per acre.
- \* The house hold size has increased from 5.01 to 5.27 in a decade.

#### 4.3.1 Shortage of Housing :

It is estimated that there are about 8867 dwellings for 8955 Households, which works out to 1.01 house holds per dwelling. 88 house holds have no seperate accommodation. The average house holds as per 1971 census is 5.01 persons which is less than 5.27 in the year 1981. The reason for this discrepancy might be that many of the dwellings have been sub divided for want of accommodation by the house holds for the purpose of earning more rent. As a result these areas are accommodating more and more



persons within the same area with some attractions in the existing accommodation, there will be problems of congestion.

#### 4.3.2 Structural Conditions of Houses:

The study of structural conditions provides the opportunity for changes that could be made for creating good environment in the Central Area. The study of structural conditions can be assessed from the material used for wall and roof and by its age of the buildings. The materials which have been used for wall and roof are given in the table below. (4.3.2)

Table No.4.3.2

Materials of Wall and Roof

| Material of wall                 | No. of H.H. % | Materials of Roof                          | No. of H.H. %age |
|----------------------------------|---------------|--|------------------|
| Mud                              | 21            | Tiles, slates (max) of shingle             | 53               |
| Bricks                           | 77            | Corrugated iron or zinc sheets or asbestos | 12               |
| C.I.sheets or other metal sheets |               | Brick/Lime                                 | 25               |
| stone                            | 3             | Concrete                                   | 15               |

Source : Municipality of Warangal.

The table above reveals that, the houses with brick walls are predominant (77%) in the Central Area.. The mud walls with 21% of total houses comes next.

About 55% of the house holds are living in tiled roof houses, about 25% of house holds are living in houses made of brick and lime. they are the traditional materials prevailing in the Telangana Region area.

#### 4.3.3 Age of Building

Age of building is important factor in deciding the renewal of the area . Therefore based on primary survey , the age of the buildings has been identified is given in the table below.

Table no.4.3.3

| Age of buildings |            |
|------------------|------------|
| Age of Building  | Percentage |
| Above 50 years   | 55         |
| 10 - 15 years    | 33         |
| Below 10 years   | 12         |

Source : Field survey

**STRUCTURAL  
CONDITIONS**

- LEGEND
- CENTRAL AREA BOUNDARY
- WARD BOUNDARY
- HILL
- POND
- RAILWAY LINE
- GOOD 34.53 %
- FAIR 36.63 %
- POOR 28.84 %
- GRAVE
- COVE
- AREA

SCALE 1:10000

**PATTERN OF  
CENTRAL AREA OF  
MIRAJ TALUK  
STUDY AND  
PROPOSAL**

ESTABLISHED UNDER  
SHEET NO. 1531-VB  
MAP NO. 4.3.2

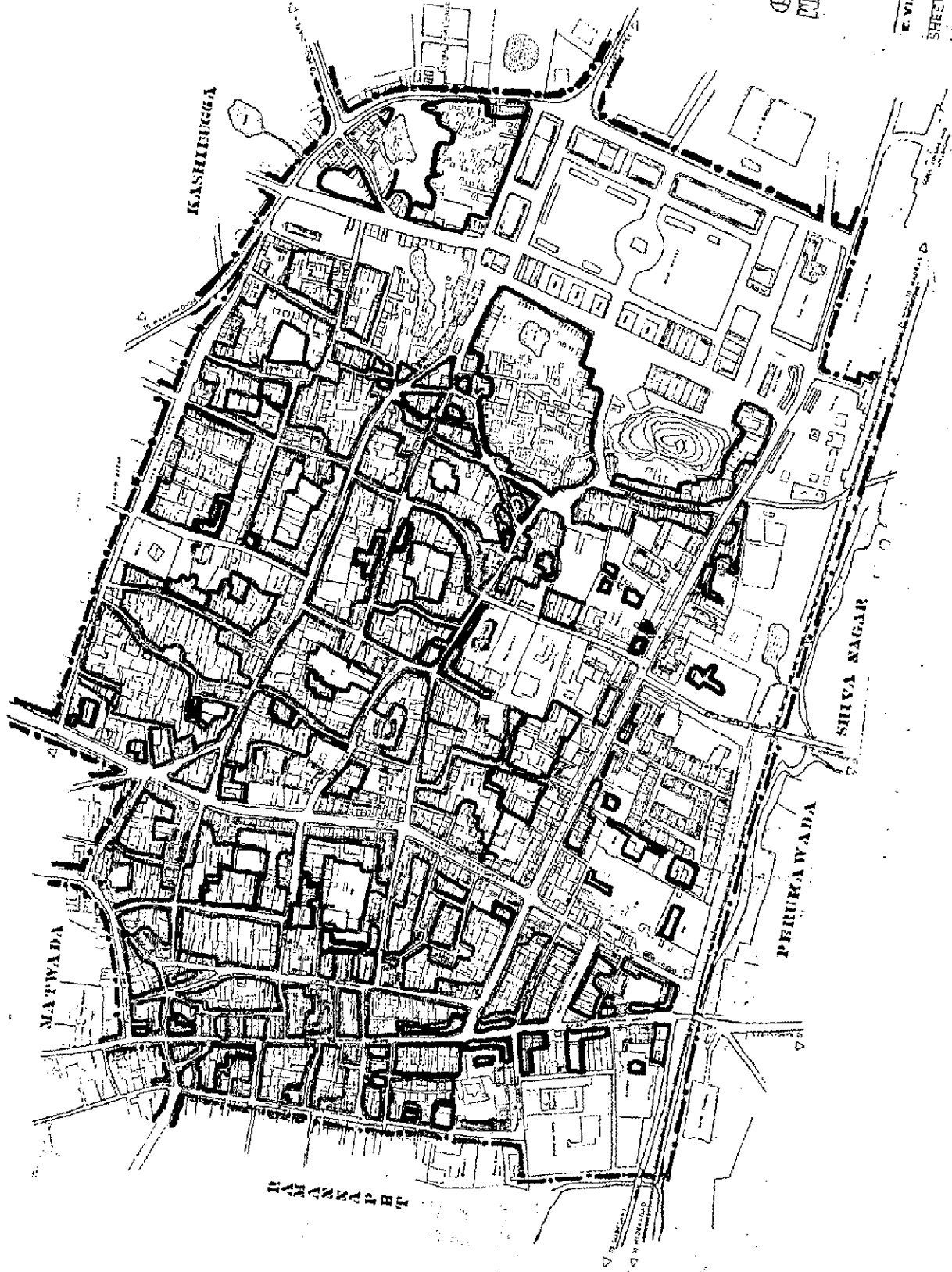


Table no. 4.3.4

over all condition of structures

| Discription | %age  |
|-------------|-------|
| Good        | 34.53 |
| Fair        | 36.64 |
| Bad         | 28.84 |

source: Field survey

(Estimated from the Map.No 4.3.2 )

**Inferences From the Study of Structural Conditions of Buildings :**

- \* The structural condition of Houses existed in the 19, and 22 pockets are very poor, and they need immediate improvement.
- \* Most of the buildings along the Vivekananda road are in poor condition.
- \* All the Godowns and Rice mills are in poor condition. They are above 100 years old in age.
- \* Maximum percentage (36.63) of the buildings are in fair condition and about 28.84 % of the buildings are in poor condition.
- \* Maximum number of buildings are of Brick construction.

**4.3.4 Property Values (per square yard) :**

The study of property values has been under taken in the central area is given in the table below.

Table No. 4.3.5

Comparason of Property Values in the Central Area.

| Sl.No. | Ward No. | 1991 | 1981 |
|--------|----------|------|------|
| 1.     | 8        | 1800 | 350  |
| 2.     | 9        | 1200 | 275  |
| 3.     | 10       | 450  | 160  |
| 4.     | 12       | 1800 | 800  |
| 5.     | 16       | 800  | 450  |

Source : Field survey by the author.

Inferences from the above table :

- \* Maximum land values are present in ward No. 12. Rs.1,800/- Sq.yard.
- \* There is a rapid increase in the land values in one decade.
- \* The minimum is 350 rupees present in 10th ward.
- \* These are the maximum values but as one goes inside from the road, it slightly decreases.

4.3.5 The study of the Building heights :

As per Table below, the pockets 6 and 12 are having more built up area, with 2.1 FSI. They are the most congested pockets. The pockets 1, 2 and 7 are the areas along the SVN - Road are also congested with 1.8 FSI, causing congestion and excessive pressure of infra-structural facilities. there is no

**BUILDING HEIGHTS**  
IN TERMS OF GROUND COVERAGE

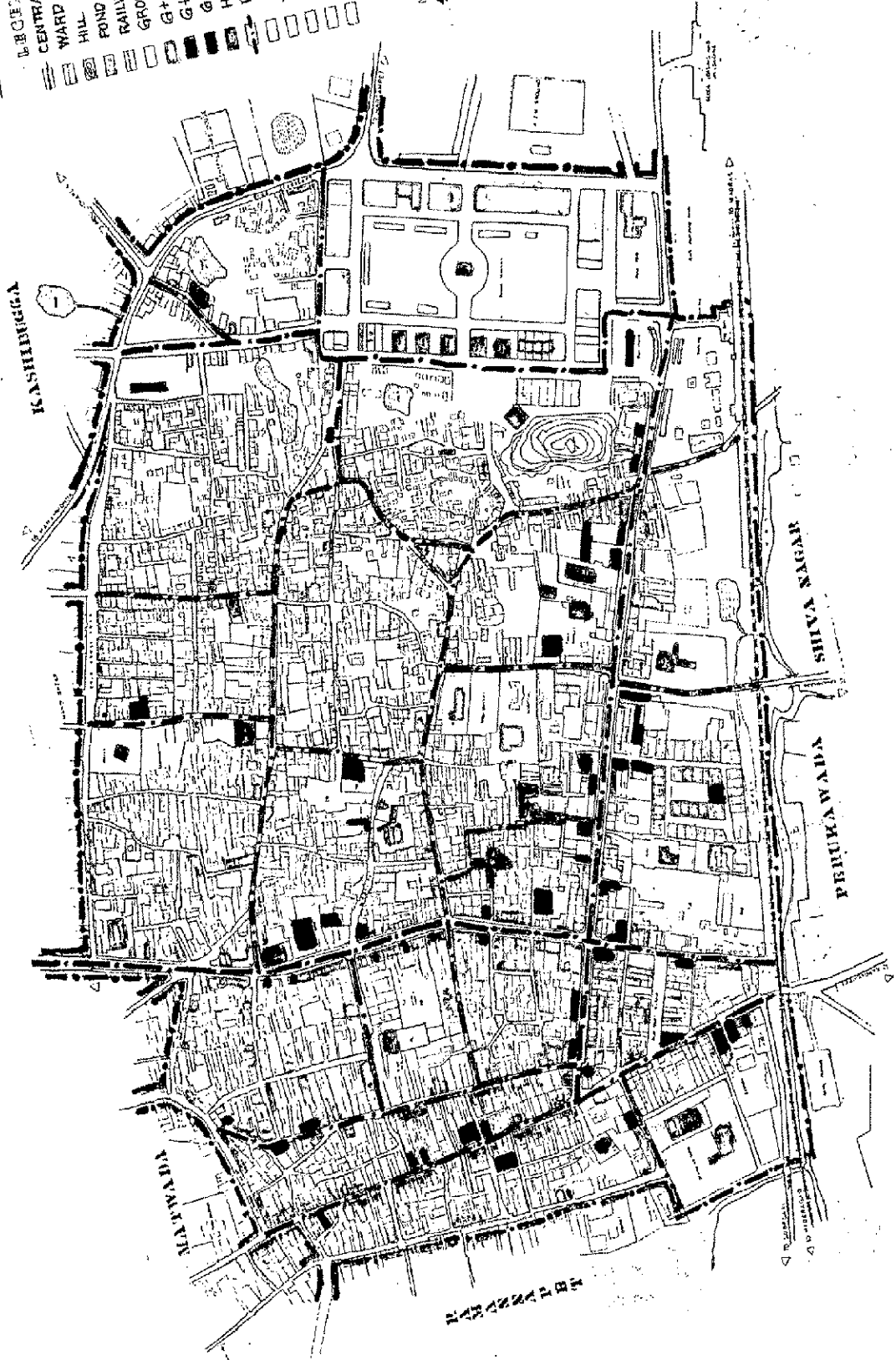
- LEGEND
- CENTRAL AREA BOUNDARY
- WARD BOUNDARY
- HILL
- POND
- RAILWAY LINE
- GROUND STOREY
- G+1
- G+2
- G+3 AND ABOVE
- HISTORICAL BUILDINGS
- POCKET BOUNDARY
- TOTAL GROUND COVERED
- AREA - 101.8 ACRES. OF 119
- OF TOTAL CENTRAL AREA

63.71%  
22.45%  
4.67%  
4.77%

SCALE 1" = 100' (1:1250)  
N

**PEOPLE OF  
CENTRAL CITY:  
STUDY AND  
PROPOSAL**

V. VIJAYARAJU, ARCHT.  
SHEET NO. 4-5-5  
MAP NO. 4-5-5  
T.M. 218



# BUILDING HEIGHT

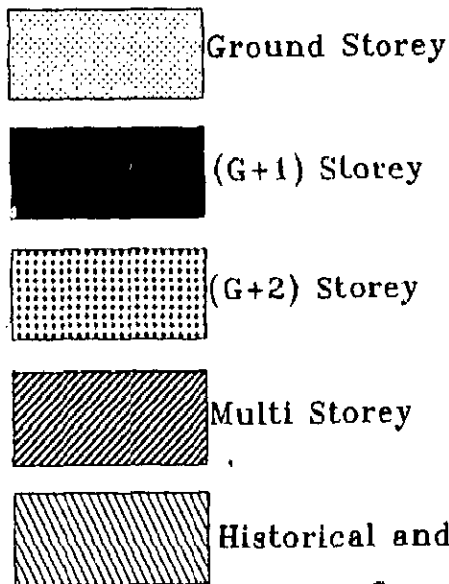
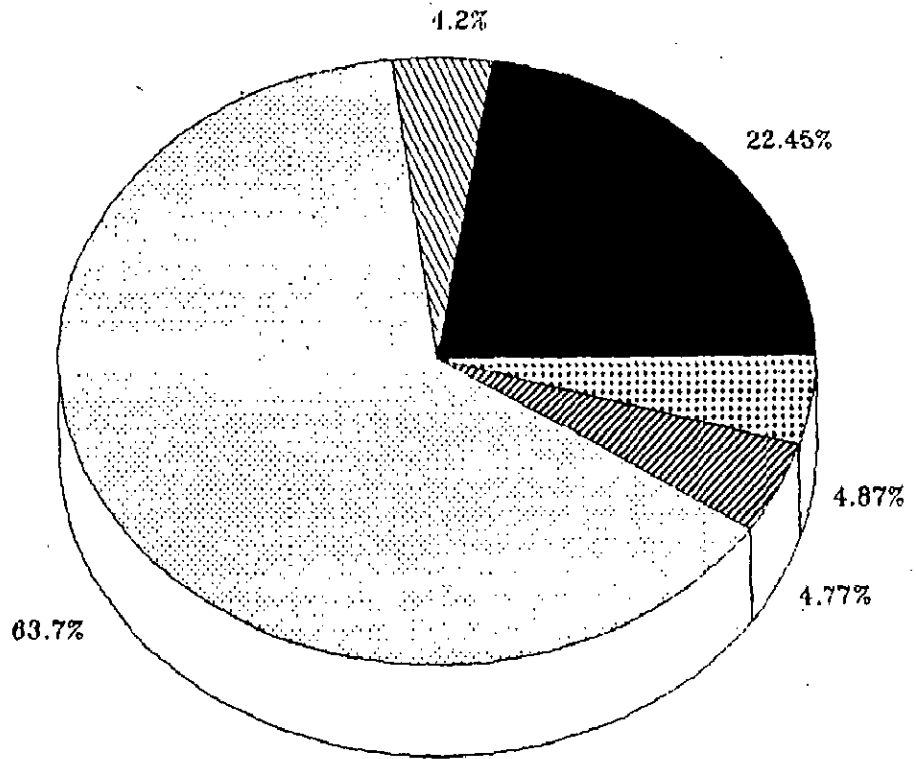


Fig. No : 4.3.5

Source : Municipal office and Field survey

sufficient open space in between these houses. The street with the houses on both sides is very narrow. As they are located in very busy areas, dust and dirt particles are creating nuisance around the buildings. Hence, it is highly essential to create open spaces within the each cluster of the Central Area. Table below gives the coverage and FSI of different pockets of the Central Area.

TABLE NO.4.3.6

The coverage and F.S.I. Calculations

| Ward No. | Pocket No. | Area of Block (Ac) | Covered Area | %age of Covered Area | Floor Area | FSI   |
|----------|------------|--------------------|--------------|----------------------|------------|-------|
|          | 1          | 13.12              | 8.27         | 63.03                | 98784      | 1.859 |
|          | 2          | 11.55              | 8.04         | 69.61                | 92592      | 1.979 |
| 12       | 3          | 12.37              | 2.48         | 20.04                | 47376      | 0.945 |
|          | 4          | 16.59              | 4.85         | 29.05                | 84672      | 1.252 |
|          | 5          | 09.29              | 3.16         | 34.01                | 52704      | 1.400 |
|          | 6          | 09.08              | 4.78         | 52.64                | 84024      | 2.284 |
|          | 7          | 08.98              | 3.52         | 39.19                | 67392      | 1.853 |
|          |            | 81.35              | 35.10        | 43.14                |            |       |
|          | 8          | 23.04              | 7.43         | 32.24                | 130176     | 1.395 |
|          | 9          | 10.2               | 5.17         | 26.92                | 104508     | 1.343 |
| 9        | 10         | 11.94              | 4.08         | 34.17                | 57888      | 1.197 |
|          | 11         | 22.89              | 6.29         | 27.47                | 86112      | 0.928 |
|          |            | 76.07              | 22.97        | 30.19                |            |       |

Cont....



| Ward No. | Block No. | Area of Block (Ac) | Covered Area | %age of Covered Area | Floor Area | FSI   |
|----------|-----------|--------------------|--------------|----------------------|------------|-------|
|          | 18        | 29.79              | 7.43         | 24.94                | 108000     | 0.895 |
|          | 21        | 2.83               | 0.71         | 25.08                | 8640       | 0.753 |
| 10       | 22        | 11.52              | 2.41         | 20.92                | 31536      | 0.67  |
|          | 19        | 14.86              | 4.12         | 27.72                | 51840      | 0.861 |
|          | 20        | 13.08              | 2.80         | 24.40                | 40752      | 0.769 |
|          |           | 71.58              | 17.47        | 22.54                |            |       |
|          | 13        | 15.84              | 4.62         | 29.17                | 64224      | 1.001 |
|          | 14        | 14.56              | 3.87         | 26.58                | 68688      | 1.164 |
| 8        | 15        | 21.74              | 5.12         | 23.55                | 79056      | 0.89  |
|          | 17        | 6.66               | 0.99         | 14.86                | 19296      | 0.509 |
|          | 16        | 15.69              | 1.92         | 12.24                | 32400      | 0.509 |
|          | 12        | 7.68               | 3.27         | 42.58                | 75172      | 2.416 |
|          |           | 82.17              | 19.79        | 24.08                |            |       |
| 16       | 23        | 33.50              | 6.47         | 19.31                | 196        | 1.2   |

Total Covered Area = 101.8 Acres  
Total Uncovered Area = 237.89 Acres  
%age of Coverage = 42.79  
Total Area of Central Area = 339.69 Acres.

Source : Estimated from the Map.no.4.3.6



245651 50

### Inferences from the study of Building Height

- \* maximum number of single storied buildings are in 9th ward and constitutes the maximum percentage.
- \* Multi storied buildings are very few and situated along the Jayaprakash Narayan and Ravindra Nath Togore road.
- \* As all the single storeid buildings are (almost 90% of the single storied buildings) have tiled roofing.
- \* Most of the G+1 and G+2 buildings are situated along the main roads Jayaprakash, Vivekananda and Ravindra Nath roads.
- \* FSI is maximum in pocket no.12, 6 and 19th.
- \* 10th ward is observed to be very low built up area.
- \* Poket no. 1,2 and 6 has more than 60% coverage.
- \* The total covered area in the Central Area is 42.76% of the total Central area.

#### 4.4 LAND USE PATTEERN OF THE CENTRAL AREA :

The land use survey and analysis is undertaken to identify the changes and trends in the use of the Land use pattern of the Central Area. the Land use pattern of the Central Area during the years 1971, 1981 are given in the following table.

Table No.4.4.1

##### Land Use pattern of the Central Area

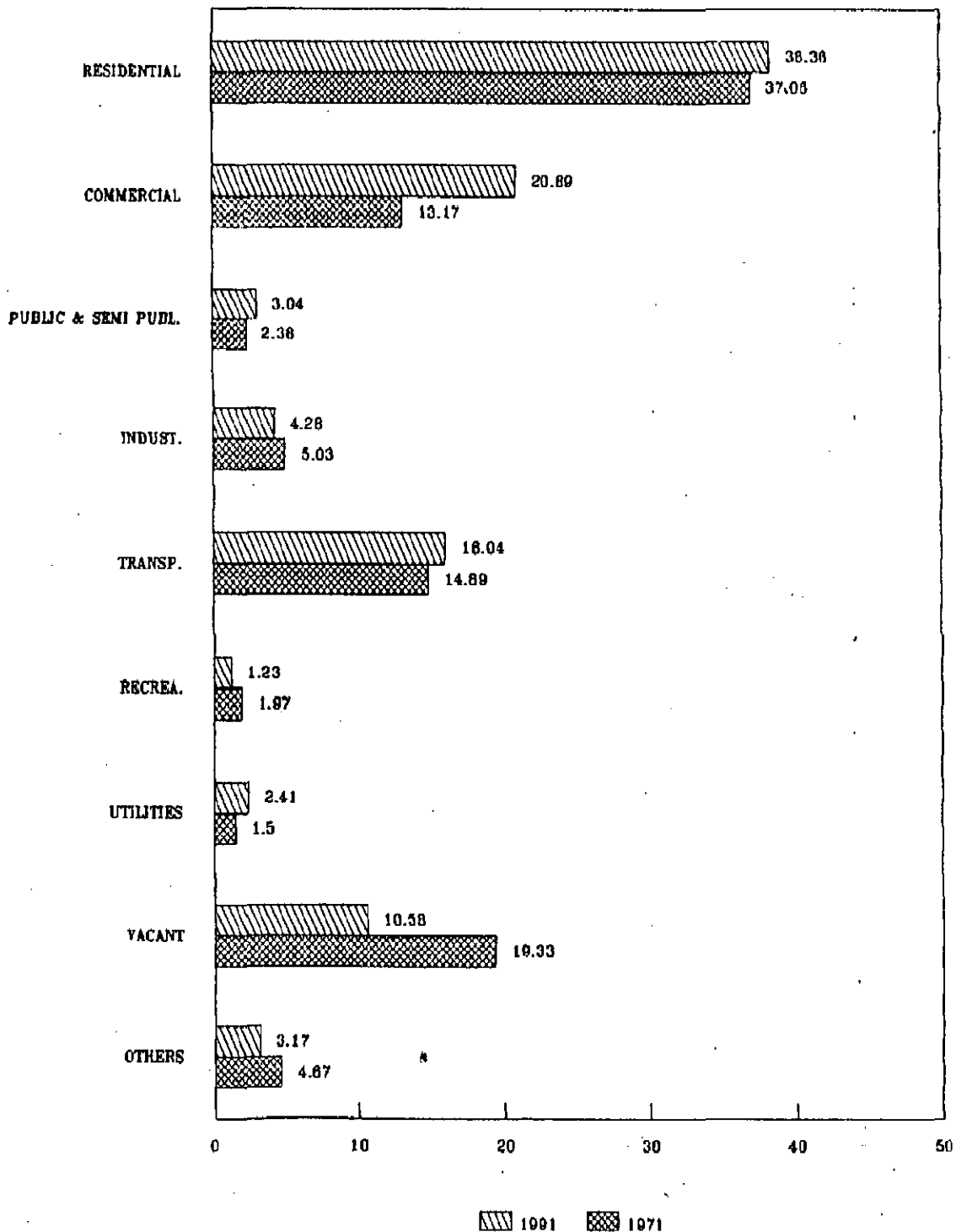
| Use             | 1991            |        | 1971            |        |
|-----------------|-----------------|--------|-----------------|--------|
|                 | Area<br>(Acres) | %age   | Area<br>(Acres) | %age   |
| Residential     | 130.33          | 38.36  | 125.89          | 37.06  |
| Commercial      | 70.78           | 20.89  | 44.76           | 13.17  |
| Pub.& Semi-Pub. | 10.33           | 3.04   | 8.10            | 2.38   |
| Industrial      | 14.54           | 4.28   | 17.09           | 5.03   |
| Transp.& Com.   | 54.51           | 16.04  | 50.50           | 14.89  |
| Recreation      | 4.19            | 1.23   | 6.7             | 1.97   |
| Pub. Uti.       | 8.43            | 2.41   | 5.11            | 1.50   |
| Vacant          | 35.94           | 10.58  | 69.04           | 20.32  |
| Others          | 10.77           | 3.17   | 12.50           | 3.68   |
| Total :         | 339.69          | 100.00 | 339.69          | 100.00 |

Source : TCPO of Hyderabad and Field survey by the author.

#### 4.4.1 Residential Use :

Warangal Municipal area has the residential use of 9.84% of total urban area. there is no area which is purely Residential in the city, the commercial or the office uses have been penetrated into the Residential areas regardless of accessibility, there by, causing the problem of congestion, nuisance and danger to the people. Every year Residential use is

# COMPARISON OF LAND USES OF CENTRAL AREA BETWEEN 1971-1991



Source : Municipal Office (For 1971 information)  
Field Survey (For 1991 information)

Fig. No: 4.4

being converted into commercial use. The buildings situated along Pinnavari street and Ellamma Bazar road are the examples (see. map. no. 4.4.1 & 4.4.2) The increase in the land values and rents are the main reasons for this conversion. As a result of that, the compact residential area in the Central Area has been changed. At present, the central area constitutes about 38.36% of the total Central Area, earlier it was 37.06% in 1971.

#### 4.4.2 Commercial Use:

Land put to residential cum commercial purposes is only 54.76% acres accounting for only 0.41% of the total area. Trade and commerce flourished in the city from the periods of Kakatiya dynasty and the same is still being continued. The commercial activity is going on exclusively on both sides of the main roads in the three localities of Hanamkonda. Warangal and Kazipet with good number of restaurants, lodgings and other shops. Commercial use is the major use after the residential use in the Central Area. There is an increase in this use from 44.76 Acres to 70.98 Acres. It signifies that there is a rapid change in commercial activities. There is a whole sale market in Central Area located along the Vivenkananda and old Beet bazar road. From there goods are purchased and transported to small commercial centres and Rural areas for retail business. There are saw mills, rice and oil mills in whole central Area, the products of which are marketed for whole sale business.

There is one grain market in 16th ward near Girmajipet. This was the first assembling market in Telengana Region. Presently, serving (96) villages surrounded by Warangal City area. The area of this market is approximately about 31 Acres of land, which is 9.1% of the total central area.

Its presence in the residential areas is causing health and traffic problems, especially the packing and processing of chilli are causing breathing problems. Hence it is essential to shift it from the Central Area.

The commercial areas are very congested particularly in the Central Area with narrow roads and lanes with two or three storied buildings which also accommodates dwellings on the upper floors. Along Vivekananda street leading Matwada has 18 feet wide, where most of the whole sale cloth shops, cangan halls, and traders etc. are situated. They are attracting the people from whole city and villages. There is no place for parking of vehicles and causing congestion. Therefore, it is necessary to provide parking places at different place to avoid the zig-zag parking.

The whole-sale, drugs-shops are concentrated along Pinnavari street. Here it is observed that, the conversion of almost all residences in to commercial use. The frontages of almost every building on the road are occupied by the commercial

establishment, with residential quarter in the rear and upper floors. This is the characteristic of land use prevailing commercial activity spreading along all the roads.

The whole sale fruit shops are situated in Yellamma Bazar area. These are encroached upon the roads for commercial use. Hence, there is a problem of congestion. This can be solved by shifting this market from this area.

The whole sale vegetable market is located in between high school and hospital. The area of this market is 2 acres, it is very congested. The excessive load of goods compelled the shop keepers to encroach up on the narrow lane passes along the market. There is a problem of loading-unloading of vegetables and also the problem of parking. Since the lane width is 12' that is very narrow subjected to heavy traffic volume. Therefore this market must be shifted from this place.

(It contains the 25 stalls within the area about 6' x 10' size of each stalls. This is inadequate space to accommodate the vegetable etc. at present demand.)

The other retail and servicing centres are situated almost all along length of the Jayaprakash and Ravindra Nath Tagore roads. The cinema hall, Marriage hall and whole sale shops are situated just adjacent to each other attracting more traffic and creating traffic problems. There are new shopping areas

coming up mainly along the busy Narasampet road, the central area boundary. The reasons might be due to lack of planned shopping centres in these areas and also due to the fact that the new developments in the proximity of these areas have not made adequate provision for shopping facilities.

#### 4.4.3 Industrial Use:

The land use for industrial activity in the city is 154.14 acres, percentage of which to the total area being 1.16% of the city, whereas in the Central Area it is about 14.54 acres, which is about 4.28% of the central area.

It has decreased from 5.03% to 4.28% as Industrial uses are converted into residential or commercial uses in the Central Area.

Most of the Rice mills, Oil mills, Saw mills and other small scale industries like carpet, weaving etc. scatter all over the city. There is textile mill located on the East side adjacent to grain market. The other area Deshaipet and Vadepelly are famous for carpet industry. According to master plan the following areas are identified as potential areas for Industrial development. Madikonda outside the municipal limits along Hyderabad road, perukawada, Karimabad on the south side of the city and Gorrekunta on the east side of the city towards Narsampet road. There are some industries located in



**LAND USE - 1971**

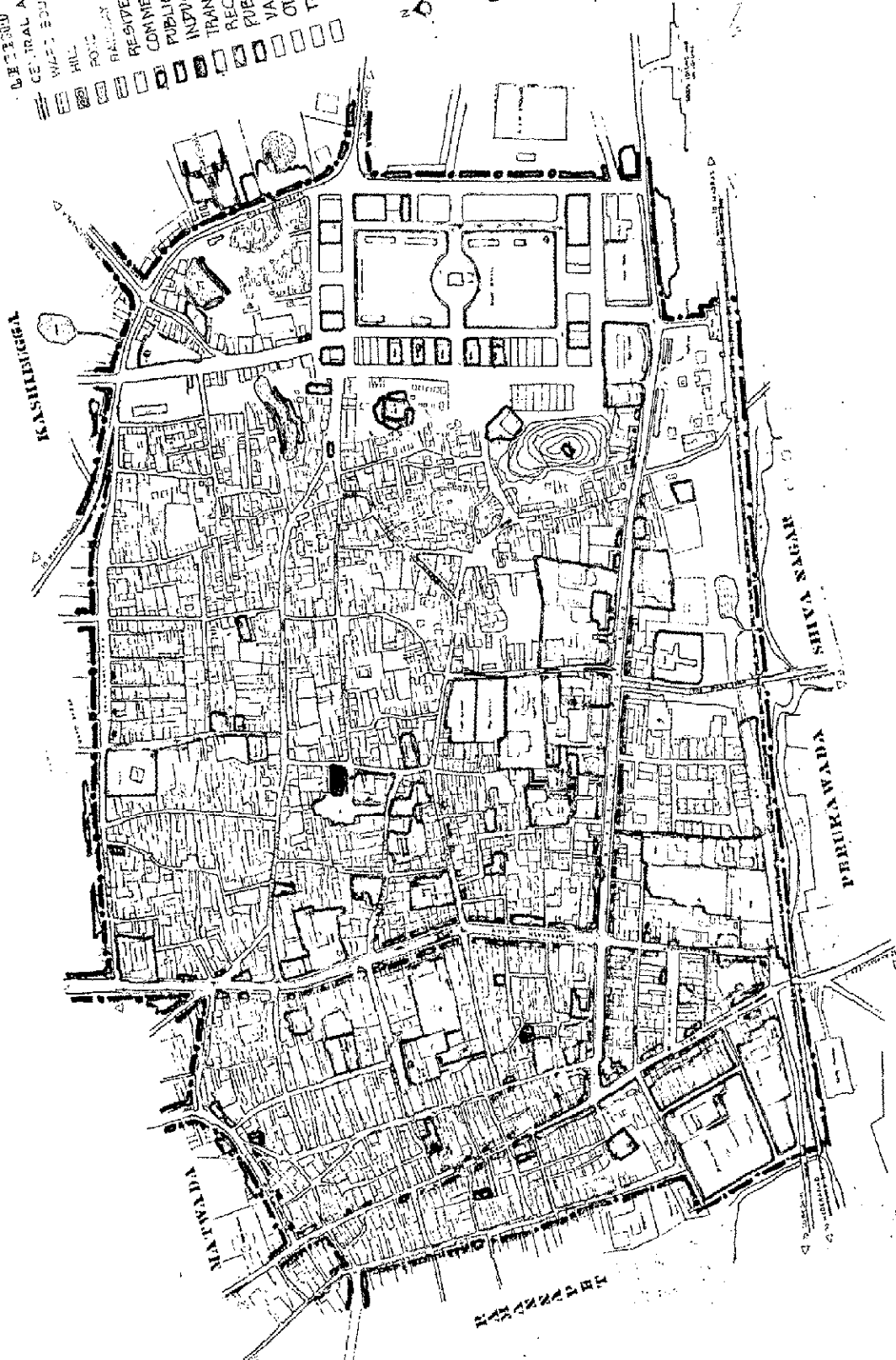
DEFERRED  
CENTRAL AREA BOUNDARY  
WIDE BOUNDARY

|                            |        |
|----------------------------|--------|
| HILL                       | 37.06% |
| POIC                       | 13.17  |
| RAILWAY LINE               | 5.05%  |
| RESIDENTIAL                | 14.84  |
| COMMERCIAL AND SEMI-PUBLIC | 1.97   |
| PUBLIC                     | 1.50   |
| INDUSTRIAL                 | 20.52  |
| TRANSPORTATIONAL           | 3.06   |
| RECREATIONAL               | 3.06   |
| PUBLIC-UTILITIES           | 3.06   |
| VACANT                     | 3.06   |
| OTHERS                     | 3.06   |
| TOTAL                      | 99.94  |

SCALE 1:10000 OF 1971

**PELLENT OF  
CENTRAL CITY  
STUDY AND  
PREPARED**

E. VISHVAKAR, 22/11/55  
SHEET NO. 4-4-1  
MAP NO. 4-4-1



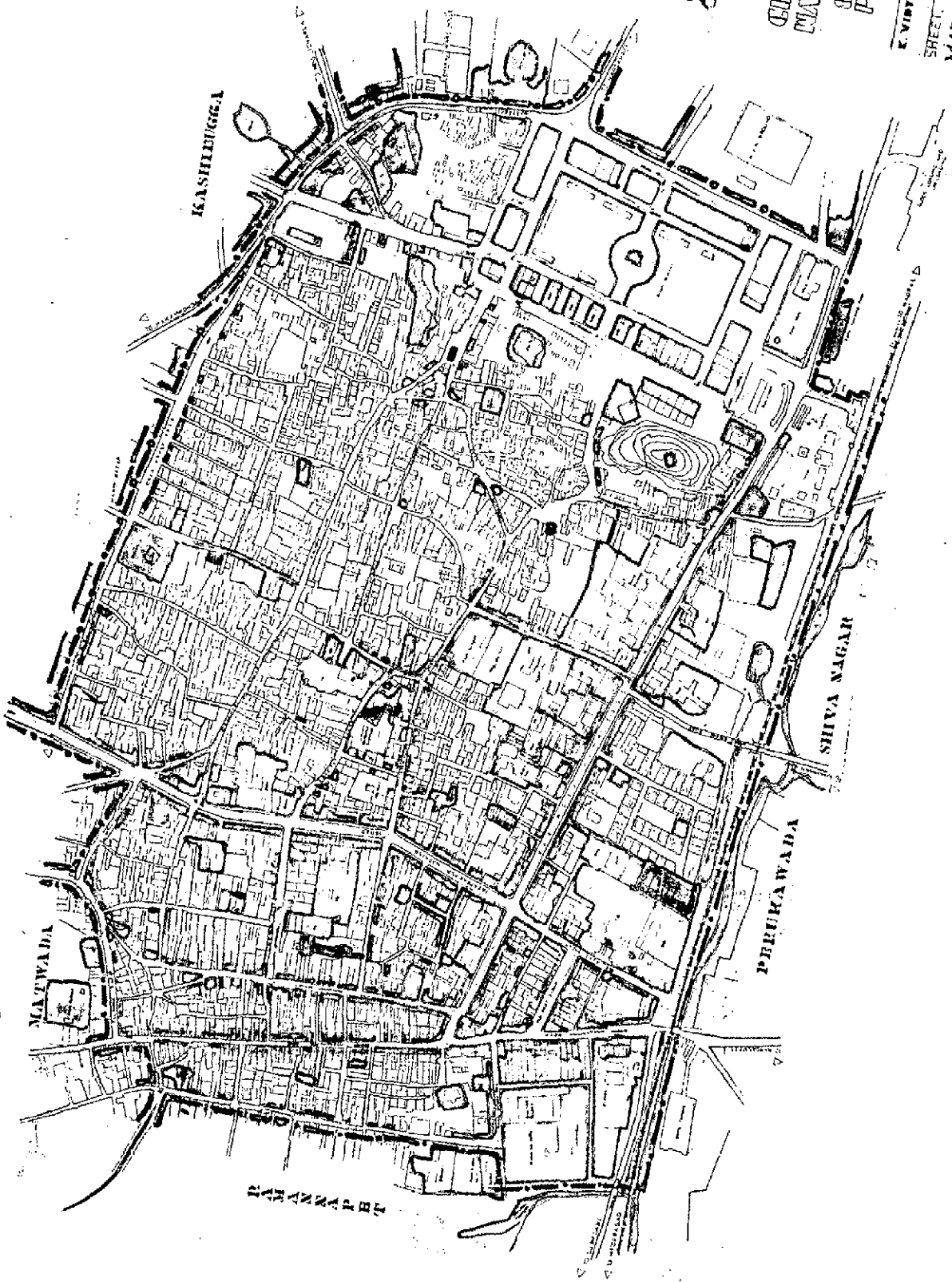
**EXISTING LAND USE**  
- 1991

|                        |          |        |
|------------------------|----------|--------|
| LEGEND                 |          |        |
| CENTRAL AREA BOUNDARY  | [Symbol] |        |
| WARD BOUNDARY          | [Symbol] |        |
| HILL                   | [Symbol] |        |
| POND                   | [Symbol] |        |
| RAILWAYS - VE          | [Symbol] |        |
| RESIDENTIAL            | [Symbol] | 38.56  |
| COMMERCIAL             | [Symbol] | 20.81  |
| PUBLIC AND SEMI-PUBLIC | [Symbol] | 4.28   |
| INDUSTRIAL             | [Symbol] | 16.04  |
| TRANSPORTATION         | [Symbol] | 1.25   |
| RECREATIONAL           | [Symbol] | 2.41   |
| PUBLIC-UTILITIES       | [Symbol] | 10.58  |
| VACANT                 | [Symbol] | 5.17   |
| OTHERS                 | [Symbol] |        |
| TOTAL                  |          | 334.69 |

SCALE 1:50,000

**PERFORMANCE OF  
CENTRAL AREA I  
MARRAJEAL CITY  
STUDY AND  
PROPOSALS**

E. VITABRAC, Z. BDDP.  
SHEET NO: 1583-58  
MAP NO: 4.4.2.



residential areas in Central Area. (see.map no. 4.4.2 )  
Creating the noise and other traffic problems must be shifted out of the Central Area. particularly the lorry Transport servicing industry situated in nthe Old Beet Bazar area. must be shifted immediately.

#### 4.4.4 Public and Semi Public Use :

The land under all educational and religious institutions, Government offices, and other public institutions etc. comes under this use. In city, the area of which is accounting 488.99 acres, which is 3.66% of the city area. Being district headquarters of a District, several Regional offices of the State and Central Govt. are located in this city. Maximum land under this use is found in Hanamkonda, Kazipet, Rangampet and Warangal.

There is a slight increse from 2.30% to 3.01% in the the Central Area, because a new educational institution (degree college ) which is constructed on the open play area (see Map no. 4.4.1& 4.4.2) situated along the Narsampet road. Most of the land under this use is occupied by religious buildings and educational buildings. they are scattered all over the central area and the temple on the hill dominating the Central Area scene, needs improvement to preserve the culture of the city. Only one Police station with inadequate space functioning inefficiently and located in Old Beet bazar area, must be shifted to other suitable place. Similarly, all the educational

institutions are not upto the space standard. Neither they have enough space to play nor significant entrance, totally congested and situated in rented buildings. Hence, it is necessary to provide adequate space and amities to these activities.

#### 4.4.5 Transport and Communication Use :

It includes streets, roads, railways and their offices, bus stand and parking places. The city has got 5.35% of total urban area under this use, most of the Transportata tion use is in Kazipet. The Central Area has got about 16.04% of the total Central Area under this use as against 14.89% in 1971. The increase in this use come out to be 1.15% of the Central Area, because the use of the Land along the railway track has been converted from dumping area (garbage desposal area) to lorry parking area.

At present lorry and jeep/trucks parking places are available at Old Beet bazar, under bridge road are unauthorised parking places have got inadequate space for parking . there fore, it is essential to provide the enough space for parking.

#### 4.4.6 Recreational Use:

In city, about 116.44 Acres or 0.87 % of the land comes under this use. Most of the parks, play grounds are found in HNK and in Warangal, the land under this category includes, parks, open spaces and clubs and other recreational centres.

In the Central Area it is about 4.19 acres of land, accounting 1.23% of the total Central Area comes under this use. In 1971 it was 65.7% of the total Central Area, has decreased to 5.47% in 1991, because the use of the play area near slaughter house has been converted into public use. (The new college building has been built on this area). At present, there are only two recreational parks available, one at Railway Station area and another at post office area; These parks are in bad condition. The Nehru park at Railway station is generally occupied by the beggars and the frontage of park is used for parking of vehicles (Jeeps).

Due to insignificant and improper maintenance of these parks, people are not attracted to these areas. Dust, animals etc. are also added for polluting the atmosphere of these parks. Hence, it is required to improved the existing condition of parks.

#### 4.4.7 Vacant Land :

Vacant land contains about 35.94 Acres or 10.58% of land of the total central area. It includes all partly built-up areas where the activity has not taken place. It has been decreasing every year as the house holds are increasing and making sub divisions of land.

The vacant land available mostly on the rear portions of buildings is in bad condition and creating space for dirt and dust. As a result the residential environment is being spoiled. Hence, it is highly essential to improve the condition at the rear portion of houses.

#### 4.4.8 Others:

It includes the hills, ponds and Nala area. It contains 3.17% of the Central Area. The area under pond is gradually decreasing because the area of ponds are being gradually converting into disposal purposes.

#### 4.5 TRAFFIC AND TRANSPORTATION :

The streets in the Central Area of the city are narrow and inadequate to meet the present vehicular traffic and facing the serious transportation problems. Therefore, the survey and study has been carried out to understand the pedestrian and vehicular movements which would give the clues to improve the present network system and also to identify the main causes for traffic problems which are restricting the efficiency of roads.

Warangal city has good network system situated between Madras - Delhi broad gauge Railway line. City has been developed in a ribbon like fashion along the road from Kazipet to Warangal fort, connecting the four distinct localities Kazipet, Hanamkonda, Matwada and Warangal.

The major roads that are meeting at Warangal are :

- i. Hyderabad-Hanamkonda road
- ii. Hamamkonda-Khammam road
- iii. Hanamkonda-Karimnagar road

#### Present Circulation pattern

The development of the city is west oriented towards Hyderabad. The construction of two railway stations within 8 miles resulted in the development of the area between Kazipet and Warangal, along the main high way. The growth of the rice mills and oil mills attracted the development along the main road from the Warangal Fort upto the railway gate. This indicates that the city has been developed in linear fashion connecting the localities at longer distances, which take longer time. Therefore, the result being that the people who would like to commute from one place to another has to pass through the Central Area.

The Central Area being the oldest part of the city consists of narrow streets with much concentration of trade and business in Matwada and Girmaji pet. As the Warangal being the Headquarters of the district has the connection to all other Taluk Head quarters as well as other District Headquarters, by good network system. The Major District roads which are connecting the Central Area are :

- i. Hanamkonda-Khammam Road
- ii. Hanamkonda-Narasampet road

The important roads in the Central Area are :

- i. Jayaprakash Narayan road, and
- ii. Vivekananda road

While the city expanded and the new Residential and Industrial areas developed the existing road pattern in the Central Area of the city continues to be what it was previously with the increase of traffic volume. The number of vehicles on the city roads has been increasing being about 17,103 at present which represents threefold increase in 10 years since 1971.

#### 4.5.1 VEHICLE MOVEMENT

##### 4.5.1.1 Slow moving vehicles :

There are at present about 2782 slow moving vehicles in the city. Most of them are concentrated in commercial area. They are used for the transport of goods from one part of the city to the other parts in view of the lower cost of transporting goods over short distances within the city. Bicycle is an important mode of transport for considerable percentage of the population of the city.



#### 4.5.1.2 Bus Movement :

Bus is provided as mass transportation system. There are totally about 45 buses are operating, out of these 38 buses are operating in the Central Area bus-stand as against 37 buses prior to 1981. The total number of trips made by passenger buses from the Central Area are given below in the table No. 4.5.1.

Table No.4.5.1

RTC City Service Within the Jurisdiction of Warangal City  
Trips/day 1991

| Sl. No. | Route  | No. of single trips/day |      |              |
|---------|--|-------------------------|------|--------------|
|         |  | 1981                    | 1991 | No. of buses |
| 1.      | Kazipet to centra area                         | 336                     | 384  | 28           |
| 2.      | Darga to central area                          | 30                      | 30   | 3            |
| 3.      | Waddepally to central area                     | 15                      | 24   | 2            |
| 4.      | Kazipet to labour colony<br>via Narsampet road | 16                      | 24   | 2            |
| 5.      | Central area to VRUS                           | 15                      | 15   | 1            |
| 6.      | Central area to fort                           | 20                      | 20   | 2            |
| Total : |  | 432                     | 487  | 38           |

Source : Field survey by the author.

Findings From Above Table :

1. The maximum number of trips are taking place between Kazipet and Central Area via Jaiprakash Narayan road 424 trips per day including the Durga to central area trips 30 per day.
2. Next maximum is 20 trips per day between Central Area and fort Warangal, through underbridge road.
3. The total trips through under road bridge between Central Area to Fort and URUS about 35 trips per day.

#### 4.5.2 Passenger Movement by Rail :

It is estimated that about 3548 persons come to the city and 3888 persons leave the city daily by rail. Kazipet Railway Station is the main station handling 1548 incoming passengers and 1888 outgoing passengers daily. The Central Area railway station is also busy, handling 1346 incoming passengers and 1510 outgoing passengers. (See Table no. 4.5.2 )

Table no. 4.5.2

Number of incoming and out going passengers at central area and Kazipet Station

| Year                        | No. of incoming passengers | No. of out going passengers |
|-----------------------------|----------------------------|-----------------------------|
| 1985                        | 5,99,603                   | 6,57,384                    |
| At Kazipet station          |                            |                             |
| 1986                        | 5,95,782                   | 6,28,410                    |
| 1987                        | 5,44,854                   | 7,21,154                    |
| 1988                        | 5,42,856                   | 6,74,332                    |
| 1989                        | 5,04,265                   | 7,18,428                    |
| <b>Total :</b>              | <b>27,87,360</b>           | <b>33,99,708</b>            |
| 1985                        | 3,81,390                   | 5,94,367                    |
| 1986                        | 6,42,264                   | 6,11,253                    |
| at Warangal Railway Station |                            |                             |
| 1987                        | 2,00,730                   | 5,68,440                    |
| 1988                        | 5,00,586                   | 4,32,155                    |
| 1989                        | 6,98,323                   | 5,12,322                    |
| <b>Total:</b>               | <b>24,23,293</b>           | <b>27,18,587</b>            |

Source: Directory of socio-economics of A.P.

Table no. 4.5.3

Growth of vehicles

| Type of vehicles | 1971 | 1981 |
|------------------|------|------|
| Stage carriage   | 332  | 348  |
| Goods vehicles   | 591  | 610  |
| Motor cycles     | 1065 | 1520 |
| Scooters         | 3017 | 4032 |
| Auto Rikshaws    | 248  | 292  |
| Taxies           | 20   | 28   |
| Jeeps            | 217  | 222  |
| Others           | 1389 | 1923 |
|                  | 6829 | 8974 |

Source : Municipality of Warangal.

Findings From the Above Table :

1. Maximum number of vehicles present in the city are scooters.
2. Then motor cycles are the maximum after the scooters.
3. Taxies are not so pronounced in the city.
4. Use of goods vehicles is predominant in the city.

Table no 4.5.4

Incoming and Outgoing Vehicles

| Type                            | Etur Nagarani road | Hyd. road | Kammam road | Karim road | Narampet road |
|---------------------------------|--------------------|-----------|-------------|------------|---------------|
| Buses and Trucks                | 85/85              | 45/38     | 68/70       | 35/30      | 20/18         |
| Cars, Taxies, Vans, Jeeps, Etc. | 84/112             | 65/68     | 39/39       | 52/38      | 42/45         |
| Bullock carts                   | 73/70              | 32/52     | 258/202     | 170/109    | 182/256       |
| Total :                         | 242/267            | 142/158   | 365/311     | 257/177    | 244/319       |

Source : Municipality of Warangal.

Findings From the Above Table :

- \* Maximum number of bullock carts are coming from Khammam road, then followed by the Narsampet road.
- \* Maximum number of vehicles are coming from the Khammam side.
- \* Total No. of Vehicles coming into the City and going out of the City are 1160, 1232 Vehicles respectively.

4.5.3 Traffic Volume and Capacity Analysis :

With reference to the traffic survey conducted during 1986-87, the following results are obtained.

Under Bridge Road or Kammam Road

This is the main district road leading to khammam. The functions of this road are as follows. Access to Central Areas,

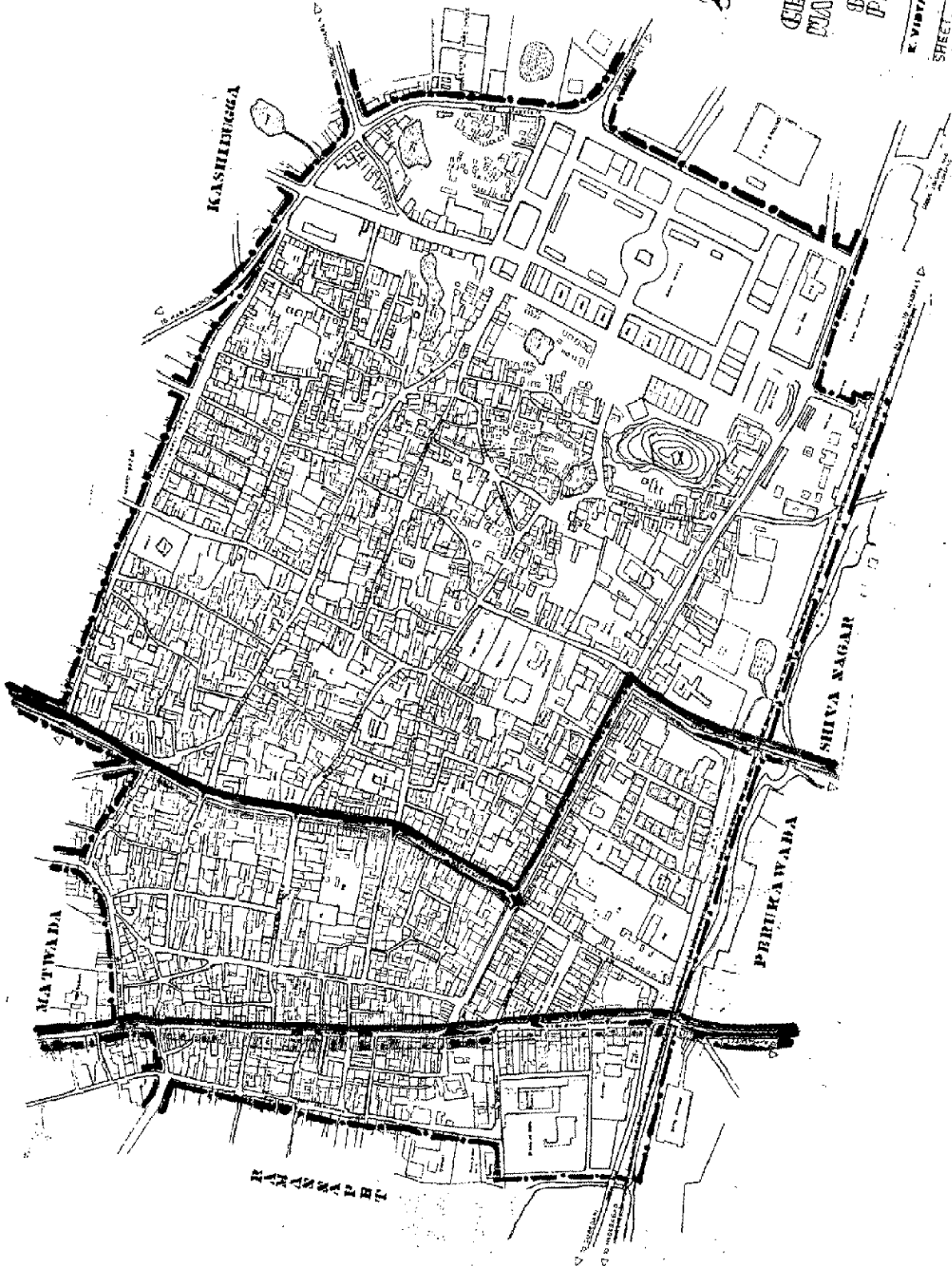
**TRAFFIC VOLUME**

- LABORER
- CENTRAL AREA BOUNDARY
- WARD BOUNDARY
- HILL
- POND
- RAILWAY LINE
- SLOW MOVING - 67%
- FAST MOVING - 33%
- ON YIVEKA MANDA ROAD
- 1435 PPA
- 706 PPA
- ON JPN & SVN ROAD
- 1173 PPA
- 581 PPA

SCALE 1:10000

**PROBLEMS OF  
CENTRAL AREA OF  
MUMBAI CITY  
STUDY AND  
PROPOSALS**

K. VISHWANATH, M. APPA  
SHEET NO. 1394-98  
MAP NO. 4.53



access to railways station, movement of goods, tourist route, pedestrians and parking. ( The existing width of the road is 33').

As it runs through the heart of the city the inter-city traffic coming in conflict with the local traffic and resulting in traffic congestion and accidents. Hence, it is necessary to divert the inter-city traffic.

#### **Vivekananda Road :**

This is one of the major roads connecting Hanamkonda and Warangal. This road is flanked by commercial areas on both sides. The function of this road is the access to industrial areas and also to residential areas. As per capacity analysis this can not accommodate existing volume and has no space to widen the road, demolition of adjacent buildings is not possible as the buildings are of 2 to 4 storied . Hence, it is required to look for alternative route to divert the through traffic from this road. (capacity 1420, volume 2139) (ref. Map.No.4.5.3)

#### **Jaya Prakash Narayan Road:**

This is one of the main roads which runs right through the centre of the Central Area. It is flanked by shops on both the sides. All the buses to the other districts pass through this road. As a result, it is subjected to traffic hazards and delay in movement. The capacity is more than volume. But the slow

moving vehicles like cycles, rikshaws and pedestrians virtually restricting the actual capacity of the road resulting in over loading of the road. As the road is flanked by commercial establishments the waiting vehicles are also restricting the capacity. Hence, the alternative road has to be found to divert the traffic going beyond Hanamkonda. ( the capacity and the volume are 3300 PCU, 1760PCU )

**Narsampet Road:**

This is one of the major roads. It passes through along the boundry of Central Area. The functions of the road are access to the Central Area and movements of goods to grain market. The existing width 61' is enough for traffic movement. It also has enough space to be widened.

**4.5.4 Parking Study :**

Parking surveys which have been conducted at the underbridge road and at the junction near Old Beet Bazar has revealed the maximum number of vehicles parked at any time as given below :

**Table No.4.5.4**

**Parking in the Central Area**

| Place             | Maximum number of vehicles parked at a time | Remarks               |
|-------------------|---|-----------------------|
| Under bridge road | 58  | Jeep, truck excluding |
| In old Beet       | 38  | Lorries               |



bazar area

-----  
source: Field survey by the author.

#### 4.6 PUBLIC UTILITIES :

##### 4.6.1 Water Supply :

The distribution mains were laid in the year 1939 when the population of the city was about 62,119. The present population of the city is about 4.65 lac. as per 1991 census. The demand of water supply in the central area has been increased considerably owing to sub division of properties and increase in number of house connections and the sizes of pipes laid originally for distribution mains are not sufficient.

The maximum supply expected from the existing source of supply namely Dharamsagar is 133 lac gallons per day which is far below the requirements.

As per the estimated size of the population there will be demand for 147.42 lac of gallons/day including the Industrial needs at the rate of 35 gallons per head per day as suggested by the Town and Country Planning Organisation to the city or population of size between 1 to 5 lacs. Hence, there is every need to tap a new source by 1991 lest there is break down of the existing system.

#### 4.6.2 Drainage system

There is open drainage system for Warangal. There is no sewage treatment , the sewage led into the tanks. The total number of latrines in the city are 25,540. While the number of houses in the city is 61,422. That means only 41.58% of the Houses have the latrines.

## 4.7 FINDINGS FROM OTHER STUDIES OF CENTRAL AREA

### 4.7.1 Socio-Economic Study

1. Although, About 28.9% of the total houses increased in a decade from 1978 to 1981, still there is a shortage of housing in the Central Area. About 133 house holds are living without houses. Hence, it is required to provide accomadation for the house less population.
2. The Density and House hold size have been increased from 5.01 to 5.27 and 120.46PPA to 150.43PPA respectively.
3. About 28.84% of houses are in bad condition, most of them situated in the pocket no.19, 21 and 22 along Viveka Nanda Road (see Map .no.4.3.4).
4. The Wards no. 8, 9 and 10 are having the max. Net Residential density. 534PPA, 384PPA, 424PPA.
5. The pockets no.1,2,6,7 and 12 have the max. FSI (more than 1.8).The pockets no.19 has the min.FSI(0.5)
6. The rent and land values are steeply increacing.The wards 8th and 12th wards are having the max. land values (Rs.1800 per SQ.Y.). The 10th ward has the min. of (Rs.450 per SQ.Y.).

7. Encroachments are present along major roads occupying the foot path and road space.
8. Pocket no. 19,22,21 have unauthorised constructions.
9. Maximum area (63.71 %) covered by the ground storied buildings.
10. Multi-storied buildings have very less percentage (4.77 %) of the total covered area of the central area.
11. Max. commercial activity is there in 16th, 8th and 9th ward.
12. Wards No. 10th and 9th constitutes the maximum percentage of (51 %) residential area. While 8th ward has very less percentage (20.28 %).

#### 4.7.2 Findings from Land Use survey:

1. Mixed land use is the major use and predominant in whole central area, usually the front portion of the Residences is being used for the commercial purpose and rest of the portion for residential purpose. Hence, it can be considered as a character.
2. The higher order Commercial and religious functions are served by the Central area. eg. Grain market area is biggest assembling market serving the whole city and its

surroundings. And vegetable and Fruit markets are also serve the whole city.

3. All shops have been developed along the roads and streets in ribbon development fashion.
4. Most of the schools , colleges, and Police stations situated in old and rented buildings, with inadequate space and amenities.
5. Most of the timber depots , Godowns and Industries are dispersed in residential areas causing noise and traffic problems.
6. Different activities concentrated at one place creating traffic problems.
7. The areas near Grain market are lacking water supply and other amenities (latrines and Bath rooms).
8. Dumping areas are found in where ever low lying and Gullies. All ponds are covered by the garbage.
9. Multi- storied buildings are very few and it constitutes very less percentage (4.77%) of the covered area.
10. Maximum commercial activities is there in 16th, 8th and 9th Ward

**Findings form Transportation Survey:**

1. Grain market ,whole sale,vegitable and fruit markets are the attracters of the trffic.
2. Maximum number of Bulluck carts are comming from Kammam road then from the Narsampet road. About (715) bullock carts are comming and 680 number of bullock carts leaving the city daily.
3. Maximum no. of Bus trips (328) are made between Kazipet and Central Area along JPN road.
- 4 Peak hour volumes are max. in SVN road and Under bridge road.
5. Zig-zag parking is common in Central Area.
6. Kurb parking has been provided at junction formed by JPN and RNT road.
7. Most of the juctions are not properly designed will require improvement.
8. The Bridge width is inadequate (25) to carry the present volume needs improvement.
9. Bullock carts are mixing up with fast moving vehicles.
10. Parking space is inadequate at old beat bazar area and under bridge road.
11. On street parking is provided at junction near old beet bazar area.
12. Through traffic going beyond Hanamkonda and to other district going through the central area.

# CHAPTER 5

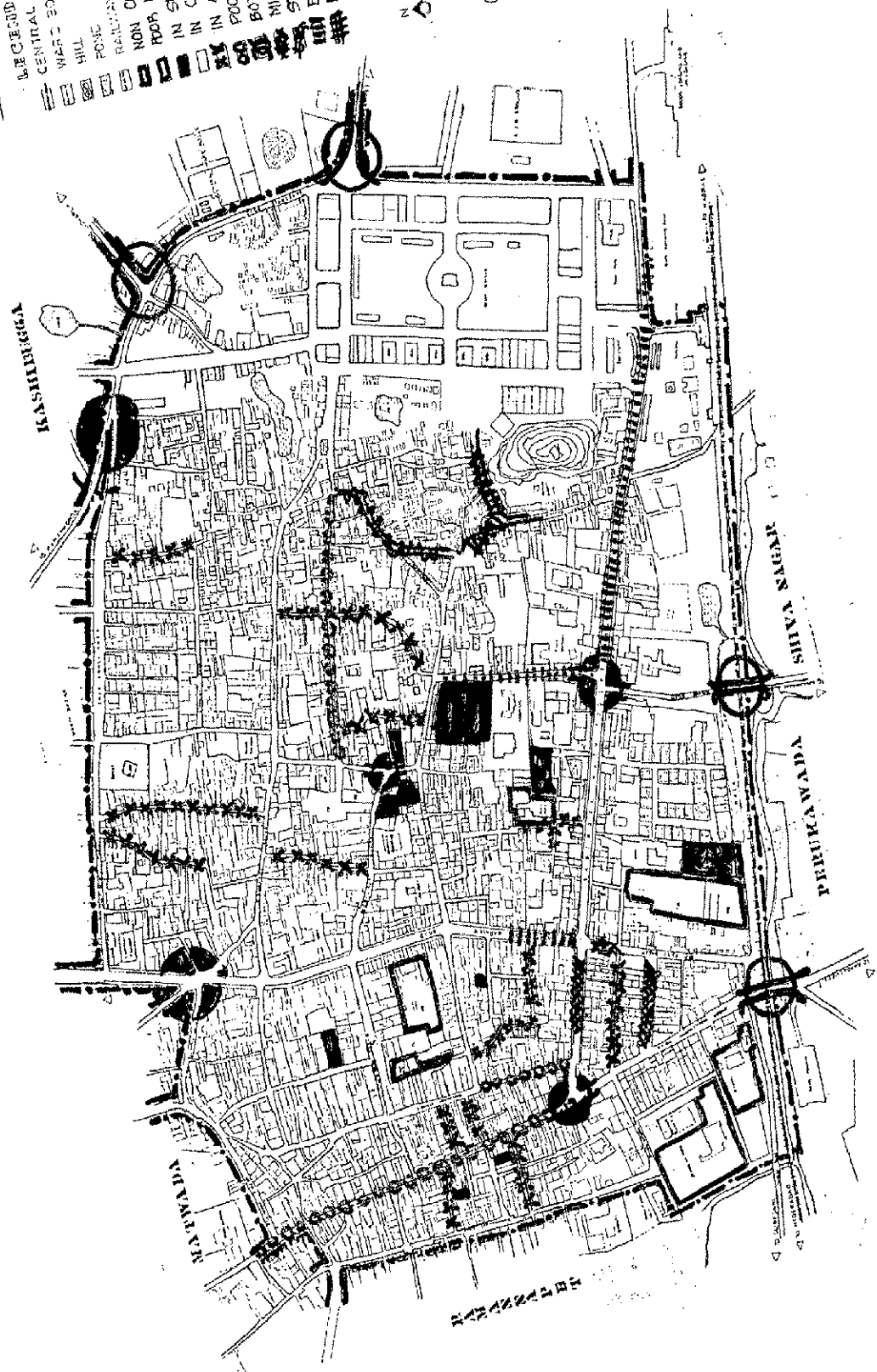
**PROBLEMS**

- UNDESIRABLE CENTRAL AREA ENCLOSURE
- CENTRAL AREA ENCLOSURE
- WAR - BOUNDARY
- HILL
- POND
- RAILWAY LINE
- NON CONFORMING USE
- NON LIVING USE (INTERNO)
- POOR LIVING USE (INTERNO)
- SUFFICIENT USES
- IN COMPATIBLE
- IN ACCESSIBILITY
- POOR ACCESSIBILITY
- BOTTLE NECK
- NOISY USE
- STEEP GRADIENTS
- ENCROACHMENTS
- PARKINGS

SCALE 1:1 INCH = 100 FEET

**PEDDLEMEET DE  
CENTRAL CITY:  
WARTY AND  
PEOPLE**

E. VIKRAMAIAH, P. 2000  
1980-1985  
SHEET NO. 5.1  
MAP NO. 5.1





## IDENTIFICATION AND ANALYSIS OF PROBLEMS AND PROPSALS

After the study and analysis of physical, socio-economic land use and Traffic conditions of the Central Area of Warangal, the problems of the Central area have been identified as given below and ref. Table No. 5.1 for more detail.

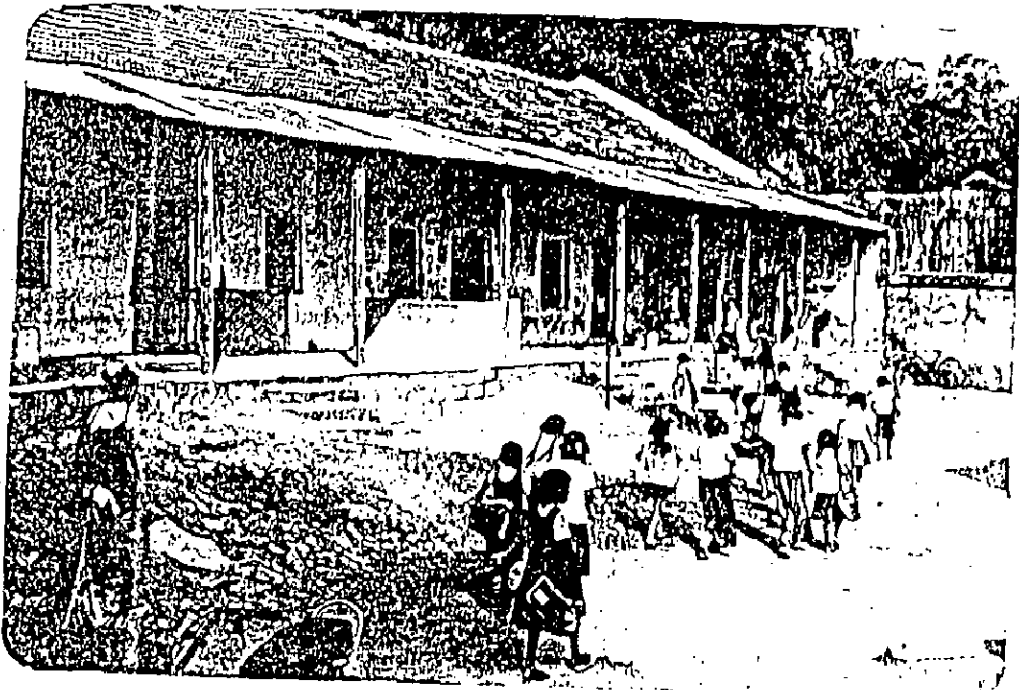
### 5.1 SOCIO-ECONOMIC PROBLEMS:

#### Pressure on the Facilities:

Due to non conformity of building height, building rules and violation etc. (see. illu. No. 12 ) high density development has resulted, causing straining and reduction on utilities. Hence, it is proposed to frame appropriate municipal bye-laws and enforcing them strictly.

#### Obsolescence :

Due to materials and its age (above 80 years) the dilapidated conditions of the structures have emerged. (see illu. No. 1) there is a risk of life to the inhabitants and give ugly look to the passers by. Hence, it is proposed that, the Municipal Board should be empowered to enforce demolition of irreparable structures or get repair undertaken on pattern of what is prevelent in cities like Bombay. The buildings which are are in poor condition have been shown in the Map No. 5.1.



Illu. 1: A veiw of the primary school which in dilapidated condition near Ayurvedic Medical College.



Illu. 2) A view of slum with poor living conditions near grain market.

## **SLUMS:**

The heavy influx of people from Rural and other urban areas to the city, in search of jobs, has caused formation of slums (see. illu.No. 2 ) because of inadequate space ( shortage of housing ) and high rent values. These in tern, have contributed to the degradation of overall environmental quality, visual pollution etc. Hence, it is proposed

1. To improve the existing quality of slums by providing better water supply and other amenities,
2. To prevent future slums, strict enforcement and measures should be adopted to curb all unauthorised constructions and encroachments on public land.

## **5.2 LAND USE PROBLEMS :**

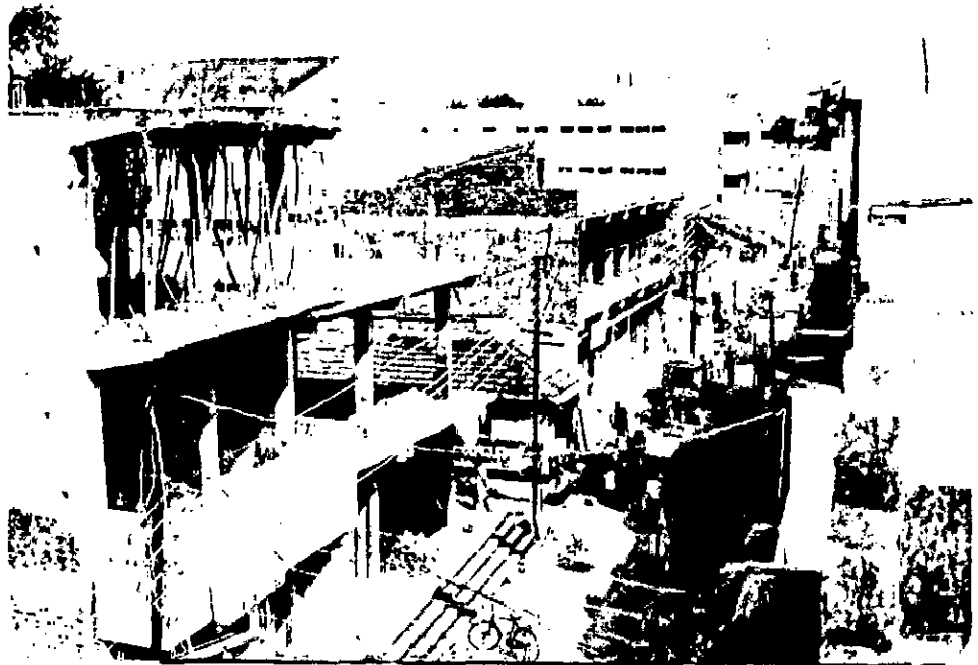
### **Buildings violating the rules**

Due to unplanned and haphazard growth of the city the non conforming land uses have emarged in almost the whole the central area(see. Map.No. 5.1 ), causing obstructions and accidents through vehicular movement. Hence, it is proposed to regularise the line of streets, through clearance of road enchroachments.

### **Conversion of use:**

Due to increase in rent and land values, the use of residential buildings situated along major roads and streets has been changed to commercial use, e.g. Pinnavari street, Girmagipet road and Vivekananda road ( see Illu.No. 3 ). As a result, the

volume of traffic has been increased as the People are attracted by the new shopping establishments which causes congestion. Hence, it is proposed that, new establishments should be allowed only on such roads, which can sustain the traffic.



Illu. 3: View showing the construction of building on the Girmajipet Bazar road.

#### Misuse of road space:

Due to ribbon development of shops all along main and small roads, activities like loading-unloading are causing traffic jams, accidents etc, (See Illu. No. 4). there by, reducing efficiency of road width and disturbing the effective grouping of buildings. Hence, it is proposed that,

1. The entry and exit for the vehicles delivering the service goods should be restricted or should be allowed only after the day time or outside the peakhours

2. On-street parking during peak hours should be allowed on one side of the street or on both sides during lean hours. Wherever situation permits, the parking should be created on vacant land and wherever it is possible to restricting the traffic by rules such as one way traffic etc. This will also help in avoiding traffic problems like congestion etc.



Illu. 4: Loading and unloading activities are occupying the road space near grain market and old Beet Bazar.

**Nonconforming uses:**

Due to bad location and insufficient space for assembling and whole sale markets, godowns, industries and timber depots; loading-unloading and encroachments ( see Illu.No. 5 ) are causing congestion, accidents and noise pollution to respective adjoining areas. Hence, it is proposed to shift or relocate vegetable market and godowns to more suitable places within the

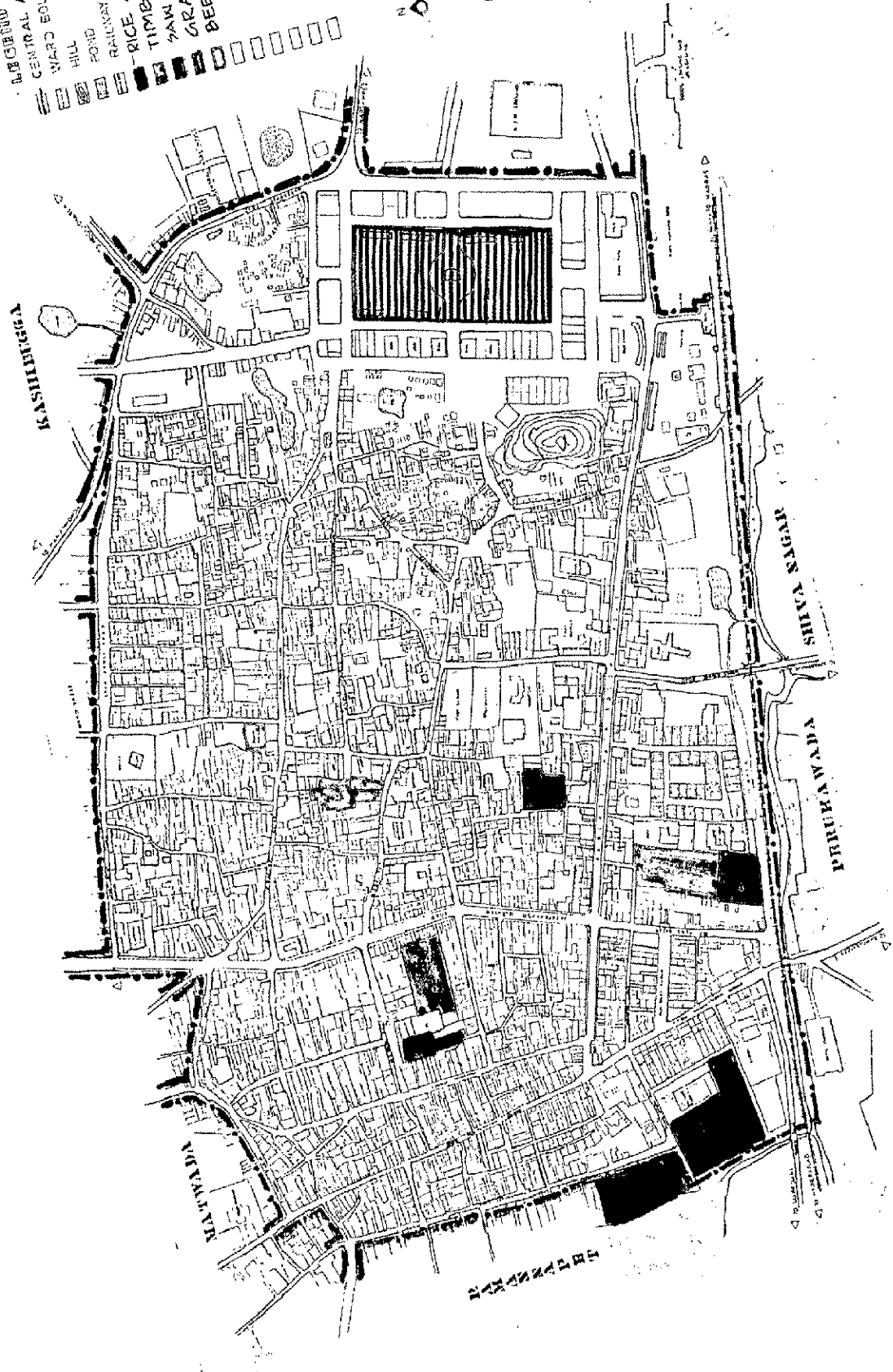
**BUILDINGS TO BE  
SHIFTED OUT OF  
CENTRAL AREA**

- LEGEND
- CENTRAL AREA - BOUNDARY
- WARD BOUNDARY
- HILL
- POND
- RAILWAY LINE
- RICE AND OIL MILL
- RICE DEPOT.
- TIMBER MILL
- SAW MILL
- GRAIN MARKET
- BEEDI FACTORY

SCALE 1:10000  
N

**PERMISSION OF  
PETROLEUM OF  
CENTRAL AREA OF  
MADRAS CITY.  
STUDY AND  
PROPOSALS**

E. VIGNARAJAN, ARCHT.  
1951-52.  
SHEET NO. 5.1.2.  
MAP NO. 5.1.2.



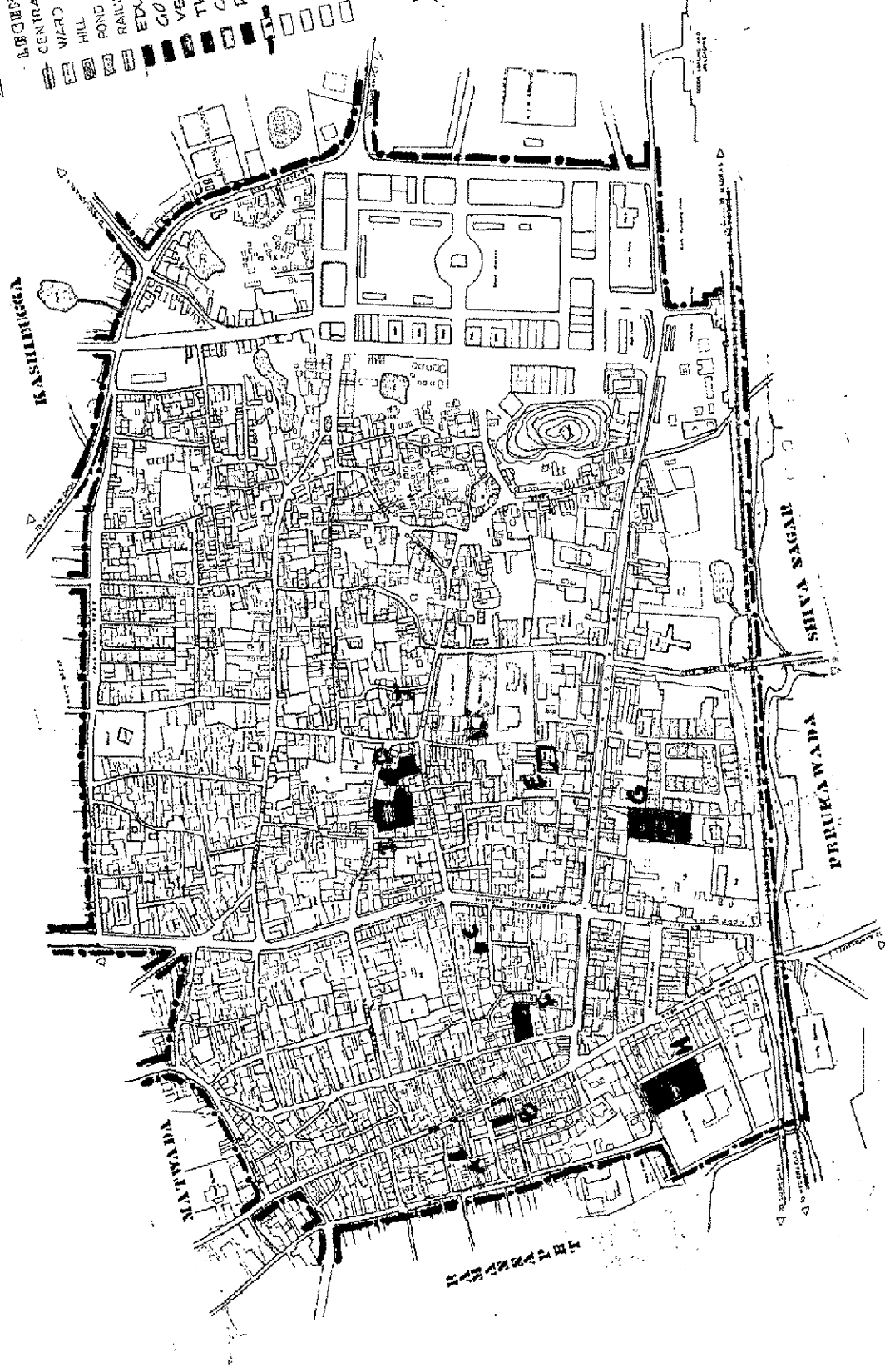
**BUILDINGS TO BE RELOCATED**

- LOCAL AREA BOUNDARY
  - CENTRAL AREA BOUNDARY
  - MICRO BOUNDARY
  - HILL
  - POND
  - RAILWAY LINE
  - EDUCATIONAL
  - GODOWNS
  - VEGETABLE MARKET
  - THEATRE
  - COMMUNITY HALL
  - POLICE STATION
  - MARKET BOUNDARY
- NOTE: A, B, C & D - PRI. SCHOOL  
 . . . . . AXI. MEDICAL COLLEGE  
 . . . . . E - COLLEGE

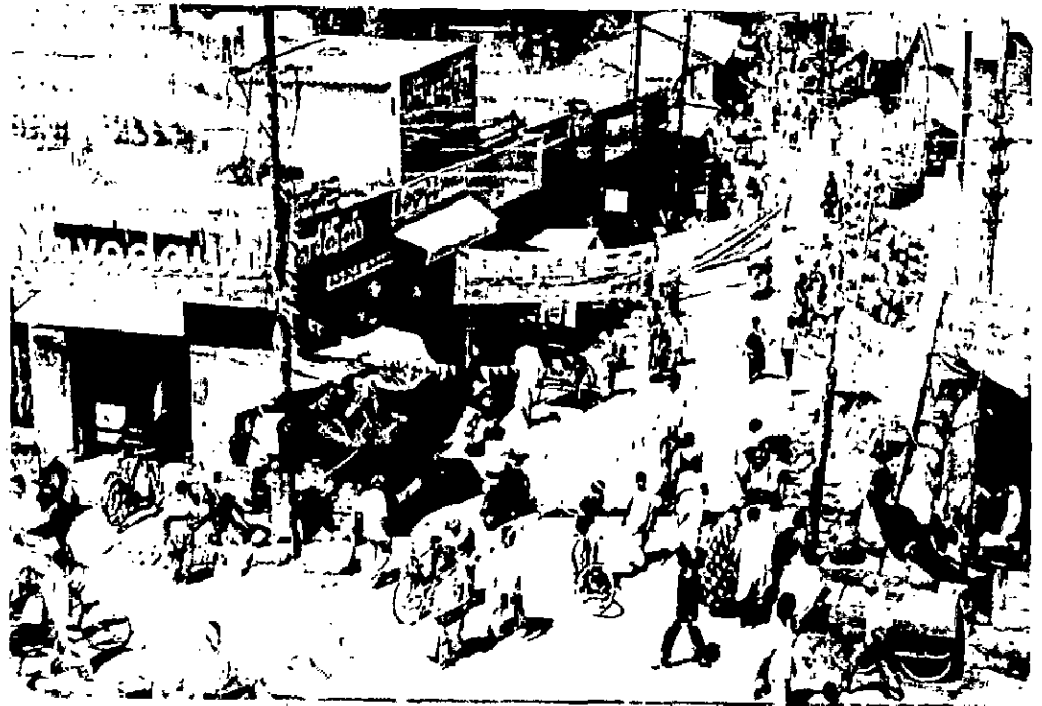
SCALE 1:1 INCH = 100 FEET

**PEOPLE OF CENTRAL AREA OF MADRAS CITY: STUDY AND PROPOSALS**

E. VIDYARATHNAM, D. DESAI  
 SHEET NO. 5.1.3  
 MAP NO. 5.1.3



Central area, and Grain market, Industries and Timber depots to outside the Central area. Such problem areas are shown in Map No. 5.1.2 & 5.1.3



Illu. 5: Encroachments occupying the road space near vegetable market.

**Inefficient functioning:**

Due to lack of adequate space, the schools, colleges, community hall and police Station are facing problems like inadequate play area, amenities etc. Hence, it is proposed to provide sufficient space for the institutions, the police Station and community hall.

**Bad location of disposal areas :**

Due to lack of particular dumping or garbage disposal areas, the low lying areas within the residential areas having 2 to 5 feet depth became dumping areas and causing bad smell,



mosquitoes, animal menace and health problems are emerging. Hence, it is proposed that the suitable places are identified, where this garbage can be dumped ( sanitary land fillings ) and buildable areas can be reclaimed.

### **5.3 TRAFFIC AND TRANSPORTATION PROBLEMS :**

#### **Over Loading on the Road Space :**

Due to heavy through traffic along Ravindranath Tagore road and JPN road. There is an increase in the traffic volume in the main roads causing congestion, traffic jams, accidents etc. Hence, it is proposed to divert the through traffic.

#### **Inconvenient Junctions and bad Junctions**

Due to existing bad junctions in almost the whole of Central area faces problems like congestion, traffic jams, accidents etc. Hence, it is proposed to improve the Junctions.

Due to the narrow bridge ( See Illu. No. 6 ) and road width oftenly traffic jams are seen through out the day near under bridge road and old Beet bazar area. Hence, it is proposed to widen the bridge.

#### **Inadequate parking space**

Due to inadequate parking lots and on street parking near under bridge road and old beet bazar area ( See Illu. No. 7 and 8), all vehicles are parked along curb of road in haphazard manner causing reduction in capacity of the road, increase in accident potentials etc. Hence, it is proposed to provide

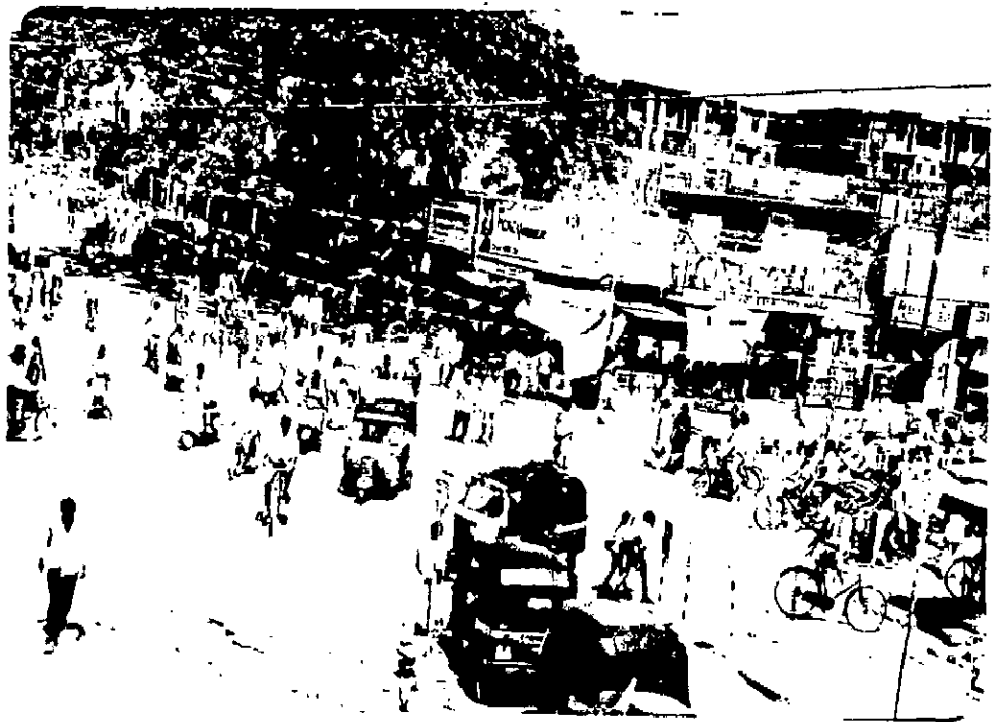
adequate space for parking lots at suitable poaces, wherever, vacant land is available.



Illu. 6: A view of narrow under bridge which is leading to Khammam District.



Illu. 7: A view of on street parking near bus stand, which occupied the road space causing inconvenience for bus movement.



Illu. 8: The road space is using for parking purpose, at junction near the old Beet Bazar.



Illu. 9: A view of the bullock carts which making the movement of bus slow.

### **Mixed Traffic:**

Due to lack of segregation, fast moving vehicles and slow moving vehicles are mixing up ( See illu. No.9 ) on RNT road and JPN road, causing delays in movement and accidents. Hence, it is proposed to limit the hours entry-exit particularly for slow moving vehicles.

### **5.4 ENVIRONMENTAL PROBLEMS :**

#### **Insanitary Conditions:**

Due to the open drainage system in the Central Area insanitary conditions prevail causing unhygienic conditions such as bad smell, fossils, flooding of water etc. (see Illu. No. 10) Hence it is proposed to develop underground drainage system.



**Illu. 10:** One of the lane near Ayurvedic Medical College became a place for garbage dumping.

**Air Pollution:**

The assembling and whole-sale market activities punctually the grain market which is situated near residential areas ( see Ill. No.11 ). The commodity namely chilly, cause health related, especially breathing, problems. Hence, the market is proposed to shift away from the central areas.



Illu. 11: A view of the area which is facing the problems of the air pollution near grain market.

## Summary of problems

From the foregoing discussion of the problems, it can be concluded, the planning problems of central area of Warangal, priority-wise, are as under.

1. The first and most major problem is that of inefficient functioning of the activities. Due to inadequate space and amenities all the activities are functioning inefficiently, need enough space and amenities.
2. The problem of through traffic, traffic volume, bad junctions and the Bullock carts, can be solved immediately through traffic control system such as one ways, fixed timings for entry-exit for the Bullockcarts and Police control system or redlight systems at junctions etc.
3. Obsolescence is another major problem, it needs reconstruction of all dilapidated buildings.
4. Conversion of use is also an urgent problem to be tackled. It can be solved only if the local authority is empowered and provided with adequate staff to check the illegal constructions.
5. Parking problem, the vacant land is available in the central area can be used for providing parking lots.
6. The problem of the non-confirming uses, can be solved by sifting these uses to their respective zones, as per master plan of Warangal.

7. The problem of narrow width of the road and bridge is solved by widening and the problem of road encroachments can be solved by removing them.
8. The final problem is of insanitary conditions in the central area. It can be solved by providing adequate public latrines, baths and dumping areas.

Table No. 5.1 showing major planning problems their causes, their impacts and suggested remedial measures.

| S.No. | Problem                      | Cause   | Impact   | remedial measures   |
|-------|------------------------------|---|--|---|
| 1     | Pressure on facilities       | Nonconformity of building by-laws                                   | -Causing straining<br>-Reduction in facility               | Modify the bye-laws   |
| 2     | Slums                        | Heavy influx of people<br>-Shortage of housing<br>-High rent values | -Degradation in Environmental quality<br>-Visual pollution | To improve  |
| 3     | Obsolescence                 | Use of poor quality material & const. techniques.                   | -Risk of life<br>-Ugly look                                | Demolition  |
| 4     | Building violating the rules | Un planned & haphazard growth                                       | -Obstructions<br>-Accidents                                | Regularise the line of street   |
| 5     | Conversion of use            | Increase in rent & land values                                      | -Increase in traffic volume                                | Commercial establishments should be allowed only on such roads that which can sustain the traffic |
| 6     | Ribbon development of shops  | Lack of shopping centre   | -Traffic jams  | Entry- exit for goods vehicles should be restricted   |
| 7     | Nonconforming uses           | Bad location<br>-Inadequate space                                   | -Enchroachments<br>-Accidents<br>-Noise pollution          | To be relocated   |



| S.No. | Problem                  | Cause   | Impact   | remedial measures  |
|-------|--------------------------|---|--|--|
| 8     | Overloading on the road  | Increase in the traffic volume                      | -Congestion & accidents                            | To reduce the traffic volume                                       |
| 9     | Bad junctions            | Due to haphazard growth<br>-Lack of proper planning | -Accidents   | To improve by closing unrequired roads & by traffic control system |
| 10    | Bottleneck               | Narrow width of bridge                              | -Traffic jams<br>-Accidents<br>-Delays in movement | To be widened  |
| 11    | Inadequate parking space | Lack of vacant land                                 | -Reduction of road capacity                        | Parking should be provided wherever vacant land is available.      |
| 12    | Mixed traffic            | Lack of segregation                                 | -Delays in movement<br>-Accidents                  | Limiting the exit-entry for slowmoving vehicles                    |
| 13    | Insanitary conditions    | open drainage system                                | -Bad smell<br>-Mosquitoes<br>-Flooding of roads    | Under drainage should be developed                                 |
| 14    | Air pollution            | Bad location of activities                          | -Breathing problems                                | To be shifted away from the Central area                           |

# CHAPTER 6

**PROJECTIONS AND FUTURE NEEDS (for 2001 A.D.)**

Preparation of Redevelopment plan for central area requires systematic analysis of present problems and deficiencies of Central Areas and assessment of future requirements particularly for a period of 20 years.

The causes and impacts of the problems have been identified systematically and described in Chapter 5. The analysis of planning problems reveals that there is an immediate need to plan central area for future. For this, targets for future Landuse and other requirements should be made for the period ending with year 2001 A.D.

**6.1 Demographic Projections :**

An assessment of future population and its characteristics is a basic requirement for estimating the land use requirements, because every thing is related directly to its population. Hence, design populations for future has to be projected by various methods.

**6.1.1 Population :**

Population of central area is not growing uniformly. The growth rate is changing from decade to decade. The maximum growth rate (61.50%) is in 1981 over last 10 decades. It is almost double as against the 1971 growth rate (32.93%). Refer

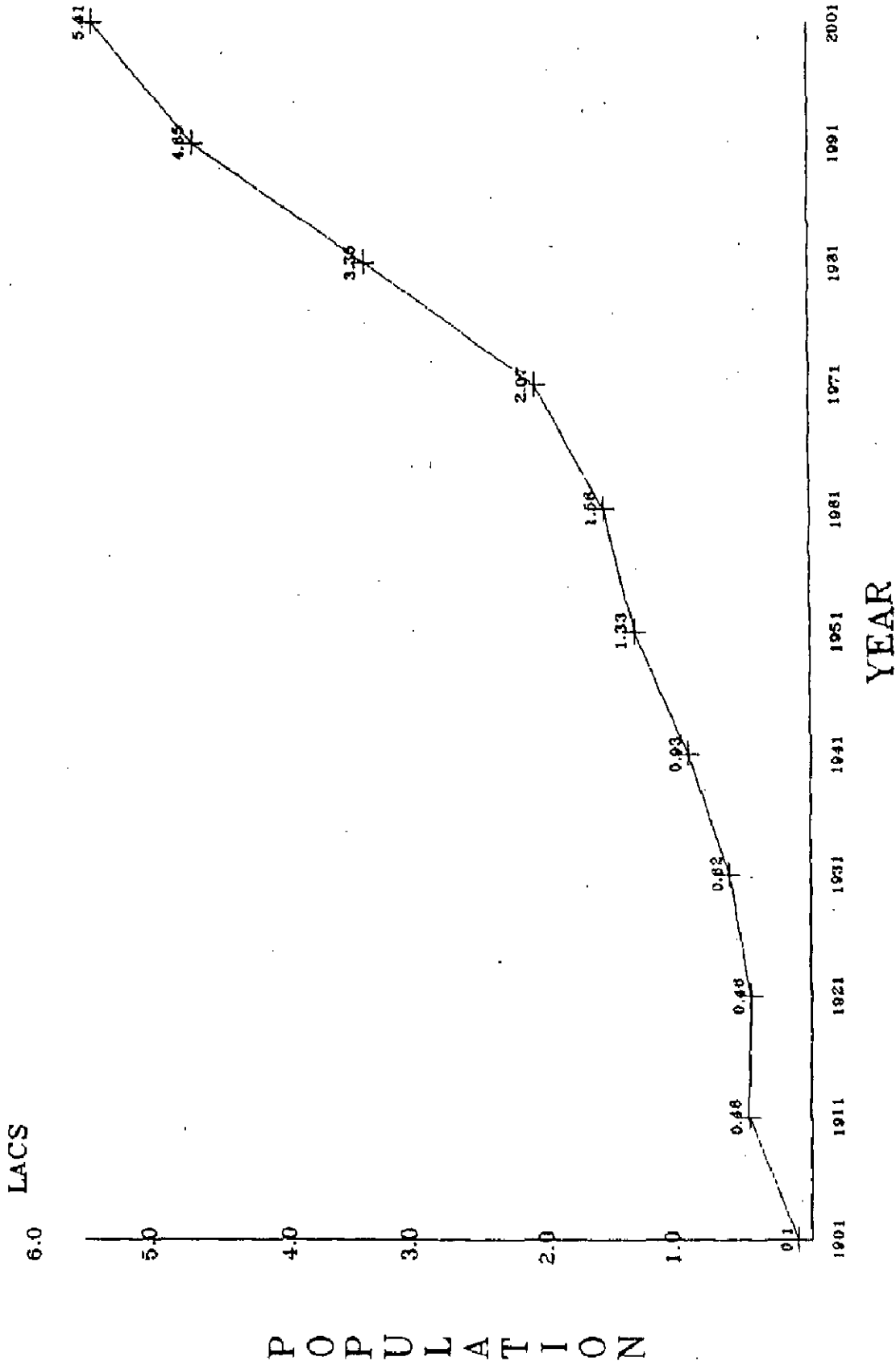
Table No. 6.1

## Projection of population for city for 2001 .A.D.

| Sl. No.         | Year | Popu.  | Increase per decades | Increment on increase per decade | %age of decade increase | Decrease in %age increase |
|-----------------|------|--------|----------------------|----------------------------------|-------------------------|---------------------------|
| 1               | 2    | 3      | 4                    | 5                                | 6                       | 7                         |
| 1.              | 1901 | 10487  | -                    | -                                | -                       | -                         |
| 2.              | 1911 | 48342  | + 37855              | -                                | + 360.97                | -                         |
| 3.              | 1921 | 46791  | - 1561               | - 36294                          | - 3.22                  | + 364.19                  |
| 4.              | 1931 | 62119  | + 15362              | + 16889                          | + 32.76                 | - 29.54                   |
| 5.              | 1941 | 93803  | + 30689              | + 15363                          | + 49.40                 | - 16.64                   |
| 6.              | 1951 | 133130 | + 40322              | + 9633                           | + 43.45                 | + 5.95                    |
| 7.              | 1961 | 156106 | + 22976              | -17346                           | + 17.26                 | + 26.19                   |
| 8.              | 1971 | 207520 | + 514141             | +28438                           | + 32.93                 | - 15.67                   |
| 9.              | 1981 | 335150 | + 127630             | +76216                           | + 61.50                 | - 28.57                   |
| 10.             | 1991 | 465480 | + 130330             | + 2700                           | + 38.89                 | + 22.61                   |
| 11.             | 2001 | 527987 | + 62507              | + 67823                          | + 13.42                 | + 25.47                   |
| -----           |      |        |                      |                                  |                         |                           |
| Till 1981 Total |      |        | +324687              | +92897                           | + 595.05                | + 305.91                  |
| Average         |      |        | +40585.8             | +13271                           | + 74.38                 | + 43.70                   |
| Till 1991       |      |        |                      |                                  |                         |                           |
| Average         |      |        | +50557.4             | +11949.6                         | + 60.84                 | + 41.05                   |

Source: census report 1981

# GRAPHICAL METHOD - PROJECTION OF POP. FOR 2001 A.D. FOR THE CITY OF WARANGAL



Source : Census Report - 1981

Fig. No : 6.1

Table No. 6.1.1 which gives the details of growth rate etc. The various methods for calculating the future population depending upon the trends of population growth are given below.

#### 6.1.1.1 Graphical method:

Population projected by graphical method ( See Fig. No. 6.1 ) for 2001 A.D. for Central Area is approximately 5,41,267. This method projects population only according to the last two decade rates of increase in population, i.e., 61.50% per decade and does not take former trends into account.

#### 6.1.1.2 Annual Rate of Increase method:

Population of Warangal city for 2001 A.D. after 20 years (from 1981 population ) is given as :

$$P_{2001} = P_{1981} (1 + i)^{20}$$

where :

$i$  = Annual rate of increase of population

$$i = \left( \frac{P_n}{P_n - 1} \right)^{1/10} - 1$$

$$= \left( \frac{335150}{207520} - 1 \right)^{1/10} - 1$$

Hence,  $P_{2001} = 335150 \times 2.6083$

$$= 874182$$

### 6.1.1.3 Arithmetic Projection Method :

Population of Warangal City for 2001 A.D.

$$P_{2001} = P_{1981} + 2 \times i$$

Where,

$$\begin{aligned} i &= \text{Average variation of population per decade} \\ &= 40585.8 \text{ (From Table 6.1.1)} \end{aligned}$$

Hence,

$$\begin{aligned} P_{2001} &= 335150 + 2 \times 40585.8 \\ &= 416321 \end{aligned}$$

### 6.1.1.4 Geometrical Progression Method :

Projected population for Warangal city for 2001 A.D.

$$\text{i.e.; } P_{2001} = P_{1981} (1 + i/100)^2$$

where,

$$\begin{aligned} i &= \text{Percentage rate of increase per decade} \\ &= 74.38\% \text{ (From Table No. 6.1.1.1)} \end{aligned}$$

Hence,

$$\begin{aligned} P_{2001} &= 335150 (1 + 74.38/100)^2 \\ &= 10,19,137 \end{aligned}$$

### 6.1.1.5 Incremental Increase Method :

Projected Population for Warangal city for 2001 A.D.

$$P_{2001} = P_{1991} + i + i_o$$

Where,

$i$  = Average increase per decade till last decade

$i_o$  = Average incremental increase per decade till last decade

$$= P_{1991} + i + i_o$$

$$P_{2001} = P_{1991} + i + i_o$$

$$i = 465480 + 50557.4 + 11949.6$$

$$= 527987$$

Five methods have been used to calculate the designed population for 2001 A.D. Out of which the population projected by the Incremental increase method is considered as most appropriate one, because the other methods give the irrational values (too high or too low). Therefore, the projected population for future 2001 A.D. can be safely taken as 527987, based on Incremental Increase Method.

As per the study area is concerned with only 'Central Area'. It is necessary to project the population for 2001 A.D. During the year 1971, central area population was 18.04% and it decreased to 14.08% in year 1981. This indicates that the growth of central area is lower than the city and it will decrease further in future with respect to the city population. Hence,



considering the present percentage of 14.08%, the projected population of Central Area for 2001 A.D. will be 74340.

#### 6.1.2 Housing Requirements :

The number of HOUSING UNITS for 2001 A.D. is estimated taking the Household size in the Central Area as 5.27 and the population of 2001 A.D. as 74340, The total number of housing units required for 2001 A.D. is calculated to be 14106.

$$\begin{aligned} \text{Household for 2001 A.D.} &= 74340/5.27 \\ &= 14106 \end{aligned}$$

The projected number of housing units for the Central Area is 2001 A.D. is 14106. The existing units are 8867. therefore, the required units are 5239. housing units.

#### 6.1.3. Literacy Rate

As per analysis in chapter-3, The increase in Literacy rate of Central Area and city, (58.30% to 60.88%) and increase in the number of educational institutions ( see Appendix No. VIII) indicates that Literacy Rate will increase in future. Hence, it is expected that all the children will be going to the schools by 2001 A.D.

#### 6.1.4. Working Force :

As per analysis of working force in the chapter- 4, the percentage of working population is very less (25.35%). and while most of the workers are engaged (89%) in Tertiary sector, household workers (Secondary Sector) are decreasing gradually.

Hence, it is expected that, there will be a need for more commercial and trade establishments in future.

## **6.2 SERVICES:**

### **6.2.1. Water Supply :**

The requirement of water for the projected population of 527987 of Warangal for 2001 A.D. will be 18.48 MGD (Million gallons per day) for domestic and industrial use as per standards (35 gallons per head per day).

At present about 13.20 MGD of water is being drawn from various sources (Kakatiya canal, Dharma Sagar tank) available as against assigned capacity of 15.20 MGD. This capacity has to be increased by constructing the water reservoirs and by tapping other sources as per need.

### **6.2.2 Sewage/Drainage Systems :**

As per analysis in chapter 4. Warangal requires underground drainage system for existing and new developments. There is need for adequate sewers and efficient means of sewerage treatment for the whole city.

### **6.2.3 Power Supply :**

Power supply is one of the essential requirements for the survival of Industries etc. The present supply is inadequate and it will have to be increased by tapping other sources. As per standards 10 MW of electricity per one lac people is required. Thus the total required electricity for Warangal city for 2001 population will be 5.2 MW.

Table No. 6.2

Educational and community facilities required for  
the Central Area for the projected population in 2001 A.D.

| Sl.No. | Description                       | Existing Number | Required Number | Space requirements Acres (Hect.) |
|--------|-----------------------------------|-----------------|-----------------|----------------------------------|
| 1      | 2                                 | 3               | 4               | 5                                |
| 1.     | Primary School                    | 9               | 15              | 11.25                            |
| 2.     | Secondary School                  | 2               | 7               | 10.50                            |
| 3.     | Colleges                          | 2               | 1               | 6.00                             |
| 4.     | Specialised Health Centre         | 1               | 2               | 1.50                             |
| 5.     | Community Hall Library            | 1               | 2               | 1.50                             |
| 6.     | Police chowki                     | 1               | 2               | 0.50                             |
| 7.     | Cinemas                           | 4               | 2               | 1.50                             |
| 8.     | Fire Station                      | -               | 1               | 0.50                             |
| 9.     | Petrol pumps and service Garrages | 1               | 2               | 0.50                             |
| 12.    | Community Centre                  | -               | 1               | 6.00                             |
|        |                                   |                 |                 | 39.75                            |

Remark: Based on planning standerds adopted by TCPO. of Hyderabad.

Table No.6.3

## Buildings Identified for Improvement

| S.No. | Types of Institution          | Remarks  | Approx. space requirements Acres     |
|-------|-------------------------------|--|--------------------------------------|
| 1     | 2                             | 3  | 4                                    |
| 1.    | Ayurvedic degree College      | Will have to be relocated  | 6 to 10 Acres                        |
| 2.    | Inter College, 10+2           | The site vacated by the Saw Mill can be used for the expansion of the existing area.                       | 1.5 to 2.5 Acres (for 1000 students) |
| 3.    | High School                   | The site vacated by vegetable market can be used for the High School for want of more space.               | 1.5 to 2.0 (600 students)            |
| 4.    | Primary School upto 5th class | The site vacated by Ayurvedic Medical College Godowns, rice mills etc. can be used for want of more space. | 0.2 to 0.75                          |
| 5.    | Police Chowki/ station        | The open land near bridge can be used for this purpose.  | 0.2 to 0.75 without staff quarters.  |
| 6.    | Community Hall                | The open land available in the 8th ward can be used for this use.  | 1.5                                  |
| 7.    | Maternity Hospital            | The site vacated by Rice Mill can be used for want of more space   | 1.5                                  |

Remark: Based on Space standards for old city redevelopment suggested for Delhi

### **6.3 AREA REQUIREMENTS FOR LANDUSE DEVELOPMENT FOR 2001 A.D. :**

For a better and healthy environment of Central Area in future including the removal of existing problems and redevelopment of area, correct projection of landuses is required. For calculations, the City and Central Area population projected for 2001 A.D. has been considered. The City and Central Area Populations are considered to be 74,340 and 5,27,967 respectively.

#### **6.3.1 Residential**

As per density analysis, the most appropriate net residential density is 384PPA in ward number 9 because it has 51% of residential use. While the other wards have irrational percentage of residential area (very high and very low). Hence, the proposed net residential density in Central Area will be around 390. Thus, the total residential area required for future population will be 190 Acres considering 390 PPA.

At present 133.33 Acres of land is under this use. So, 56.67 Acres of land is further needed to accommodate the future projected population.

#### **6.3.2 Commercial Use :**

Land requirement for the Commercial Uses should be projected considering regional role of the city and the Central Area population. The present rate of shops is 1.75 shops per 1000 population. As per standards, 3.5 shops per 1000 population is

required. So the total required number of shops are 2109 (from Table 6.2). Therefore the total required land for commercial use is 126.54 acres including the existing land of 70.78 acres, estimated as per standards (6 acres per 100 shops)

Table No.6.3.2

Shops and Space Requirements

|                       | Existing | Required | Space requirement (Acres) |
|-----------------------|----------|----------|---------------------------|
| 1. City level         | 603      | 1847     | 110.82                    |
| 2. Central area level |          |          |                           |
| neighbour hood level  | 158      | 262      | 15.72                     |
|                       | 761      | 2109     | 126.54                    |

Source : as per TCPO Standard

### 6.3.3 Public and Semi Public Use :

As study area is confined to only Central Area, the projections of requirements of educational facilities will be limited to Primary schools. because these are the essential facilities at Neighbourhood level .There fore, the total required no. of Primary schools for the projected population are 18. (including the existing number is 9) as per standerds. The total required land under this use is 13.5 acres.

The study area consists some of city level public and educational Institutions, the land use analysis in chapter 4 reveals that they are fuctioning inefficiently due to inadequate space and amenities. (see table. no. 6.3). Hence, it is nessassary to improve the existing condition of the said buildings. Thus the total area proposed comes under this use of 25 acres of the total Central Area.

### 6.3.4 Traffic and Transportation :

Growth of modes of movement is difficult to forecast, but it can be stated that, number of trips by individual vehicles is likely to reduce due to increase in petrol cost and shortage of petrol. And mass transportation movement trips are likely to increase. Intercity movement of goods by trucks and vans is likely to increase. The increase in number of buses will need space. Therefore, it is needed to provide another bus stand at suitable place. Similarly, the increase number of vehicles

(Ref.Appendix. No.X) will need space for parking. Thus the total proposed area comes out to be 59.69 acres.

#### 6.3.5.Industries

It is impossible to make an exact forecast of number of industries, which will be established during planning period. However, it is expected that following industries will be established, such as Rice Mills, Cotton Mills and Engineering Works etc.

The locations for new industries and industries which proposed for shifting out of central area are identified as Perukawada, Karimabad, Gorrekunta and Madikonda.

#### 6.3.6.Recreational Use

The present land utilisation rate is 0.08 acres per 1000 population containing the total area of 4.19 acres of total Central Area. As per standards, it is estimated that, the required Recreational Use for projected population will be 22.29 acres (0.3 acres of land is required for 1000 population).



# CHAPTER 7

### REDEVELOPMENT PLAN

The Redevelopment plan is not a simply planning exercise or job. It involves in phisical plan based on two processes.they are:

1. The arrangement of land uses with a view to achieve desirable environmental conditions, and
2. The modification of phisical structures of central area in respect of building heights, density of population and relation of buildings with roads and open spaces. After studying and analysing the problems, potentials and the future requirements of the Central Area, now planning for healthy development of the central area can be done systematically. The salient features of the Redevelopment plan of the Central Area of Warangal are given in the following paragraphs.

#### Goals and Objectives

The goals and objectives set for the redevelopment plan of Central Area are.

#### Goals:

1. To remove the existing problems of central area related to haphazard growth.

2. To develop the Central Area for 2001 A.D. in planned and control manner.
3. To integrate the development of central area with that of the city.

### Objectives

1. To solve existing Central Area problems related to unorganised land uses, circulation and other utilities, utilising the potentials of the central area.
2. To provide adequate space for the existing facilities available in the Central Area.
3. To provide various facilities and activities required by the future population
4. To prepare a land use plan for the development of central area for the year 2001 AD.
5. To prepare a circulation plan for the year 2001 A.D.

#### 7.1 Basic considerations and assumptions for Redevelopment plan Proposals for Central Area of Warangal

After the study of problems, potentials and projections, the following points have emerged and have guided the proposals :

1. The detailed study of central area problems highlights the need for redevelopment so as to enable it function more efficiently.
2. Out of the total number of dwelling units required (13973) for future population. The Central Area has got only 8867 dwelling units providing accommodation for 47221

population. So there is a need for 5,106 more dwelling units to accommodate the projected population for 2001A.D. within the Central Area. Due to the lack of vacant land in the central area, the future population will have to be accommodated on the upper floors. Therefore, it is estimated about 61 acres of land is covered by the single storey buildings, which can accommodate 11514 dwelling units within the Central Area. If the density increases to more than 500 ppa. It will create problems in the Central Area. Hence, considering the density of 400ppa, the Central Area can accommodate a population of 55360 or 10411 dwelling units as against 13973 required units. So the excess comes out to be 3561 dwelling units which will have to be accommodated outside the central Area.

3. Out of the total required number of 262 shops at the Neighbourhood level for the projected population, the Central Area has got a total number of 716 shops including neighbourhood level (158) and city level shops (603). It indicates that they are in excess. Hence the present number of shops are sufficient for the projected population. Then regarding land use, the present commercial use of land is quite enough and it is possible to accommodate all the existing shops with adequate space within the central area, if the grain market (constituting an area of 31 acres.) is shifted out of central area.

4. Due to the lack of open space in the Central Area it is not possible to construct the required number of primary schools(18). But as per analysis two more schools can be accommodated within the central area. So the total number including the existing 9 schools.
5. As per analysis, recreational use can be increased, because most of vacant land (partly built up areas) available in the rear of residences. So, it can be transferred immediately into community use, such as parks and totlots.
6. The study of structural conditions of Central Area revealed that large portions of properties of central area and its surroundings are in a very bad condition, with "katcha" and semi pucca structures needing reconstruction.
7. The availability of vacant land in the rear portion of houses is a resource which that can be utilized for community use.
8. Retention of mixed land use is a character of the central area which is considered suitable for conditions prevailing in cities in India.
9. Conversion of residential use into non residential use, is allowed only on such roads which can sustain the ensuing traffic.
10. The space for relocation of incompatible and insufficient uses be such that, the new location offer needed infra structure and near to the activities.
11. Only those structures should be relocated which are neither capable to improve nor to create pollution.

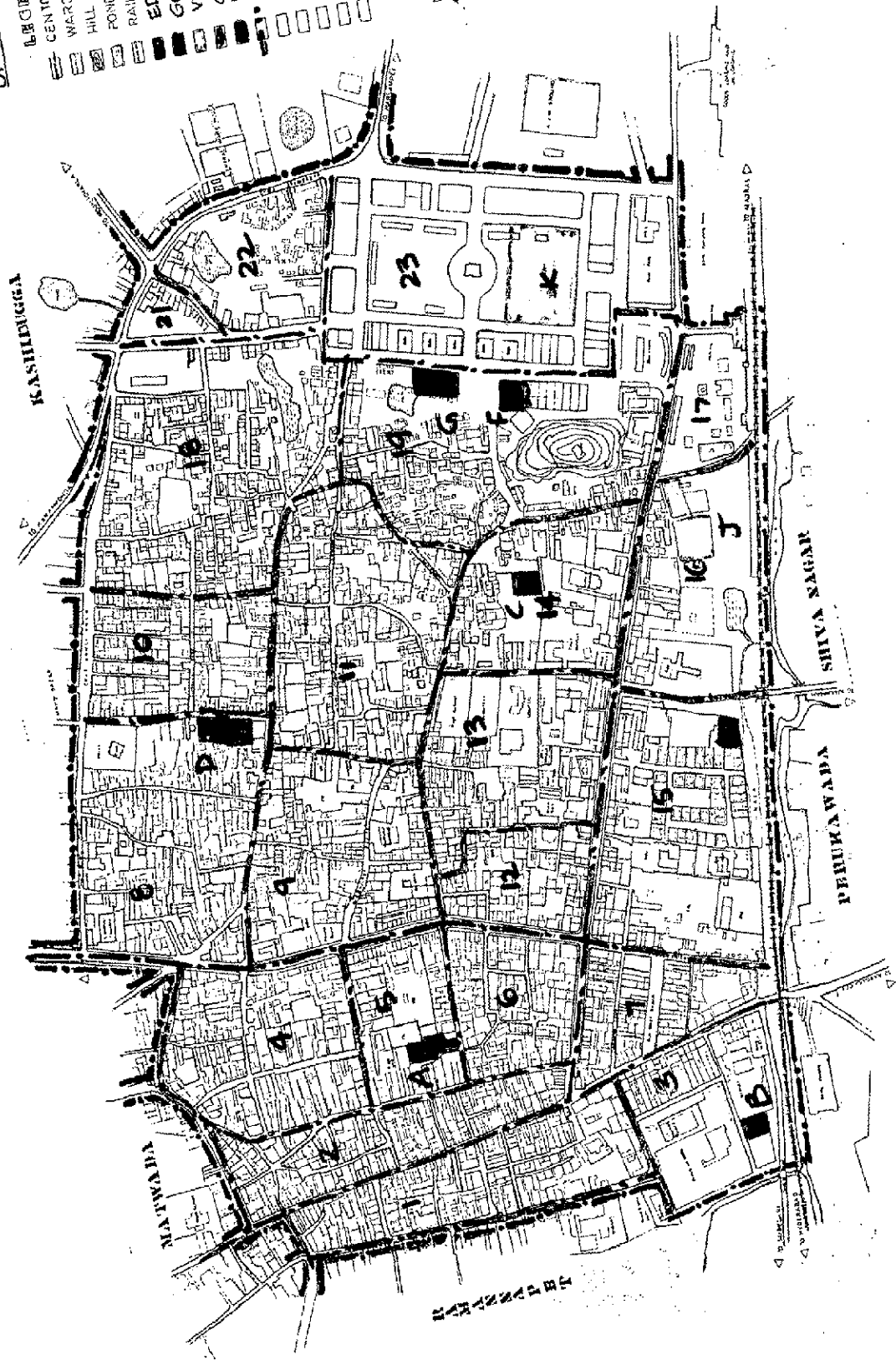
**PROPOSED RELOCATION  
OF USES**

- ▬ BOUNDARY
- ▬ CENTRAL AREA BOUNDARY
- ▬ WARD BOUNDARY
- ▬ HILL
- ▬ POND
- ▬ RAILWAY LINE
- ▬ EDUCATIONAL
- ▬ GODOWN
- ▬ VEGETABLE MARKET
- ▬ VEGETABLE HALL
- ▬ COMMUNITY HALL
- ▬ POLICE STATION
- ▬ POCKET BOUNDARY

SCALE 1:10000  
N

**PROBLEMS OF  
CENTRAL AREA OF  
MADRAS CITY  
STUDY AND  
PROPOSALS**

E. VITTHALAN, DR. PH.D.  
1951-55  
SHEET NO. 7.2.3  
MAP NO. 7.2.3



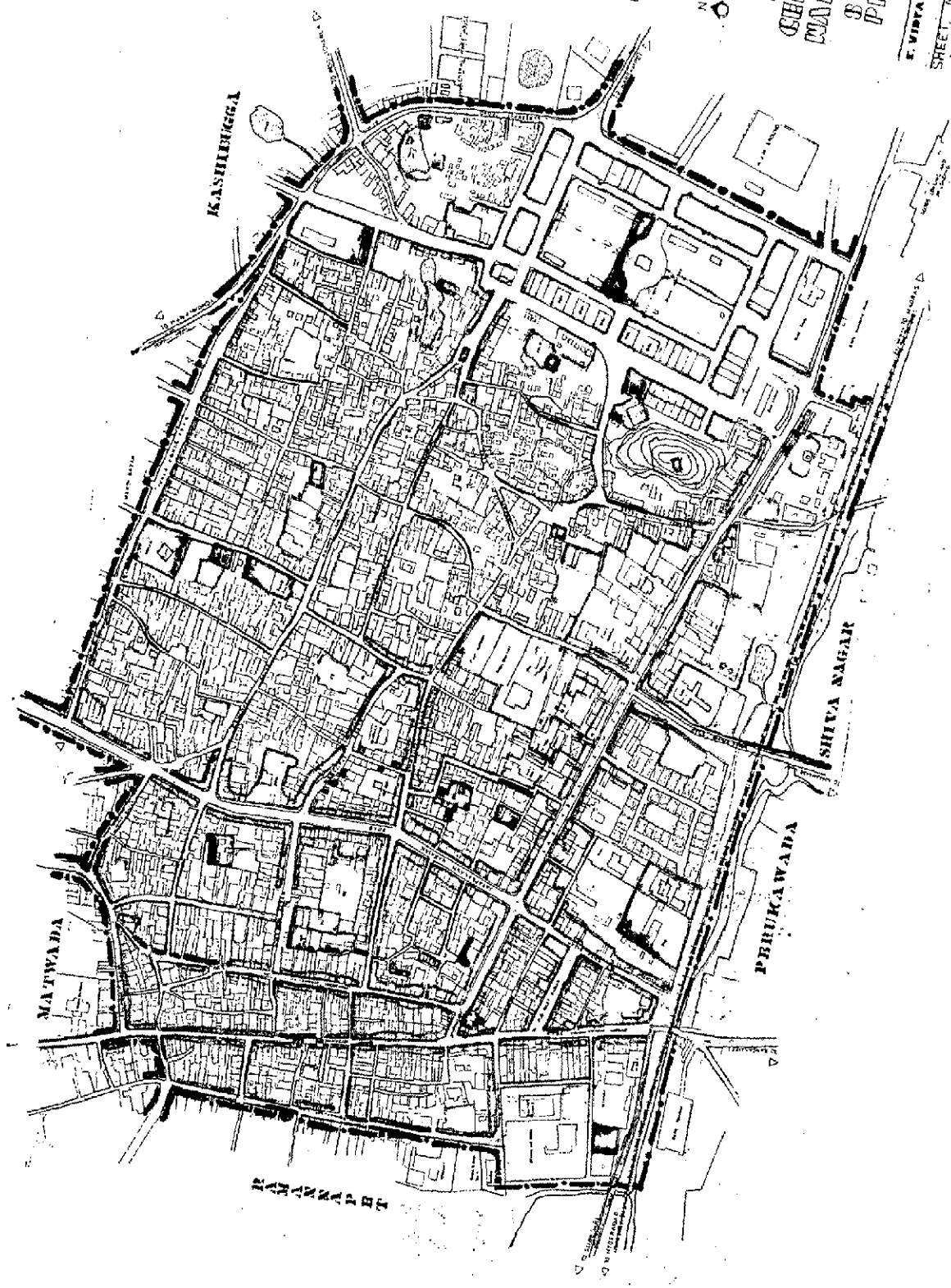
**PROPOSED  
LAND USE**

|                        |             |
|------------------------|-------------|
| LEGBORD                | 40.76 1/2 % |
| CENTRAL AREA BOUNDARY  | 22.00 %     |
| WARD BOUNDARY          | 0.57 1/2 %  |
| HILL                   | 17.57 %     |
| POND                   | 6.24 %      |
| RAILWAY LINE           | 4.67 %      |
| RESIDENTIAL            | 1.25 %      |
| COMMERCIAL             |             |
| PUBLIC AND SEMI-PUBLIC |             |
| INDUSTRIAL             |             |
| RECREATIONAL           |             |
| OTHERS                 |             |
| UTILITIES              |             |
| TOTAL                  | 339.69 Acre |

SCALE 1:1 INCH TO FEET  
N

**PROBLEMS OF  
CENTRAL AREA OF  
MANGAL CITY  
STUDY AND  
PROPOSALS**

F. V. VISWANATHAN, CHIEF ENGINEER  
SHEET NO. 1581-VB  
MAP NO. 7.2.4



12. Persons affected by clearance or improvement may be rehabilitated as close to the present site as possible.
13. Vacated land by other non confirming uses can be transferred in to other required purposes.
14. The area available under pond or garbage disposal can be used for parks.
15. The buildings or uses which are identified for shifting only can be relocated.

## 7.2 PROPOSED LAND USE PLAN:

This plan is for 2001 AD and it is based on the above mentioned considerations which have been deduced from the problems findings, projections for 2001 A.D. Various land uses have been proposed as follows.

### 7.2.1 Residential Use:

Mixed land use is predominant in central area. In view of considering it as a character, housing areas have been proposed in areas lying between commercial roads and first floor and subsequent floors, above non residential buildings. This will ensure maximum use of services provided in the central area. Thus the total proposed area comes out to be about 40.78% or 138.54 acres of central area and the proposed net residential density is 400ppa.

### 7.2.2 Commercial Use:

Most of the existing commercial roads are proposed to be retained as such the whole-sale vegetable and fruit markets are



proposed to be relocated in the vacated land for want of more space. Thus, the total proposed area comes out to be 77.45 acres. The description of roads and streets proposed as commercial is as under :

1. Swami Vivekananda road
2. Pinnavari street
3. Jaya Prakash Narayan road
4. Ravindra Nath Tagore road
5. Old beet bazar road
6. Post Office road

In addition to the above, the following roads have been identified with commercial character, the commercial cum residential use have been proposed along these roads :

1. Girmajipet road - 1
2. Girmajipet road - 2
3. Girmajipet road - 3
4. Charbowli road
5. Ellamma bazar road
6. Sivam Gudi bazar road

### 7.2.3 Public Use

The proposed Ayurvedic medical college has to be relocated out of the central area so that all the proposed primary schools could be relocated within the central area (refer. Table no.7.2 )with adequate space. The new schools are also proposed in

pocket numbers 21 and 22, so that it will provide education facility for the slum people. The hospital, college and high school are proposed to be retained as they are in the existing location, The area of these facilities is proposed to be increased by occupying the adjacent vacated land. Thus the total land proposed under this comes out to be 20.16 acres or 5.93% of total Central Area. Similarly, the proposed police station and community hall have been relocated in 8th ward, where vacant land is available.

#### 7.2.4 Industrial Use:

The industrial units which are proposed to be shifted from Central Area are given in Table No.7.2. The other small units corresponding to service industry and house hold industries related with functions of Central Area are proposed to be continued. Thus, the total proposed area comes out to be 1.85 acres.

#### 7.2.5 Recreation Use and Preservation of Buildings

The Central Area has some buildings which are of religious and historical importance. These buildings are proposed to be preserved and improved.

Open spaces are proposed in the area vacated by timber depot, saw mill and the rear portions of residences, to create the residential environment to each cluster (pocket) of Central Area ( ref.Map no: 7.2.5. ). Thus, the total proposed area comes under this use is 22 acres..

**7.2.6 Redevelopment Near Grain Market And Of Area Along Vivekananda Road**

The residences in these two pockets are proposed to be rebuilt with adequate toilets, bathrooms and with other amenities to improve the environmental quality of Central Area

**Table No.7.2.1**

**Proposed Land Use**

| S.No. | Description                  | Area (Acres) | %age to the Total |
|-------|------------------------------|--------------|-------------------|
| 1     | 2                            | 3            | 4                 |
| 1.    | Residential Use              | 138.54       | 40.78             |
| 2.    | Commercial Use               | 77.45        | 22.80             |
| 3.    | Public and Semi-Public Use   | 20.16        | 5.93              |
| 4.    | Industrial Use               | 1.85         | 0.57              |
| 5.    | Transportation Use           | 59.69        | 17.57             |
| 6.    | Recreational Use             | 21.20        | 6.24              |
| 7.    | Public Utilities             | 4.25         | 1.25              |
| 8.    | Others ( Hill, Ponds etc., ) | 16.55        | 4.87              |
| Total |                              | 339.69       | 100.00            |

Source: Estimated from the Land Use Map.

Table No.7.2.2

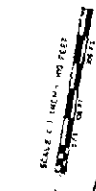
Relocation and Development of Vacated Land

| S No.               | To be Shifted             | Existing Location<br>(Pocket Wise) | Proposed Location<br>(pocket wise) | Use after Vacation |
|---------------------|---------------------------|------------------------------------|------------------------------------|--------------------|
| Non-Confirming uses |                           |                                    |                                    |                    |
| 1.                  | Oil Mill                  | 3                                  | Out of Central area                | Residential        |
| 2.                  | Saw Mill                  | 15                                 | ..                                 | School             |
| 3.                  | Timber Depot              | 15,5,9                             | ..                                 | Parks              |
| 4.                  | Rice Mill                 | 3                                  | ..                                 | Residential        |
| 5.                  | Rice Mill                 | 13                                 | ..                                 | School             |
| 6.                  | Rice Mill                 | 6                                  | ..                                 | Recreational       |
| 7.                  | Beedi Factory             | 8                                  | ..                                 | School             |
| Insufficient Uses   |                           |                                    |                                    |                    |
| 8.                  | School                    | 1                                  | 5                                  | Recreational       |
| 9.                  | School                    | 1                                  | 3                                  | Residential        |
| 10.                 | School                    | 6                                  | 14                                 | ..                 |
| 11.                 | School                    | 12                                 | 8                                  | ..                 |
| 12.                 | Ayurvedic Medical College | 13                                 | Out of Central Area                | School             |
| 13.                 | Community Hall            | 11                                 | 16                                 | Residential        |
| 14.                 | Police Station            | 7                                  | 15                                 | Open               |

|                         |     |                        |             |
|-------------------------|-----|------------------------|-------------|
| 15. Theatre             | 3,9 | Out of<br>Central Area | Residential |
| 16. Grain<br>Market     | 23  | ''                     | Commercial  |
| 17. Vegetable<br>Market | 13  | 23                     | School      |
| 18. Fruit<br>Market     | 2   | 23                     | Residential |

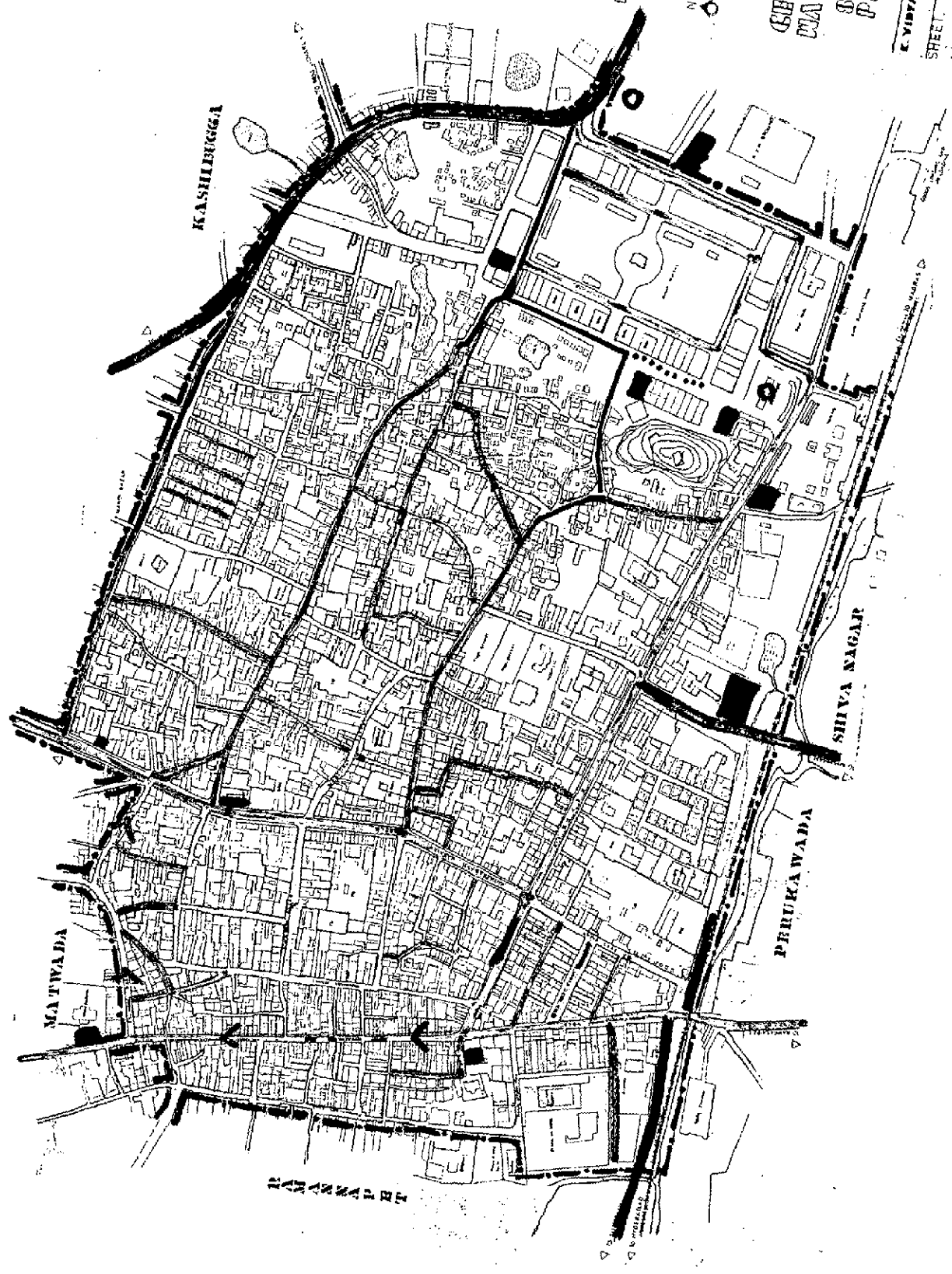
**PROPOSED CIRCULATIC PLAN**

- UNBUILT
- CENTRAL AREA BOUNDARY
- WARD BOUNDARY
- HILL
- POND
- RAILWAY LINE
- DISTRICT ROAD 100' FT WIDE
- MAJOR ROAD 30'-60'
- COLLECTOR ROAD 30'-25'
- RESIDENTIAL LANES 12'-18'
- RED WAYS
- ONE WAY
- NEW CONNECTION (PROPOSED)
- PARKING
- BUS STAND
- BYPASS ROAD



**PROBLEMS OF CENTRAL AREA OF MANGALUR CITY: STUDY AND PROPOSALS**

K. VISWANATHAN, 2ND YR. B.E.  
 SHEET NO. 105-1-10  
 MAP NO. 7.3



### 7.3 PROPOSED CIRCULATION PLAN:

Traffic study reveals that the circulation pattern in Central Area suffers from in accessibility, encroachments of road space, mixed traffic, through traffic etc. These problems have rendered the efficient functioning of the central area difficult. Keeping this in view, the problems of circulation, the following basic considerations emerge which will guide the proposals for circulation pattern for the Central Area.

1. Improvement of the accessibility in and around the Central Area, with limited and controlled accessibility.
2. Creating space for parking at appropriate location wherever vacant land is available.
3. Provision of proper linkages to the central area with in the city circulation system.
4. Restoration of the movement space and original road width of certain roads in the central area.
5. Improvement of important junctions, particularly at the entry points of the Central Area.
6. Minimum demolition with in the Central Area for providing new roads and widening of existing ones.
7. The lorry stand is proposed to be shifted from the old beet bazar so as to eleminate truck traffic.
8. Elimination of city traffic as far as possible from the outer roads of Central Area.
9. Elimination of the slow moving traffic (bullock carts) from the Central Area.

10. Provision of defined parking lots and short-term parking space within the Central Area.
11. Ensuring that Central Area is served by city bus stand and with pick up stations for mass transportation purposes

#### 7.3.1 Circulation Pattern:

In order to provide workable solutions to the problems outlined above and keeping in view the basic considerations outlined above, the peripheral road ( Narsampet road ) and Hunter road are proposed to carry through traffic both inter city and intra city and width of the road is proposed to have 100 feet.

Some of the roads are proposed to be closed and widened up for efficient movement. Then the junctions primarily at entry points are proposed to be improved for free flow of traffic. The parking areas (Ref. Map.No.7.3.) have been proposed wherever it is necessary. The description of the roads proposed for widening is given in the table below:



Table no:7.3

## Discription of roads proposed for widening

| S.No.                    | Road Description           | Existing Road width ft. | Proposed Road width ft. |
|--------------------------|----------------------------|-------------------------|-------------------------|
| 1                        | 2                          | 3                       | 4                       |
| <b>District Roads</b>    |                            |                         |                         |
| 1.                       | Narsampet Road             | 61                      | 100                     |
| 2.                       | Khammam Road               | 33                      | 100                     |
| <b>Major Roads</b>       |                            |                         |                         |
| 3.                       | JPN and Ravindra-nath Road | 61                      | 61                      |
| 4.                       | Vivekananda Road           | 18                      | 30                      |
| <b>Collector Roads</b>   |                            |                         |                         |
| 5.                       | Girmajipet Road-1          |                         |                         |
| 6.                       | Girmajipet Road-2          |                         |                         |
| 7.                       | Charbowli Road-3           |                         |                         |
| 8.                       | Govindarajulu Bazar Road   | 18-30                   | 25-30                   |
| 9.                       | Post Office Road           |                         |                         |
| 10.                      | Pinnavari Street           |                         |                         |
| 11.                      | Old Beet Bazar             |                         |                         |
| <b>Residential Lanes</b> |                            |                         |                         |
| 12.                      | Ramannapet Lane            |                         |                         |
| 13.                      | Rama Talkies Lane          | 12-18                   | 18                      |
| 14.                      | Sivangudi Bazar Lane       |                         |                         |
| 15.                      | Girmajipet Lane            |                         |                         |
| 16.                      | Lakshmipuram Lane          |                         |                         |

### Roads Proposed for Closing

1. Grain market road
2. Grain market road, leading to community hall.

### Junctions proposed for Improvement (at entry points)

They are :

- a) Under bridge
- b) Narsampet Road
- c) entry at SVN Road

### 7.3.2 Street Lines

The field studies revealed that most of the roads are occupied by the irregular constructions of buildings which have reduced the road width. Therefore, the roads, street and lanes are proposed to be regularised the line of street to achieve the desirable width.

### 7.3.3 Bus Route:

Mini bus service is proposed for mass transportation purpose in Central Area. It will run between bus stand and Pochamma maidan.

Another bus stand exclusively for district buses is proposed near Venkatarama theatre to relieve the congestion of existing bus stand of the Central Area.

### 7.3.4. One Way Street :

It is proposed to have provision of one way traffic system for convenient shopping during peak hours. They are given below.

1. Vivekananda road
2. Pinnavari street
3. Old beet bazar.

#### 7.3.5 Parking:

Efficiency of road system can be improved by providing parking lots at appropriate places as this will eliminate parking of vehicles on the movement space. Off street parking proposed within the limitation of space available in Central Area, the important sites envisaged are as under :

1. Old beet bazar
2. Under bridge
3. Bus stand

# CHAPTER 8

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## CHAPTER - 8

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### CONCLUSIONS

The Redevelopment of Central Area is not an easy job. which includes making hard decisions on shifting and relocating land uses or activities. Hence, the planning will not be successful if proper policies and steps are not taken by the Government. And it is most essential to have the coordination and to seek financial help from the various organisations involved in the planning and development of the city.

#### 8.1 LEGAL, FINANCIAL AND ADMINISTRATIVE SYSTEMS OF WARANGAL CITY :

##### 8.1.1 Legal Instruments to Control the Developmental Activities:

To manage development process in a city, it is necessary to have knowledge about the legal instruments applicable to any area to be developed.

The various prevailing acts pertaining to the Central Area are:

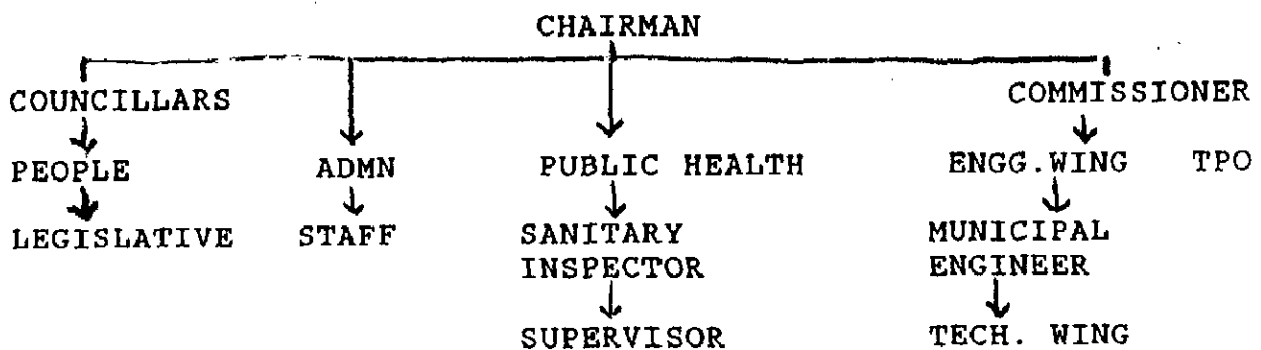
1. A.P. Municipal district Act 1920
2. A.P. Town Planning Act 1920
3. A.P. Urban Land ceiling and Regulations Act, 1976
4. Water Pollution Act, 1981
5. Air pollution Act, 1984
6. National Highway Act 1957
7. Motor Vehicle Act, 1988
8. Land Aquisition Act 1984 (amended in 1984.)

All the above mentioned acts are formulated to control the development activities and to plan the towns and cities accordingly.

### 8.1.2 Administrative System :

Warangal Municipality and Kakatiya urban development authority are responsible for construction and maintenance of public services, utilities and facilities. The Municipality is also responsible for operation and maintenance of public services and also the other agencies involved are A.P. Housing Board, A.S.E.B., A.P.I.D.C. and A.P.S.F.C. and the Collectorate. Therefore, it is highly essential to have the coordination between various agencies for efficient implementation of the redevelopment plan. The Agencies are: Municipal Office, Public Works Department, Housing Board, Roads and Buildings (UDA) Electricity Departments, Police, Post and Telegraphs and Dist. Collectorate Organisational Structure of Warangal Municipality.

The organisational structure of the municipality.



### 8.1.3 Financial System and Sources:

Financial aid coming from :

- i. Central Govt.
- ii. State Govt.
- iii. Taxes

### 8.1.4 Financial Status of Warangal Municipality :

The major share of the income for municipality is from taxes and through grants, properties, loans and advance from government. At present municipality is running in deficit. The expenditure is more than the actual income (Ref. appendix No. X ).

Hence, it is highly essential to increase the available funds through grants, aids etc, and revenue from taxes on properties etc. for implementation of the redevelopment plan proposals.

### 8.2 PHASING OF DEVELOPMENT :

Since it is not feasible to implement the redevelopment plan proposals of Central Area at a time, it is required to have phase-wise development or implementation of development within the time frame. The implementation of proposals should be of 20 years programme study for 1981 and it can be divided into three phases. The first second and third phases should be of 5, 10 and 5 years simultaneously.

## First Phase

During the first-phase the following proposals shall be implemented as per redevelopment plan proposals.

1. First of all the existing condition of residential areas, schools and parks should be improved by providing necessary amenities and services.
2. The existing garbage dumping areas should be reclaimed soon and transformed into parks.
3. Traffic rules such as one way traffic control system must be introduced immediately.
4. Open drainage lanes should be modified to the desired width immediately.
5. New buildings should be constructed for the buildings which are proposed for shifting out side the Central Area.

## Second Phase

During Second Phase following proposals can be implemented:

1. Ayurvedic college, all other non-confirming industries and grain market should be relocated in the proposed areas as per redevelopment plan.
2. The vacant land in rear portion of residences should be acquired immediately and transformed into community use as per development plan.
3. The width of the narsampet road and the under-bridge road including the bridge should be widened up to the hundred feet (100) width



### Third Phase

1. Under-ground drainage system should be constructed in the city including the Central Area.
2. New buildings for residential, commercial, Police station, schools and community hall should be constructed in the proposed areas in the vacated land as per development plan.
3. Then encroachments beyond the building lines should be demolished.
4. Finally commercial centre and other new stalls related to shopping (vegetable , fruit markets) purpose should be constructed in the Land vacated by the grain market.

### 8.3 GUIDE LINES/POLICIES FOR DEVELOPMENT OF CENTRAL AREA :

Following are the conclusions and recommendations arrived out of the whole study. Which are applicable to the development of the Central area in general.

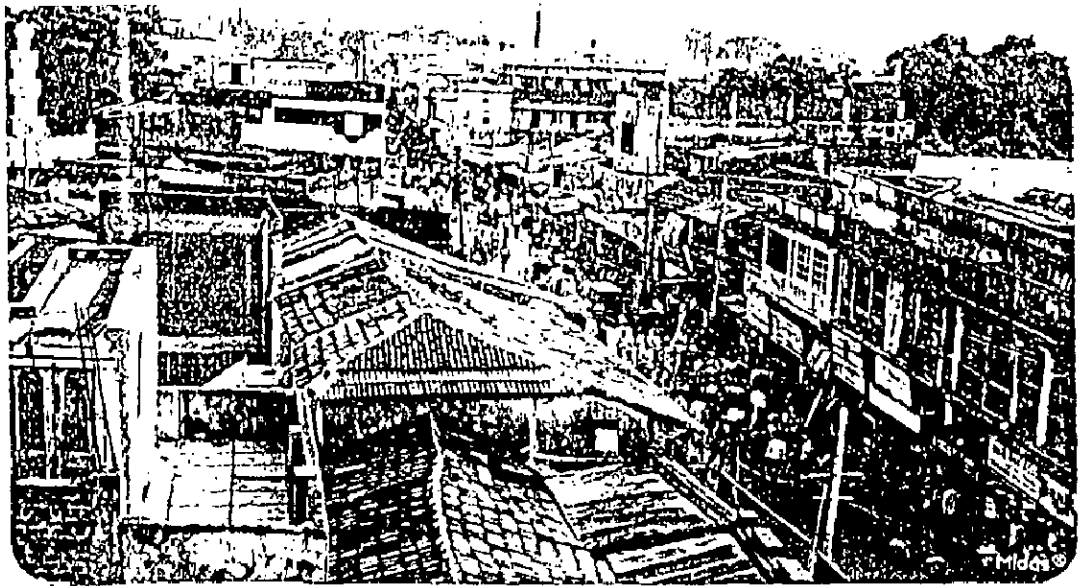
1. As most of the central areas have grown without proper planning, the development plan should be prepared immediately.
2. Planning should be done considering the physical social economical factors existing land use pattern and traffic movement of the Central Area.
3. Most of the residential areas are not having adequate utilities such as latrines etc. So it is essential to provide the basic amenities.

4. Non-confirming uses are dispersed in residential areas causing various kinds of problems should be relocated out of the central area.
5. Vacant land is a scarce source and it is impossible to create open spaces in the central area, if it is allowed to be developed with out any chage grow asusual. So the present vacant land available in the central area should be acquired immediately and used for community use.
6. Increase in the land and rent values encouraged the process of re construction. So all the new constructions should be guided properly by the local athourity. In addition, frequent checkings of the building Bye-laws should be done by the local authorities.
7. The activities of different nature like e.g. theatre, school, communiuty hall etc. should not be clubed at one place.
8. Encroachment beyond building line should be demolished to achieve the desirable width of the streets.
9. The People affected by the redevelopment process should be rehabilitated as close as possible .So that they feel as close as their old environment.
10. Vehicles supplying goods should not be allowed in the central area during the day time.
11. The central will not survive without vehicle entry and it is necessary to provide mass transportation system. So the mini-buses should be introduced.

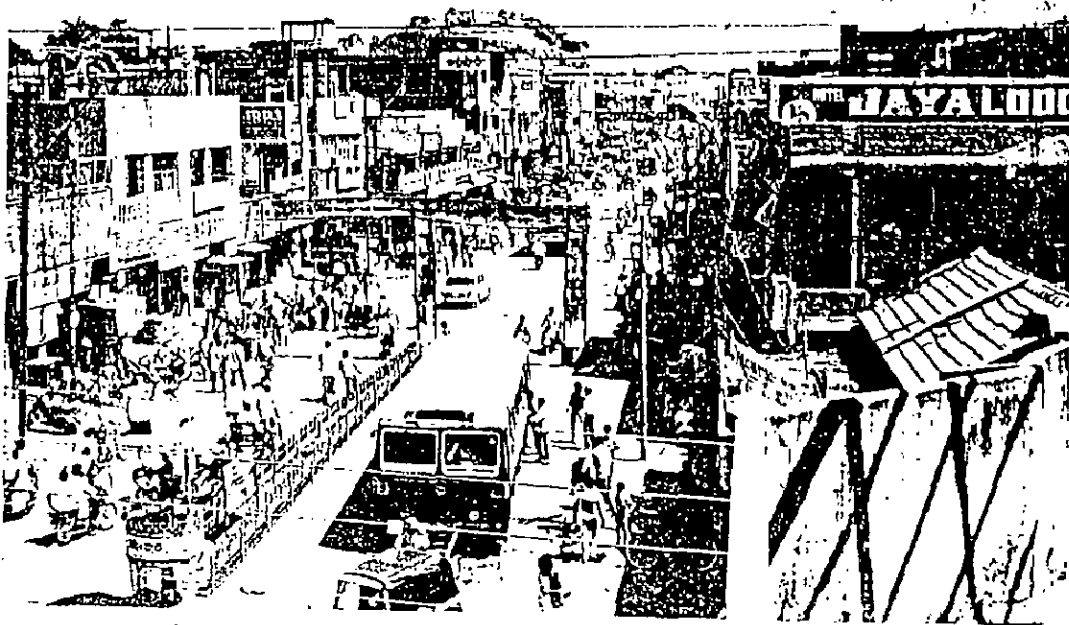
12. Through traffic should not be allowed in the Central Area.
13. Parking should be provided wherever vacant land is available as per need.
14. Preservation measures should be taken for old monuments and all the old constructions should be renovated.
15. The local authority should be empowered to demolish the structures in violation of the rules and adequate staff should be provided in local authority for frequent checking of the unauthorised and new constructions.
16. Finally The other agencies should involve in the process of implementation.

It is hoped that, the findings of planning study as the redevelopment programs of this thesis project would prove to be useful in undertaking similar studies and including policy guidelines in the redevelopment of other cities of India.

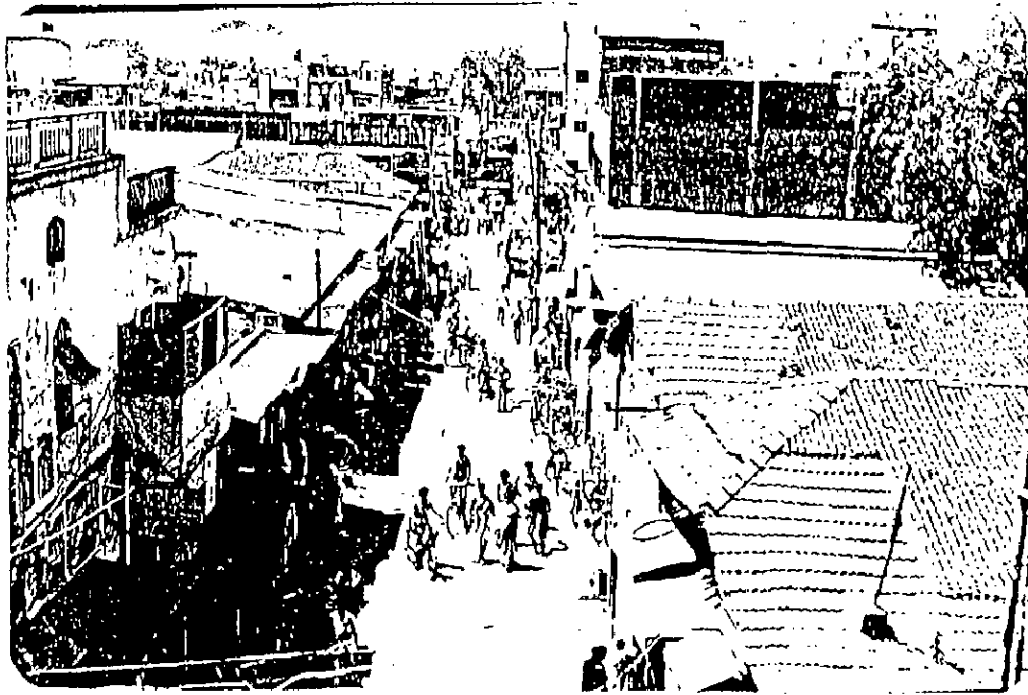
# PHOTOGRAPHIC STUDY



Illu.12) A view of the old buildings situated along Vivekananda road.



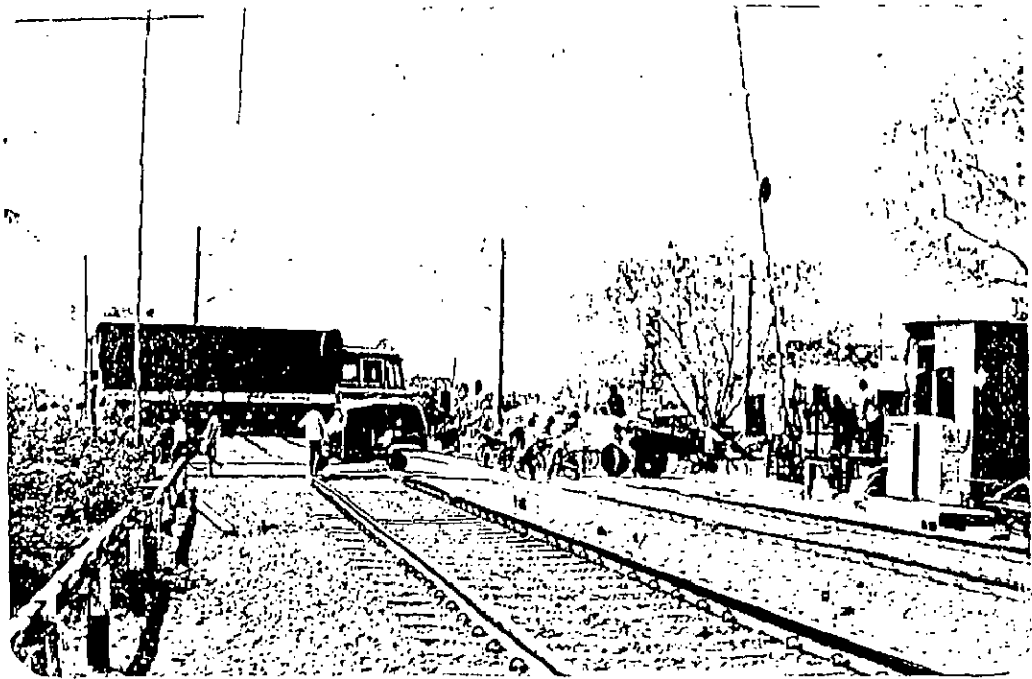
Illu.13) A View of ribbon development of shops along Rabindra Nath Tagore road.



Illu.14) One of the residential lanes, near Rama talkies having narrow width.



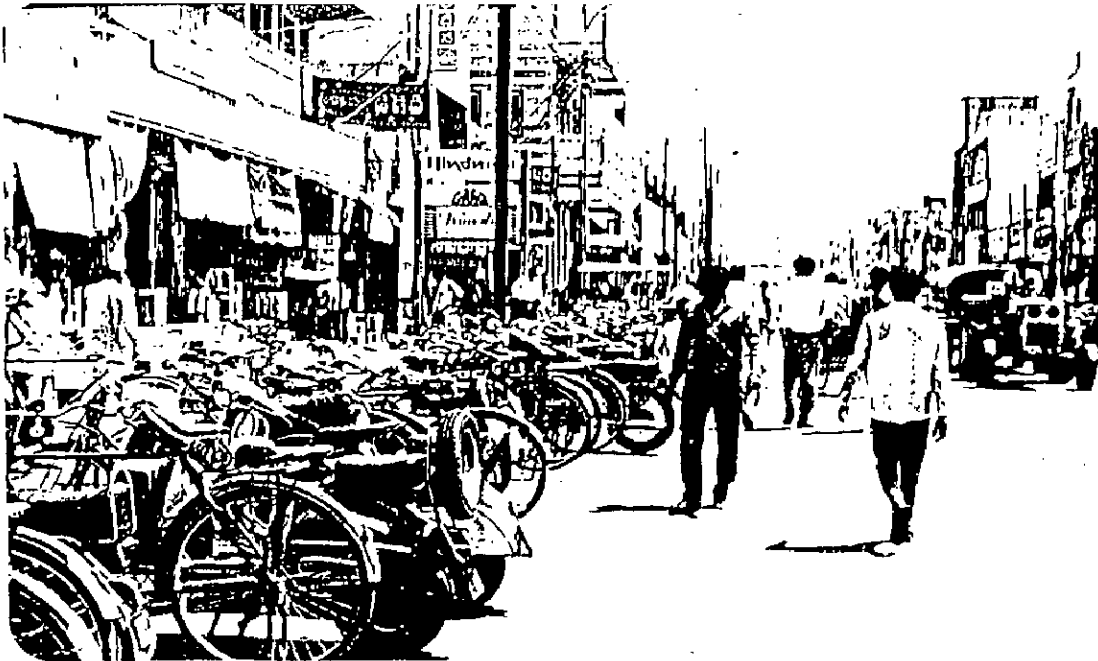
Illu.15) A view of encroachment near recreational park occupying the road space.



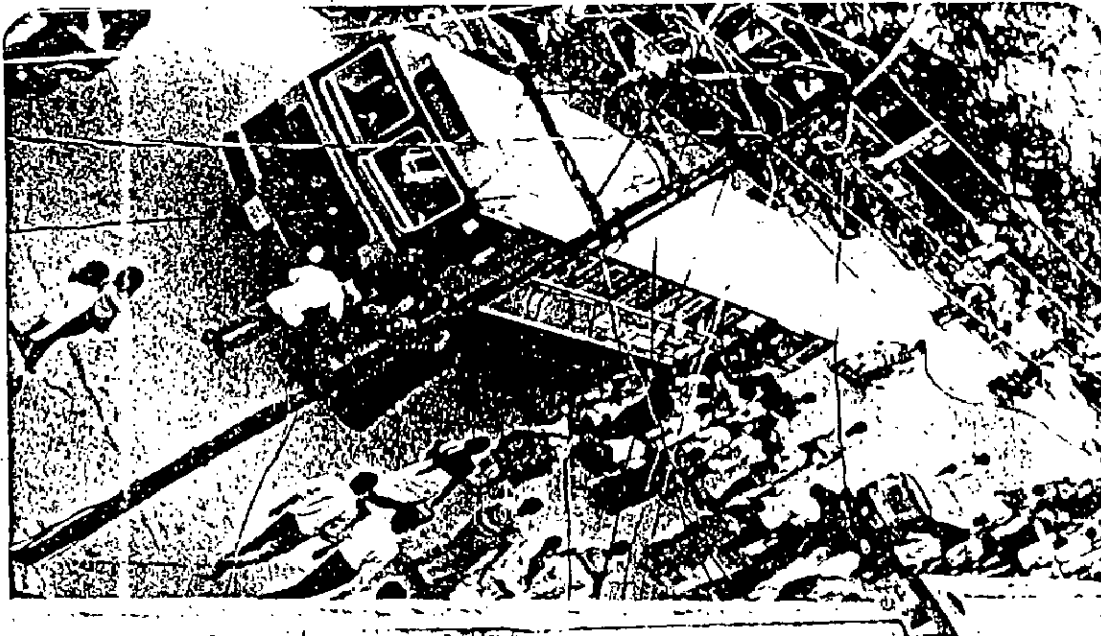
Illu.16) A view of narrow bridge near Old Beet bazar needs improvement



Illu.17) A view of the rice mill situated in residential area adjacent to Ayu. Medical College creating traffic problems.

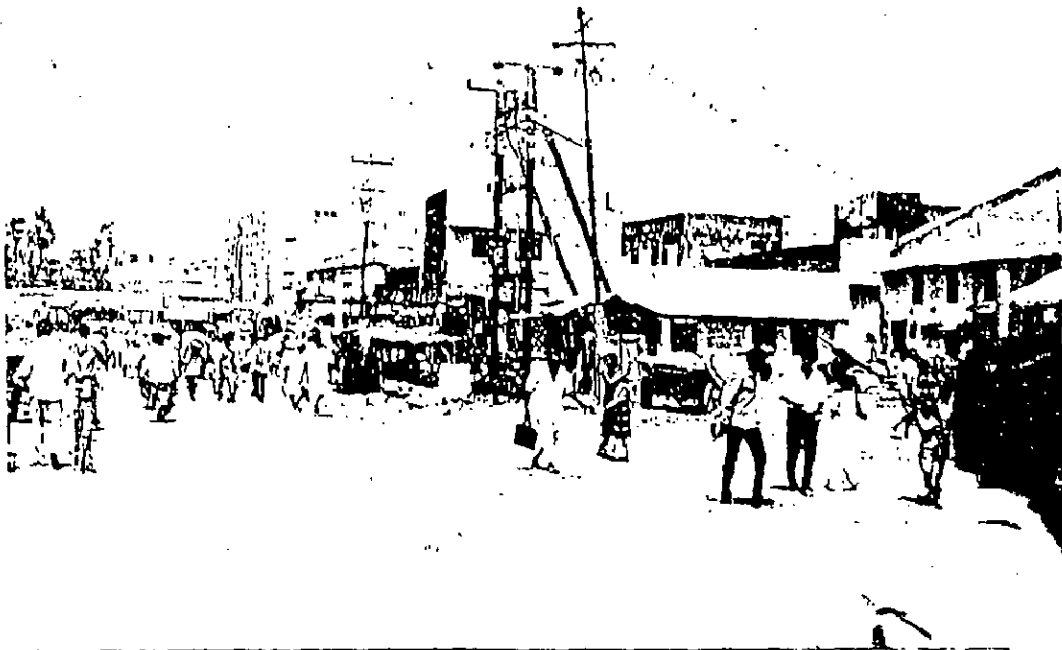


Illu.18) A kerb parking - serving for parking purpose near junction.

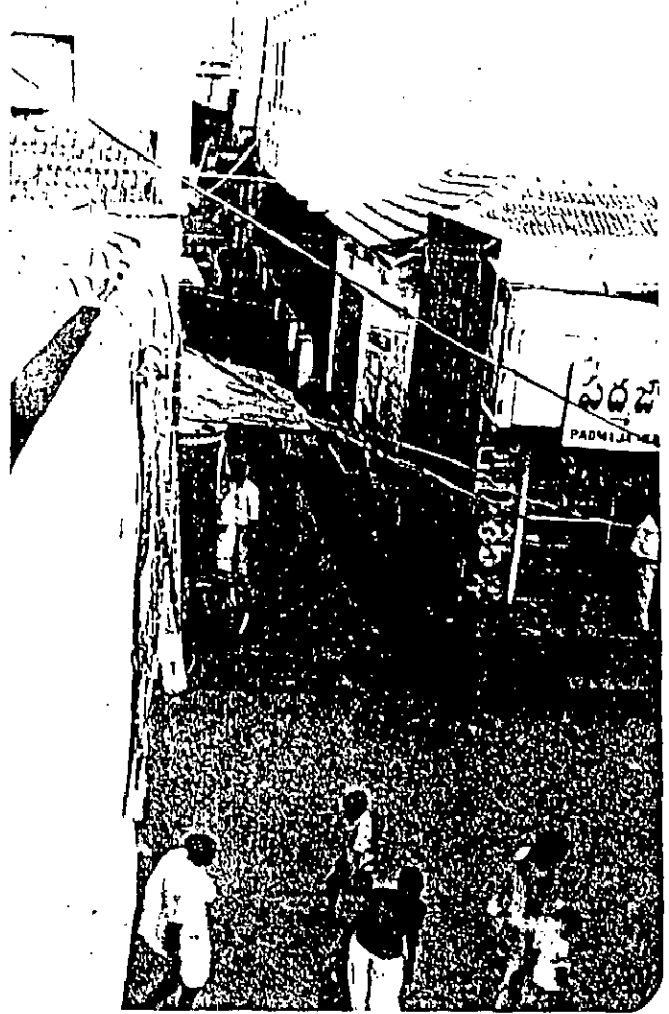


Illu.19) A view of bus stop without shelter and particular location near pocket No. 6





Illu.20) A view of electric transform~~er~~ creating space for encroachments and dumping of garbage.



Illu.21: A view of the open drainage line near ellamma bazar and S.N.V. road with wide opening causing accidents.

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3. Master Plan of Warangal 1971
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1. Narendra N.V. Thesis studies on Transportation Net Work Warangal City, REC, Warangal, 1984.

# APPENDICES

APPENDIX NO. I

TEMPERATURE DATA

| Month | Mean max.<br>Monthly<br>Temp.<br>Deg. Cent. | Mean min.<br>Monthly<br>Temp.<br>Deg. Cent. | Humidity        |                 | Rainfall<br>Mean<br>Monthly<br>mm |
|-------|---|---|-----------------|-----------------|-----------------------------------|
|       |   |   | Morning<br>%age | Evening<br>%age |                                   |
| Jan.  | 29.4  | 16.6  | 76              | 34              | 10.2                              |
| May.  | 40.2  | 16.6  | 50              | 23              | 31.0                              |
| Aug.  | 30.4  | 23.9  | 78              | 64              | 117.3                             |
| Nov.  | 29.6  | 77.8  | 72              | 43              | 27.9                              |

\* Mean Monthly max. Temp. 40.2 Deg. Cent.

\* Mean Monthly min. Temp. 16.6 " "

Source: Meteriological dept. of Warangal

APPENDIX NO. II

WIND DATA

| Month | Morning   | Evening   | Mean Monthly<br>wind speed<br>km/sec |
|-------|-----------|-----------|--------------------------------------|
|       | Direction | Direction |                                      |
| Jan   | SE/E      | SE/ S     | 5.79                                 |
| May   | SE/S      | SE/NE     | 10.14                                |
| Aug   | W/NW      | NW/W      | 2.47                                 |
| Nov   | E/N       | NE/N      | 4.67                                 |

Source: meteriological dept. of Warangal.

Appedix no. III

The Central Area population of Warangal during 1971 - 1981.

| S.No. | Ward No. | Area<br>cre) | Population<br>1971 | Population<br>1981 | Percentage<br>increase<br>(71-81) |
|-------|----------|--------------|--------------------|--------------------|-----------------------------------|
| 1     | 8        | 79.01        | 7189               | 8553               | 18.97                             |
| 2     | 9        | 76.66        | 8852               | 15818              | 79.09                             |
| 3     | 10       | 77.50        | 10384              | 11384              | 9.63                              |
| 4     | 12       | 81.35        | 11594              | 12465              | 8.10                              |
| 5     | 16       | 33.30        | -                  | -                  | -                                 |
|       |          | 347.69       | 37454              | 47221              |                                   |

Source: Census 1971& 1981



APPENDIX. NO.IV

MIGRATION

| Migration from    | Persons | %age of the population | total | %age among migrants |
|-------------------|---------|------------------------|-------|---------------------|
| Other urban areas | 13612   | 8.7                    |       | 25.7                |
| Rural areas       | 38820   | 24.9                   |       | 73.3                |
| Foriegn contries  | 529     | 0.3                    |       | 1.0                 |
| Total             | 52961   | 33.9                   |       | 100.00              |

source: census 1981,

APPENDIX. NO. V

DENSITY OF CENTRAL AREA

| Ward no. | Population | Area   | Net Resd. Area.Ac. | Net Resd. Density. PPA. | Gross resd density. PPA |
|----------|------------|--------|--------------------|-------------------------|-------------------------|
| 8        | 8553       | 79.01  | 16                 | 534.56                  | 150.74                  |
| 9        | 15818      | 76.66  | 43.25              | 383.39                  | 206.33                  |
| 10       | 11384      | 77.50  | 26.84              | 424.14                  | 146.89                  |
| 12       | 12487      | 81.35  | 47.17              | 253.91                  | 153.47                  |
| 16       | 10         | 33.19  | .07                |                         | 142.85                  |
|          | 47221      | 347.69 | 133.33             |                         |                         |

Source: Census 1981 and Estimated from the Land Use Map.

Appendix. No.VI

Distribution of working population in Central Area

| Sl. No. | Category           | 1971           |                    | 1981           |                    |
|---------|--------------------|----------------|--------------------|----------------|--------------------|
|         |                    | No. of workers | % to total workers | No. of workers | % to total workers |
| 1.      | Cultivators        | 32             | 0.42               | 95             | 0.79               |
| 2.      | Agr. Labourers     | 23             | 0.30               | 132            | 1.10               |
| 3.      | Household Industry | 795            | 10.52              | 555            | 4.64               |
| 4.      | Other workers      | 6703           | 88.76              | 10,759         | 89.89              |
| 5.      | Marginal workers   | -              | -                  | 428            | 3.58               |
| Total   |                    | 7553           | 100.00             | 11959          | 100.00             |

Source: census 1981

Total working population : 20.16% in 1971 25.32% in 1981  
 Total non working population : 79.84% in 1971, 74.68% in 1981

APPENDIX. NO.VII

NO.OF SHOPPING ESTABLISHMENTS IN THE CENTRAL AREA

CITY LEVEL ESTABLISHMENTS

| Type of establishments        | Number of shops |
|-------------------------------|-----------------|
| Gen. stores (Whole sale)      | 21              |
| Medical stores                | 61              |
| ferilisers                    | 36              |
| Lodgings                      | 11              |
| cloth stores                  | 122             |
| Photo studio                  | 10              |
| Godowns                       | 15              |
| Electronics                   | 66              |
| Toilers                       | 21              |
| Book stalls                   | 28              |
| Ice cream parlors             | 8               |
| Cycle stores                  | 19              |
| FOot wear                     | 21              |
| Kangan Halls                  | 32              |
| Engg. works                   | 31              |
| Opticals                      | 21              |
| Jewelers                      | 21              |
| Printing presses              | 7               |
| Steel and Glass mart          | 37              |
| Service and repairing centers | 149             |
| Total                         | 608             |
|                               | Cont.....       |

**CENTRAL AREA LEVEL SHOPPING ESTABLISHMENTS**

| Type of shops             | Number of Shops |
|---------------------------|-----------------|
| Saloon                    | 19              |
| Hotels                    | 46              |
| Bakery                    | 15              |
| Type & Zerox              | 11              |
| gen. stores               | 62              |
| <b>Total no .of shops</b> | <b>153</b>      |

Source: Labour commissioner office of Warangal.

**APPENDIX NO. VIII**

**NUMBER OF EDUCATIONAL FACILITIES IN THE CITY**

| S. No. | Perticulars       | 1971       | 1981       |
|--------|-------------------|------------|------------|
| 1      | Primary schools   | 45         | 85         |
| 2      | Middle scools     | 36         | 72         |
| 3      | Secondary schools | 26         | 48         |
| 4      | High schools      | 10         | 10         |
| 5      | Degree college    | 7          | 7          |
| 6      | Medical coolege   | 1          | 1          |
| 7      | REC               | 1          | 1          |
| 8      | Polytechnic       | 2          | 2          |
| 9      | Type institute    | 10         | 21         |
| 10     | Short hand Inst.  | -          | 5          |
| 11     | vocational Inst.  | -          | 3          |
|        | <b>Total</b>      | <b>138</b> | <b>255</b> |

Source: Cences report 1971 and 1981

APPENDIX. NO. IX

LAND USE IN THE CITY

| land use                               | Area in acres   | %age to Total |
|--|-----------------|---------------|
| Residential                            | 1314.20         | 9.84          |
| Commercial                             | 54.76           | 0.41          |
| Indusrtial                             | 154.14          | 1.16          |
| Recreational                           | 116.44          | 0.87          |
| Public& semi                           | 488.99          | 3.65          |
| Transport.                             | 715.55          | 5.35          |
| vacant                                 | 2569.45         | 19.24         |
| Others<br>(Agri. Canal,<br>Hills etc.) | 7941.47         | 59.47         |
| <b>Total</b>                           | <b>13355.00</b> | <b>100.00</b> |

SourceL: Master Plan of Warangal 1971.

APPENDIX. NO. X

MUNICIPAL FINANCE

| Discription                 | Rupees        |
|-----------------------------|---------------|
| Receipt through taxes       | 78422         |
| Revenue from property. etc. | 14839         |
| Govt. grant                 | 38843         |
| Loan                        | 44500         |
| Advance                     | 9968          |
| Other sources               | 10088         |
| <b>Total Reciepts</b>       | <b>196660</b> |

EXPENDITURE

| Discription                   | Rupees        |
|-------------------------------|---------------|
| General Administration        | 14055         |
| Publlic safety                | 52617         |
| Public health and convenience | 29994         |
| Public works                  | 27362         |
| Public Institutions           | 1553          |
| Others                        | 58093         |
| <b>Total Expenditure</b>      | <b>183874</b> |

source: census 1981.

APPENDIX NO. XI

BUILDING BYE-LAWS

---

|                      |   |
|----------------------|---|
| 1. Plot coverage     | Should not be more than 50 % of plot area   |
| 2. Frontage of plot  | min. 9mts.                                  |
| 3. ROAD WIDTH -      | The Building line from the plot line        |
| a. 12 mts.& below    | 1.50 mts                                    |
| b. 23 mts to 18 mts  | 3.00 mts                                    |
| c. 18 mts and over   | 4.50 mts                                    |
| 4.Height of building | Shall not exceed 1.5 times of abutting road |
| 5. Floor Coverage    | max. FAR 1:2.5 in commercial areas          |
|                      | max. FAR 1:2 in Residential areas           |

---

Source : Municipality of Warangal

HOUSEHOLD SURVEY QUESTIONNAIRE

INTERVIEWER : K. VIDYADHAR

PROFORMA NO. :

LOCATION:

-----  
I. OBSERVATIONS

1. No. of Storeys
2. Age of the building
3. Uses other than residential within the unit
4. Structural condition overall  
(a) Walls ( ) (b) Roof ( )
5. Road condition
6. Efficiency of sewage disposal system
7. Any additions made to the house

II. HOUSE HOLD QUESTIONNAIRE

1. Name of the household
2. Occupation
3. Household size
4. Is the house rented or owned?
5. If rented what is the rent?
6. How long are you staying in this house?
7. What was the rent that time?
8. What additions you made to this house after you acquired it?
9. What was the main reason for that addition?
10. Did you migrate to this place?
11. If yes when did you migrate here?
12. Why did you choose this area to live in?
13. Do you have Municipal water supply connection?



14. If not what is the source of supply?
15. Do you have separate bath-room?
16. If no where do you go for bath?
17. Do you have separate W.C.?
18. If no where do you go?
19. When did you settle in this area?
20. Why did you choose this area for living?
21. If you were given a house outside this area are you willing to go and join there?
22. If yes what is the reason?
23. If no what is the reason?
24. If you go out what will you do to this house?
25. Do you have a Post-office nearby?
26. How far is the Hospital?
27. How far is the Telephone Exchange?
28. How far is the work place?
29. How far is the Park?
30. How far is the Bus-stand?
31. Any suggestion in terms of facilities?
32. You were here for that long time in this period did you notice these changes (write according to order)
  1. Commercial development
  2. More traffic conjection
  3. Heights of buildings increasing
  4. Aging of buildings
  5. New migrants coming in
  6. Municipal care increasing
33. Income pattern