

# DESIGN GUIDELINES FOR HUMANE STREETS

## A DISSERTATION

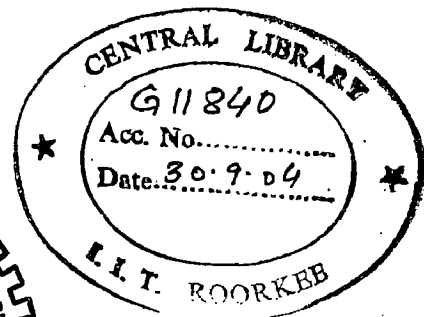
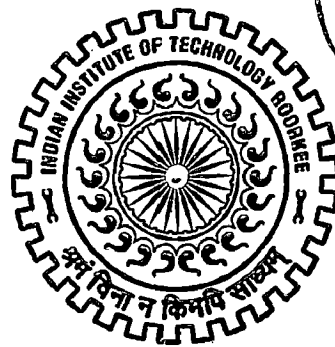
*Submitted in partial fulfilment of the  
requirements for the award of the degree*

*of*

**MASTER OF ARCHITECTURE**

*By*

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MAY, 2004

## CANDIDATE'S DECLARATION

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I hereby certify that the work which is being presented in the dissertation entitled '**DESIGN GUIDELINES FOR HUMANE STREETS**' in partial fulfillment of the requirement for the award of the degree of **MASTER OF ARCHITECTURE** submitted in the **Department of Architecture and Planning** of the Institute is an authentic record of my own work carried out during the period from Aug2003 to May 2004 under the supervision of **Dr. Pushplata**.

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

Place: Roorkee


Dated: May 17, 2004

  
(SAURABH SAXENA)

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

Dated: May 17, 2004



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# CHAPTER 1: INTRODUCTION TO THE PROJECT

## 1.1 INTRODUCTION

*“Streets are streets and are meant not only to travel from one place to another but are also to be lived as an experience and a means to recreation”.*

Streets, always in use but perennially neglected. Streets are essential components in the urban fabric, they are places in themselves, they are the most immediate part of the public realm and we encounter them everyday. Given their importance, why are so many of our streets alienating and unappealing non-places?

We all have wandered along the streets of town, informally, casually, wanting an experience of the environment around. The desire to encounter blue sky, green trees, and the yellow sunshine is all obscured by the blowing of horns, pollution, huge billboards, fear of accidents and several unpleasant experiences.

The expectation of a harmonic public environment is not fulfilled and what one receives is not really satisfying..... What one gets is adjoining building facades with architectural styles which are miles or ages apart from each other, colors which can be used to teach the contrast to an art student.....Overhanging electricity/telephone cables, which may snap at any moment.....Lack of toilets and drinking water facilities.....Large Billboards craving for attention.....Poor lighting conditions and what not.

Indian bazaars/streets are losing their age-old charm, which used to be the main attraction to pull out people from their homes to take a stroll on the streets. Charm of overlooking ‘chajjas’ and ‘jharokhas’ has faded but the nostalgic memory still remains in the user’s mind. These memories very frequently get refreshed by listening to older people, reading literature and coming across work of art.

## 1.2 IDENTIFICATION OF THE PROBLEM

**HUMANISATION OF STREETS** is a prime issue, which needs to be addressed to safeguard the life of commuters on streets and make it an enjoyable experience for them. With the changing life style of the people, the secured environment for the roads for providing psychological and physical security of commuters besides other factors is an emergent need. This becomes even more important as we are facing the problem of identity crisis of built environment.

The public realm is the most important part of our towns and cities. It is all parts of the urban fabric to which the public have physical and visual access. It is where the greatest amount of human contact and interaction takes place.

A serious decline in the quality of the rich public domain is being seen. Many of the country's towns and cities- especially their roads have become threatening places- littered, piled with rotting rubbish, covered in graffiti, polluted, congested and choked by traffic, full of mediocre and ugly poorly maintained buildings, unsafe, populated at night by homeless people, and during the day many of the same people begging on the streets.

If integrated properly these "eye sores" can become beauty spots. They can lend the much-needed character to the developing cities of the nation, defaced by the rapid urbanization and not to mention the 'bania' baroque and 'Punjabi' post modernism.

At the same time that the public realm has declined there has been a corresponding flourishing of the private realm- with an emphasis on personal comfort, personal security and private consumption. The public realm has become an **SEP (somebody else's problem)**.

As a matter of fact most of our urban road networks have become a mess: they are not **people-friendly**. There is a progressive dehumanization of our streets. A fresh look has to be taken at what really matters to people who use urban areas. There is a need to reconsider both the traditional principles and processes of design used by architects and designers in light of these considerations.

This current dehumanization of our urban realm has to be stopped, corrected somehow. A lot of architects have been thinking along these lines (Constance Perin, *With Man in Mind*, Harold M. Proshanky, *Environmental Psychology and the Design Professions*, Jon Lang, *Urban Design: The American Experience*) and have proposed that human needs be the basis or the criteria that one should try to strive to fulfill while designing urban spaces. Any design has to be responsible for its human consequences and urban design more so, as its existence lies in the very fact that it caters to the public and is not a private space. If urban design is to serve the people well, it must be concerned with the needs of the people. If the built environment is to serve human purposes one must have a good model of human needs to use as the basis for asking questions about what should be done-what functions should be served- in a specific circumstance. All efforts should be aimed at designing streets for human behavior-that is, a truly functional architecture which will meet physiological, social, and psychological needs of human beings.

Improving streets is not simply a design issue. Enhancing streets addresses a wider social issue; it is about achieving safer and comfortable environments through promoting a personal and communal sense of security. It is about reclaiming local ownership of the public realm and helping to reduce the physical and cultural isolation fostered by streets created with no thought to the needs of the individuals or communities.

### **1.3 AIMS AND OBJECTIVES**

The broad aim of the thesis is that at the end of study and analysis, I shall be in a position to, and will, propose DESIGN GUIDELINES for the design of urban streets, such that they are responsive to/ fulfill Basic Human Needs. The design parameters shall be drawn from the basic criteria of satisfying human needs and their design implications. The objectives through which this broad aim shall be fulfilled are:

- To understand the evolution and progression of streets as an integral part of the city.
- To understand the phenomenon of humanization as a reflection of basic human needs.
- To evolve performance criteria from the study of literature on human needs.
- To draw design implications for the fulfillment of the above criteria.
- To analyze the case studies with respect to the performance criteria.
- To draw design parameters from the analysis of case studies.
- To propose design guidelines for urban streets and roads.



## 1.4 METHODOLOGY

The most important part of the study is to comprehend the psychology of the people on the streets and its dependence on the public realm, since these two invariably affect each other.

Street design requires a proactive approach that anticipates - and then protects - the street occupants, resources, and structure from accidents, theft, vandalism, fire, antisocial elements, and a range of manmade catastrophes. The method followed for achieving the objectives of the thesis shall be a series of steps. Each preceding step shall form the foundation for the development of the following stage, leading to the final culmination of all the study, analysis, interpretation, thoughts and ideas, to the proposal of design guidelines.

- Identification of problem.
- Literature Study of Basic Human Needs.
- Literature Study of streets as to what constitutes good design with respect to human needs.
- Identification of performance criteria from the literature study Understanding the design implications for fulfillment of these performance criteria.
- Case study of streets/ roads that are fine examples of design.
- Analysis of case studies as per the design implications.
- Referring to standards.
- Surveys, Questionnaires.
- Establishing broad design parameters on the basis of the above two points.
- Proposing design guidelines for humanization of urban streets.

## 1.5 SCOPE AND LIMITATION

The study shall analyze streets as a product of our urbanization process with reference to architectural trends on the whole.

Steps would be taken to reflect how streets are being used in the present scenario. How they influence the actions of people and the environment around us.

- Study will restrict to roads within the cities.
- The study will restrict to prime commercial roads of mediocre towns.
- Roads that have substantial pedestrian movement and mixed vehicular pattern roads will be studied.
- Highways and roads that connect two cities/ towns are beyond the scope of the study.
- The morals of signage and other features that exist on streets have not been discussed in the study.

## 1.6 PROBLEMS AND POTENTIALS

In the Indian scenario the street development is not a very controlled one. Competition amongst shopkeepers leads to encroachments and a desire for newer styles to attract customers. Lure of quick monetary gains and lack of space are the cause behind such activities. Violation of setbacks and height restriction norms are also very frequent, thus resulting in a chaotic condition. Negligence on the part of authorities towards development and maintenance of public realm has also lead to its deterioration. Corruption in Govt. agencies is no way behind in disturbing the environment on streets.

With the opening of economy people have more money and are buying new and bigger cars day by day. These cars require space, which cannot be bought on street and thus leads to problematic conditions, especially for the pedestrian and slow moving traffic. Mixed mode of traffic is our prime trouble creator. We have all kinds of traffic modes from Sedans to bullock carts. All these modes have different travelling speeds and it is also one of the major problems. Parking of automobiles is another issue that troubles our developing towns. Due to high concentration of people in these streets they are outrun of the resources in terms of public conveniences, space, cleanliness, trees, lighting and various other factors.

Most of the urban streets are these days no more safe for women, who were worshipped as '*Devi*' in our country, for elderly people, for children and the disabled. As a matter of fact the society is on the verge of split and the socialisation process will get limited to indoor spaces. People no more want to stay back in the streets than is necessary for them to finish their work. They would want to retire to the comforts of their home as soon as possible. In a way this is their response to the dull streets that we have now.



Fig 1.1 Streetscape in Jaisalmer

*'Streets and their sidewalks, the main public places of a city, are its most vital organs. Think of a city and what comes to mind? Its street: If a city's street look interesting, the city looks interesting: If they look dull, the city looks dull.'*

\_\_\_\_Jane Jacobs

## CHAPTER 2: HISTORICAL OVERVIEW

### 2.1 DEVELOPMENT OF SOCIETY AROUND THE STREETS

Since the man started the journey of civilization he began to use caves as residences. Later he started with an effort to modify the natural environment for physiological safety and thus started the process of building houses.

Initially the left over space between early huts was used as meeting place and it also acted as the line of communication. Then came the Hamlets (small agglomerations), which were connected by unpaved paths known as streets. With the insatiable urge of man to explore further he started venturing out to other villages and the shortest (most convenient) path ones turned out to be the streets between two villages. The above-mentioned process continued and man learnt a lot of lessons, by nature and his experience and he started to pave the streets, first the ones which were of prime importance either for commerce or safety (from wars) and then the other ones too.

Slowly and gradually the population increased, men came in contact with others and societal activities emerged. With this the street also found uplift in their conditions in the sense that men paid more attention towards their building and maintenance.

First use of planned streets was in 3000 B. C during Indus Valley Civilization, and men left a mark of having established a well-planned street system. Their system had covered drains too. Earlier they were mud streets and at some of the places stone was used for their decoration. Egyptians and Sumerians developed hieroglyphics and uniform characters, which came to represent the mark of the society on streets in the form of Obelisks.

Romans then widened the concept of street to Broadway, which was primarily done for war interest, since they wanted the army to march out in the street after the victory. The street thus became the symbolic theatre for display of power. The Romans were the first ones to implement the bylaws regarding setbacks and they also made colonnaded pathways along the streets for the common public to watch the victory procession.

During the renaissance the streets found even more display of public art. Now they were not merely the lines of commutation. Society was attached to them and used them wealth display objects (Esteem Needs). The people also liked the beautifully laid down streets and responded to them positively. After the industrial revolution and with the advent of automobiles the need was felt to widen up the streets, as there was a different mode of transport, which was faster and needed more space on street. This lead to evolution of roads, thus in a way all roads have streets as their background to start with.

## 2.2 GRADUAL CHANGES OF CITY EXPRESSION WITH TIME

The history of civilization as interpreted through records tells us, that from time known to us, we find a colored strip of shopping space/bazaar like an artery with in the human body through the heart of every Indian town. As has been rightly commented by Le Carbusier ' Shopping serves as the pulsating heart for the throbbing body of town and cities". Time changes, scale of activity changes and some times even the nature of activity changes, however the function of bazaar remain the same.

### **Mohanjodaro**

Dating back to Mohanjodaro (3000 B.C.) essentially an introvert, commercially oriented town of historical importance contained many beautiful colored strips of bazaars throughout the town fabric. The scale was pedestrian and orientation of activity was on true human scale. The specialized markets (Katra) were also formed within the Town.

### **Srirangam**

Srirangam, as typical of many ancient towns in India, is essentially a –"temple town" located near the confluence of the river Cauvery and Coleroon at an elevated plateau and about six miles from Tiruchirapalli in Tamil Nadu State. Srirangam grew into sizeable town between 6th and 12th Cent A.D. From an obscure beginning which dates back to Tamil Sangam (about 3<sup>rd</sup> Cent A.D.), the town grew around a temple. This temple remained to be core of the town throughout centuries and it is so even today. A street in srirangam is primarily a processional route or movement channel, it is not an integral part of the space volume. The streets through a series of 'gopurams' leading towards the main temple, in turn have created eccentric enclosures, which are according to religious practices, and have determined the movement pattern as well as the urban pattern. Shopping occupies the major center of attraction and along the street the shops are planned and forms a strip type of street market.

## SHAHJAHANABAAD

Mughals whose ancestors were great warriors and wanderers of desert brought with them a desire for luxury. While they were busy in building towns and seats of their kingdom at various place all over the country these enthusiastic exhibition lovers impregnated luxury in Bazaar also.

As a fair example the city of Shahjahanabad - dedicated to Shahi Jama Masjid followed by a giant red fort- had a beautiful axis connecting Diwan-e-khas to Diwaan-e-Am to Chandni Chowk by means of traditional water channel with a number of water fountains culminating at Chandni Chowk. A chowk means a confined area.

Here, once again the function remaining the same, pattern of activity changes. The intensity of activity is motivated towards passive but luxurious recreation apart from the activity of shopping. In true sense shopping happened to be convenient 'meeting place' suitable for almost all age group of people.



Fig 2.1 Streetscape in Sahajahanabad



## Jaipur

The pink city Jaipur is a definite modification over its medieval ancestor. Here, once again the function remaining the same, the intensity increases and Bazaar area sometimes also accommodates Chariots and Bullock carts. The void contained between the two rows of shopping widened from a narrow alley to a wide bazaar. The sprawl of Bazaar increased with an increase in city size and the various regional linkages. Hence the popularity and the so-called influence of the bazaars has also increased.



Fig 2.2 Streetscape in Sahajahanabad  
**JAISALMER**

When the city used to give shelter to the Caravan the bazaar used to provide shopping facilities to the traders from far and wide. This compulsion of activity gave birth to towns like Jaisalmer - in modern terminology – a trade town, which developed at transport node.



Fig 2.3 Serial Vision, Jeta Bera

The streets are restricted in width with building of varying heights on both sides. The hot sun is thus effectively shut off and the street is perpetually in shade. The street then becomes cool shaded corridors, and allows comfortable conditions for movement through the town. Scale is still dominated by the pedestrian even though the location of town is in desert area. Some of these bazaars were designed in a fashion, which incidentally matched the scale of the camel, which was a major means of transport of goods. Furthermore the area has expanded with time and the scale of activity has also grown enormously. The function, however, remained the same at the core, and the nature of activity did not change considerably.

## CHAPTER 3: UNDERSTANDING HUMANISATION

### 3.1 WHAT IS HUMANISATION

There are generalizations one can make about groups of needs – categorization of needs – that can be used as the basis for defining a functional urban design. A number of models of human needs have been examined by designers. There is considerable overlap among the models, but each emphasizes a different aspect of human life.

**Abraham Maslow's** hierarchical model of needs, which is, perhaps, the dominant, all-inclusive model, is presented as a “theory of human motivations”. Alexander Leighton describes needs in terms of “essential striving sentiments”. Erik Erikson analyzes individual identities at each stage in the human life cycle. Hadley Cantril also focuses on stages in the life cycle as a basic determinant of human needs. All of these psychologists bring important insights to the analysis of human behavior, but ultimately it is Maslow's model that holds up as the best comprehensive view. Indeed, in thinking about design issues, most city planners and architects who are concerned with a user needs approach to design have tuned to some adaptation of Maslow's hierarchy of human needs.

In 1954 Abraham Maslow proposed a hypothetical model of human behavior in his book *MOTIVATION AND PERSONALITY*. His hierarchical “holistic-dynamic theory” draws on the earlier psychological work of John Dewey and Gestalt theory as well as psychoanalytical literature. Maslow identifies five sets of basic needs from the most fundamental to the most esoteric in a hierarchy of prepotency. “the most prepotent goal will monopolize consciousness...and when a need is fairly well satisfied, the next prepotent [higher] need emerges.”

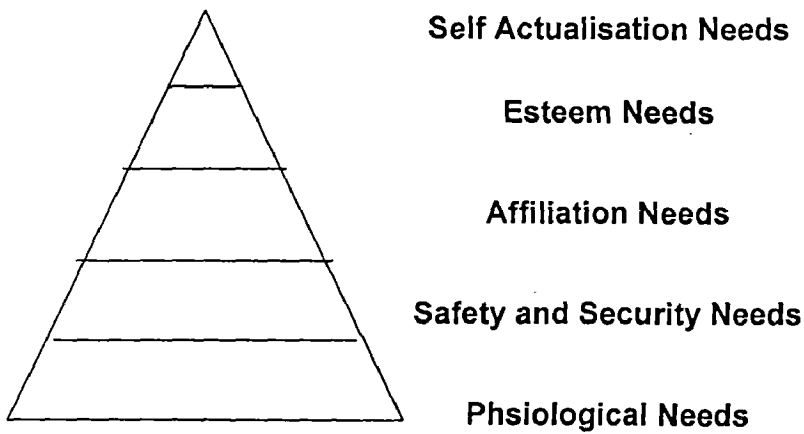


Fig 3.1 Hierarchy of Basic Human Needs

**1. PHYSIOLOGICAL NEEDS:** The fundamental human need is for survival. In order to survive, the basic physiological need for water, food, air, and sufficient warmth is to be fulfilled.

**2. SAFETY AND SECURITY NEEDS:** This need has both a physiological and psychological component to it. Physiological safety stems from avoiding harm inflicted, directly or indirectly, by other people and from the biogenic environment; psychological safety and a feeling of security stem from being oriented in space and time, geographically and socially, and being confident of maintaining one's place there.

**3. AFFILIATION NEEDS:** People need to feel loved and to feel a member of a group.

**4. ESTEEM NEEDS:** The need to be held in esteem by oneself and by others.

**5. SELF-ACTUALIZATION NEEDS:** Maslow identifies it as the need to be helpful to others as much as the need to achieve one's own potential on one's own.

6. Paralleling these basic needs are **COGNITIVE** and **AESTHETIC** needs: the need to learn and the need for a sense of beauty.

### **3.2 EVOLUTION AND COMPREHENSION OF BASIC HUMAN NEEDS**

Designing to meet the physiological needs of people using the public realm of cities is obviously an area of concern for architects and urban designers. They are regarded as given requirements that are easy to meet. Yet there are many examples of environments where the physiological needs of people have been inadequately met or where post construction adhoc solutions to remedy problems that have arisen have led to undesirable social side effects. At the same time, there is a developing body of empirical knowledge that can be applied to design salubrious and comfortable environments.

One of the reasons for creating buildings has always been to provide shelter from the extremes of climate. At a more complex level of concern, self-consciously designing to meet health and comfort needs can be traced back to the earliest civilizations on earth such as the Indus Valley civilization. The layout for Mohenjodaro shows a great concern for public sanitation. Vitruvius's locational and design principles for cities were based on criteria, for creating a healthy place. Modern town planning and zoning controls were developed to create a healthier city than those created by the laissez-faire processes that shaped the industrial city. The concern at this level of thinking is primarily with people's requirements for survival, health, comfort, and physiological development.

### 3.2.1 PHYSIOLOGICAL NEEDS

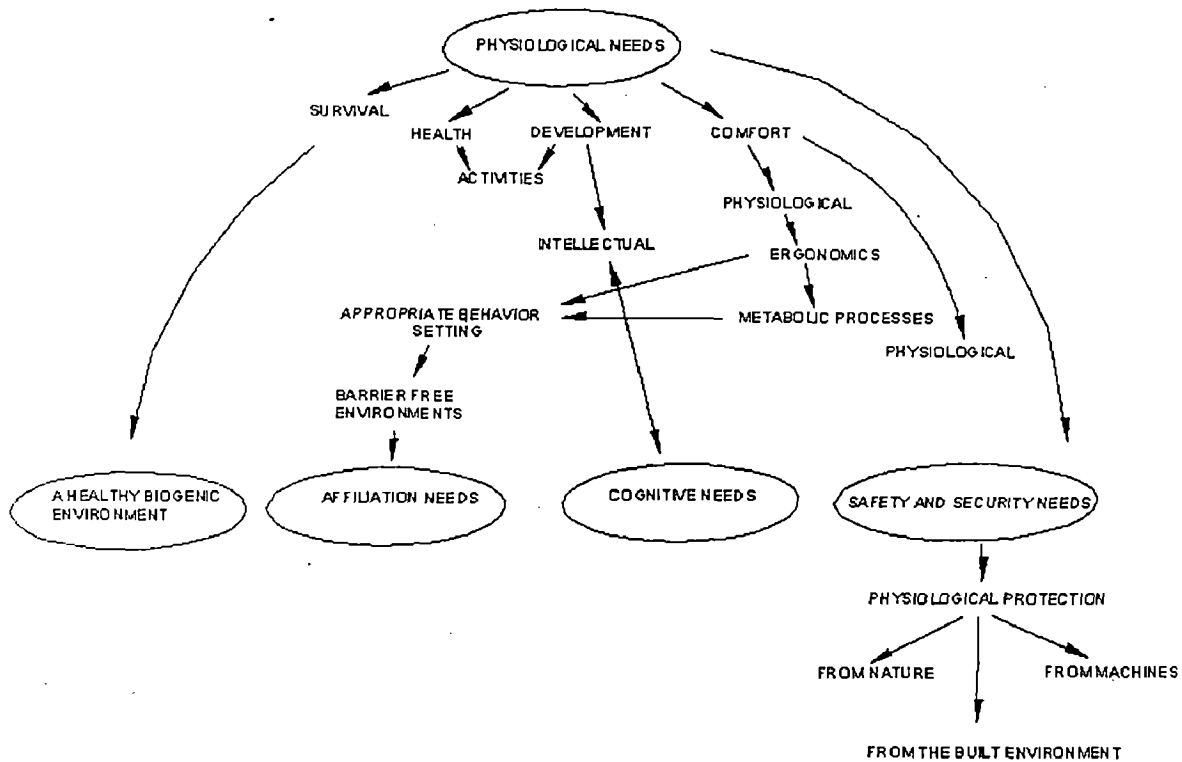


Fig 3.2 Physiological needs

Physiological needs also have a hierarchy amongst themselves. They vary from survival needs to needs for healthy development to the need for a comfortable environment. The basic survival needs are for air, food and shelter to stay alive. Beyond this level are the needs for a healthy life and for opportunities to develop well physically. The urban design concern is with creating environments that are comfortable rather than ones that simply afford survival.

**SURVIVAL NEEDS** – The need to survive is the most basic of human needs. There are millions of people in the world striving for survival. The number of homeless people in the streets of India brings this point home. Shelter for survival is what they seek. Of the basic requirements for survival only access to water and, in most climatic areas, a sheltering public environment falls into the domain of concern of urban designers. The physical design consequences of social policies to provide shelter also have important urban design ramifications.

**HEALTH** – In health planning the urban design concern has historically been with the clearing of swamps, the designing of sewerage systems, the provision of clean water, the reduction of crowding, and the provision of services. The urban design concern in creating salubrious environments has been with designing guidelines that ensure sites are designed so that inhabited rooms get sunshine, buildings have cross-ventilation, and there is easy access to open space for their inhabitants and their users.

**DEVELOPMENTAL NEEDS** – A concern for the development and maintenance of a healthy body has become important for many people. The urban design concern is with providing people with opportunities to exercise their bodies and to increase their physiological competence through the self-testing of their abilities. The maintenance of physiological abilities is also a major concern, especially in those societies where occupations demand little more than sedentary lives. Urban design has been more concerned with the formal opportunities for such activities, as the provision for playgrounds, playing fields, and other sports facilities.

**COMFORT** - Comfort, at a minimal level, implies a freedom from pain on all dimensions of environmental experience. Biological comfort has to do with a person's assessment of the level of stimulation to which his or her body is being subjected. The pressure on the skin and joints from the patterns of the physical environment and from wind, the ambient and radiant temperatures, and the air moisture levels of a behavior setting are the major contributing factors to perceptions of comfort. There is considerable individual variation in subjective assessments of comfort for both physiological and psychological reasons. Much depends on habituation levels.

### 3.2.2 SAFETY AND SECURITY NEEDS

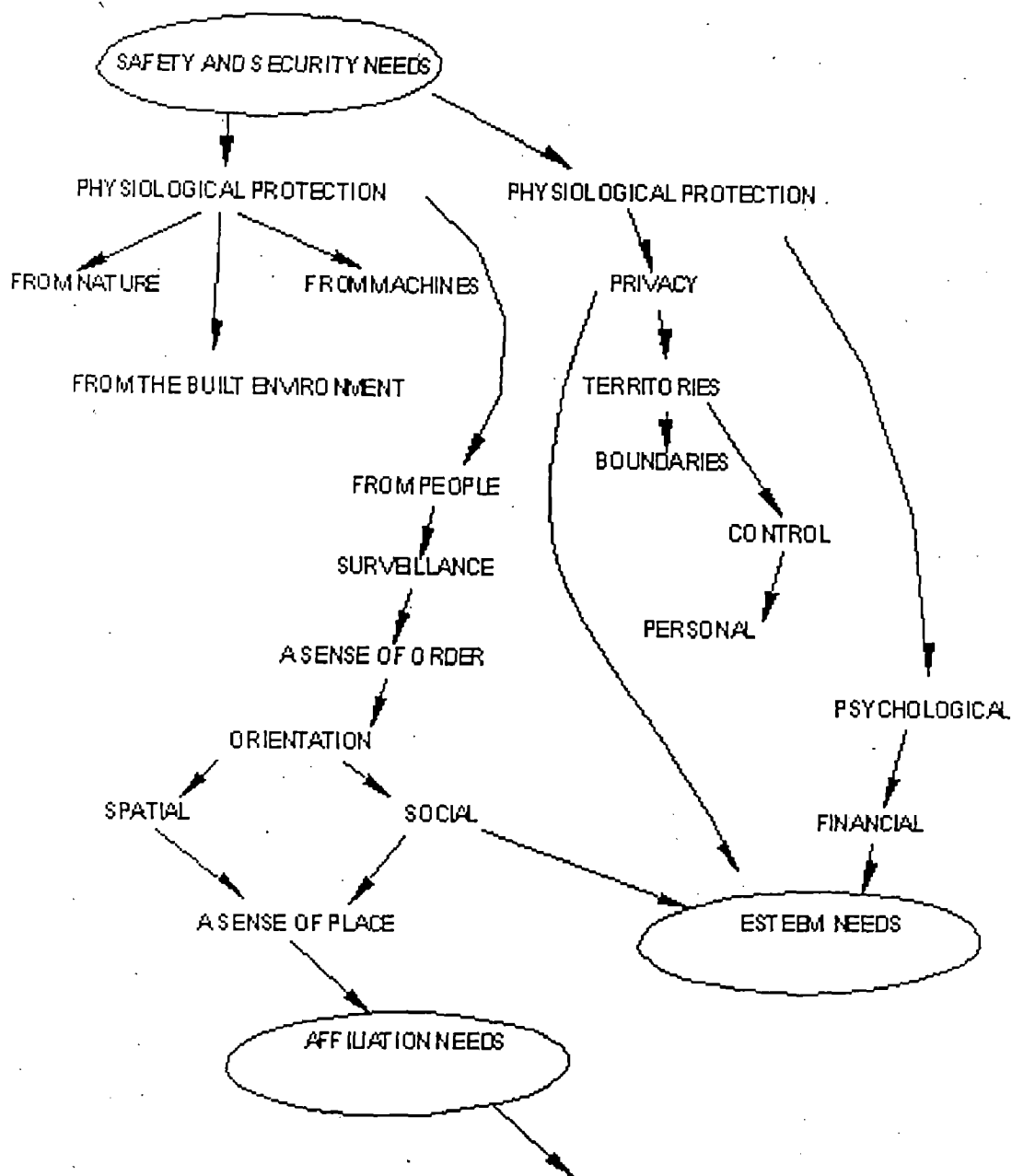


Fig 3.3 Safety and Security needs

Once their survival needs and basic comfort requirements are reasonably well satisfied, people's concerns shift up the scale to focus on the fulfillment of other ends, particularly safety and security needs. The fear of antisocial behavior results in safety and security issues taking precedence over many others in urban design.



The partial fulfillment of these needs remains a prerequisite for being motivated to seek the fulfillment of higher-order needs.

There are two basic types of safety and security needs that have an impact on the work of the urban designer:

(1) Physiological-to have freedom from bodily harm, and

(2) Psychological-to have a sense of place, geographically and socially in a society.

To achieve the former, people need to feel safe from wild animals, criminal assault, and various types of accidents: household, vehicular, and so on. To achieve the latter, there is a desire to avoid the unexpected, to be in *control*, to know where one is in one's social and physical surroundings, and not to be afraid of other people and social situations.

### **Sources of Insecurity**

Sources of people's insecure feelings vary considerably. There is still a fear of nuclear disasters and the effects of the continuing pollution of the earth in many minds, particularly those of the young, many of whom have a highly pessimistic view of the future. There is a fear of antisocial behavior, even when walking around one's own neighborhood in much of urban India. Dealing with many of these issues falls outside the scope of concern of designers as professionals. They are social problems. Urban design can only deal with the symptoms, not the problem. It is possible to design layouts of the environment that provide various types of safety and personal defense mechanisms, but they do not address the social and economic roots of antisocial behavior. Sets of both physiological and psychological safety concerns do, however, have major implications for the design of the public realm.

### **Physiological Insecurity**

There are four basic sources of danger to one's physiological condition in the environment:

- (1) Harmful bacteria and pollutants,
- (2) Natural events of the biogenic world,
- (3) Elements of the artificial environment-the built environment and the machines we use, and
- (4) The antisocial behavior of segments of the population.

Fears of any of the four may also cause feelings of psychological insecurity. The ability of individuals to cope with these dangers depends on their level of competence. Addressing any of the sources of problems has implications for urban design.

#### HARMFUL BACTERIA AND POLLUTANTS

The urban design concern here overlaps that of regional and city planners and sanitation engineers. Harmful bacteria come from many sources: poor waste disposal, stagnant water, bites from insects, and so on. Pollutants too come from many sources: mining and industry, automobile usage, and even from various plants. The urban design concern is with the provision of good sanitation and the location of the noxious facilities that are at present needed to maintain our living standards.

#### NATURAL DISASTERS

The natural elements of the environment are sources of potential danger in many ways. People have built settlements in a wide variety of places for economic, defensive, or climatic reasons sometimes without knowing the potential dangers that exist in a location, but sometimes knowing them full well. There are cities on seismic faults, in cyclone/typhoon areas, susceptible to choking dust storms or torrential downpours, and on sand dunes. People are clearly willing to tolerate the potential dangers in order to achieve other satisfactions, but many costs are incurred in not using our present knowledge to establish the controls that minimize the dangers.

Building codes, zoning ordinances, and engineering design principles have been developed to minimize the effects of such disasters and the more everyday ones such as fires. No doubt these codes will be further developed as more empirical data become available through experience and systematic research. Such efforts will still not, however, avert major catastrophes.

## PATTERNS AND MATERIALS OF THE BUILT ENVIRONMENT

The utility of specific patterns and materials of the environment to make the milieu safe is largely well known. The concern is two fold:

- (1) For horizontal and other surfaces to support behavior patterns safely
- (2) For elements of the built environment to be structurally sound not to catch fire or collapse or have sections break off and hurt people (e.g., decorative moldings from buildings).

Building materials deteriorate, clamps holding panels on the facades of buildings erode as the result of chemical interaction with other materials, wind forces make windows pop out of buildings. Certain surfaces are slippery when wet. Such matters are increasingly well understood, and the major problem is one of technology transfer-getting the information out to practitioners. New materials with seemingly high potential are made available on the market prior to our understanding their impact.

## MACHINES

Machines of all sorts, from stepladders to construction cranes, can be source of potential danger. The city planning and engineering concern in urban design has been with the design of safe highways and public transit systems-intersection configurations, lane widths, road cambers for various speeds of movement and so on.

## THE SOCIOGENIC ENVIRONMENT

In many Indian cities, antisocial behavior seems to have reached a point where there is a regression from a concern with higher-order needs to concerns for safety

and security from criminal behavior. Whenever a chaotic state arises, or a threat of such a state or nihilistic attitudes occur, safety and security needs become prepotent, and designing social programs and physical environments to deal with them becomes the focus of much attention.

One of the most intractable and emotionally charged issues with which the urban designer has to contend is both the actuality of high levels of criminal behavior in many places and the fear of it in people's minds. Crime is a social problem, but we can see the physical design responses to it increasingly in cities, with individual business proprietors putting up riot screens on shop windows and householders barring their windows and doors.

### **Psychological Insecurity**

Psychological security is attained through having control over one's life-with peace of mind. At one end of the scale it is closely related to survival needs and physical security, but at the other end it has to do with meeting affiliation, self-esteem, and self-actualizing needs. Peace of mind can also have spiritual characteristics. Some people feel the need to be part of a cosmological order. Certainly this need has been exemplified in much religious architecture but also in the design of cities (such as Jaipur and Madurai in India, Beijing in China) that follow a cosmological order. If one does not understand the cosmological order the geometry of the city is largely meaningless as a symbol.

The ways of achieving a sense of security depend on the type of security one seeks. *Static security* can be achieved by closing oneself off from one's surroundings, but the goal of improving the quality of life of people is surely through having them achieve a *dynamic security* where they are secure as individuals, possessing skills and being ultimately self-actualized.

One of the mechanisms for attaining control is privacy. A well-functioning built environment provides appropriate levels of privacy for activities. People need to carry out activities, particularly idiosyncratic behavior free from censure, and to have opportunities to withdraw from people and the activities of the world.

### 3.2.3 AFFILIATION NEEDS

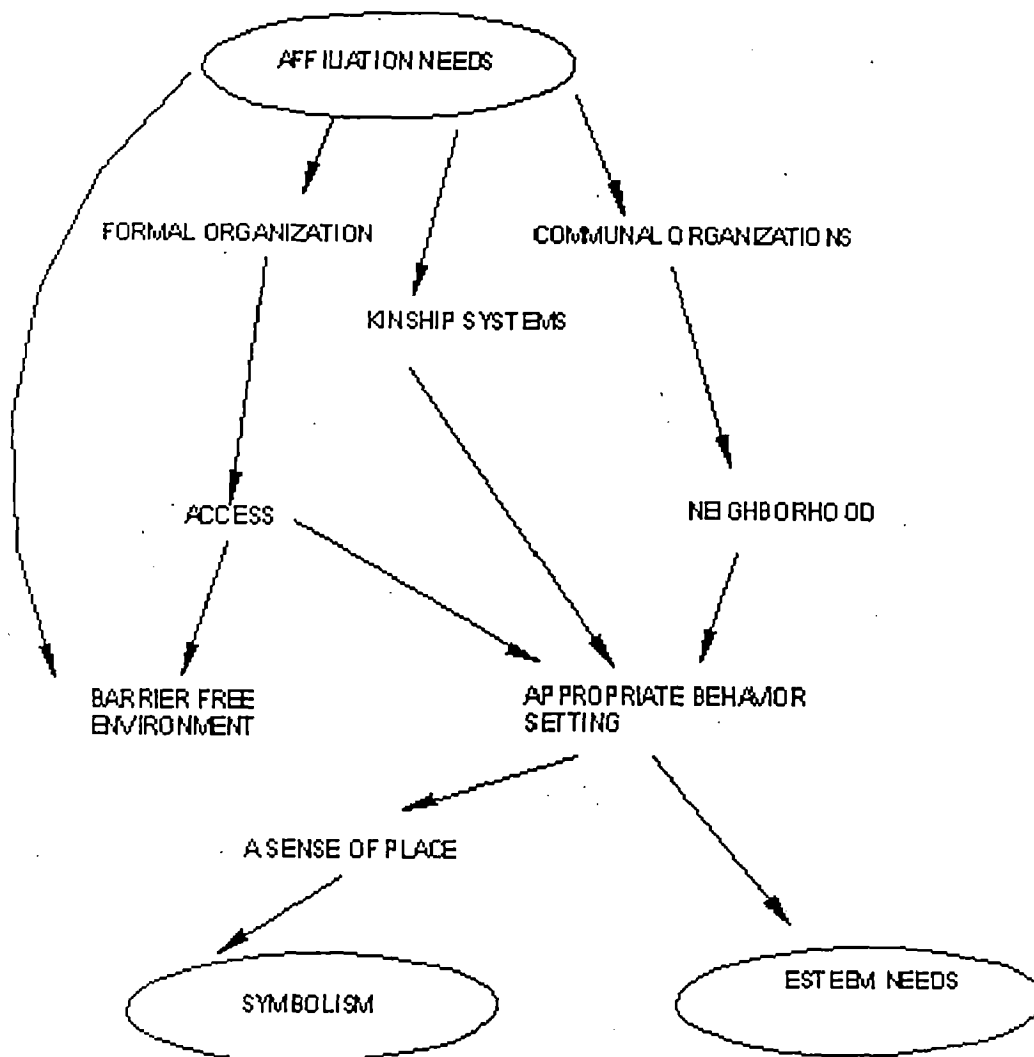


Fig 3.4 Affiliation needs

Participation in a supportive social system is necessary for an individual's survival with a modicum of psychological comfort. This is particularly so in an urban world. Once their need for survival is met reasonably well, people feel most keenly the need for membership in a group. These groups consist of individuals and settings that provide individuals or other groups with affection, support, and identity. Often, however, at least a partial fulfillment of affiliation needs is a prerequisite for survival, safety, and security.

## BELONGING

People's need for belonging is fulfilled by having supportive relationships and an identity as a participating member of a set of groups. The uniqueness of each person's patterns of membership also gives each individual a personal identity and a sense of self-worth. There are a number of often highly interrelated groups that people are either born into or have to join in order to fulfill their needs. Some groups or organizations are more important than others to individuals, depending on the nature of the culture within which they exist. In order to meet the need for affiliation a person can be a member of a kinship system, a set of organizations, a people, and often a nation.

### Belonging to a family and a kinship system

One is born into a family and thus into some sort of kinship system. These systems vary from the nuclear family to horizontally and vertically extended systems. Sometimes, particularly in preindustrial societies, these systems are clearly reflected in the physical layout of human settlements. Kinship systems in this case are coterminous with physical environment patterns. In the *pois* of the Old City of Ahmedabad, India, for instance, there is a close tie between kinship (caste), occupation, and a clearly bounded residential territory.

Membership in a kinship system, like any other organization, carries with it a set of obligations to other people and a set of expectations of their behavior toward oneself. These behaviors provide support in day-to-day activities, affection, and a sense of identity through not only the blood relationship but also the celebrations of rites of passage and other communal occasions.

### Belonging to nonkinship organizations

In industrial and postindustrial societies, people belong to a number of organizations of various types-business organizations and organizations of common interest. At the most global level is a society itself. The intensity of commitment of an individual to an organization depends on that person's needs, but it is also a function of the broader culture of which he or she is a part. Whatever the type of organization, there are some things they all hold in common.

## Belonging to people

The concept of belonging to people, say an ethnic group, in addition to depending on its social linkages between individuals also means having a shared history, usually language, symbolic aesthetic values, and the types of symbols that need to be displayed by individuals to be members of the group.

## Belonging to a place

One aspect of fulfilling the need for security as well as affiliation is to know, be familiar, or have strong associations with a specific geographical area.

## Social Networks, Activities, and Events

All people who are not socially isolated are members of communities. As many commentators have noted, urban designers have long sought to enhance a sense of community through a physical design and the location of facilities that provide for social opportunities. In doing so urban designers have tended to rely on the notion that the creation of institutions and public places the enhancement of the qualities of the public realm will bring people together. The belief has been that by providing specific buildings and open spaces people will get together.

## The Nature of Community and Neighborhood

In the everyday language of urban designers and developers alike, *community* and *neighborhood* are often used synonymously. This usage is unfortunate because the two words really have different meanings. A neighborhood is a physical entity and a community a social one. Urban designers can design neighborhoods and they can locate institutions and design the public realm within them, but whether or not a neighborhood is also a community depends on the type of social organization that evolve there.

## Events

There are many events and situations that bring strangers together in ways that establish a sense of group identity. Sometimes these events are recurrent and sometimes infrequent if not unique. Such events bring people together for

entertainment, but latent functions of their uniqueness to a city are a reaffirmation by its citizens of who they are and to give a sense of participation. Such events vary considerably in nature.

#### Activities and the Public Realm

Many European cities are full of streets where people gather in a ritual of promenading, or hanging out, on a regular basis. They form behavior settings of importance in relationship to their surrounding land uses. We designers look at such places with nostalgia and want to create them in new developments or in remodeling the existing city on the assumption that public life will occur there and that people will develop a sense of belonging to a citizenry and to a place.

Plazas, squares, and pedestrian ways have to be located where people are or want to be or else they will be deserted. They serve many purposes, but it is presumptuous to assume that the interactions that might occur there will more than marginally aid in the development of a sense of community. They may be more important as symbols of community.

#### The Symbols of Belonging

People consciously or unconsciously use symbols that identify them with groups of people. Hairstyles, clothes, possessions, and where they live all contain symbolic messages about people that they send to others. Their home environments and housing units act as symbols of. So do the attributes of the neighborhoods in which they live and the buildings in which they work. The design of any urban environment implicitly, if not explicitly, is an act of symbol creation.



### 3.2.4 ESTEEM NEEDS

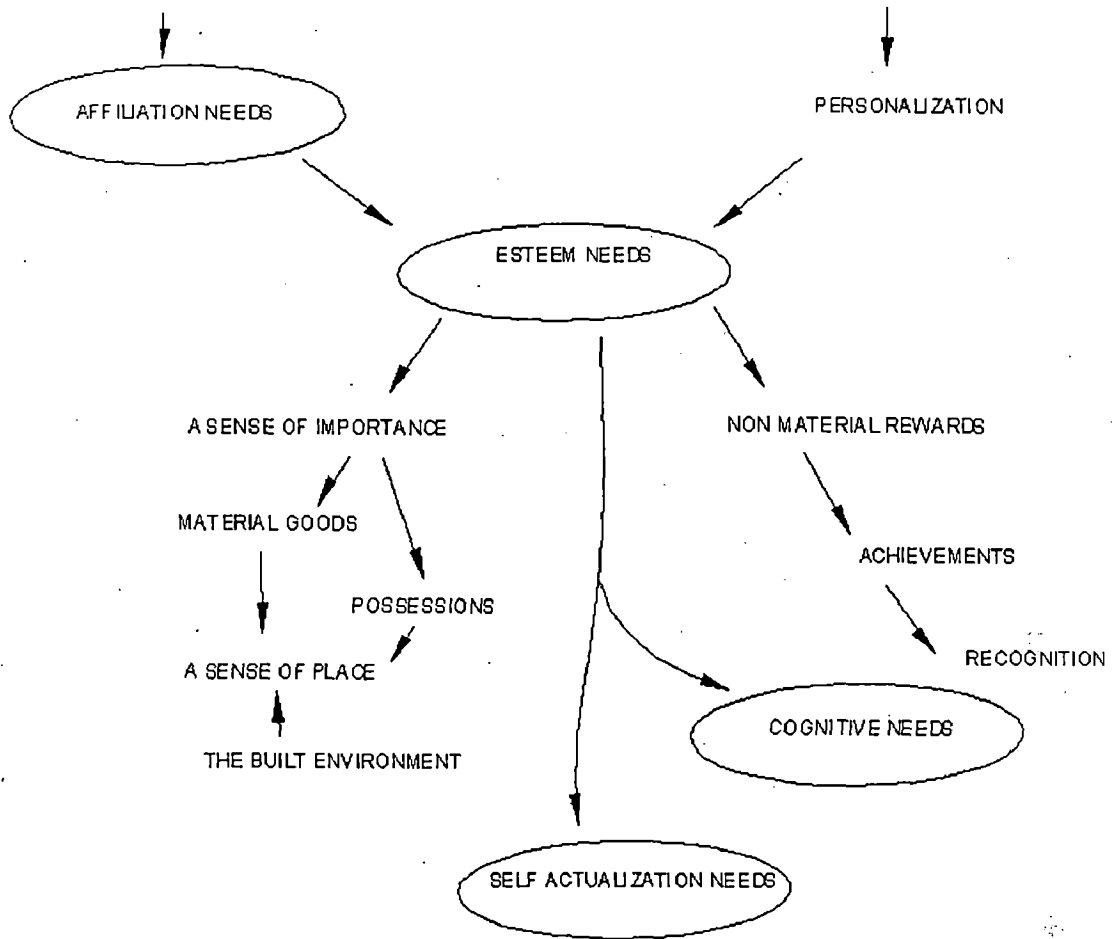


Fig 3.5 Esteem needs

Almost all people have a need for self-respect or self esteem. Maslow regards those who do not as "pathological exceptions." The need to be held in high esteem is a characteristic not only of individuals but also of groups of people: business organizations, religious organizations, institutions, ethnic groups, and nations. An ideal society would be one where all people have a high degree of self-esteem without achieving it at the expense of others.

There are two interwoven sets of esteem needs: the need to hold oneself in high esteem, and the need to be held in esteem by others-to have prestige or reputation and to perceive this esteem. The satisfaction of both is necessary to have a feeling of self-worth and self-confidence. Both are prerequisites for the fulfillment of self-

actualization needs. The failure to hold oneself in high esteem leads to feelings of inferiority and weakness.

The need to hold oneself in high esteem can be met in a number of ways: through the development of a mastery of knowledge and competence in its use, through control over one's own life, and through the possessions one has. Perceiving that others hold one in high esteem is achieved through external rewards-the support and praise that one receives-and the reliance other people place on one. It is possible to perceive one is held in high esteem when one is not, but this is hardly a desirable situation. For few people is the satisfaction of one of these two sets of esteem needs sufficient.

### 3.2.5 SELF-ACTUALIZATION NEEDS

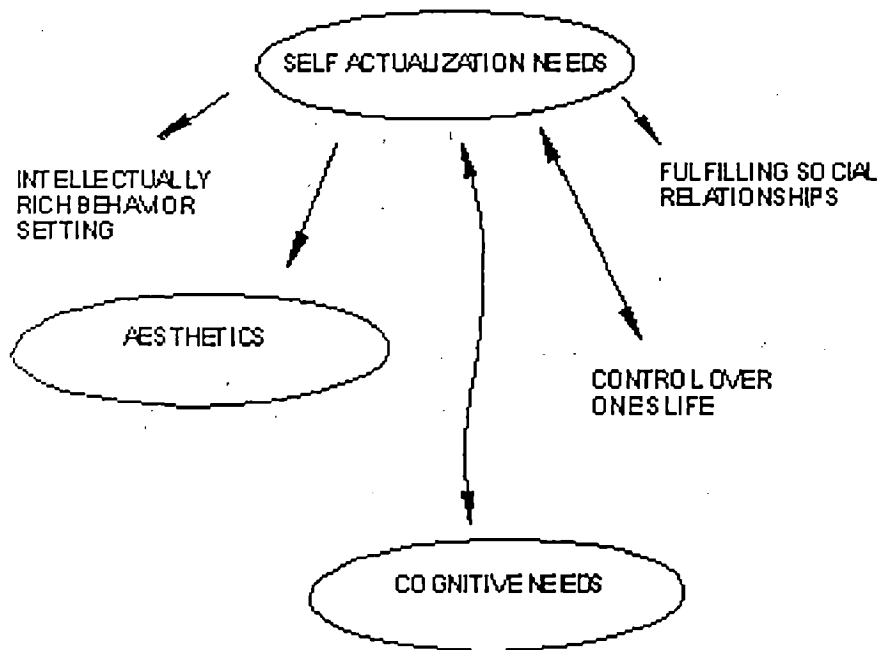


Fig 3.6 Self-Actualisation needs

The pursuit of self-actualization is seldom done self-consciously. Fully self-actualized people have become everything that they are capable of becoming. They feel a sense of fulfillment and they are content with their philosophy and outlook on life. They are fully functioning beings. According to Maslow, few individuals fully reach this stage of psychological maturation. They remain at the level of striving for greater self-esteem.

Self-actualized people are those who concentrate more on the problems at hand rather than with boosting their own egos—they are problem-centered rather than self-centered. They are autonomous and independent, have a strong identification with humankind, a strong social interest in people and in democratic values and attitudes. They have an ability to transcend the difficulties of their social and physical environments rather than simply coping with them. They have the ability to turn frustrating situations to their advantage. They possess a high degree of self-acceptance and are accepting of other people as they are and the natural world as it is. They may have a need for much privacy in their personal lives. They tend to have strong intimate relationships with a few people rather than superficial

relationships with many people. The pursuit of self-actualization has high civic and social consequences. People with a high degree of self-esteem tend to love others. They get involved with life. In apparent contradiction to all these attributes, self-actualized people also exhibit more idiosyncratic behaviors. They are, nevertheless, considerate of the feelings of other people while following their own inward longings.

### 3.2.6 COGNITIVE NEEDS

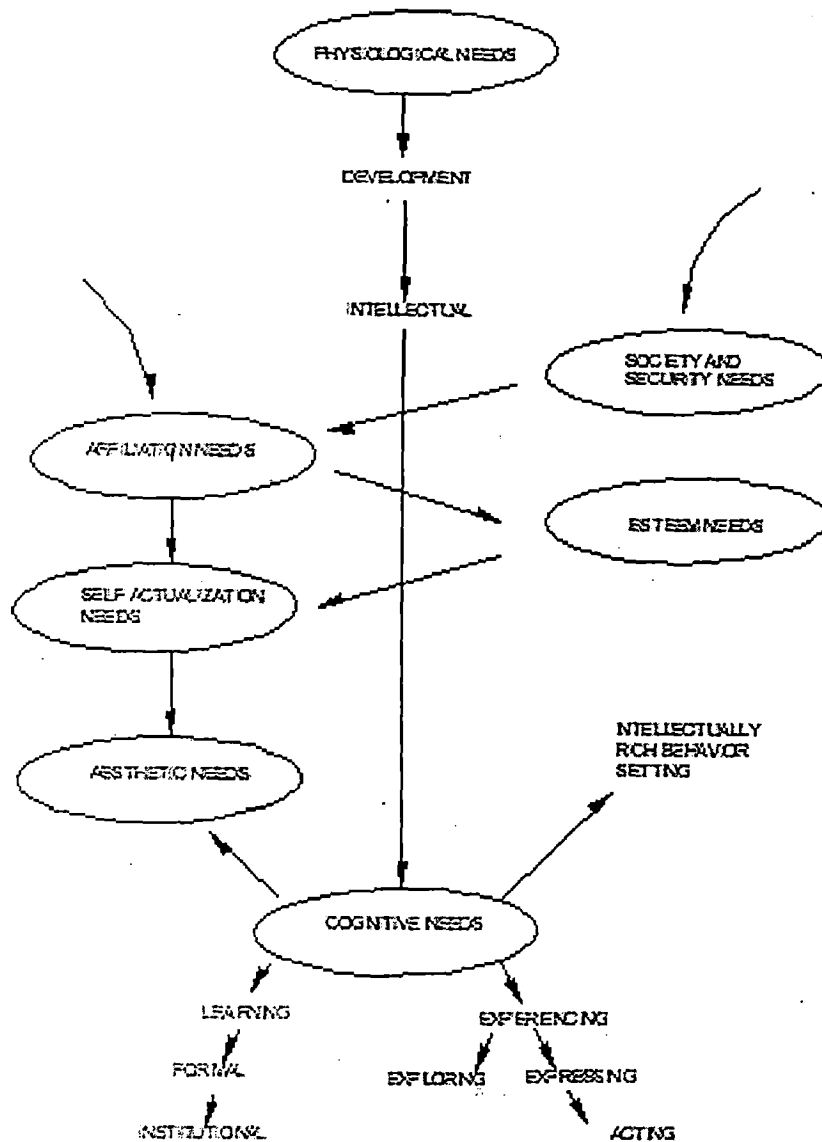


Fig 3.7 Cognitive needs

For people to meet their basic needs, from survival to esteem, requires a continuing process of learning to deal with their biogenic and sociogenic environments. The need to learn is a necessary part of any definition of *cognitive needs* but it is by itself insufficient. People also have a need to gratify their curiosity about how the world works for its own sake rather than any instrumental ends. This varies, depending on where they are in their stage of life cycle and the degree to which

basic needs are satisfied. While this attribute of people is particularly one of self-actualized people and not of people struggling for survival, it is a hallmark of human nature.

From this statement, it can be deduced that people have three interrelated sets of cognitive needs:

(1) Those that are necessary for achieving instrumental ends-doing a job; and so on,

(2) Those concerned with the need to learn for its own sake and not for any instrumental reward, and

(3) Those involving expressive actions.

The first set is concerned with the development and/or maintenance of competence-with acquiring knowledge and developing skills-in dealing with the world; the second with the need to satisfy one's curiosity about places, people, and ideas; and the third with rewards obtained through the experience of performing enjoyable acts-with the experience itself being the reward.

There are two categories of competence that individuals strive to develop: physiological and mental. The former involves the development of strength and motor skills, and the latter the processes of acquiring knowledge, memory, convergent and divergent production of ideas, and the transformation of knowledge to bring it to bear on the problems people face and the opportunities available to them. Physiological competence develops through the early stages of the human life cycle, peaks, and then gradually declines with aging. Some aspects of intellectual competence seem to follow the same curve, but others (e.g., vocabulary growth) continue to develop throughout people's lives as long as they are healthy.

### 3.2.7 AESTHETIC NEEDS

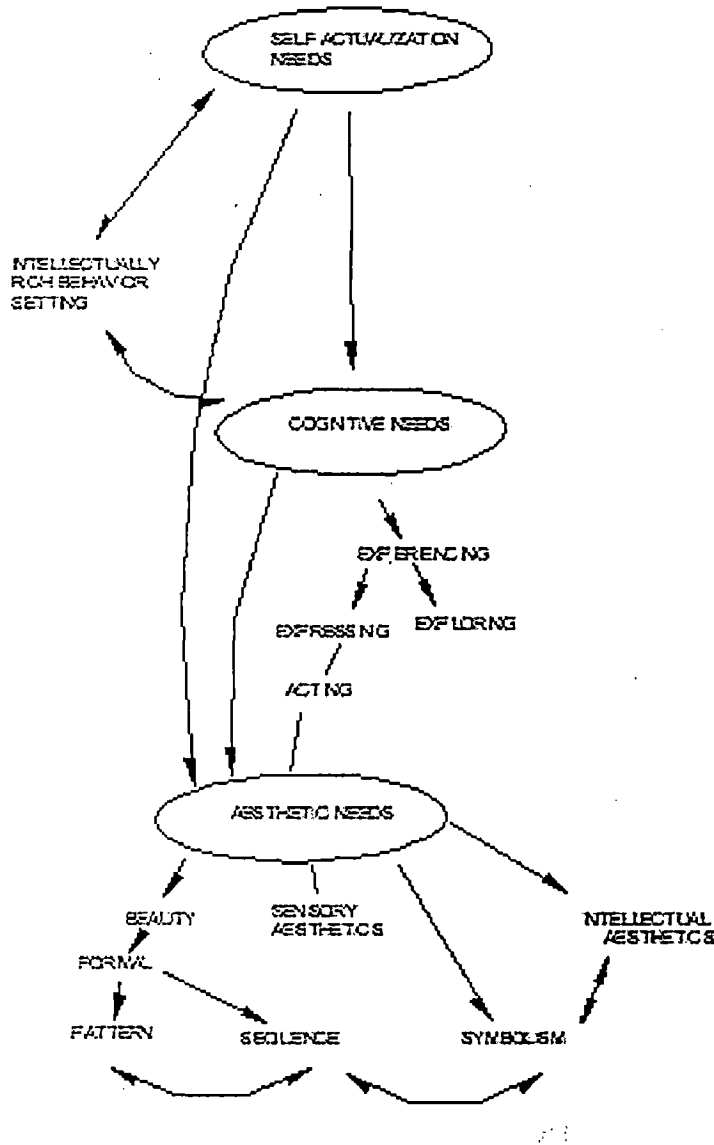


Fig 3.8 Aesthetic needs

To fulfill their aesthetic needs people need the opportunity to contemplate beauty. This act involves their appreciation of the characteristics of the world for their own sake, for their beauty-and not for any instrumental reward. The reward is internal. Some people crave beautiful settings. This craving is seen in every culture and in every age group, but the definition of beautiful is very much culture dependent and often highly individual. The overall visual orderliness of the built environment plays

a major part in people's perception of the beautiful, so the elements and layout of the public realm, if properly arrayed, do make a substantial contribution to the aesthetic effect of all human settlements.

### The Concept Of Beauty

"Beauty is in the eye of the beholder" may be true but it is not an observation that provides much guidance to the designer. Speculative philosophers and psychologists alike have found it useful to consider beauty in hedonic terms—as the intrinsic qualities of an object, person, or event that give us pleasure or at least hold our interest. Aesthetic pleasure arises not from the value of such experiences in establishing identity or status but from the experience resulting from the examination or use of an object or environment for itself. "The mystic experience, the experience of awe, of delight, of wonder, of mystery, and of admiration are all subjectively rich experiences . . . they are end experiences rather than instrumental.

### Our Aesthetic Experience

To understand our aesthetic responses to the environment we need to understand how we experience it. There are three types of experiencing of the elements of the environment that give us pleasure: the *sensory*, the *formal*, and the *symbolic*. Sensory experiences derive from the pleasures of pure sensation, the formal from the pleasures of the three- and four-dimensional geometric character of the environment, and the symbolic from the associations those patterns arouse in us or that we assign to them. We can also appreciate the layout of the environment in terms of specific intellectual constructs of what is good and bad—in terms of its sensory, formal, and symbolic qualities.

### Sensory Aesthetics

The experiencing of the environment is a multimodal perceptual process; consequently so is the aesthetic appreciation of it. Unless we have some problems with our perceptual systems, we can see how the world around us is structured, provided it is illuminated. We can examine the surfaces of places, their textures, temperatures, and colors; we can hear the sounds (or feel vibratory events) generated by the occurrences around us; we can smell odors. We can feel the wind



move through the hair on our heads and arms and press against our skins. Sometimes we actively seek out pleasures of this kind; such experiences always impinge on us but we do not necessarily heed them.

#### Formal Aesthetics

Every environment has geometry. It consists of patterns. There are many geometric patterns that serve essentially the same purposes—they possess the affordances required of the environment to meet a number of pressing needs simultaneously. Sooner or later a designer imposes a pattern, geometry, on the layout of the environment to give some order to it or as an act of personal expression. Indeed, some urban designers regard this focus of concern as the major if not the sole purpose of urban design.

The composition of the geometric pattern of the milieu can be analyzed in terms of its proportions, rhythms, balance points, and expressions. Formal aesthetic pleasure derives from our subconscious responses to the degree of order, and the mechanisms for attaining order, in the geometry of built form.

#### Symbolic Aesthetics

The symbolic aesthetic value of the built environment is a fundamental component of the human experience of the world. The patterns people choose or would like to choose for their habitats are largely based on the associational meaning those environments have for them. Sometimes the choice is made subconsciously, but often it is highly self-conscious.

#### The Environment as a Work of Art

The environment can be regarded as a work of art in two intellectual aesthetic ways: as a medium of architectural expression for its own sake, and as a medium for conveying an architect's message to others. The first is not a deliberate act of communication, although one who observes the results may assign a meaning to the expression; the second is deliberate. In a sense all works of urban design end up being works of art.

## The Environment as a Container of Works of Art

In many places artists have been asked to adorn walls with murals, reliefs, or billboards. Sometimes the pavement is designed as a work of art. In these cases there is a blurring of the environment as a work of art and as a container of art. More specifically, squares, boulevards, parks, internal public spaces, and other urban places have sculptures and fountains. In these cases the art works are clearly seen as objects in space.

The purposes of public art are at least fourfold:

- (1) To beautify a place (often, after the fact, to enliven it),
- (2) To raise the identity and self-esteem of people through the display of heroes and heroic behavior, and to commemorate important events,
- (3) To enable artists to exhibit work-to give them "rooms" for self-expression, and
- (4) To educate the public.

## CHAPTER 4: WORLD OF STREETS

### 4.1 STREET VERSUS ROADS

Streets are the most common feature of our towns and cities: they are the veins, which allow places of every shape and size to function. They exist not just for movement, but as a space that everyone shares. So pervasive are they that constantly run the risk of being taken for granted, treated as something that can always be relied upon however much they are abused or neglected. It is assumed that they can be depended on at all times and in all conditions.

The starting point of the research is the realization that streets cannot take care of themselves. Because of their many functions they have always been the subject of potential conflicts, and this is truer than ever in our unprecedently complex society. It is increasingly difficult to know who is responsible for their different aspects, and how they relate to each other.

Whereas words such as road (from Anglo-Saxon *ride*) suggest movement from one place to another, the word street (from the Latin *sternere*, meaning to pave) suggests an area for public use but not exclusively devoted to circulation. By dictionary meaning both street and road serve the purpose of line of communication with the difference that the streets are narrower than the roads. The street is, by definition, a multi-functional space, providing enclosure and activity as well as movement. Its main functions are:

1. Circulation, for vehicles and pedestrians
2. Access to buildings, and the provision of light and ventilation for buildings.
3. A route for utilities.
4. Storage space, especially for vehicles.
5. Public space for human interaction and sociability; everything from parades and protests to chance encounters.

Streets or alleys were seen as the lines of communication along which people traversed. Looking at them it could be said that they are the linear space left between two buildings and provides for the access of the buildings. Or the other way it could be said that the buildings are built around a street.

But again as Cullen says that scale is not size, that is not the sole criteria. But it is the scale of a road that can make it street with the scale of abutting buildings, with the amount of pedestrian and vehicular movement that occurs. The amount and type of usage that street offers. Hence forward throughout the study wherever the world street has been mentioned, it implies the roads, which have substantive pedestrian movement is under commercial use primarily.

## 4.2 NETWORK

Road network is the system of roads that lie within a city or area. The road network can be classified on the basis of their geometry; it is essential to know about the road networks as this in turn effect the physical environment of street.

### Grid Iron Pattern

In this pattern the streets cut each other at right angles and is generally considered to be a very good street pattern. The problem is that the intersections face each other but one can reach from a place to another via any route. Sense of orientation and direction is very high but the streets lacks variety and thus tend to be monotonous if not treated properly.

Example: Jaipur (Walled City)

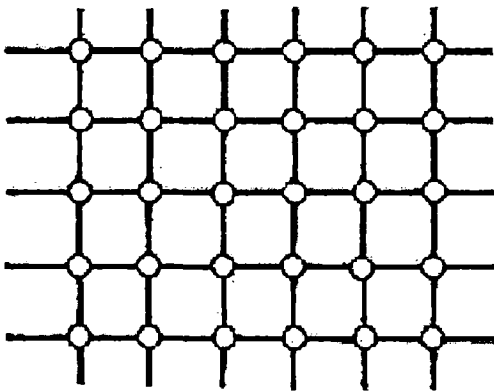


Fig. 4.1 Grid Iron Pattern

### Radial Pattern

In this pattern the streets emanate from a point, which could be a building or a square in all directions and never meet each other. The advantage is that the streets form vistas and if the center is treated well they all get pleasant view of the focal point, but the sense of direction is lost in this system.

Example: Cannaught Place, New Delhi.

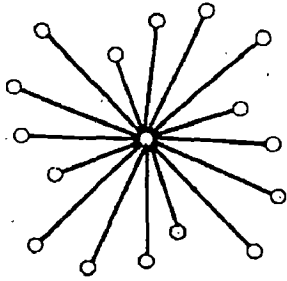


Fig. 4.2 Radial Pattern

### **Irregular Street Pattern**

This is generally developed by inorganic street growth and sometimes gives very exciting results. Most of the times it leads to congestion problems and is not very preferred these days. It leads to conflict of different modes of traffic, but if used properly can create good examples of serial vision.

Example: Agra

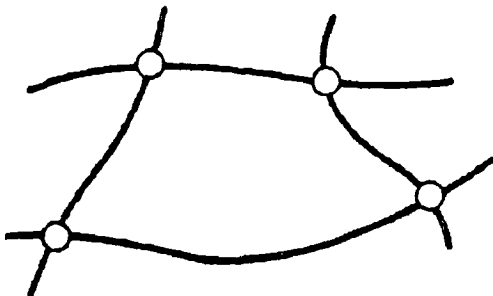


Fig. 4.3 Irregular Street Pattern

### **Diagonal Grid**

In this kind of pattern three roads cut each other at one point and is quite similar to gridiron pattern in its approach. This also has the advantage that a person can exercise his choice of route. Offers more variety of views than gridiron pattern. The disadvantage is that at intersection there are chances of collision.

Example: Washington D.C.

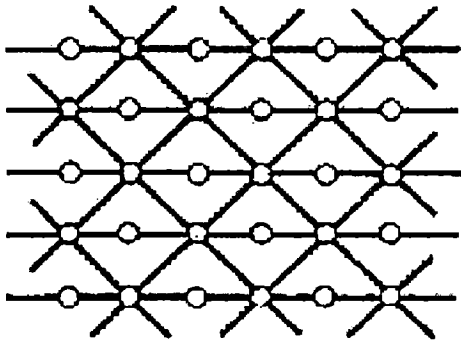


Fig. 4.4 Diagonal Grid

### Branching Radial

In this pattern the roads emanate from one point like radial system and then further branches out to provide access to large blocks, which have become large as a consequence of the branching out of the roads and thus have become farther. This system has a strong visual and motion axis, generally.

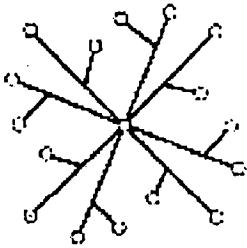


Fig. 4.5 Branching Radial

### Linear Branching

This pattern has a linear road with perpendicular roads meeting at intervals this is the most common system and thus forms the order for Collector Street. It has a strong sense of orientation.

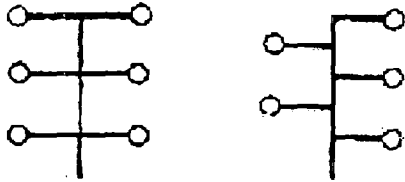


Fig. 4.6 Linear Branching

### One Way Grid Iron

In this system the roads intersect at right angles like gridiron pattern and the traffic is channelised in one direction only. In the perpendicular streets the traffic can change lanes at some intervals. It has good orientation but does not appear interesting to the pedestrian. Very efficient for traffic movement.

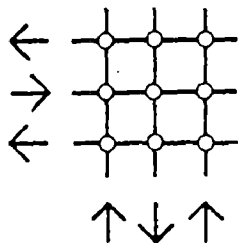


Fig. 4.7 One way Grid Iron

### Irregular Branching Pattern

In this pattern the roads emanate from a linear road and further carries the line of transportation. The far off places have to be traversed long as all the connectivity is through the central spine road.

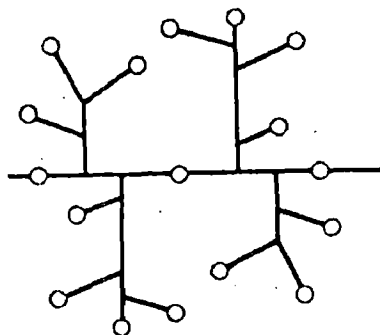


Fig. 4.8 Irregular Branching Pattern



### Regular Branching ( T type)

This pattern is same as a linear road pattern and the roads emanate from the spinal road and then again bifurcates at right angles. More of a systematic approach.

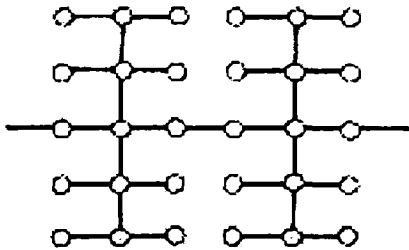


Fig. 4.9 Regular Branching

### Grid Iron Variant

This system is similar to the grid iron system except for the fact that the interconnecting roads are not at the same location thus there are hidden views and also puts a check on the traffic speed.

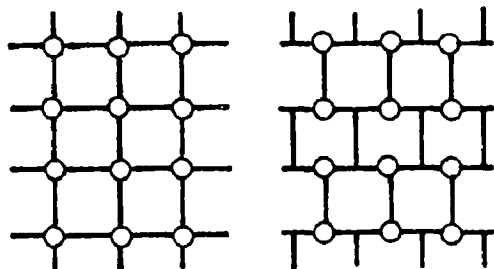


Fig. 4.10 Regular Branching

### 4.3 STREET STANDARDS

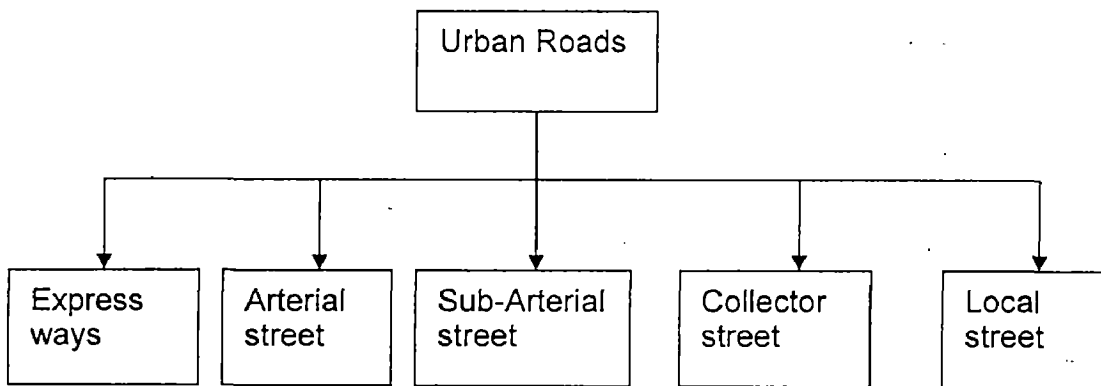


Fig. 4.11 Urban road categories in India

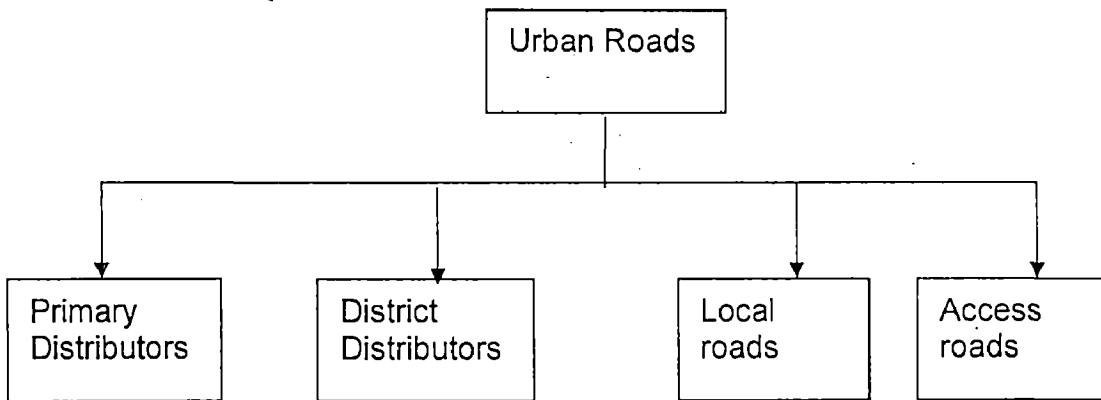


Fig. 4.12 Urban road categories Abroad

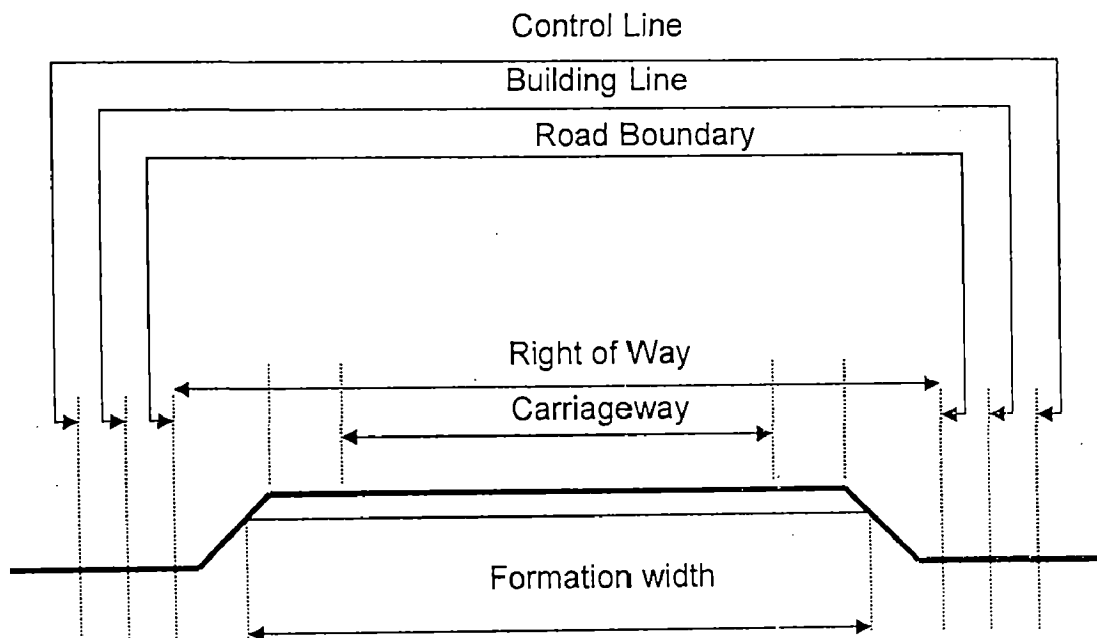


Fig. 4.13 Cross Sectional elements of road width

Table 4.1 Design standard for carriageway

S.N.	Description	Width in meters	
		India	Abroad
1	Single lane without kerbs	3.5	-
2	2 lane without kerbs	7.0	6.0
3	2 lane with kerbs	7.5	7.2
4	3 lane with or without kerbs	10.5/11.0	9-10
5	4 lane with or without kerbs	14.0	12-15
6	6 lane with or without kerbs	21.0	18-22

*Derived from IRC-86-1983 and Roads in urban areas*

### Control of Access

Cross road at near intervals impede the safe movement of traffic and control of access checks it.

Table 4.2 Standards for building lines, control line and control of access.

S.N.	Type of street	Building Line(m)	Control Line(m)	Control of Access
1	Sub arterial street	2-5	5-10	300
2	Collector street	2-5	5-10	150
3	Local street	2-5	5-10	Free access

*Source L.R.Kadiyali 2000 Traffic and Transportation Engineering*

Table 4.3 Space standard for R.O.W. urban roads

S.N.	Category of Road (India)	Minimum Space (m)	Category of Road (Abroad)	Minimum Space (m)
1	Sub arterial street (4-lane divided)	30-40	Primary distributors	40
2	Collector street(4-lane divided)	20-30	District Distributor	Resi-12 Comm-21
3	Local Street	10-20	Local	12-18

*Derived from IRC-86-1983 and roads in urban areas*

Table 4.4 Footpath slope criteria

Longitudinal slope	Preferred slope 0-3 %	Max. slope 5 %
Cross slope	Min 1 %	Max 3 %

Source IRC – 103

Table 4.5 Footpath and Subway standards

Types	India	Abroad
Walk Ways	Min 1.2 m	Business District-6m Residential-2m
Arcading over footways	-	Clear Head height-5m Parapet-0.9m
Pedestrian Arcades	-	Min –6m
Elevated Footways	-	Min –5m, Parapet 1m
Foot over bridges	Vertical clearance-2.5 m	50 per/min/metre
Ped. Subways	2.5m wide, head-2.5 m slope-1 in 30	Min width-2.25m , head 2.1m
Design standards for cycle tracks		
Features	India (m)	Abroad (m)
Single lane width	1m	3
Min.two lane	2m	4
Three lane	3m	5.3
Four lane	4m	-
Gradient	1 in 30	1 in 20
Horizontal curve	10m for 1 in 40 slope	

Vertical curve	200	
Sight distance	25m min.	
Clearance	-	
Vertical	2.2.5	
Horizontal	2.5	
Railing in case of the bridgesa	90 cm	
Verge	1 m from C.W.	2 m from C.W.

*Derived from IRC-11 and roads in urban areas*

Table 4.6 Design speed of streets

Types of street	India kph	Types of street	Abroad kph
Sub arterial street	60	Primary distributor	65-80
Collector street	50	District distributors	50
Local street	30		

*Derived from Roads in urban areas and urban roads manual-1998*

Table 4.7 Standards for overtaking distance and stopping distance

Design speeds	Stopping distance(m)		Overtaking distance(m)	
	India	Abroad	India	Abroad
20	20		-	-
25	25		-	-

30	30	33	-	144
40	45	-	165	-
50	60	57	235	210
60	80	-	300	-
65	90	90	340	285

*Derived from IRC-86 and roads in urban areas*

Table 4.8 Light pattern for roads

Types of roads	Average Illumination (lux)
Main roads carrying mixed traffic	15
Secondary roads with medium and heavy traffic	8
Secondary road with medium traffic	4

*Source: Urban roads manual*

Table 4.9 Lighting Guide for different roads

R.O.W	Height	Spacing	Power	Lighting Fixture	Position
100 ft	10.5m	30m	250 watts	HPSV	Central verge
60-100ft	9.1 m	30m	150 watts	HPSV	Both side staggered
30-60 ft	6.6m	25m	70 watts	HPSV	One side
<30 ft	6.6m	20m	15 watts	Incandescent lamp	One side

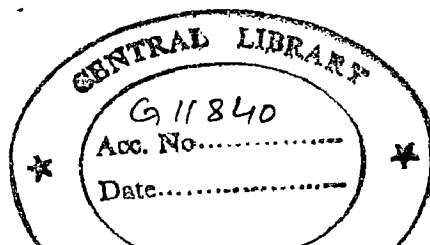


Table 4.10 Other safety Devices

The other safety devices are those who help in traffic safety other than traffic control

S.N.		
1	Visual Marks	
1.1	Delineators	
	Function	Provide visual aids to the driver concerning the alignment of road, especially at night.
	Shape	Curved section and straight section
	Features	Distance
	Section	84 cm.*10cm.
	Spacing in straight section	50-60m.
	Spacing in curved section	Depends on the radius of the curved section. 30m radius-6m, 1000m radius-50m
	Distance from the kerb	50cm
1.2	Hazard Markers	
	Function	Intended to define the objects like guard rails and abutments adjacent to the carriageway.
	Shape	Rectangular
	Size	90*30 cm
	Height	30 cm from the ground

	Distance from kerb	50cm
1.3	Object markers	
	Function	To indicate the obstruction in the vehicle path eg. Mark Channel sing island.
	Shape	Triangular
	Size	30*30cm
	Height	40-50cm
	Distance from the kerb	50cm
2	Speed controllers	
2.1	Speed breakers	
	Function	Speed control humps used near schools and residential areas to restrict the speed.
2.2	Rumble strips	
	Function	Speed controllers strips produce noise causing sensation to the drivers.
	Spacing	At a distance about 100 m.
3.0	Barriers	
3.1	Guard-Rails	
	Function	Guides pedestrians to subways, footbridges and surface crossings, and keeps them off from the carriageway.
	Distance from	50 cm



	the kerb	
	Height	121 cm.
	Location	Hazardous location, at junction/ intersection, school etc.
3.2	Safety Barriers	
	Function	To prevent vehicles accidentally leaving the carriageway.
3.3	Barricades and channelisers	
	Function	To control and divert traffic on construction zones and temporary diversions.
3.4	Traffic attenuators	
	Function	Absorbs the energy of impact of vehicles that go out of control.

*Derived from IRC-code no,79,99 and Traffic Engg. By L.R.Kadiyali.*

- Reduce width only where cul-de-sac is less than 300 feet (90 m) long and is greater than 600 feet (180 m) from a canyon rim.
- Construct sidewalks on both sides of street, including single-loaded cul-de-sacs.
- At fire hydrant locations, the curb-to curb width shall be 26 feet (7.8 m), for a distance of 20 feet (6.0 m) on each side of the fire hydrant.
- Parkways shall be installed only in areas where a cul-de-sac is adjacent to natural open space.
- The minimum distance between the facing of the curb and the required sidewalk shall be three (3) feet.

- All curbs and gutters installed in conformity with these regulations shall be minimum six (6) inch vertical face with one (1) foot of gutter, or an overall width of combined curb and gutter of eighteen (18) inches.
- The minimum spacing of collector street intersections along any major arterial or minor arterial street shall be 1300 feet from centerline to centerline.
- All commercial or industrial service streets shall be constructed to the minimum collector street standards.
- The minimum distance between the face of the curb and the required sidewalk shall be three (3) feet.
- All cul-de-sacs shall terminate in a circle with a radius of not less than 50 feet.
- All curbs and gutters installed in conformity with these regulations shall be minimum six (6) inch vertical face with one (1) foot of gutter, or an overall width of combined curb and gutter of eighteen (18) inches.
- All sidewalks installed in conformity with these regulations shall be along at least one (1) side of all local streets except no sidewalks shall be required on cul-de-sacs 500 feet or less in length in single family subdivisions.
- Street alignment shall be designed to eliminate sharp curves and street jogs. Streets shall intersect at right angles if possible and in no case at an angle of less than 70 degrees.
- Curb radii of collector and local streets shall be as follows:

Local - Local 25 Feet

Local - Collector 25 Feet

Collector - Collector 25 Feet

Streets shall be graded to a minimum line of seven (7) feet back of the curb line with a rise of not less than eight (8) inches nor more than fifteen (15) inches from the flow line of the gutter unless the topography is such as to make this prohibited.

A portion of the required off-street parking spaces shall be specifically designated, located and reserved for use by persons with physical disabilities in accordance with Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.

### **Maximum Allowable Grades in Parking Lots**

Maximum grades allowed in parking lots shall be 8%.

### **Lighting**

Adequate lighting shall be provided for all parking facilities used at night. Lighting sources shall not be directly visible from adjacent roadways or residential uses and shall not interfere with the safe operation of vehicles moving on or near the site. Parking area lighting shall, where possible, be located in landscaped areas.

The minimum required lighting intensity to be provided in all parking areas is 0.6 foot-candle. High activity areas such as near building entrances and pedestrian corridors shall be provided with a greater lighting intensity. The maximum height of required lighting is 35 feet, measured from the parking surface to the top of the lighting standard. Lighting located near buildings and adjacent to sidewalks shall not exceed 12 feet in height.

### **Corner Clearance**

Corner clearances are defined as the distance between a driveway and the nearest intersecting street. The clearance is necessary so that accesses do not interfere with street intersection operations and should provide drivers with adequate perception-reaction time to avoid potential conflicts. On corner lots, the access location shall be on the street of lowest functional classification.

## **Cross Section**

### **Cross Slopes**

The typical cross slope is 2% crown to provide for adequate drainage to the pavement edge. The maximum cross slope on the tangent sections shall not exceed 4%. The minimum cross slope shall be 1%.

### **Sight Zones**

Within the sight zone there shall be no sight obscuring sign, wall, fence, berming, or other object higher than 30 inches, or in the case of trees, no foliage lower than 8 feet. Vertical measurement shall be made from the flowline of the adjacent gutter or, if no gutter exists, from the edge of the nearest traveled way. Objects that may be located in the sight zones are items such as hydrants, utility poles, and traffic control devices. These shall be located to minimize visual obstruction.

### **Angles**

Proposed public streets must intersect at 90° angles or as close to 90° as topography permits (no less than 80°). Intersections on sharp horizontal curves shall be prohibited.

### **Spacing and Offsets**

#### **Principal Arterials**

Signalized intersections shall be spaced at ½ mile intervals. Unsignalized intersections must be T-intersections spaced at least 600 feet apart, measured centerline to centerline.

Unsignalized four legged intersections may be allowed on arterial streets provided that the design of the intersection precludes left turns onto and through movements across the arterial. If the overlap of left turn storage requirements for two T-intersections exceeds 600 feet, the minimum spacing must be increased to provide adequate left turn storage in both directions.

### **Minor Arterials and Collectors**

Signalized intersections shall be spaced at 1/4-mile intervals. Unsignalized four legged intersections must be spaced at least 300 feet apart. When T-intersections are used, the centerlines of streets not in alignment shall be offset a minimum of 150 feet and be 150 feet from the nearest four legged intersection.

If the left turn storage requirements for adjacent intersections overlap, the minimum spacing must be increased to provide adequate left turn storage in both directions.

### **Crosswalks**

Crosswalks shall be marked at signalized intersections and designed as part of the markings for the traffic signal.

## CHAPTER 5: PERCEPTION OF STREET

### 5.1 SCALE

What is a scale? It is a ratio: a ratio of building height to street width; a ratio of height of human beings to the building height, the ratio of his height and the width of a street between two tall buildings.

All these ratios are nothing else but the gauges of the comfort level of a human being. It is a physical quantity with a sensory, perception level barometer. The scale of the building will define the boundary of its influence area on the urban street, of which it is a part. It is an entity totally dependent on the human perception, and if not flexible enough, it can be disrupted very easily. The disruption of the scale if for worse will lead to that area's deterioration. Because once a person starts feeling uncomfortable in a space, his subconscious will automatically reject that space as an option to go, if he has an alternative choice.

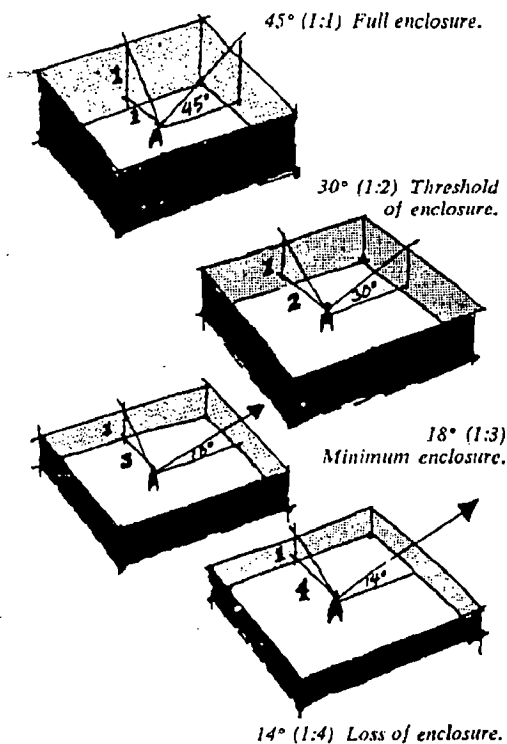


Fig 5.1 Sense of Enclosure

What one is trying to understand is the phenomenon, of the scale and its effect on the users of a street. Elements which have a definite role to play, but to be looked

at from a fresh perspective, chances are that if they continue to be just stucco elements, they might start disrupting the scale of the street, and in this mad rush to outsell one another, the environment may prove to be looser. Their sheer size coupled with the magnitude can really mar the quality of the public realm.

The database of these elements, harming or enhancing an area can go on, but nothing should be left to fate. The molding of the environment should be in our hands and not allowing simple commercial logic to rule, for if left uncontrolled an element may become the kingpin, dominating the environment. The attempt should be to incorporate them within the urban landscape and infact used to enhance the existing urban scope of the street.

Scale plays a very important role in qualifying a place as comfortable to use. By nature man always tries to relate himself to his surroundings in order to ascertain his position and feels secure. The feeling of security and comfort are essential in deciding the success of use of any surrounding. Narrow space enclosed by high edges induces a sense of claustrophobia whereas the lack of enclosing elements creates a lack of sense orientation in space.

*Intimate scale.*



*Urban scale.*

*Monumental scale.*

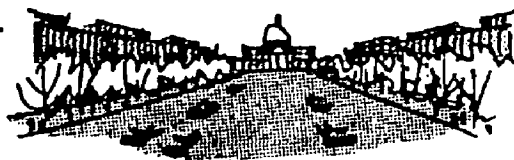


Fig 5.2 Scales in Urban Realm

## **Different Scales**

When a person moves around the city it is through the variations in the perception of scale that he relates himself to his surroundings. The quality of scale in buildings, constructions and trees is one of the most potent tools in the art of juxtaposition, and reference has already been made.

"...Scale is not size, it is the inherent claim to size that the construction makes to the eye. By and large the two go hand in hand; a big building does have a big scale and a small building a small scale. It is in the manipulation of the borderline that the designer's skill is called for."

**-Cullen**



## 5.2 LEGIBILITY

Kevin Lynch was interested in how people understand the structure of cities and how they use them. There were two basic questions – what do they notice and to what extent in the structuring to people does it depend on the environment, i.e. are there any regularities? This concern was almost exclusively with imageability – the clarity and ease with which people form urban images and how memorable they are.

Kevin Lynch took the ability to make a city 'imageable' i.e. 'the ease with which the parts of a city can be recognized and organized in to a coherent pattern'. He attempted to identify some of the features of the townscape which contribute to form an accurate image of it. These features, or 'elements', were abstracted from interviews and sketch maps which people made as accounts of a city. They provided headings under which the image could be considered. There were five elements described as:

1. PATHS – Paths are the channels along which the observer customarily, or potentially moves... People observe the city while moving through it and along these paths the other environmental elements are arranged and related.

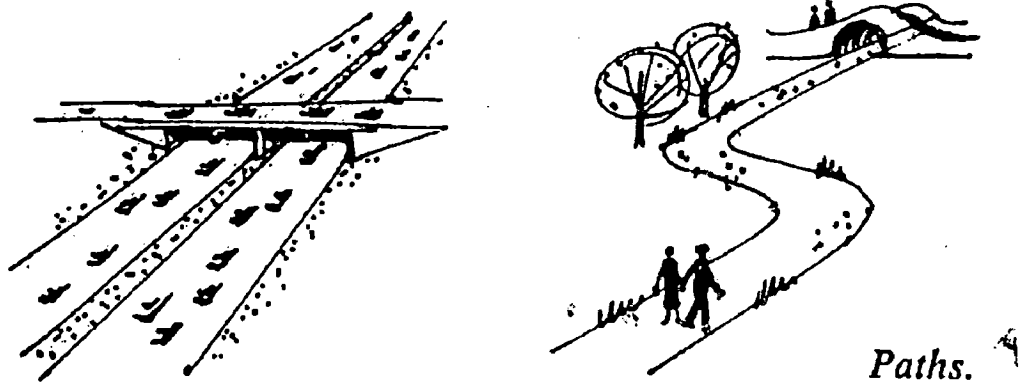


Fig 5.3 Paths

2. EDGES – Edges are linear elements not used or considered as paths by the observer... such edges may be barriers, more or less penetrable, which close one region off from another; or they may be seams, lines along which two regions are related and joined together.

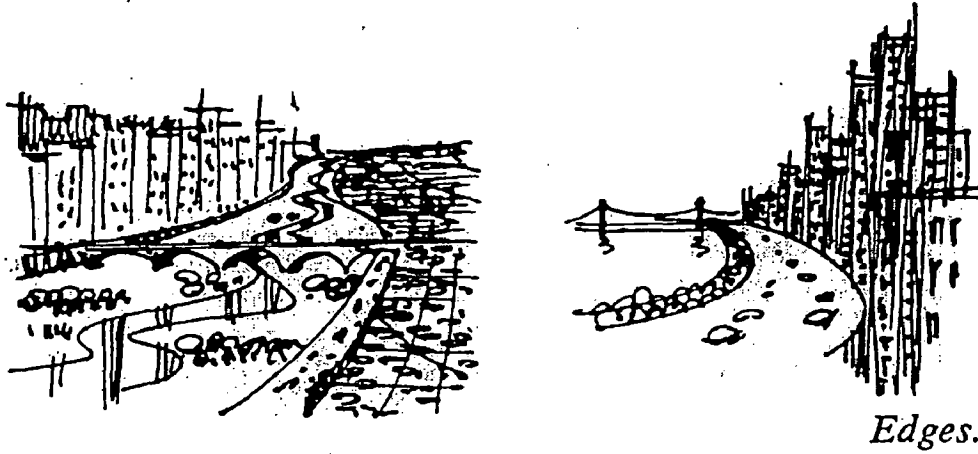


Fig 5.4 Edge

3. DISTRICTS – Districts are medium to large sections of the city, conceived of as having two-dimensional extent, which the observer mentally enters and which are recognizable as having some common, identifying character.

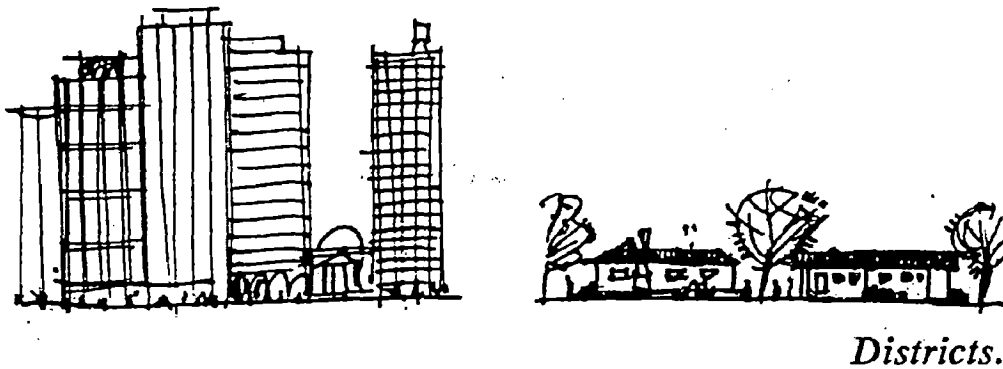
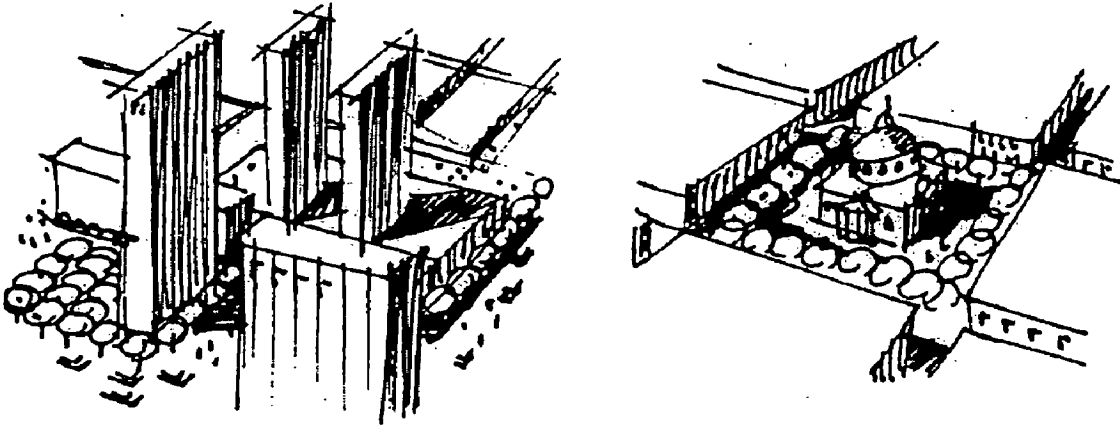


Fig 5.5 District

4. **NODES** – Nodes are points, the strategic spots in a city, into which an observer can enter, and which are intensive foci to and from which he is traveling...The concept of node is related to the concept of path, since functions are typically the convergence of paths, events on a journey.



*Nodes.*

Fig 5.6 Node

5. **LANDMARKS** – Landmarks are another type of point of reference, in this case the observer might not enter inside them, they are external and are generally highly visible. They are usually a rather simply defined physical object, building, sign, stores or even a letterbox.



*Landmarks.*

Fig 5.7 Landmark

Using these elements people are able to conceive an accurate image of the city. Thus legibility is the quality by which the structure of a place is easily understood.

Legibility is important at two physical levels: physical form and activity patterns. Places may be read at either level separately. For example, it is possible to develop a clear sense of the physical form of a place, perhaps enjoying it only at an aesthetic level. Equally, patterns of use may be grasped without much concern. But to use a place's potential to the full, awareness of physical form and patterns of use must compliment one another.

The legibility of both form and use is reduced in fast changing urban streets. Comparing the traditional city with its modern counterpart easily sees this. Before the twentieth century, cities worked well in terms of legibility. Places that looked important were important, and places of public relevance could be easily identified. This was true of buildings and streets alike.

"The modern city is legible only in the sense that buildings are taller and the streets have become narrower. But these bureaucratic enclaves – irrelevant to how people use the street – visually overwhelm publicly – relevant places and facilities, confusing important activity patterns. This confusion is made worse because important public areas and irrelevant private ones look alike."

-Responsive Environments

### 5.3 COLOR AND TEXTURE

Colour and texture are surface qualities of the materials, which make up our visual environment. Colour and texture complement each other and give a definition to the objects we see. Colour and texture are defined by light and shadow. The perception of color is directly influenced by the speed of the speed viewer. Colors like red, orange, black are easily perceived at high speeds, also contrast such as black and white are also seen easily.

Le Corbusier said that " texture influences greatly how we react to our environment; it can be interesting or it can be austere and forbidding. Colour and texture are the qualities that first acquaint us with the urban environment. If this first impression is favorable and pleasing, then we are tempted to look further and explore."

Most of the graphic imagery and colour that we absorb in the urban environment comes from advertising or display of one form or another, whereas decorative elements traditionally are incorporated into the architectural structures of the buildings. If this idea is reversed billboards and hoardings can begin to decorate the city externally.



Fig 5.8 Façade effected by different textures

It is evident that colour, texture and light also play a big role in giving a certain character, life and humour to our urban spaces. Colour and graphics are the most direct modes of playing on human mind that reacts very subjectively to different colour combinations.

"The use of behavior - influencing colours in today's retailing, marketing, and advertising is pervasive. Fast-food restaurants are designed in warm or hot colours to depict speed of service, warmth, and an exciting atmosphere. Hospitals use whites and restful blues and greens. Exclusive restaurants and department stores often choose rich purples, gold, and earth tones to convey sense of quiet elegance."

- Wendell C. Crow

The physiological and psychological impact of colour stimuli and their effects on perception are only beginning to be understood. Designers usually employ the warm end of the spectrum - reds, oranges, and yellows – to show action. Cooler hues-blues, greens, violets - depict calmness and serenity. There are some of the other connotations usually assigned to colors.

Greens and browns - colours in nature, trees, grass earth.

Blues - also natural, as in water, sky, also shows seriousness or sincerity (true blue).

Violets and purples - royalty, elegance.

Gold- value, rarity, stability.

Reds - passion, intensity, warmth, sunshine, protection, life (blood).

White - cleanliness, purity.

## 5.4 IDENTITY AND CHARACTER OF SPACE

A quick visual survey of almost every community discloses not only chaos and clutter but also an enormous sameness, a tedious dullness that deadens the civic senses and joie de vivre. And this condition will worsen. As towns become cities and cities merge into 600-mile long megalopolises, local community imagery will become more essential in order to provide a sense of place that the city dweller can cling to. But there is more here too: the need for imagery translates into an economic need because imagery means selling, and cities must always be aware of the need for selling. Buying and selling are basic to our lives. Cities compete for favor (talent, loyalty, money) even as do corporation and individuals.

The need to create a favorable urban image has always existed. Kings built huge monuments to make apparent their power. City-states erected extravagant symbols to attract trade and commerce. The bronze statue the 'Colossus of Rhodes' was one of the Seven Wonders of the World until destroyed by earthquake in 227 B.C. It could only have been built by a city seeking to express the grandeur of its harbour and thereby attract more commerce.

Now with statistics showing that the average member of our mobile population changes residence every four years our cities - and our neighbourhoods too - must face a struggle for distinction in order to retain and attract consumers (shoppers, industry, taxpayers). Many older, more conservative cities, particularly in the east, seem unaware of the intensity of this competition, their complacency being visually manifested by the deterioration of their brand image and their overall attractiveness. For these who are aware of the economic value of a favorable image, the problem is not whether to have an image but rather what kind and how is it to be achieved.

A few cities have been blessed with natural features of exclusive character that endure and can be enhanced through purposeful design. When natural endowments are lacking, historical heritage can provide an auspicious approach to unique, time-honored identity, and consumer acceptance. Using as a guide the well-documented Norwich Plan of Norwich, England, several American neighborhoods and shopping streets are being rehabilitated with emphasis on the Victorian character of the streets and houses. Hampton, Virginia, whose renewal program was prepared by Doxiadis Associates, capitalized on tradition that goes back to the time of the

Pilgrims. The imagery of this project has been reinforced by replacing street lighting with antique posts and lanterns imported from England.

Similarly, Chicago old town, once a decaying cluster of Victorian row houses centered around Wells street, now presents to the romance seeking tourists a potpourri of restaurants, pubs, galleries, and shops. But there is not enough of the real thing to go around. What of the city that grew up about a fork of the road, hard by a railroad junction, or just by happenstance? The majority of American cities lack natural or historical distinction and in fact is known only by place names and conjures no images to sight or mind. And what of all the new towns and cities still to be built this century? What will be their form and unique identity? With the design talent, technology, and financial resources available today it is possible to construct an 'instant tradition' or a happening environment in any desired mode where before there was nothing.

Malt



Fig: 5.9 Detail Reflecting Identity of place

When an area has a historic character, this has high association values and the way the signages come up should respect this character. Grain and texture of a place also determines the character of a place. A large area becomes legible by mental structuring of the smaller character zones. Hence detailing should reflect the grain and texture of a place.



## 5.5 ORDER AND HARMONY

There is a basic need to stress for a rhythm in the skyline and a homogenous composition of the street facade. It starts from one building, but it is not contained just to it only. Order and harmony cover the whole length of the street up to the 'square' (chowk). The order is the character of a place .it requires a composed building facade which dose not give a jagged effect and the overall effect is that of a picturesque setting .the "rhythm can vary from the simple pattern of rock'n'roll to highly developed and complex pattern like that of symphonies".

Order essentially does not mean monotonous facades with an unending repetition of the same element. This can be one of them -but at the same time it can also be a repetition of an amalgamation of a number of these facade elements. These elements can include advertisement billboards also- only that they should be taken up as a serious primary element and not a secondary stucco element.

"It is fruitless, however to search for some dramatic key or king pin which if made clear, will clarify all. No single element in a city is in truth the king pin. The mixture is the king pin, and its mutual support is the order. "Thus there is no set rules or king pin, however one must understand the need of the hour. Billboards are going to come up and if we can design with them, then they shall truly add to the environment.

These are a number of small factors; some physical in nature, some sensory in nature, some analytical in nature; which come together to form an architectural facade, the unit of order in architecture, in an effort to form a happy and lively urban environment.



Fig: 5.10 Building follows form of the location

From the visual aspect, if a building can somehow relate to its neighbor then it will contribute positively to the picturesque appearance of the street. In fact, the same can be said about style as well as skyline. It is the skyline - silhouetted against the evening sky; it is the style-focused on by individual lighting: it is the relationship with the neighbor- when the whole street is bathed in light.

## 5.6 VISUAL PERCEPTION AND SPEED

### 5.6.1 HUMAN PERCEPTION

The term 'perception' is used in the environmental design literature differently to the way in which it is used in psychology - it seems to be used in the sense of how things are "seen".

—Rapoport

'Perception is the use of memory to make sense of phenomena.'

—Smith

The occurrence of urban elements affects the perceived image of a city. In experiencing a city, the visual perception as one moves through the city becomes very important. This gives the subject the foremost clues about what the city is all about.

Cullen talks about the importance of the visual impact of a city on those who live in it or visit. According to him the 'dramatic event in the environment' is created by the 'art of relationship' of 'buildings, trees, water, traffic, advertisements and so on'. Vision is not only useful but it invokes our memories and experiences, those responsive emotions inside us which have the power to disturb the mind when aroused.' He also speaks about 'serial vision', which helps in experiencing the city as one moves.

*The importance of perception is implicit in the very notion of urban design - from Camillo Sitte to the English townscape group. It is the difference between planning and design, between the coloured map and the experience of urban environment.*

—Rapoport

Human perception is affected by the speed of movement. 'For example it can be predicted that pedestrians and motorists will differ greatly in the way they perceive the city. Perception of the city is sequential and the city is experienced in time.

Perception is dynamic and sequential. It is made up of short scans, involving the integration of successive partial views, but these are only meaningful if there are noticeable changes in successive views and some uncertainty as to the next view.

This integration of partial views is affected by speed and more generally by the rate of noticeable differences.'

This suggests that for different speeds, different cues and different levels of complexity should be designed. Long pedestrian underpasses with white, shiny tiled walls are much too long and featureless at pedestrian speeds.

The roadside strip, at driving speeds, is too complex and chaotic, while residential streets seen at slower driving speeds or at pedestrian speeds are too monotonous: there is a reversal of needed levels of complexity related to speed.

### **5.6.2. SPEED**

The perception of complexity is thus related to the number of noticeable differences per unit time and hence to speed. Speed also influences the way people organize discrete stimuli into groups.

Movement perception along a road is within a structural order of constant elements—the road, the sky, lamppost spacing and yellow stripes. A person can out himself too, this while the rest just happens. Lynch found out that more than half the objects sighted along the road by both the passenger and the driver are seen straight ahead and narrowly towards the sides as if with blinders. About one third of the attention is to the immediate sides. Attention is also more focused on 'moving objects' than 'stable' ones, except' when the observer passes a visual barrier and in order to orient him surveys the new landscape.

Speed is the determinant of focal angle, both for the driver and the passenger. Increase of speed, narrow the focal angle with a resulting shift from detail to generally, attention shifts to points of decision. The body sensations of speed are few in a car. We depend upon vision for our perception of speed. Objects that pass overhead greatly increases the sense of speed

### **5.6.3. MEANING OF SPEED**

Speed: the rate of displacement, rate at which we move quickness, velocity, swiftness, rapidity. Visual perception depends on the tremendous number of factors and complexities, yet one of the major ones happens to be speed.

For any information to get registered into our mental being, we need a certain exposure. Some can register instantaneously while others need a longer duration.

If the interval is reduced, less is the intake and more the generality. Thus what we see when we move has a great deal to do with speed at which we are moving, the medium. The amount that one registered is fixed depending on each individual's capabilities and potentials, but when speed increases the level of detail begins to drop and one cannot recapitulate exactly what he had seen. Relevance of speed is beyond a shadow of doubt. It dictates the amount of the detail that has to be provided at the building facades and in the size of the boards for the required impact.

#### 5.6.4 VARIANCE OF SPEED

##### SUPER HIGH-SPEED MOVEMENT

Higher the speed lower the interval of exposure, narrow the focal angle hence simply minute details automatically get eliminated. Expressways, highways approaching the city, flyovers all facilitate traffic to move at very high speeds, also carry high intensity of traffic hence a major potential. To be able to communicate at that speed, where one would have only a split second to get noticed, would demand large size hoardings. Function of the link is just that of a connector hence the type of hoarding seen would be more of the UNIVERSAL TYPE.

At high speeds elements are, grouped into simple chunks, while at slow speed more discrete elements are perceived. High speed makes a complex environment too chaotic; a simple environment interesting at high speed becomes monotonous at slow speeds.

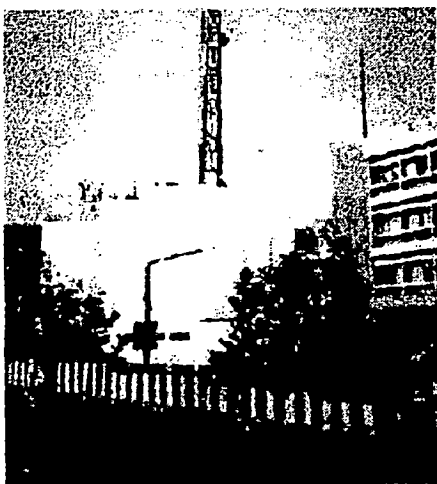


Fig:5.11 Vague Image at high speed

There are also effects of peripheral vision at high speeds. Central vision is essential for fine detail and small differences in contrast and colour, while peripheral vision detects movement. Hence the presence of elements close to a rapidly moving observer, particularly if these elements are complex, can be most distressing by greatly exaggerating apparent speed.

As speed increases, the task becomes more demanding and concentration increases. Several other things also happen. The point of concentration (or focus) recedes from 600 ft at 25 mph to 2000 ft at 65 mph. As a result elements must become larger. Also while objects perpendicular to the road become prominent those parallel to it lose prominence. Peripheral vision diminishes so that while at 25 mph the horizontal angle is 100° it reduces to less than 40° at 60 mph. One result is "tunnel vision" which may induce hypnosis and sleep.

Side elements need to be quiet and subdued and perceived semi-consciously in the blurred field of peripheral vision, with the main features on the axis of vision and the point of concentration periodically moved laterally to maintain attention. Foreground detail begins to fade, due to the rapid movement of close objects. The earliest point of clear view recedes from 30 ft at 40 mph to 110 ft at 60 mph. At the same time detail beyond 1400 ft cannot be seen, as it is too small, so that the range is between 110-1400 ft and that is traversed in 15 seconds. Elaborate detail is then both useless and undesirable.

Space perception becomes impaired so near objects are seen, get close and disappear very quickly. They thus tend to loom, sudden curves should be avoided.

#### MEDIUM SPEED MOVEMENT

On further reduction of speed, one experiences a greater flexibility to pace out one's speed, yet cannot exercise complete freedom to stop at will. One is still within a system and one must move on. Hence a considerable increase in the interval of exposure, hence a high degree of detail can be read.

## EXTREMELY SLOW MOVEMENT

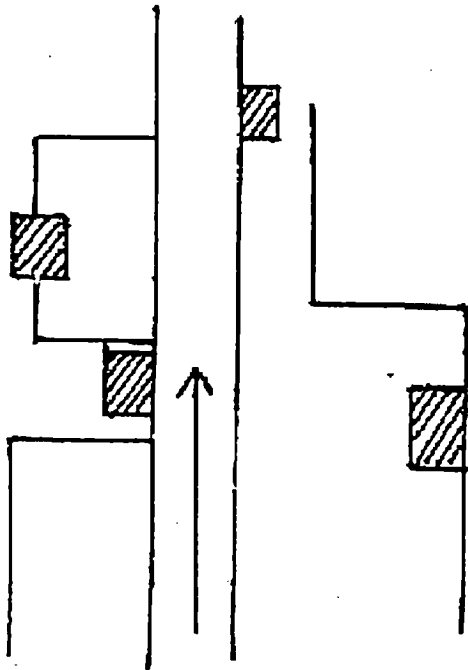
Virtually every individual has complete freedom over one's rate of movement. He can stop at will and takes as much time, no compulsion to keep on moving. Resultant he has all the time to observe as when he feels the necessity or attracted by something of his liking. Thus just a simple NAMEPLATE informing the customer of the nature of the goods available is enough, and at the same time is flashy enough to attract ones attention.

### 5.6.5 PHYSICAL MANIFESTATION OF SPEED

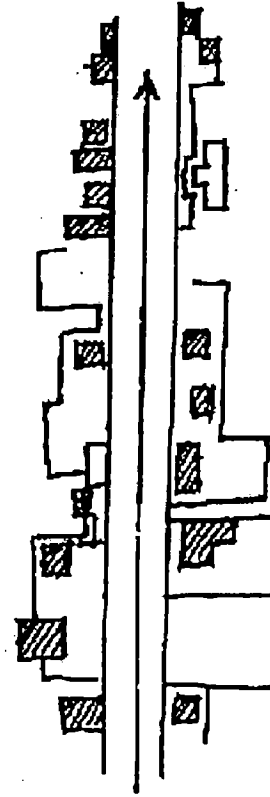
The physical elements are the hoardings but another physical element, which an affect our meaning, is our rate of displacement- SPEED. The quicker we move, shorter is the interval of exposure, hence lesser is the time interval during which the graphic stimuli's presence can be felt. Thus with varied speeds the influence would vary and hence the information communicated.

Areas used at slow speed on foot or in slow vehicles should be designed differently to those designed for high speeds. Similar to levels of complexity to be attained for different speeds by built masses, the speed of motion also affects the perceptible levels of urban façade details. Thus a pedestrian orientated commercial street may seem to be 'cluttered' by signages to motorist, whereas a fairly complex drive with hoardings at regular intervals may seem monotonous to the pedestrian.

All activities have their own speed of movement, conducive for the particular activity. Variety in activity gives rise to variety in speed. Hence when so much of a variety is in built, then to communicate there has to be an equal amount of variation, resulting in variance in size and level of detail, height, and color. So that it can be noticed, recollected and makes a dent in our mental being, at that particular speed of perception. Speed affects the size as well as various other factors connected with speed. The perception of color and texture are also directly related to speed. The scale of boards is also a direct consequence of speed.



Perception at vehicle speed



Perception at walking speed

Fig: 5.12 Perceptions at different speeds



## 5.7 VISTA

The architecture of feel - of the subconscious perception.

As discussed before colour, lights and elaborately done shop- windows are ingredients of vistas of today. They woo the customers, seduce him by oral persuasions and entice him saying come take a look at me, experience me.

Commenting on the second stories in the market streets, author William H. Whyte in his book "City" says "the second stories can make a lovely sight especially at dusk and after when the balance of light shifts to the interior there is much movement silhouetted or spotlighted". This phenomenon is especially noticed if the observer happens to be in vehicle which is stationary .at distance, at dusk the streets might look like a silhouette interspersed in parts by glows of lights from windows.

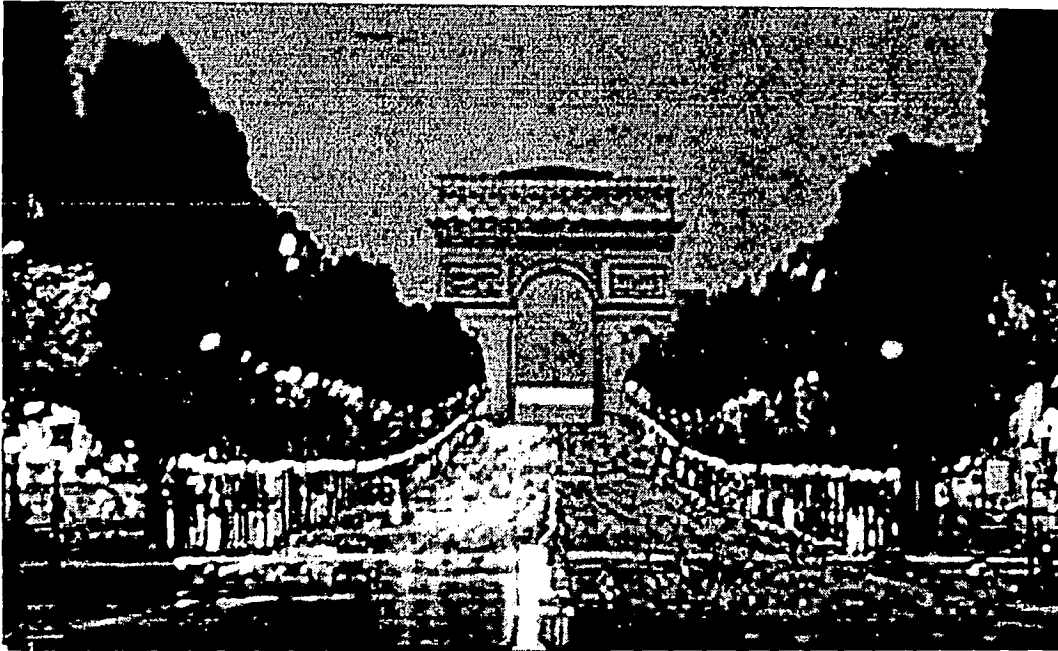


Fig: 5.13 Vista

## 5.8 SERIAL VISION

Serial vision was established by Gordon Cullen as a distinct feature in urban design: though it was quite often used by previous generations. He stated that the views on a street could be strategically framed to reveal to the user only the desired portion of the street. This is usually done by means of winding streets, but at times can also be done by a play of levels.

For Example: Rajpath the road between North Block and South Block that leads to the Rashtrapati Bhawan has a tremendous rise and as a consequence of that the whole grandeur of Building can not be realized from a distance.

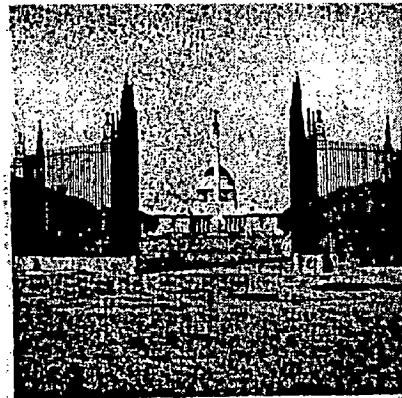
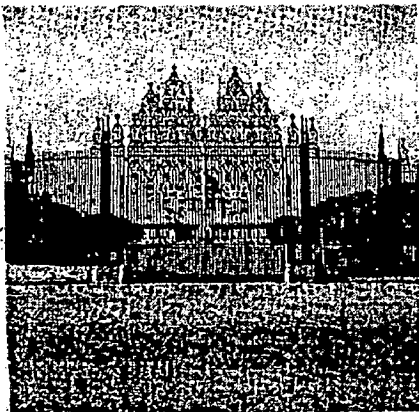
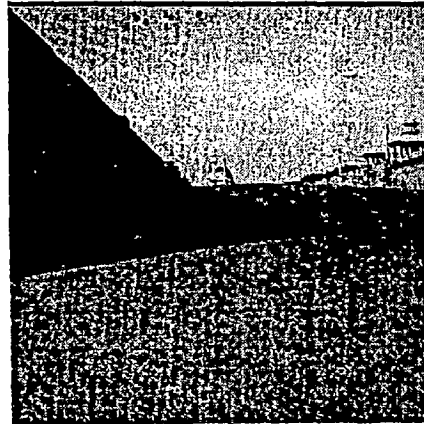


Fig: 5.14 Serial Vision

As one moves towards it the vision is even diminished and then later by the rise, the whole built facade comes in front of the eyes of the user.

## **CHAPTER 6: THE CASE STUDIES**

### **6.1 INTRODUCTION TO CASE STUDIES**

The aim of conducting these case studies is for the identification of design parameters, which contribute to the fulfillment of performance criteria, which in turn are prerequisites for the fulfillment of basic human needs. These performance criteria have been identified in the preceding chapter. Thus, the case studies will be analyzed with respect to these preconditions. A table has been developed for each need per case study, which will show the strong and weak points of each case study with regard to each basic human need.

### **6.2 SELECTION CRITERIA FOR CASE STUDIES**

A case study approach was chosen as the means of gathering the necessary qualitative data. To allow meaningful conclusions to be drawn from the case studies, developments were compared which were similar in a number of aspects to each other. To this end the case studies were limited to major commercial streets of mediocre cities.

Case studies have been selected where there is substantive pedestrian movement and potential of learning good practices from various eras. Primary case studies have been done in the city of Jaipur, Dehradun, Agra. Secondary case examples have been chosen from abroad which are considered to be most preferred streets and usually find mention in literature and narration of people who have been there.

Though examples from foreign countries have been included to learn and analyse the good techniques, but it has been kept in mind that the conditions of our streets are different from there's, hence the practices have to be sufficiently optimized to suit the Indian conditions.

Each of the cases considered are major activity areas of that city, and hold some prestige in the eyes of the commuters, developers and old residents of the city. These are streets where there is substantive pedestrian movement and like to go out to these streets. It is from the analysis of these cases studies that we will come to know exactly why it is so. All of them are:

1. Significant areas of public realm.
2. Identified as high-status developments.
3. Important centers of activity.
4. Mixed-use developments, primarily commercial and a bit of residential.

### 6.3 SURVEY RESULTS

	LOCATION																							
	M.I			K.P			CL			R.R			J.B			M.G								
	Y	N	CS	R	Y	N	CS	R	Y	N	CS	R	Y	N	CS	R	Y	N	CS	R				
<b>FACTORS</b>																								
<b>AMENITIES</b>																								
• Toilets	9	1	2	8	2	7	3	-5	0	7	5	-7	7	2	3	5	0	4	8	-4	3	7	2	4
• Drinking water	2	7	3	-5	3	3	6	0	2	5	0	-3	4	5	3	-1	2	6	4	-4	3	6	3	3
• Seating Space	4	6	2	-2	0	8	4	-8	0	4	8	-4	2	5	5	-3	7	1	4	6	2	6	4	4
• Walkway	8	1	3	7	6	1	5	5	0	9	3	-9	7	3	2	4	10	1	1	9	8	3	1	5
• Zebra crossing	11	0	1	11	0	7	3	-7	0	9	3	-9	6	4	2	2	0	10	2	-10	3	4	5	1
• Lighting	9	1	2	8	8	2	2	6	6	3	3	3	10	1	1	9	5	5	2	0	7	2	3	5
• Letter box	4	2	6	2	4	2	6	2	5	2	5	3	7	1	4	6	7	4	1	3	5	3	4	2
<b>CIRCULATION</b>																								
• Roads width	8	1	3	7	7	2	3	5	3	7	2	-4	8	4	0	4	4	6	2	-2	7	2	3	5
• Speed Breakers	4	1	7	3	4	2	6	2	0	9	3	-9	6	4	2	2	0	9	3	-9	3	3	6	0
• Street Light	10	0	2	10	9	2	1	7	5	7	0	-2	8	4	0	4	5	4	3	1	7	3	2	4
• Width of pavement	8	2	2	6	4	2	6	2	0	8	4	-8	5	7	0	-2	5	4	3	1	4	6	2	2
<b>LIGHTING</b>																								
• Motorists	7	1	4	6	6	2	4	4	4	6	2	-2	7	5	0	2	0	2	10	-2	8	2	2	6
• Cyclist	8	3	1	5	5	4	3	1	5	6	1	-1	9	3	0	6	7	2	3	5	7	2	3	5
• Pedestrian	6	1	5	5	4	4	4	0	8	2	2	6	7	4	1	3	9	1	2	8	5	3	4	2
<b>LANDSCAPE</b>																								
• Trees	2	4	6	-2	6	3	3	3	5	3	4	2	7	2	3	5	4	4	4	0	5	4	3	1
• Shrubs	3	4	5	-1	3	4	5	-1	3	5	4	-2	6	3	3	3	6	4	2	2	6	3	3	3
• Street furniture	2	5	5	-3	2	5	5	-3	1	7	4	-6	4	4	4	0	5	2	5	3	2	2	8	0
<b>MAINTENANCE</b>																								





### 6.4 GRAPHIC ANALYSIS OF SURVEY RESULTS

M.I.Road, Jaipur

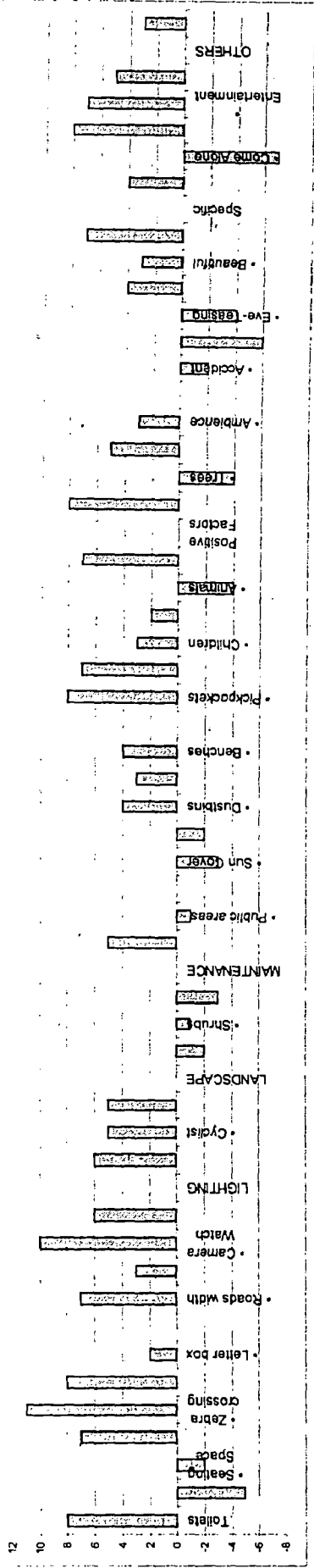


Fig: 6.1 People's perception of amenities at M.I.Road, Jaipur  
Kishan Pole Bazaar, Jaipur

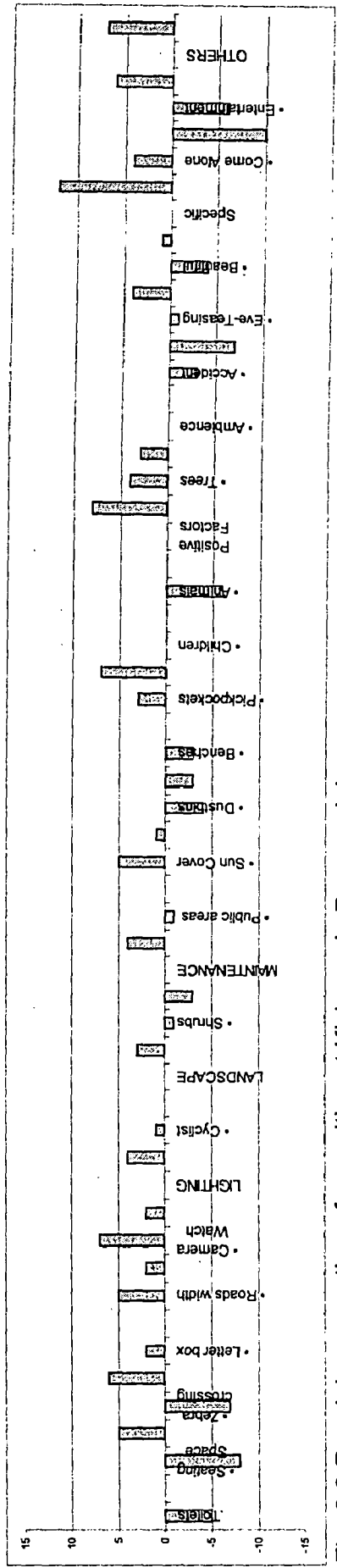


Fig: 6.2 People's perception of amenities at Kishanpole Bazaar, Jaipur



### Civil Lines, Roorkee

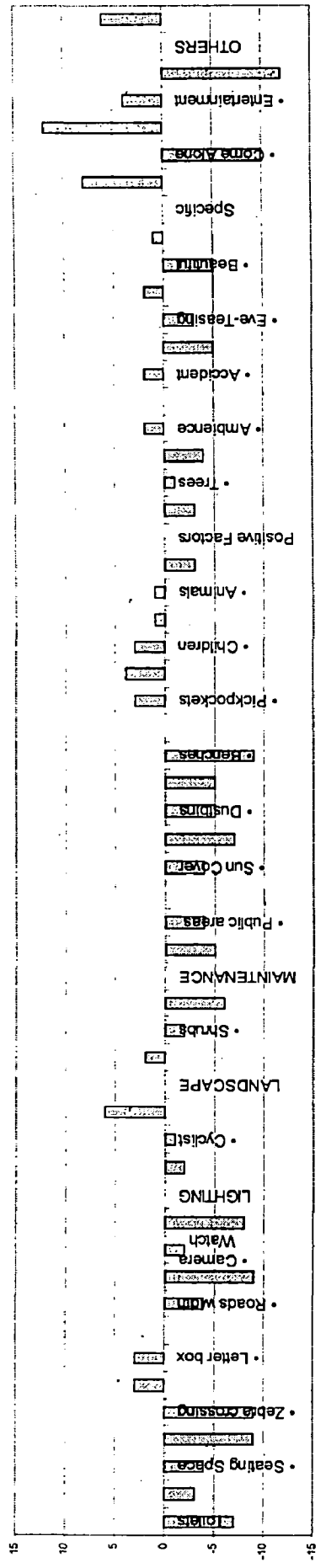


Fig: 6.3 People's perception of amenities at Civil Lines, Roorkee

### Rajpur Road, Dehradun

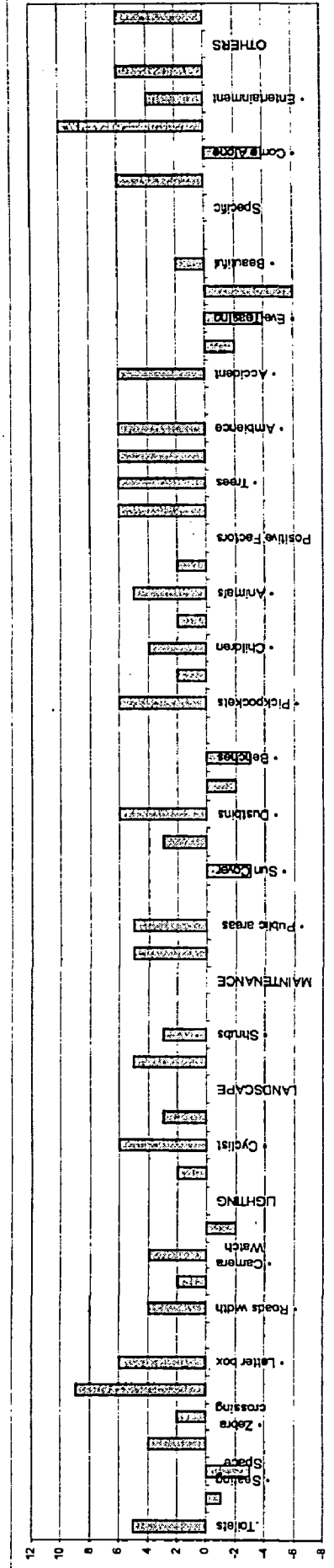


Fig: 6.4 People's perception of amenities at Rajpur Road, Dehradun

Jeta Bera, Jaisalmer

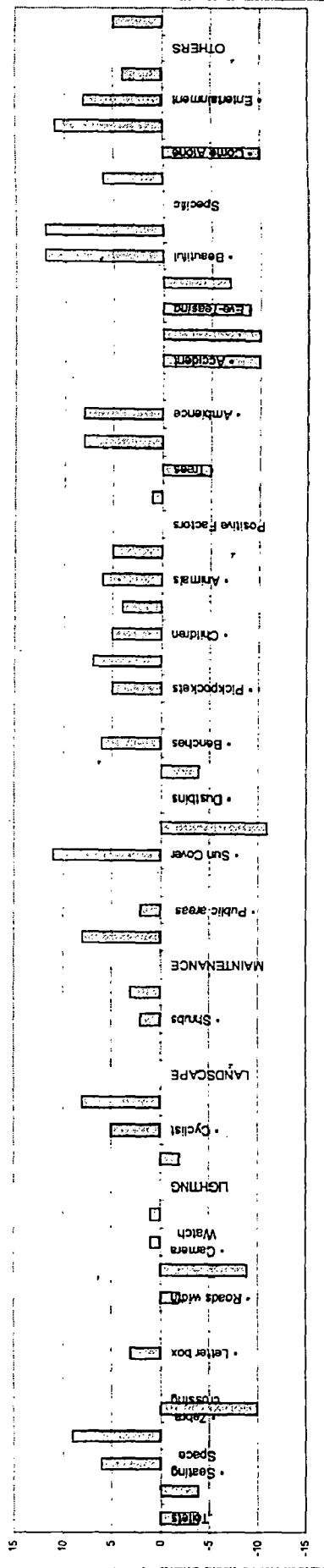


Fig: 6.5 People's perception of amenities at Jeta Bera, Jaisalmer

M.G.Road, Agra

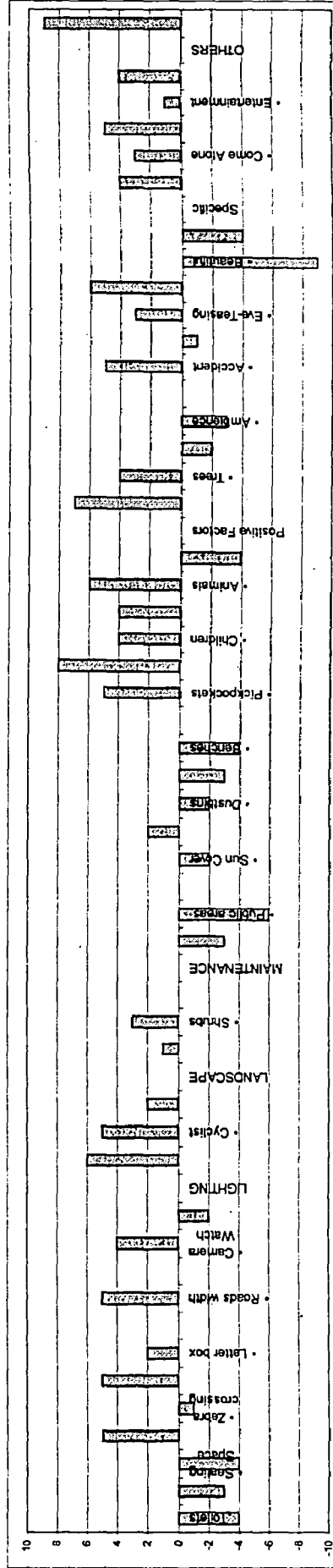


Fig: 6.6 People's perception of amenities at M.G. Road, Agra

## 6.5 COMPARATIVE ANALYSIS OF CASE STUDIES BASED ON SURVEY

This is public opinion about various features of the street, and of the author. The author does not intend any disregard to any street setting or any city or culture.

This survey indicates to the various factors that influence the behavioral tendencies and reaction of people towards streets. The sample size is 24 and the man unit has been halved for the sake of easy tabulation.

### Various Amenities

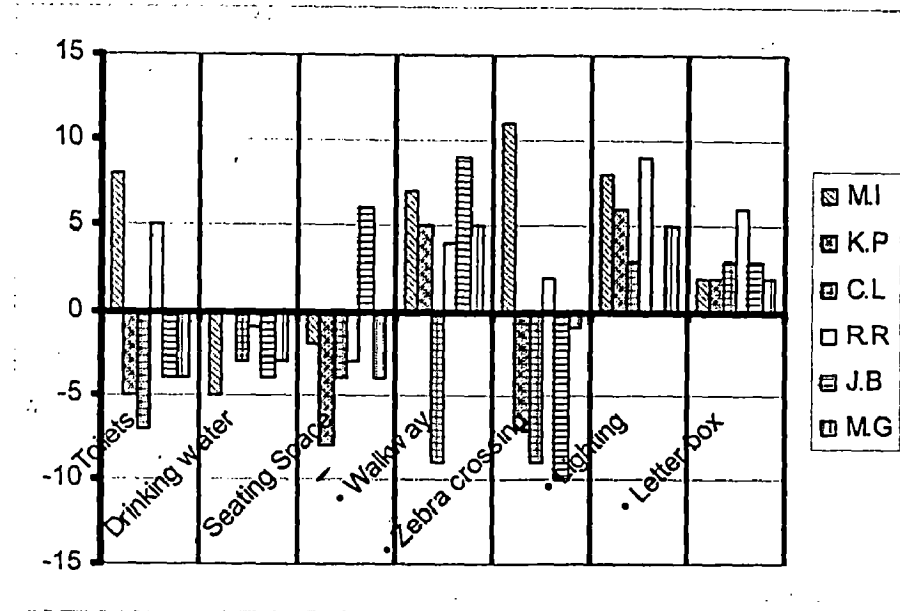


Fig: 6.7 Comparative analysis of amenities in case studies

### Circulation

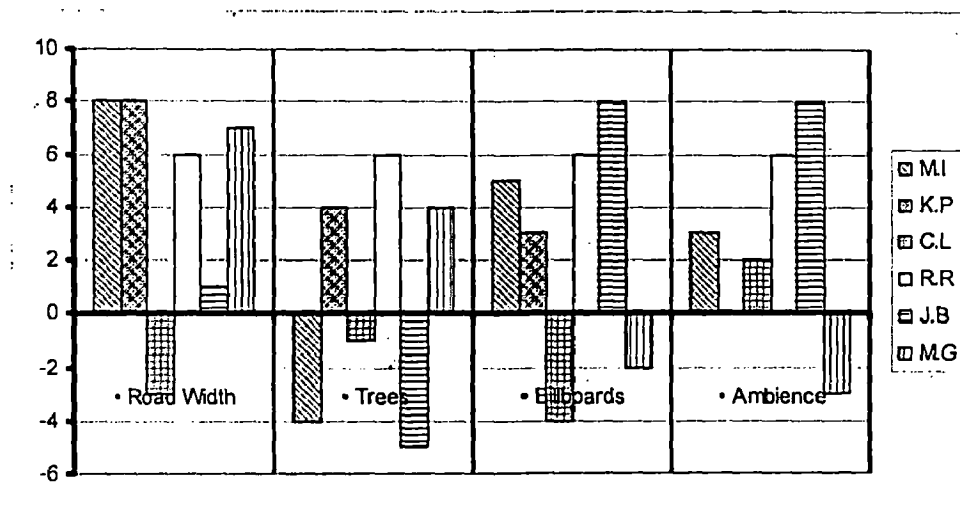


Fig: 6.8 Comparative analysis of Circulation in case studies

### Lighting

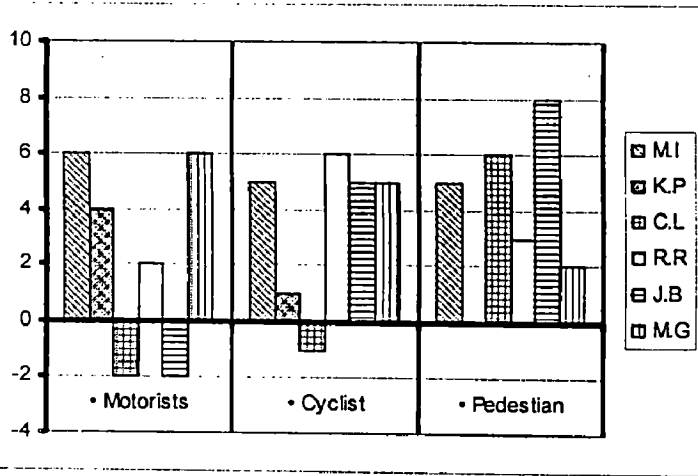


Fig: 6.9 Comparative analysis of Lighting in case studies

### Landscape

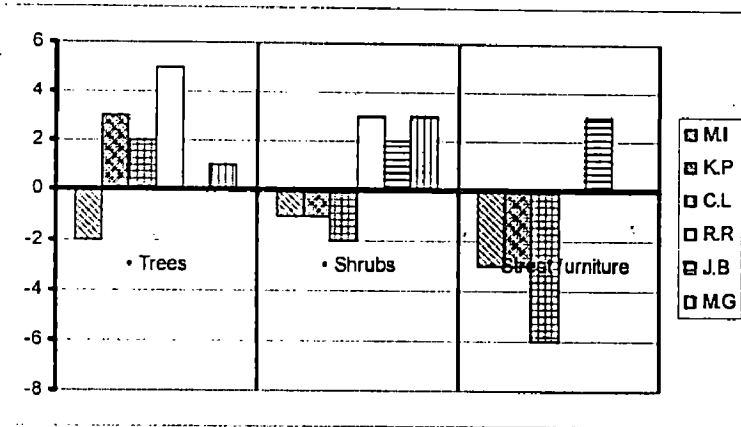


Fig: 6.10 Comparative analysis of Landscape in case studies

### Maintenance

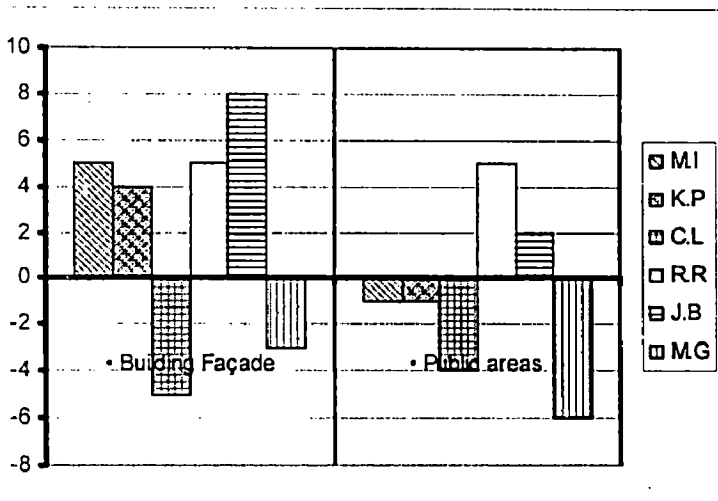


Fig: 6.11 Comparative analysis of Maintenance in case studies

### Comfort

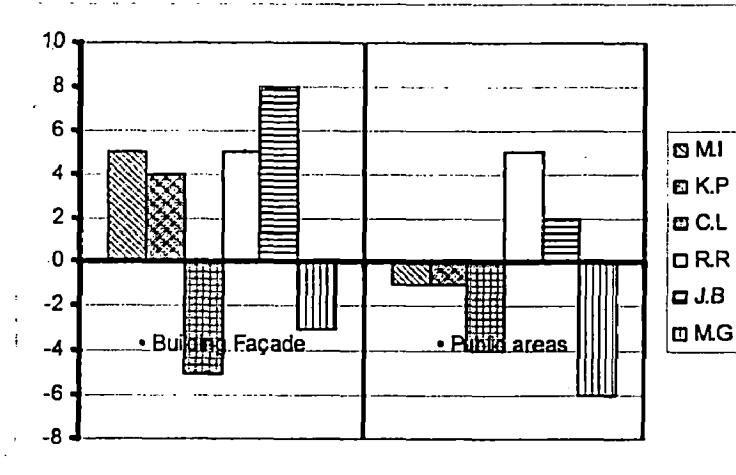


Fig: 6.12 Comparative analysis of Comfort in case studies

### Safety

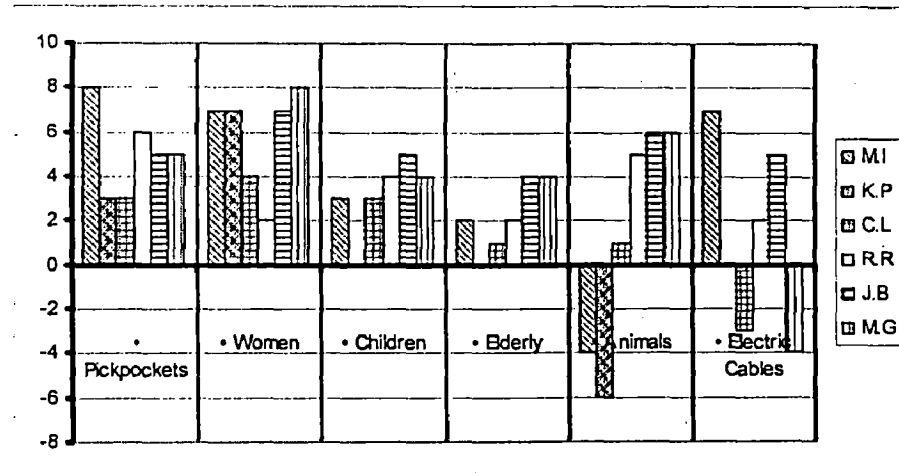


Fig: 6.13 Comparative analysis of Safety in case studies

### Positive Factors

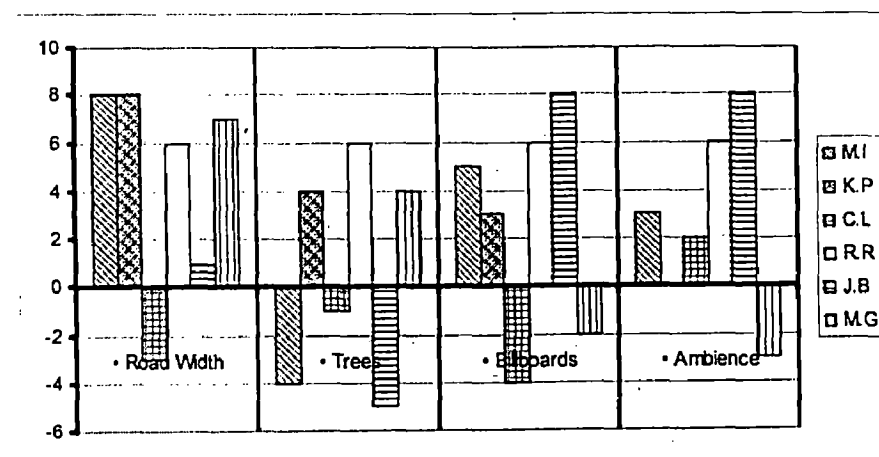


Fig: 6.14 Comparative analysis of Positive Factors in case studies

### General

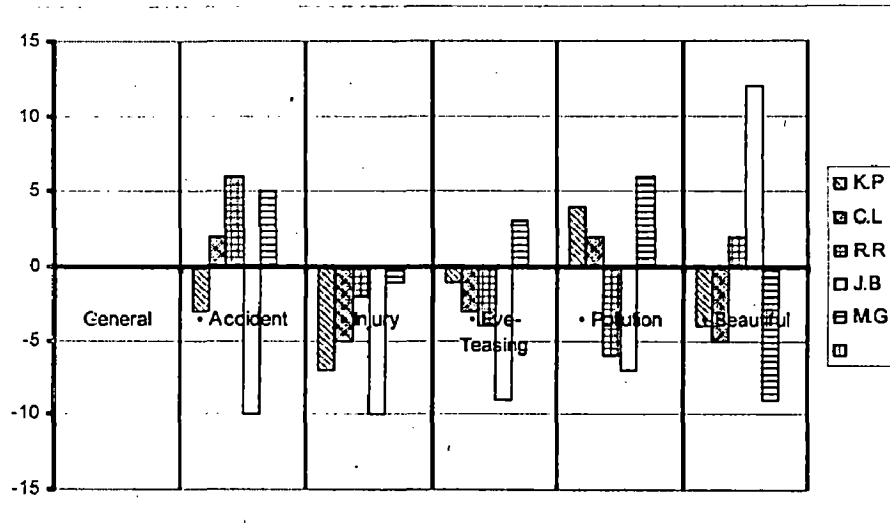


Fig: 6.15 Comparative analysis of General factors in case studies

### Specific

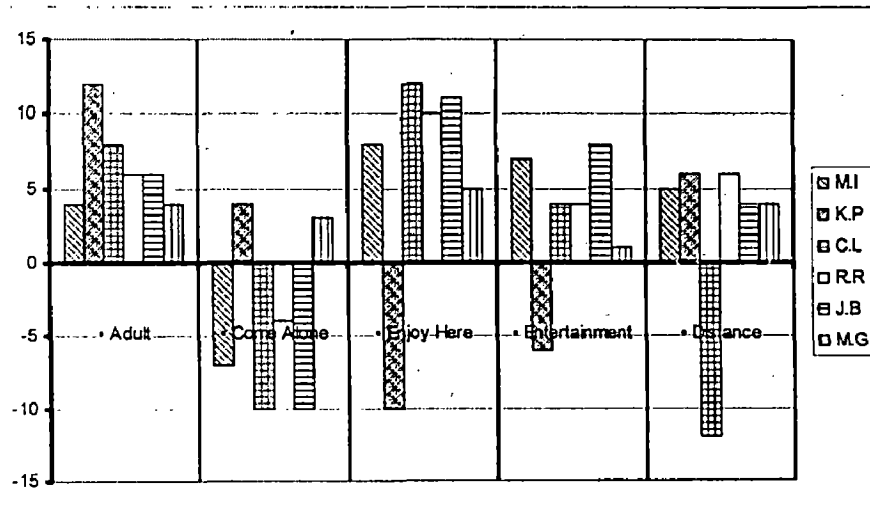


Fig: 6.16 Comparative analysis of Specific factors in case studies

### Others

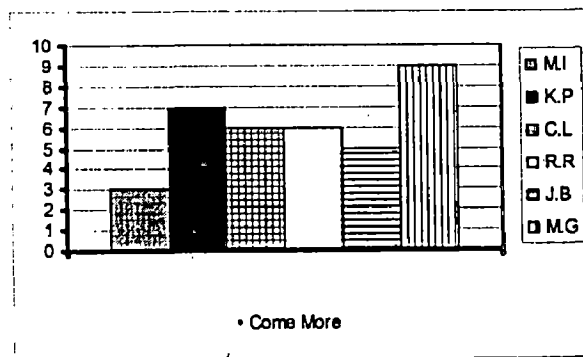


Fig: 6.17 Comparative analysis of Other factors in case studies

## **CHAPTER 7: CASE STUDIES**

### **7.1 PHYSICAL IMPLICATION**

After the extensive literature study, and surveys we are now in a position to be able to frame design criteria for the fulfillment of basic human needs. These criteria can be directly inferred from the study of the preceding chapters.

#### **Physiological Needs**

Physiological needs are concerned with the fulfillment of shelter, health and comfort needs. The provision of shelter is the concern of the planning authorities and regulatory bodies of the area. Discussed below are the performance criteria for the fulfillment of comfort needs in urban spaces.

#### **The Behavioural Program**

In developing the behavior settings required to meet human physiological needs, there are three major areas of concern to the urban designer:

- (1) The activities-the behavior settings system-required for survival, health, and development,
- (2) The qualities of the milieu required to afford those activity patterns, and
- (3) The ambient conditions required to make the carrying out of those activities comfortable.

#### **The Performance Criteria**

1. Climatic comfort
2. Visual comfort
3. Sonic comfort
4. Olfactory comfort
5. Physical comfort
  - 5.1 The horizontal surface
  - 5.2 Seating areas

## **Safety and Security Needs**

Safety and security needs are concerned with both physiological and psychological security.

### **The Behavioural Program**

Meeting physiological and psychological safety and security needs raises two broad areas of urban design concern. Designing for physiological security involves designing the behaviors that are likely to take place in different settings under different conditions and dealing with many of the criteria that meet the comfort needs of people. Psychological needs are subtler.

There are five interrelated concerns in developing the behavioral program to provide for people's safety and security needs:

- (1) The degree of segregation of incompatible uses,
- (2) The degree of surveillance-natural and artificial-of everyday life,
- (3) The mechanisms for attaining the appropriate level of privacy for the behaviors in which we engage,
- (4) The attainment of a sense of orientation in place and time, and
- (5) A sense of place-social and geographical.

### **The Performance Criteria**

#### **1. Physiological security**

- 1.1. From harmful bacteria and pollutants
- 1.2. From natural disasters
- 1.3. For horizontal surfaces
- 1.4. From Automobiles
- 1.5. Antisocial Behaviour

#### **2. Psychological security**

- 2.1 Orientation in a cosmological system
- 2.2 Orientation in geographic space



### **Affiliation needs**

The fulfillment of these needs focuses on making people associate with, or feel related to the place they are in. It is all about the human need to belong.

#### **The Behavioral program**

Unless one supports a purely laissez-faire process for developing future societies, it is clear that much public policy concerned with providing an environment in which people can meet their affiliation needs must first deal with social planning issues.

#### **The Performance Criteria**

1. The activity of hanging out
2. Events
3. A sense of place
4. Promenading
5. Landmarks
6. Symbols
7. Context

### **Esteem needs**

These are concerned with holding oneself in high esteem and being held in esteem by others.

#### **The Behavioural Program**

The behavioral program to fulfill esteem needs must cover three areas:

- (1) The provision of learning opportunities for the development of abilities,
- (2) The provision of opportunities to display skills, and
- (3) The display of the symbols of success to oneself and to others.

#### **The Performance Criteria**

1. Development of competence
2. Display of skills
3. Display of status
4. Controlling the design process
5. The Spatial configuration

## **Self-Actualization needs**

### **The Behavioural Program**

A habitat rich in opportunities for learning and aesthetic appreciation for their own sakes, and not for any instrumental rewards, is what self-actualized people will seek. Almost any environment provides these opportunities, but self-actualized people, while capable of making themselves at home anywhere, will seek places that meet their own criteria of beauty, not to boost their self-esteem, but for the sheer pleasure those places give them. Similarly, environments rich in the provision of cognitive needs will best enrich the lives of self-actualized people.

### **The Performance Criteria**

1. Aesthetic appreciation
2. Cognitive experiences
3. Variety.

## **Cognitive Needs**

This warrants the provision of an informal educative environment.

### **The Behavioral program**

An educative environment is one rich in learning opportunities for personal growth and for performing expressive acts. There are a number of concerns in devising a generic behavioral program that affords people the opportunities to fulfill their cognitive needs. The concerns, potentially, have design implications. The concern is with supporting and/or devising activity patterns associated with four highly interrelated behaviors: learning or exploring life tasks, exploring for its own sake, testing oneself, and expressing oneself. Often the same behavior pattern affords all four experiences simultaneously. The first and third behaviors are clearly aspects of competence development whether for instrumental ends or not, the second and fourth are somewhat different. Exploratory and expressive acts may serve developmental ends but they may also serve no end other than self-expression-they may be purely expressive acts-and can be self-testing.

### **The Performance Criteria**

- 1) A variety of behavioural opportunities

- 2) Vicarious participation in the lives of others.
- 3) Opportunities for expressive acts.

### **Aesthetic Needs**

This fulfills the human craving for beauty and pleasure.

### **The Behavioral Program**

If it is to meet people's aesthetic needs, any behavioral program to be used as a basis for urban design must recognize the following:

(1) The aesthetic character of the environment is very much due to the behavior settings that exist in the public realm—the places that a city, or a precinct within it, possesses:

(2) People's aesthetic experience of these places is multi modal

(3) Expressive behavior is part of the aesthetic experience of many people

(4) While the fundamental nature of an aesthetic experience is universal, what are regarded as pleasurable characteristics of a behavior setting or simply its milieu will vary by personality, stage in life cycle, socioeconomic status and, above all, culture.

### **The Performance Criteria**

1. Sensory experience
2. Formal experience
3. Sequential experience
4. Symbolic aesthetics
5. Art in the environment

### 7.1.1 CASE STUDY ANALYSIS TOOL

The case studies were evaluated according to the following table. The first column lists the urban design objective (which in this case is the need considered); the second lists the performance criteria of that need. The third column is of the strengths of that development as to how it fulfills those criteria, and the last column lists the weaknesses of that case to satisfy the aforementioned criteria.

BASIC	Strengths	Weaknesses
HUMAN NEED		
Performance Criteria		

Table: 7.1 Case study analysis tool

## 7.2 CHAMS ELYSS

France is a complex country with many layers of society and activity and presents a strange mix of old and new, subtle and brash, expensive and cheap. The capital Paris known as the Fashion capital of world, is an enormous sprawling city with a population of about 6 million- only from the air at night can one get an idea of how large it really is, 'with lights stretching into the far distance in almost every direction.

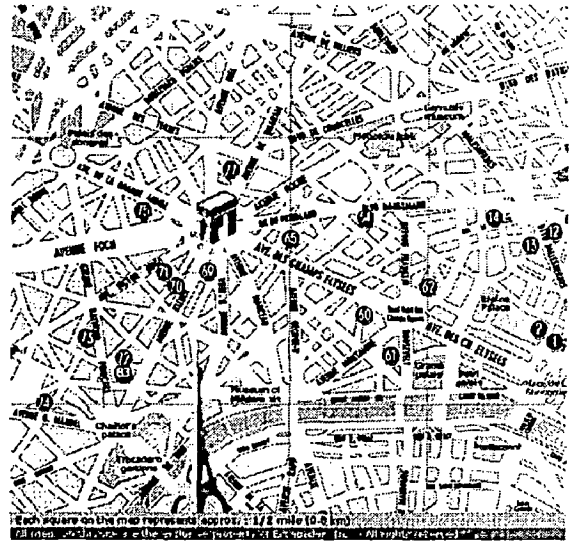


Fig 7.1 Key Plan

Paris is a frantic, energetic, purposeful, automated place. Chams Elyss is famous street connecting Palace de la Concorde to Arche De Triomphe. The Arch, which is a symbol of French victory, is a monumental area with twelve roads emanating from it. The famous Eiffel tower stands 1.8 Km south of the Arch.

The street is 2.0 Km long and runs south-east to north-west. Near the Palace it is accompanied by river Siene. It supports four lane traffic in both directions (total eight lanes). It is served by service lanes on both the side and abutted by 7-8 storied buildings.beyond the service lanes.

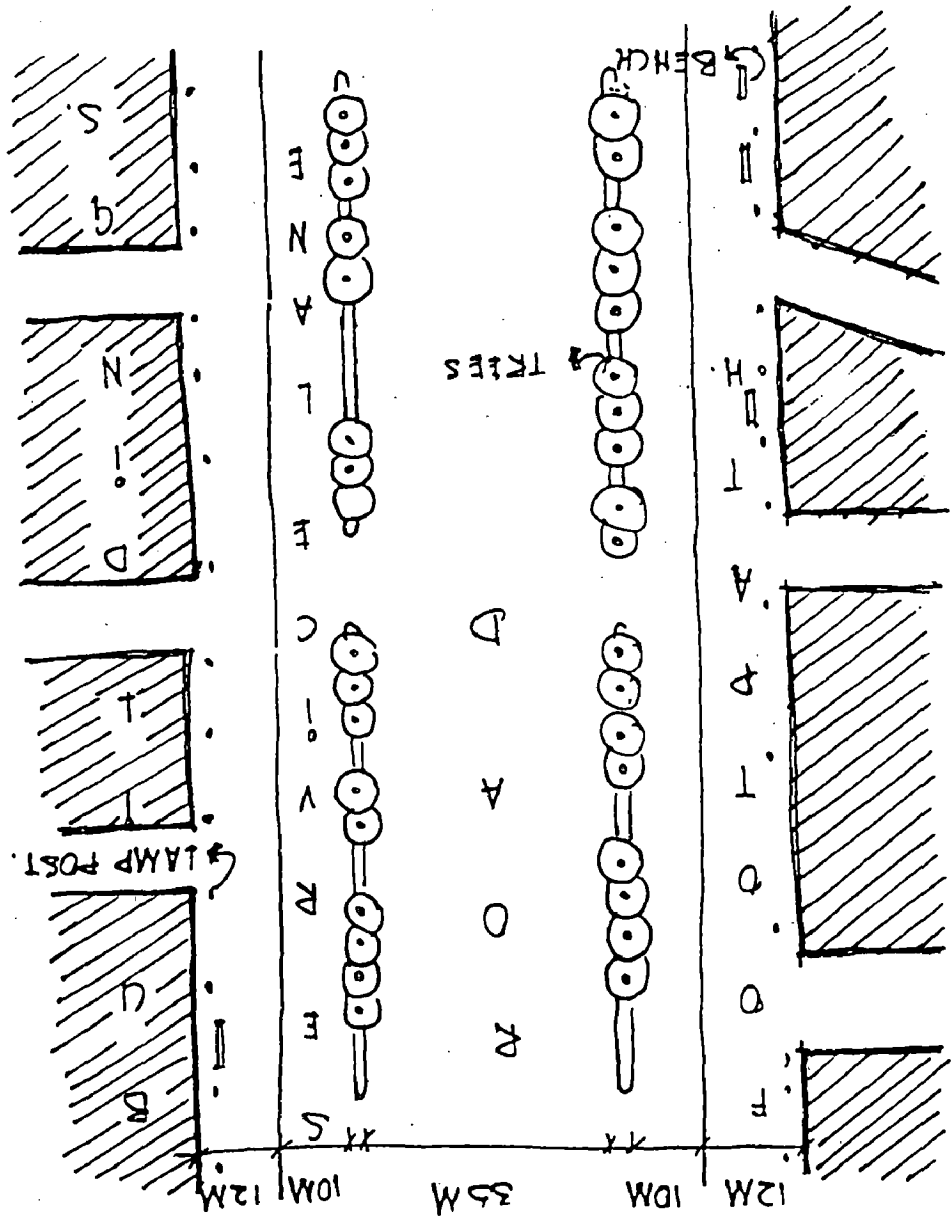
The street has various showrooms eateries, and other buildings. The lower floors are used for commercial purpose whereas the upper floors are residential. The overall usage is mixed, not following specific patterns.



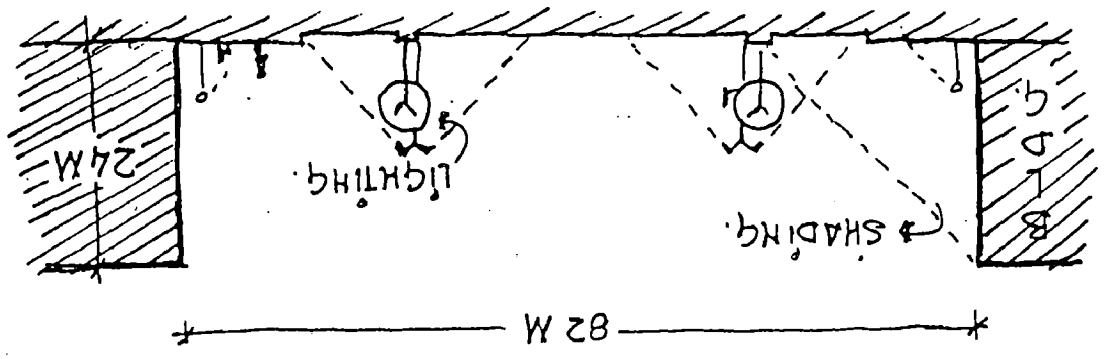
It serves motorists as well as pedestrians, also gives access to metro train stations which are sub grade. If it has space for big brands there is also space for street vendors and small time artists, which amuse people, while they are lunching/ dining. The trees form a stupendous vista and the lighting underneath it accentuates the effect at night.

Fig 7.2 Street view

PLAN.



SECTION



## 7.2.1 THE DESIGN ASSESSMENT, CHAMS ELYSS, PARIS

Performance criteria	Strengths	Weakness
<b>Physiological needs</b>		
Climatic comfort	vegetation	No corridors/ arcades
Visual comfort	Well- lit	
Sonic comfort		traffic noise
Olfactory comfort	establishments that exude pleasant odors- eateries, coffee cafes	
Physical comfort	paved flooring, comfortable seating	
<b>Safety and security needs</b>		
Pollutants		heavy traffic
Non slippery	horizontal surface hard/paved	
Automobiles	pedestrianized sidewalks	
Anti- social behaviour	Natural surveillance, mixed use, well developed, good illumination	
<b>Affiliation needs</b>		
Hanging out	gathering place, eateries, recreation	
Events	painters	
Sense of place, enclosure	proportion 1:1, good enclosure	
Promenading	broad walking area, shop fronts	
Landmarks	arche de triomphe	
Symbols	a sense of identity	
Context	façade controlled	
<b>Esteem needs</b>		
Development of competence	open spaces	
Display of skills	side walks	
Display of status	high status area, commercial	
Spatial configuration	Linear Geometry, colours: bright and cheerful	
<b>Self-actualization needs</b>		
Aesthetic appreciation	regular façade	
Cognitive experiences	educative history	
Variety	Mixed uses	
<b>Cognitive needs</b>		
Behavioral opportunities	Mixed uses, natural elements, broad walking areas	no formal/ adventure
Vicarious participation		
Opportunities for expressive acts		
<b>Aesthetic needs</b>		
Sensory experience	pants/ trees and flowering shrubs	texture of the surfaces

		colours (white and grey)
Formal experience	rhythm of windows symmetry	
Sequential experience	vista	linear geometry
Symbolic aesthetics	street furniture and signages and street furniture	none
Public art	architectural expression, in signages and street furniture	none

Table 7.2 Analysis of Champs Elysees



### 7.3 REGENT STREET , LONDON

London being the capital of colonial British Empire has a history that dates back to long times. The famous squares and streets of London invariably find mention in literature and other manuscripts. Regent street, Piccadilly circus, Trafalgar Square are a few to mention.

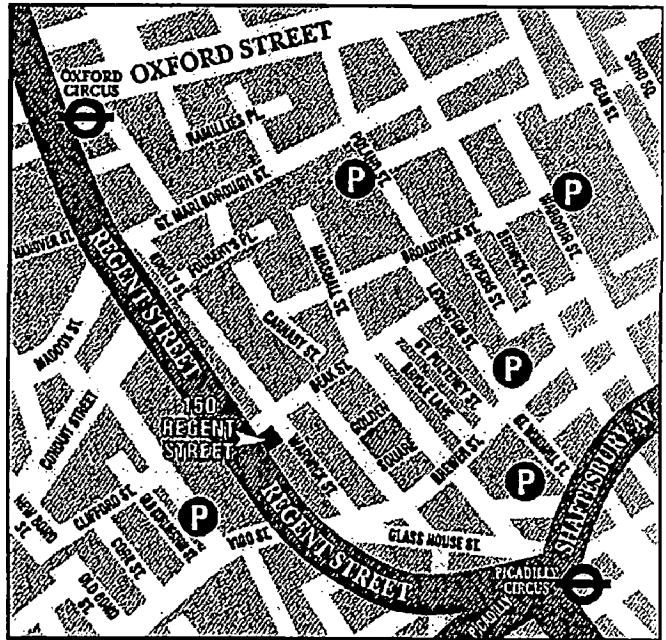


Fig 7.4 Key Plan Of Regent Street

The street has a winding shape and then runs from south east to north west. The curve of the regent street is the high point of the design and was strategically done by the designer John Nash. The length of the street is 0.8 km and is 21 m wide. The street carries two lane traffic on both sides ( total four lane), and is thus quite comparable to the width of Indian streets.

The street is abutted by four storied buildings with colonnaded arches at the ground floor. The height of the abutting buildings is 15 m with the lower floor with additional height. The buildings are ornamented at the crown level and present a visual delight for the pedestrians.



Fig 7.5 Sense of anticipation

The street is served by pedestrian walkways 2.5 m wide on both the sides. Because of the height width proportion of 1.33:1 the sense of enclosure is heightened and imbues physiological security in the mind of people. This also keeps half width of the street shady. There is a marked absence of trees but a couple of small planters can be seen. The winding curve arouses a sense of anticipation in the passerby and keeps hidden the vast sprawl of Piccadilly Circus until one reaches there.

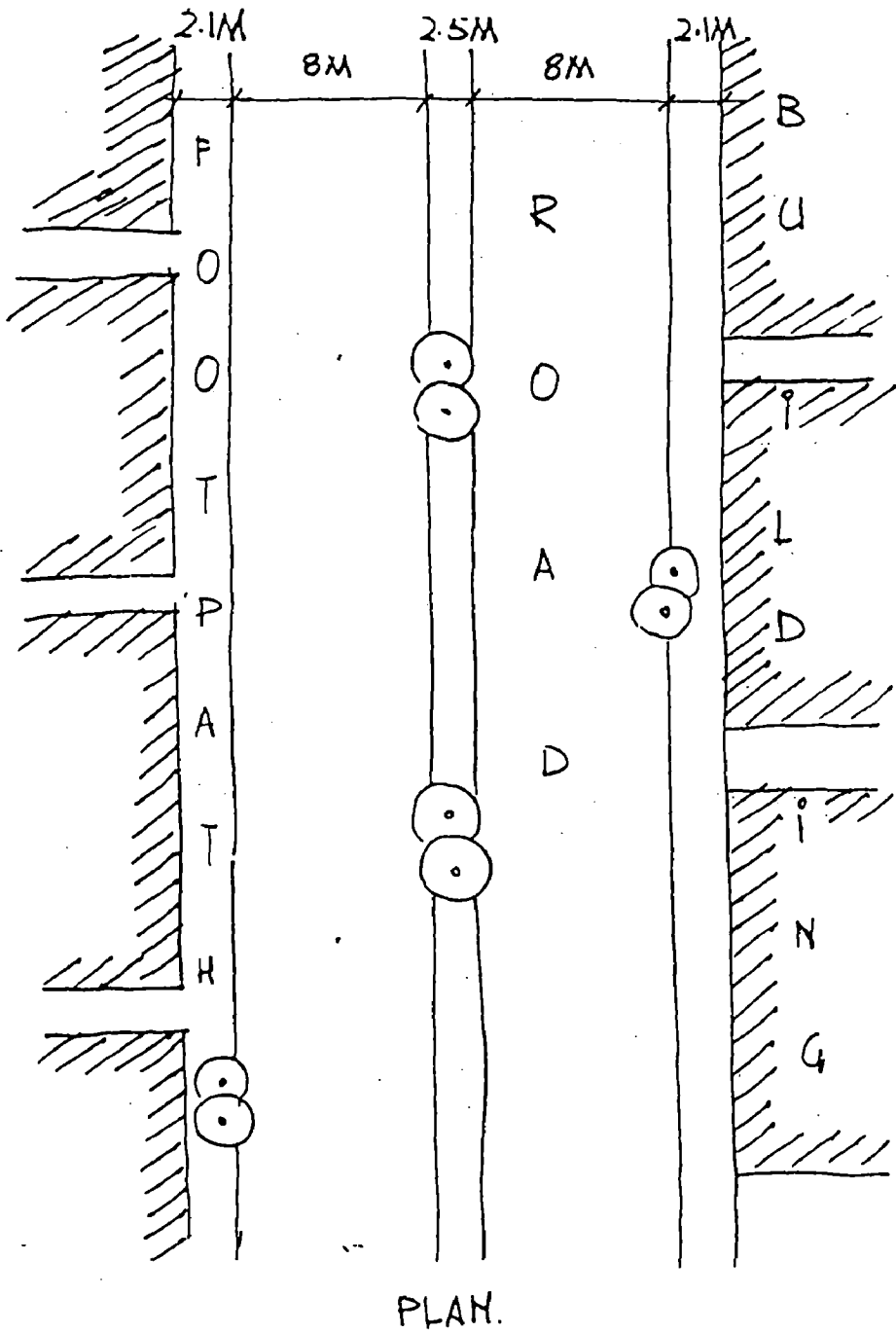
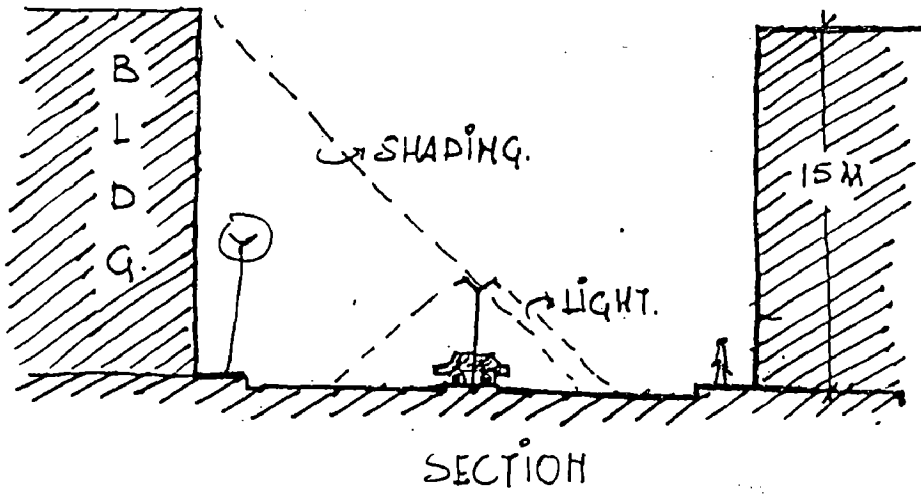


FIG 7.6 REGENT STREET LONDON.

### 7.3.1 THE DESIGN ASSESSMENT, REGENT STREET, LONDON

Performance criteria	Strengths	Weakness
<b>Physiological needs</b>		
Climatic comfort	corridors outside shops	no trees
Visual comfort		no glare
Sonic comfort		noise and echo of traffic
Olfactory comfort	some flowering plants suspended	lacks trees
Physical comfort	paved flooring	no public seating at all
<b>Safety and security needs</b>		
Pollutants		none
Non slippery	horizontal surface hard/paved	
Automobiles	pedestrianized space provided	
Anti- social behaviour	Natural surveillance, mixed use, well developed	
<b>Affiliation needs</b>		
Hanging out		no public seating
Events		no place for events to be held
Sense of place, enclosure	well bounded, central commercial street, good enclosure	
Promenading	broad walking area, colonnaded shop fronts	
Landmarks	the Piccadilly circus	
Symbols	a sense of identity	
Context	visual continuity	
<b>Esteem needs</b>		
Development of competence	small open spaces	no play area, park
Display of skills		no such place
Display of status	high status area	
Spatial configuration	order, continuity	white colour
<b>Self-actualization needs</b>		
Aesthetic appreciation	the building façade	
Cognitive experiences		not specific
Variety		single use commercial
<b>Cognitive needs</b>		
Behavioral opportunities	broad walking areas	no formal/ adventure
Vicarious participation		no seating, people watching places
Opportunities for expressive acts		less open spaces, buildings of same time
<b>Aesthetic needs</b>		
Sensory experience	texture of the surfaces	no flowering plants/trees
Formal experience	geometry of the street	
Sequential experience	a lane leading off to Piccadilly	none
Symbolic aesthetics	Architectural style of bldgs.	
Public art		no public art

Table 7.3 Analysis of Regent Street

## 7.4 M.I.ROAD, JAIPUR

Jaipur is one of the heritage cities of India (Famously called as Pink City). The walled city of Jaipur developed by Sawai Raja Jai Singh is known for its grid iron pattern planning and efficient road network.

M.I.Road runs towards south of walled city and is oriented east-west majorly. The road is 4 km long and runs from Ajmeri Gate to Raliway Station. It is primarily a commercial street with two lane traffic on both sides (total four lane). It is 19.0 m wide with 2.1 m Pedestrian path on sides at some of the places.



Fig 7.7 Vernacular architectural detail

Commercial buildings on both sides, which reflect architectural styles from the old eras to the modern glass buildings, abut it. Their height varies from 9 to 24 meter and is a rich mix in terms of style and variety. There are a couple of landmarks on the street that vary from lassi shop to Rajmandir(Cinema hall), Govt.Hostel Chowk.

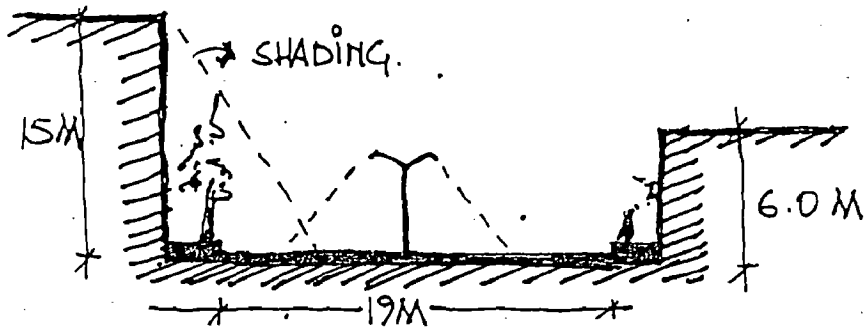


Fig 7.8 Kiosks with advertisement

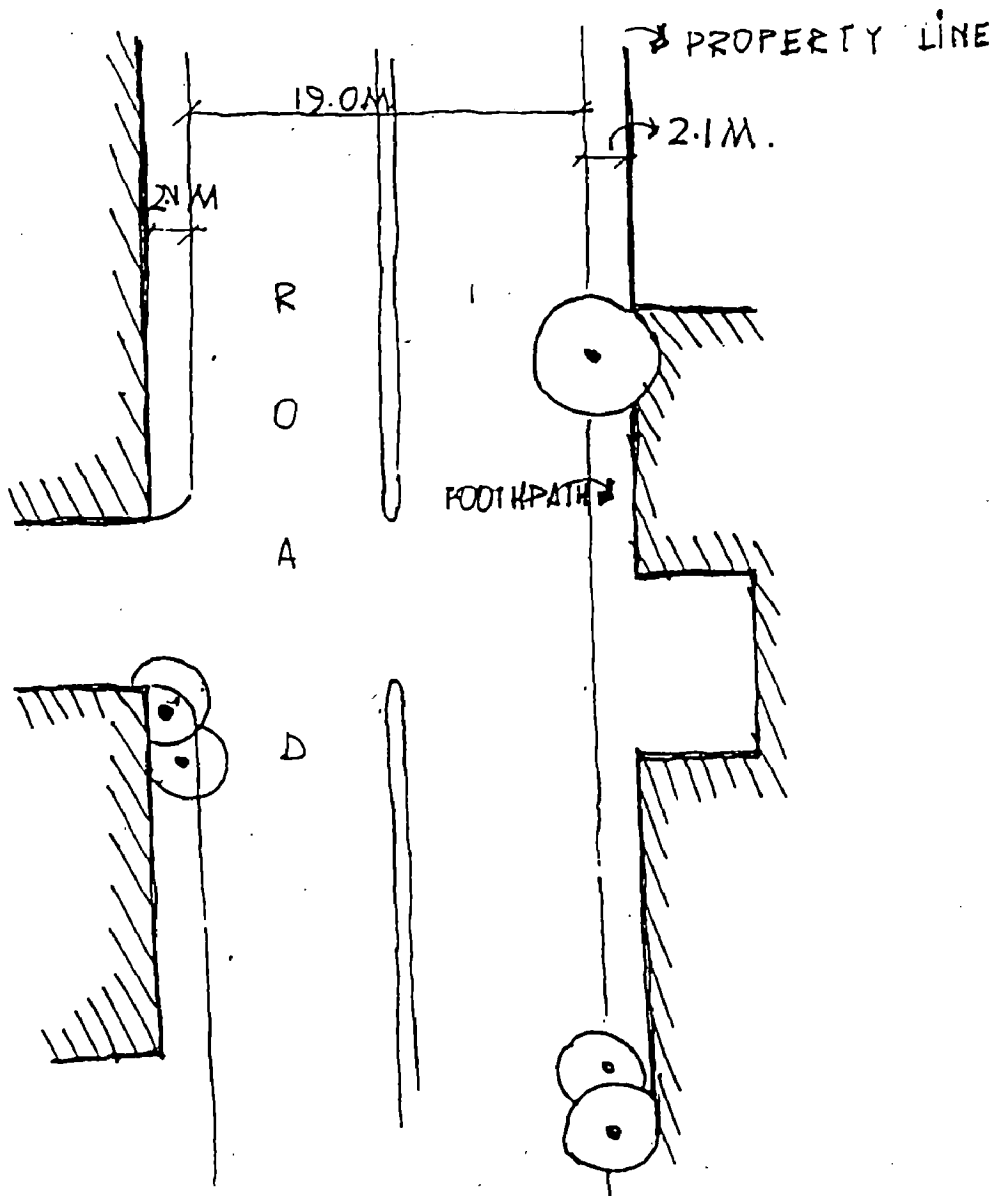
The street has pedestrian path at few stretches, which are absent at others; this reflects the piece meal development of the street. The street has divider at some places and at most of the places it is without any divider or kerb.

The street has some trees on sides and street lites are at sides and at central roundabouts. Because of its orientation it is shaded uptill 1:00 P.M. and henceforth becomes unpleasant till the sunset as the climate of jaipur is hot Arid.

There is no specific parking place and the vehicles are parked on street side which runs short and is tough handle. The street has been made one way from 9:15 to 12:15 A.M. in morning and 4:15 to 7:15 P.M. in evening. This avoids traffic jams at peak hours but at the same time is a stimulant for the vehicle drivers to drive fast.



SECTION



PLAN

FIG 7.9 M.I. ROAD JAIPUR.

### 7.4.1 DESIGN ASSESSMENT, M.I.ROAD, JAIPUR

Performance criteria	Strengths	Weakness
<b>Physiological needs</b>		
Climatic comfort	Corridors outside shops	Less trees
Visual comfort	Well- lit at night	
Sonic comfort		Noise of traffic
Olfactory comfort		Not much of plantation
Physical comfort	Paved concrete flooring	No proper seating areas
<b>Safety and security needs</b>		
Pollutants	Good sanitation	Plastic and litter
Non slippery	Chequered conc. Tiles	
Automobiles	Pedestrianised space at places	
Anti- social behaviour	Natural surveillance, good illumination	Some areas become deserted at night
<b>Affiliation needs</b>		
Hanging out	Gathering place, eateries, recreation	No seating
Events	Ram Niwas Bagh at close quarter	
Sense of place, enclosure	Central commercial area	Irregularly bound
Promenading	Shop fronts	
Landmarks	Rajmandir cinema	
Symbols	A sense of identity by old bldgs	
Context	In context with the city of jaipur	
<b>Esteem needs</b>		
Development of competence		No parks
Display of skills		None
Display of status	High status area, commercial	
Spatial configuration	Geometry, linear with turns at places creating serial vision	
<b>Self-actualization needs</b>		
Aesthetic appreciation	The building façade of bldgs	Incoherence of neighbouring bldgs
Cognitive experiences	Educative environment	
Variety	Mixed uses	
<b>Cognitive needs</b>		
Behavioral opportunities	Mixed uses, walking areas	
Vicarious participation	People watching opportunities	Seating places
Opportunities for expressive acts		Accessible open spaces
<b>Aesthetic needs</b>		
Sensory experience	Texture of the surfaces has variety	No flowering plants/ trees
Formal experience	The buildings	
Sequential experience	Turns at various points	
Symbolic aesthetics	The chatris	
Public art	Architectural expression of comm.. area	No public art on the road
Table 7.4 Analysis of M.I.Road		



## 7.5 KISHANPOLE BAZAAR, JAIPUR

Kishanpole bazaar is the street connecting Ajmeri Gate to Choti choupar in the walled city of Jaipur. This street is an imbibed part of the planned city. The street is famous for marketing of daily goods and attracts tourists because of its location. The souvenirs shops have followed as a result of it being flocked by tourists.

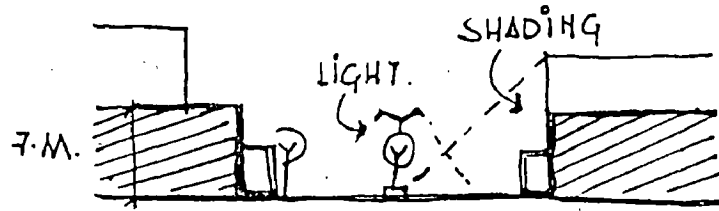
The street is aligned north south with an incline towards east and follows the geometrical gridiron pattern of the walled city of Jaipur. It is a 550 m long stretch with two way traffic lane on both sides. The street is 25 m wide and is abutted by two storied buildings i.e 6-7 m. there is minimum sense of enclosure because of proportion of 1:4:

As it falls under walled city area it adheres to the façade restriction in terms of colonnaded pathways and pink color, which has made Jaipur so famous.

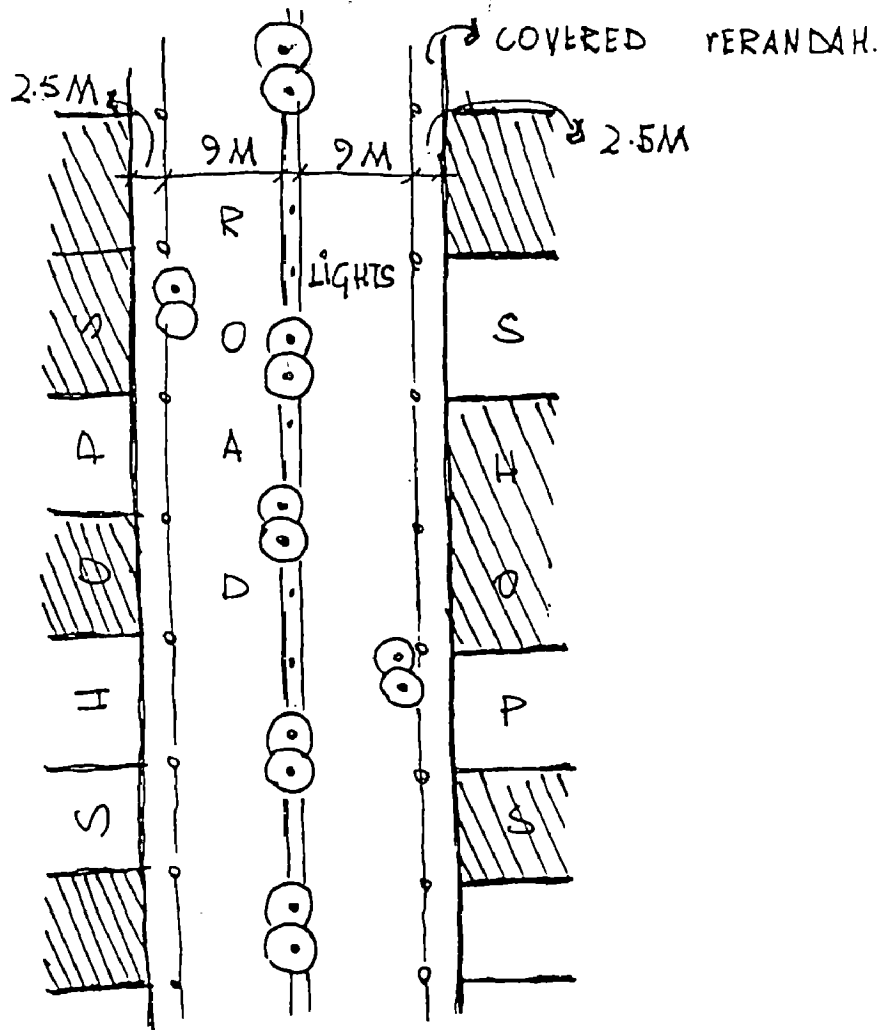
Because of the north south orientation the street is self shaded during the peak sun hours that is from 1 P.M till sunset, this makes it very convenient for shopping, unlike M.I.Road. The street has a divider running in the center and it houses streetlights which illuminate the street at night.



Fig 7.10 Traffic chaos



SECTION.



PLAN.

FIG 7.11 KISHAN POLE BAZAAR, JAIPUR.

### 7.5.1 THE DESIGN ASSESSMENT, KISHANPOLE BAZAAR, JAIPUR

Performance criteria	Strengths	Weakness
<b>Physiological needs</b>		
Climatic comfort	Corridors outside shops	Less trees
Visual comfort	Well- lit at night	
Sonic comfort		Noise of traffic
Olfactory comfort		Not much of plantation
Physical comfort	Paved concrete flooring	No proper seating areas
<b>Safety and security needs</b>		
Pollutants	Good sanitation	Plastic and litter
Non slippery	Chequered conc. Tiles	
Automobiles	Pedestrianised space at places	
Anti- social behaviour	Natural surveillance, good illumination	Some areas become deserted at night
<b>Affiliation needs</b>		
Hanging out	Gathering place, eateries, recreation	No seating
Events	Ram Niwas Bagh at close quarter	
Sense of place, enclosure	Central commercial area	Irregularly bound
Promenading	Broad walking area in front of shops	
Landmarks	Choti choupar	
Symbols		no sense of identity
Context	Reference to jaipur	
<b>Esteem needs</b>		
Development of competence	Open spaces at choupar	
Display of skills		None
Display of status	Average status area, commercial activities	
Spatial configuration	Geometry, linear with turns at places creating serial vision	none
<b>Self-actualization needs</b>		
Aesthetic appreciation	The building façade	
Cognitive experiences		
Variety	Different shops	
<b>Cognitive needs</b>		
Behavioral opportunities	Mixed use, walking areas seating, People watching opportunities	no playground
Vicarious participation		
Opportunities for expressive acts	Accessible open spaces	
<b>Aesthetic needs</b>		
Sensory experience	colours flowering plants/ trees	
Formal experience	The buildings, harmony symmetry	
Sequential experience		None
Symbolic aesthetics		None
Public art	Architectural expression	None

Table 7.5 Analysis of Kishan Pole Bazaar

## 7.6 CIVIL LINES, ROORKEE

Roorkee is basically an institutional town, with a modest population of 90,000. Civil Lines is the street that caters to the shopping and leisure needs of the institute people and the rest of the population of the town.

The street is curvilinear in form with abutting buildings two and three storeyed high. The height of the abutments varies from 7-10 meters. The street is 13 m wide with metallic portion of 7 m. on the two sides there is no regular surface finish. It is 700 m long stretch. The street is oriented north south.

It houses shops restaurants and provision stores i.e this is a typical mixed use street. Overall it offers large variety of architectural experiences. There is ample variety of uses from shopping to walk to worship (temple). It faces mixed mode of transport.

Because of its orientation the street remains shaded during the peak heat hours. There is no paved path for the pedestrians. Because of the proportion of building height and road width (1:2) it has a high sense of enclosure.



Fig 7.12 Vivid signage



Fig 7.13 Encroachment/ spillover



Fig 7.14 Multiple transport



Fig 7.15 Mixed usage

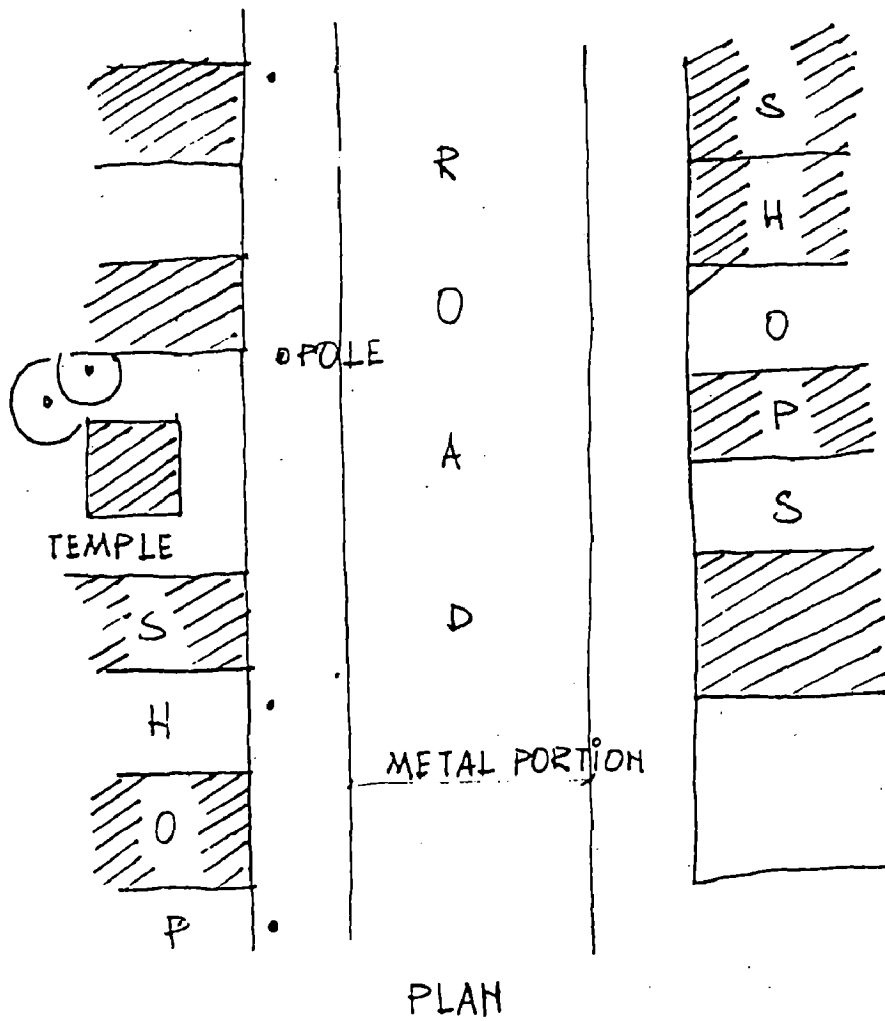
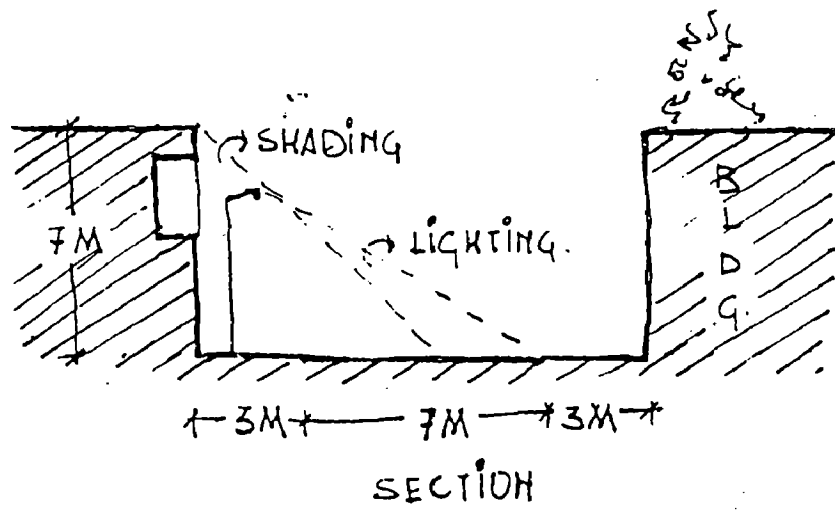


FIG 7-16 CIVIL LINES, ROORKEE

### 7.6.1 THE DESIGN ASSESSMENT, CIVIL LINES, ROORKEE

Performance criteria	Strengths	Weakness
<b>Physiological needs</b>		
Climatic comfort	Orientation NW-SE	No corridors/ arcades
Visual comfort	Well- lit	
Sonic comfort		traffic horns
Olfactory comfort	Established that exude pleasant odors- eateries	
Physical comfort		No paved path, mixed transport
<b>Safety and security needs</b>		
Pollutants		traffic pollution
Non slippery		lacks paved surface
Automobiles		no zebra crossing, red light
Anti- social behaviour	Natural surveillance, well developed, mixed use	
<b>Affiliation needs</b>		
Hanging out	Gathering place, eateries, recreation	
Events		none
Sense of place, enclosure	Central commercial area, good enclosure	
Promenading		none
Landmarks	patiala lassi wala	
Symbols		none
Context	mix of old and new buildings	
<b>Esteem needs</b>		
Development of competence		lacks open spaces
Display of skills		None
Display of status	High status area, commercial & leisure activities	
Spatial configuration	curvilinear Geometry	
<b>Self-actualization needs</b>		
Aesthetic appreciation		incongruent facades
Cognitive experiences		none
Variety	Mixed uses	
<b>Cognitive needs</b>		
Behavioral opportunities	Mixed uses	no parks
Vicarious participation	seating, People watching opportunities	No seating, people - watching places
Opportunities for expressive acts		lacks open spaces
<b>Aesthetic needs</b>		
Sensory experience		no greens
Formal experience		none
Sequential experience	sense of anticipation	
Symbolic aesthetics		None

Table 7.6 Analysis of Civil Lines, Roorkee

## 7.7 RAJPUR ROAD, DEHRADOON

Dehradun the capital city of Uttarakhand has developed manifolds after the formation of the new state out of the larger state called Uttar Pradesh. Rajpur Road is the prime road in Dehradun which houses mixed uses from commercial activities to Public buildings to houses of Govt servants. Overall it offers large variety of architectural experiences.

The street is oriented east west and runs from Ghantaghar to Missouri road. The street is brightly lit by sunlight during the peak hours due to its east west orientation.



Fig 7.17 Lack of Image

It is 19 m wide with abutting buildings varying in height from 6 m to 15 m. the street proportion being 1:3 to 1:1 also varies in the sense of enclosure that it offers. There is no specific provision of parking and street side parking can be seen very often.

Near the clock tower there are two toilets and then for the entire stretch of the 4-5 km there are no toilets. The street has level variations at various points; the need to encounter the terrain has made it more interesting.



Fig 7.18 Streetscape



Fig 7.19 Façade Treatment

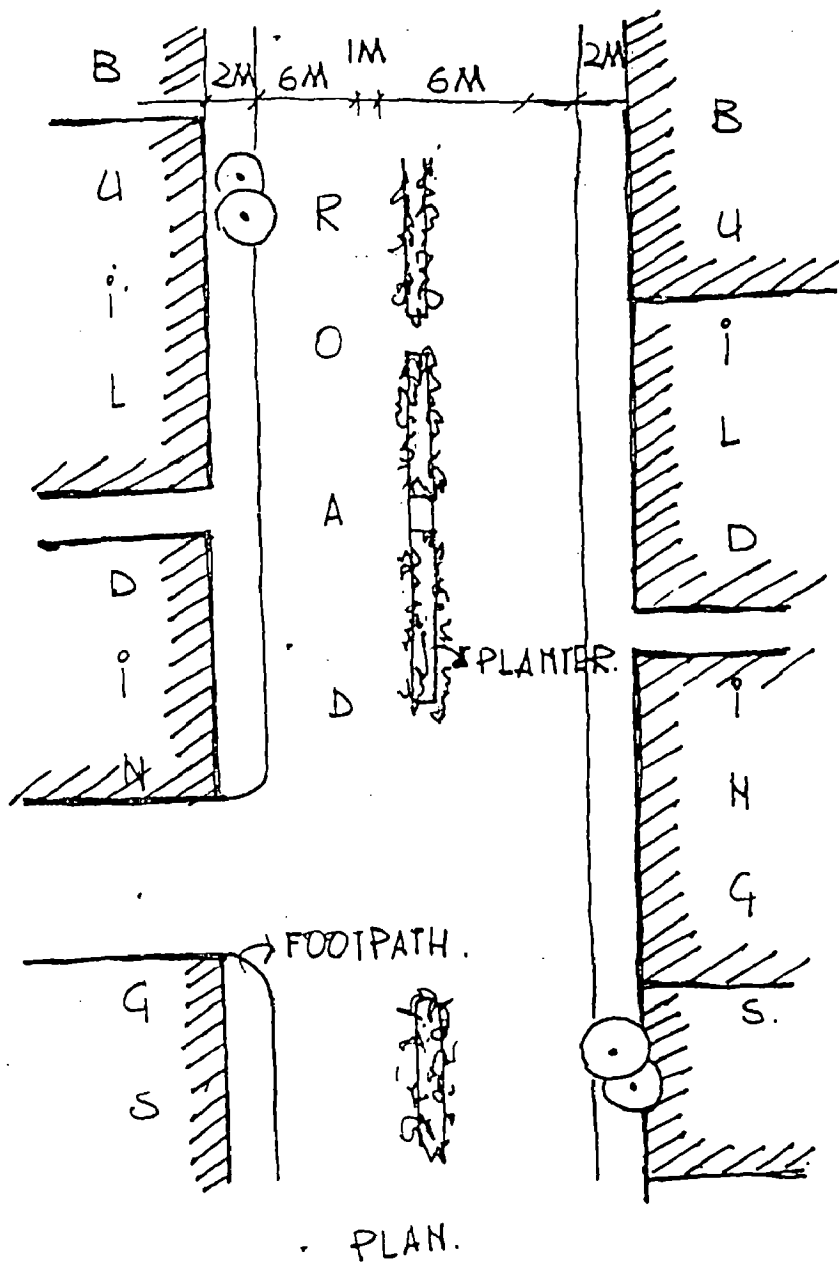
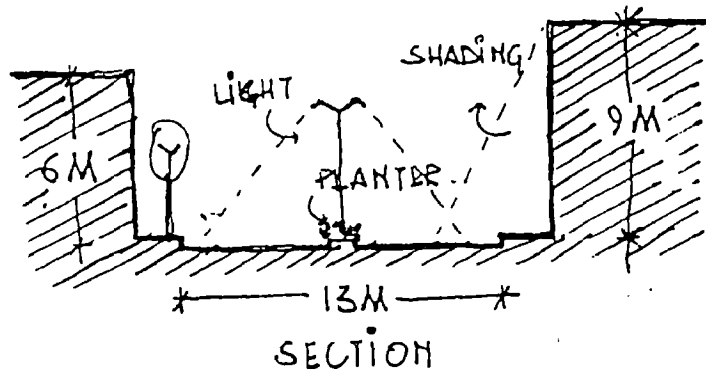


FIG 7.20 RAJPUR ROAD DEHRADOON



### 7.7.1 THE DESIGN ASSESSMENT, RAJPUR ROAD, DEHRADOON

Performance criteria	Strengths	Weakness
<b>Physiological needs</b>		
Climatic comfort		No corridors/ arcades
Visual comfort	Well- lit	
Sonic comfort		traffic
Olfactory comfort	Established that exude pleasant odors-eateries	Not much of plantation
Physical comfort		No paved path
<b>Safety and security needs</b>		
Pollutants		traffic pollution
Non slippery		lacks paved surface
Automobiles		no zebra crossing
Anti- social behaviour	Natural surveillance, well developed, mixed use	
<b>Affiliation needs</b>		
Hanging out	Gathering place, eateries, recreation	
Events		none
Sense of place, enclosure	Central commercial area	
Promenading		none
Landmarks	Ghantaghar	
Symbols		none
Context	successful mix of old and new buildings	
<b>Esteem needs</b>		
Development of competence	Open spaces	
Display of skills		None
Display of status	High status area, commercial & leisure activities	
Spatial configuration	Linear Geometry	none
<b>Self-actualization needs</b>		
Aesthetic appreciation	The building façade	
Cognitive experiences		none
Variety	Mixed uses	
<b>Cognitive needs</b>		
Behavioral opportunities	Mixed uses	no formal/ lawn
Vicarious participation	seating, People watching opportunities	No seating, people - watching places
Opportunities for expressive acts		Accessible open spaces
<b>Aesthetic needs</b>		
Sensory experience	the greens	
Formal experience		lacks symmetry
Sequential experience	the difference of levels	None
Symbolic aesthetics		None
Public art		None

Table 7.7 Analysis of Rajpur Road, Dehradun

## 7.8 JETA BERA STREET, JAISALMER

Jaisalmer, the historical town is located in the western state of Rajasthan. Jeta bera is a street oriented east west and is a reflection of rich architectural style of Rajasthan. The street is 75 m long and 3 m wide. The abutting buildings are 2-3 storied high thus the ration being 1:3 and providing full enclosure.

In negotiating the sloppy terrain the streets have become even more interesting. The street is not very long and turns after 70-80 m. With fairly high buildings and width of street rarely more than three meters, one can move around in cool shade. Thus we can term it as a pedestrian street and very limited traffic flow.

Street has at times certain pauses, which are very strategic points, either serving as a focal revival or for interaction between people. Generally it is moulded with subtle curves enhancing the view of the richly ornamented buildings and also not exposing the entire view of the façade all at once, thus making a walk an interesting experience.

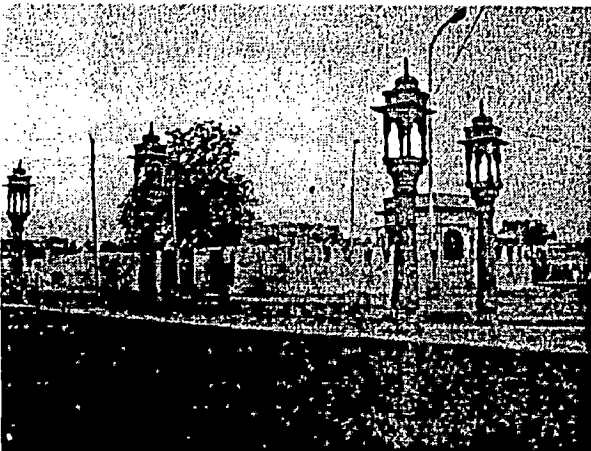


Fig 7.21 Design element



Fig 7.22 Shading pattern

The buildings have small 'chabutras' meant for interaction between people and also gives the street a sense of place. The building facades are rich with the stone carvings and the traditional vernacular style of architectural detailing. The detail also varies from building to building but there is some underlying commonality in terms of binding thread.

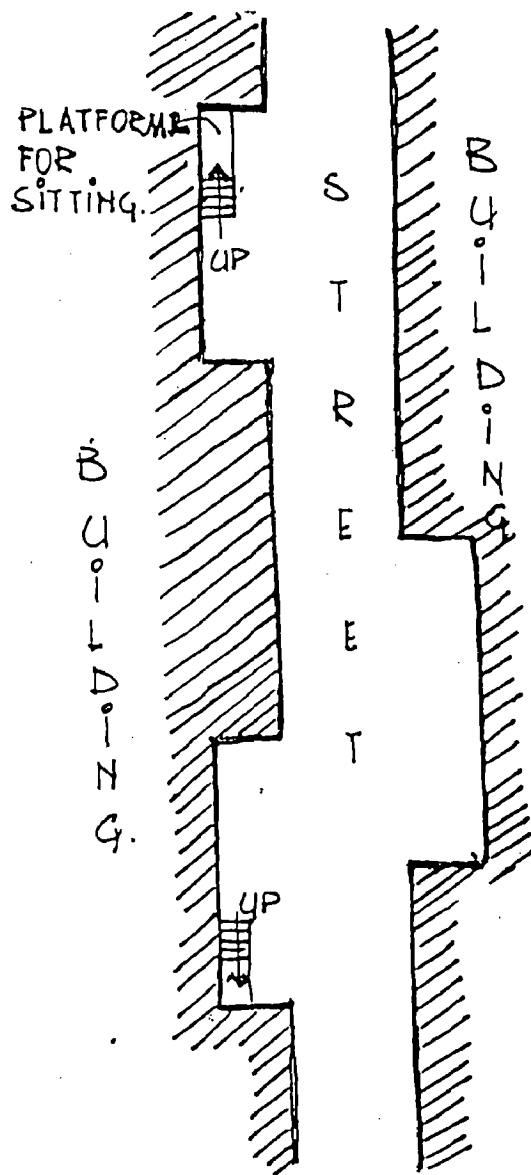
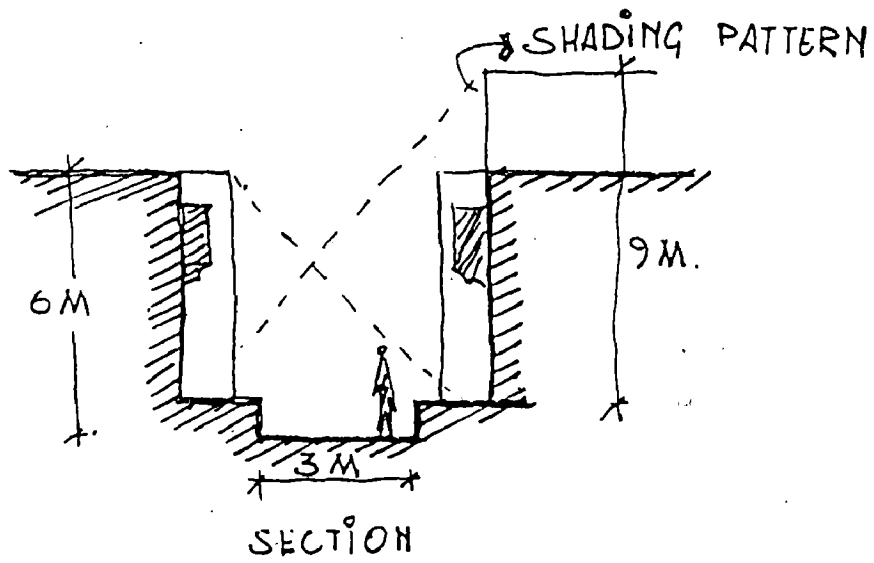


FIG 7.23 JETA BERA STREET, JAISALMER

### 7.8.1 THE DESIGN ASSESSMENT, JETA BERA, JAISALMER

Performance criteria	Strengths	Weakness
<b>Physiological needs</b>		
Climatic comfort	Self shading technique	
Visual comfort	Well- lit	
Sonic comfort	no noise	
Olfactory comfort		none
Physical comfort	paved flooring, comfortable chabutras	
<b>Safety and security needs</b>		
Pollutants	none	
Non slippery	horizontal surface hard/ paved	
Automobiles	pedestrianised space	
Anti- social behaviour	Natural surveillance, mixed use	
<b>Affiliation needs</b>		
Hanging out	Gathering place, eateries, recreation	
Events	chabutras	
Sense of place, enclosure	well bounded by high buildings	
Promenading		none
Landmarks	the royal square	
Symbols	a sense of identity	
Context	reference to rajasthan architecture	
<b>Esteem needs</b>		
Development of competence	Open spaces	
Display of skills	chabutras	
Display of status	commercial & leisure activities	
Spatial configuration	Linear Geometry	
<b>Self-actualization needs</b>		
Aesthetic appreciation	The rich building façade	
Cognitive experiences	educative environment	
Variety	Mixed uses	
<b>Cognitive needs</b>		
		no formal/ adventure playground
Behavioral opportunities	Mixed uses	
Vicarious participation	seating, People watching street	
Opportunities for expressive acts	accessible open spaces	
<b>Aesthetic needs</b>		
Sensory experience	colours of the environment	
Formal experience	geometry of the piazza, the buildings, harmony symmetry	lacks symmetry
Sequential experience	serial vision	
Symbolic aesthetics	jharokhas	
Public art	architectural expression of rajasthan	

Table 7.8 Analysis of Jeta Bera, Jaisalmer

## **7.9 INFERENCES**

Below are mentioned the inferences that have been found above after analysis of surveys and case studies. It lists the common points that were found to be strong factors that contributed to the fulfillment of basic human needs. These are supposed to be the factors that would contribute to the design of a humane street.

### **7.9.1 DESIGN PARAMETERS FOR PHYSIOLOGICAL NEEDS**

Physiological needs are concerned with the fulfillment of shelter, health and comfort needs. The provision of shelter is the concern of the planning authorities and regulatory bodies of the area. Discussed below are the performance criteria for the fulfillment of comfort needs in urban spaces.

#### **1. Climatic comfort**

- From Rain:
  - Use of colonnades, arcades, corridors.
- From Sun:
  - Use of trees, awnings, canopies, arcades.
- Humidity:
  - Fountains, trees/vegetation, lakes/water bodies.
- Ventilation:
  - Building setbacks and site coverage regulations.

#### **2. Visual comfort**

##### **2.1 Ability to see phenomena**

- Sufficient illumination

##### **2.2 Freedom from glare**

#### **3. Sonic comfort**

- Zoning such that noisy industries, airports, etc. are located away from the urban space being designed.

#### **4. Olfactory comfort**

- Zoning to segregate noxious uses.
- Places to be so designed as to contain establishments, which exude pleasant odours – bakeries, eateries, coffee cafés, restaurants.
- Fragrant trees and flowering plants should be planted in such places.

## 5. Physical comfort

### 5.1 The horizontal surface

- Grass / paved /concrete as per design requirement.
- Should be non-slippery and gripping.

### 5.2 Seating areas

- Comfortable seating
- Shaded / under trees or canopies.
- Facing each other.

## 7.9.2 DESIGN PARAMETERS FOR SAFETY AND SECURITY NEEDS

Safety and security needs are concerned with both physiological and psychological security.

### 1. Physiological security

- From harmful bacteria and pollutants
  - Good sanitation
  - Location of noxious facilities away from commercial areas.
- From natural disasters
  - Building codes, zoning ordinances, engineering design principles, fireproof materials
- For horizontal surfaces
  - Non-slippery
  - Structurally sound surfaces
- From Automobiles
  - Pedestrianised urban spaces
- Antisocial Behaviour
  - Redesign and redevelopment of open spaces changes the image and use of space, so derelicts and delinquents etc. don't hang out there anymore.
  - Mixed-use establishments.
  - Natural surveillance.
  - Defensible Space
  - Good illumination levels – reduces opportunities for miscreants to hide.

## 2. Psychological safety

- Orientation in a cosmological system
  - Religious beliefs
  - Shilpa-sastras lay design guidelines.
- Orientation in geographic space
  - Imageability
  - Legibility – landmarks, nodes, paths, edges, districts.

### 7.9.3 DESIGN PARAMETERS FOR AFFILIATION NEEDS

The fulfillment of these needs focuses on making people associate with, or feel related to the place they are in. It is all about the human need to belong.

#### 1. The activity of hanging out

- Chabutras/ Amphitheatres – gathering places.
- Clubs / bars/ eateries.
- Public seating.

#### 2. Events

- Held in public places

#### 3. A sense of place

- Well-bounded by: natural features such as hills, rivers or by artificial elements such as parks, roads, rail.
- Node: a central business district, an activity/ commercial centre.

#### 4. Promenading

- Broad walking areas/ sidewalks.
- Open piazzas.
- Window shopping (shop fronts).
- Waterfronts.

#### 5. Landmarks

#### 6. Symbols

- Public Art
- A sense of identity

#### 7. Context

- Visual continuity: same mass as surroundings  
Same type as surroundings

Same colour as surroundings

Same materials as surroundings

- Vernacular tradition.

#### **7.9.4 DESIGN PARAMETERS FOR ESTEEM NEEDS**

These are concerned with holding oneself in high esteem and being held in esteem by others.

##### **1. Development of competence**

- Provision of playgrounds, parks, open spaces.

##### **2. Display of skills**

- Open theatres as part of urban spaces.
- Parks and play areas

##### **3. Display of status**

- Land-use: low/ high status areas
- Distinctive commercial areas.

##### **4. Controlling the design process**

- Participation
- Personalization

##### **5. The Spatial configuration**

- Geometry of the environment
- Character of the open space.
- Nature of vegetation.
- Materials used: positive and negative associations.
- Illumination: Bright and well lit: sense of well-being.
- Colours: good or bad taste.

#### **7.9.5 DESIGN PARAMETERS FOR SELF-ACTUALIZATION NEEDS**

The performance criteria to be fulfilled are:

1. Aesthetic appreciation
2. Cognitive experiences
3. Variety.



### **7.9.6 DESIGN PARAMETERS FOR COGNITIVE NEEDS**

This warrants the provision of an informal educative environment. This environment should afford:

- A variety of behavioural opportunities
- Vicarious participation in the lives of others.
- Opportunities for expressive acts.
- Street and block patterns that afford a variety of behaviour settings.
- Mixed uses in close juxtaposition with each other.
- A richness of formal institutions- such as libraries, museums, etc.
- Buildings of different eras.
- Accessible unmanicured open space both within the built environment and in natural areas.
- Broad sidewalks and good streets.
- Formal places for playing and for games.
- Adventure playgrounds.
- Natural elements of the landscape.
- Posters and plaques explaining important buildings and events.
- The ability to watch activity from safe areas.
- Sites for occasional activities such as fairs, fetes, street plays, musical programs, etc.

### **7.9.7 DESIGN PARAMETERS FOR AESTHETIC NEEDS**

This fulfills the human craving for beauty and pleasure. The setting should provide affordances for:

#### **1. Sensory experience**

- Flowering plants /trees.
- Textures of surfaces.
- Colours of the environment.

#### **2. Formal experience**

- Geometric pattern: proportion and rhythm.
- Degree of order.
- Degree of symmetry/ asymmetry.

### 3. Sequential experience

- Series of vistas: offers two kinds of settings: participatory and panoramic.
- The design task is to create occluding surfaces that obscure vistas.

### 4. Symbolic aesthetics

- Associational meanings of objects.

### 5. Art in the environment

- As a medium of architectural expression.

## CHAPTER 8: PROBLEM AREA

### 8.1 ABOUT THE AREA

Agra the city of 'Taj' has come a long way from the times of Mughal emperors and in the process of doing so has seen a lot changes. During the 16<sup>th</sup> century Akbar built Fateh-Pur-Sikri and ruled the country from there. Later Shahjahan built Taj Mahal in the memory of his late wife Mumtaj Mahal.

From the glorious past that the city has inherited not much could be retained in the current scenario. Now Agra is just a one day affair for any International tourist, though there is a lot commercial trade trick by the hoteliers of Delhi. At the same time the city has deteriorated in terms of quality of life, the experiences it offers to the users on the whole apart from 'Taj' and Fateh-Pur-Sikri.

The city is very famous for shoes and 'Petha'. The trade of the city relies on these two things apart from the tourism. The city is a developing town with a population of about 13 lakh. The sprawl of the city is roughly a circle with a diameter of 15 km. The natural terrain is flat and the climate is hot and dry except during monsoons.

Off late there have been a lot of problems on the road affecting the day-to-day life of users. Though it might not be very apparently visible, but the first statement we get from any acquaintance is the bickering about the traffic, noise, pollution and other problems of street.

Above circumstances made me to choose the area for the proposal and improvement.

## 8.2 M.G. ROAD AGRA

The main business district of the city is Sanjay Place which houses a couple of Hotels, offices of LIC, State Bank of India and numeral other companies.

M.G. Road is the spinal commercial road of the city running across the diameter and connecting the N.H.2 to Taj mahal. The road stretch is about 14 km.

Study area has been limited only up to St. John's crossing considering the limited time frame of the research.

The stretch is 26 m wide with buildings abutting it from double storied to eight storied. There is a marked lack of sense of enclosure. The stretch has turns and they might prove to make the street interesting as the vision forward does not get lost.

The street stretch lacks a binding thread in terms of visual appraisal. The different architectural styles from Greek to 'C.P.W.D' exists on the stretch. Signages are another big trouble varieng from all sizes and forms to graphics. The landmark points on the street do not catch attention (are inconspicuous).

There is paved path on both sides of the street but it is not continuous, also trees are planted in between it, hence effectively reducing the width to half and rendering them unusable.

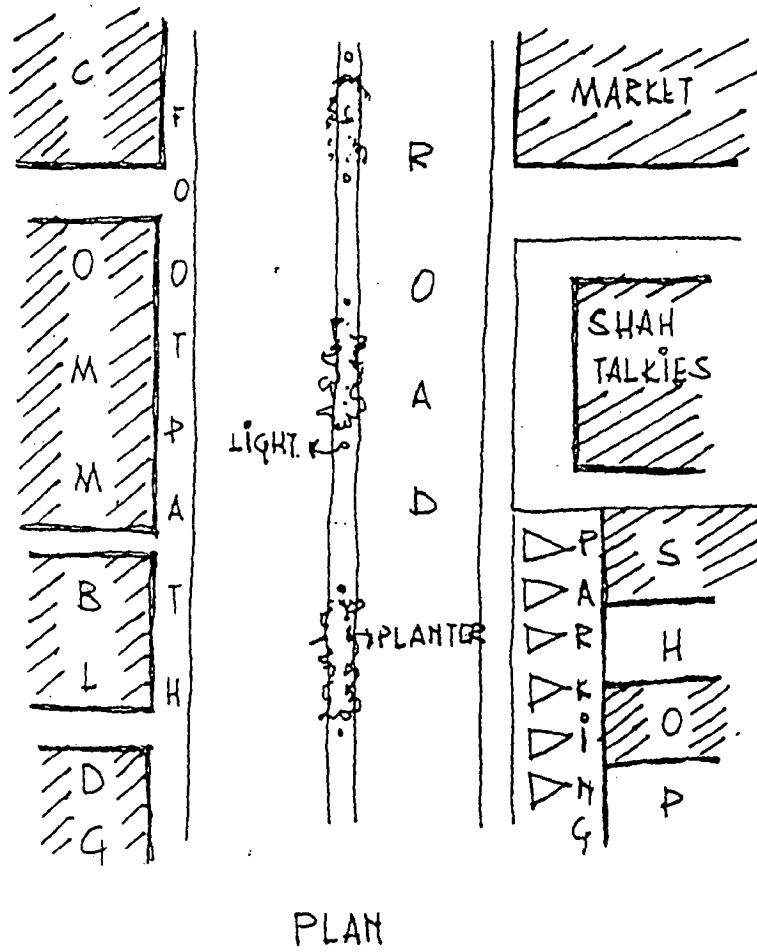
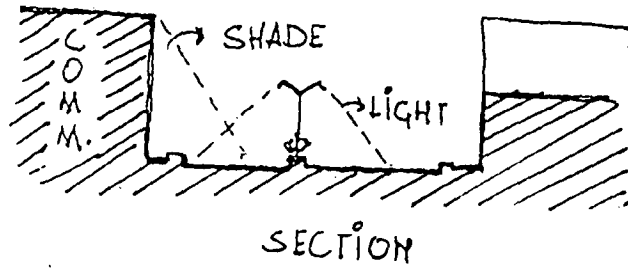


FIG 81. M. G. ROAD, AGRA

## 8.2.1 THE DESIGN ASSESSMENT, M.G.ROAD AGRA

Performance criteria	Strengths	Weakness
<b>Physiological needs</b>		
Climatic comfort		No corridors/ arcades
Visual comfort	Well- lit	
Sonic comfort		traffic
Olfactory comfort		odors, open drains
Physical comfort	paved path	not continuous
<b>Safety and security needs</b>		
Pollutants	none	traffic pollution
Non slippery	mosaic floor paving	not continuous
Automobiles		no zebra crossing
Anti- social behaviour	Natural surveillance, mixed use	eve teasing
<b>Affiliation needs</b>		
Hanging out	eateries, recreation	
Events		none
Sense of place, enclosure		lacking, no enclosure
Promenading		none
Landmarks	Sur sadan, Bhagwan talkies	
Symbols		none
Context		mix of old and new bldgs.
<b>Esteem needs</b>		
Development of competence		No open spaces
Display of skills		none
Display of status	high status area, commercial & leisure activities	
Spatial configuration	Linear Geometry with turns, sense of anticipation	
<b>Self-actualization needs</b>		
Aesthetic appreciation		no coherence, staggered facades
Cognitive experiences		none
Variety	Mixed uses	
<b>Cognitive needs</b>		
Behavioral opportunities	Mixed uses	no park or green spaces
Vicarious participation		no seating
Opportunities for expressive acts		lacks open spaces
<b>Aesthetic needs</b>		
Sensory experience		lacks trees
Formal experience		lacks symmetry
Sequential experience	the turn in the stretch	
Symbolic aesthetics	none	
Public art	none	

Table 8.1 Analysis of M.G.Road, Agra

### 8.3 PROBLEMS OF THE AREA

The following problems have been found out in the study area and needs rectification.

Physiological

Climate

1. There is lack of shade on the road, and becomes very uncomfortable during summer.
2. Boundaries on the two sides of road have different detail.
3. Welcome sign to the city of Taj put up by Municipal Corporation is out of scale.
4. Advertisement and movie posters on the walls are a real eye-sore, this should be controlled.
5. Use of glass and aluco bond without shoeing any respect to the surroundings.
6. No continuous binding thread in terms of building facades and architectural styles.
7. The paved path needs to be maintained continuously along the stretch of the road.
8. There are electric poles and transformers on the carriageway, they pose insecurity and need to be shifted.
9. There are no zebra crossings at cross sections.
10. During movie hours there is heavy rush on the stretch.
11. The signages need to be regularized in terms of size and placement positions as they make the view chaotic.
12. Toilets and drinking water facilities need to be upgraded.
13. Benches and seating area to be developed along the stretch.
14. Electric and telephone poles need to be made straight and painted.
15. Diagonal wires crossing over the stretch are very risky and pose a serious threat to life.
16. Paving is broken at places.
17. Adjoining drains are open and can prove to be risky.
18. Parking on street is troublesome for pedestrians and people with slow moving traffic.
19. Construction material is spilling on to the road at some ongoing construction sites.

19. Construction material is spilling on to the road at some ongoing construction sites.
20. Trees which have been chopped off, their stems are still standing and may become the cause of accident.
21. Traffic signal lights are not working at some intersections.
22. Parking of adjoining streets is spilling over to the main road.
23. Tree guards are not in proper shape.
24. There is a marked absence of shady and flowering trees.



Fig: 8.2 Electric services in bad condition



Fig: 8.3 Open drains



Fig: 8.4 On street parking



Fig: 8.5 Building Material spilling on street



Fig: 8.6 Tree stem on walkway

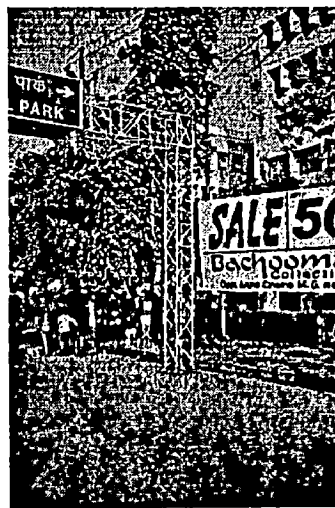


Fig: 8.7 Pole on carriageway



## **CHAPTER 9: SOLUTION FOR THE PROBLEM AREA**

The following solutions have been proposed for the problem rectification of the study area:

**LAYOUT:** Layout of a street has direct relationship with the appeal of humanization. Layout which provides natural surveillance, access control and inherent maintenance gives the Street an image and the 'image' of an area can have a major impact on whether it will be called humanized or not.

### **Layout of roads:**

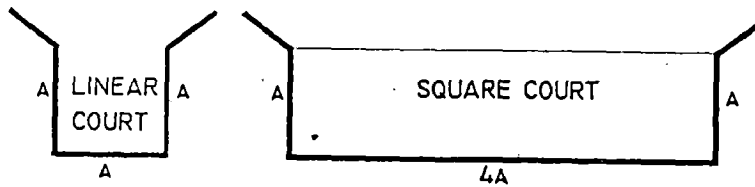
- Street should have minimum roads intersecting it, leads to less no. of traffic fears.
- Minimum width of road should be equal to the height of surrounding building, less than this can be claustrophobic.
- Footpaths should be designed along with road to avoid traffic crimes
- Pedestrian pathways should be provided to connect the adjoining areas.
- If possible the orientation of the roads should be N-S, considering the hot climatic conditions of northern India.
- If the street can have curves or turns that would give rise to the feeling of anticipation and would arouse the interest of the user.

### **Layout of buildings:**

- Street should be divided into small distinct stretches which are easy to comprehend and perceive at the slow speed. This will provide users with a sense of "ownership" and "collective concern" for the area.
- They should encourage natural surveillance of public areas, parking, other buildings etc.
- The layout should seek to provide clear distinction between private, semiprivate and public spaces.
- Blocks should be laid across the main road to avoid monotony and should have proper setback from the road.

**Open Areas** are best suited as cognitive needs are concerned. It defines the territory, provide spill out spaces which increases interaction between users of street and create enclosed space where children can play.

### Width of court:



- In case of linear court, it should have a minimum 1:1 height to width ratio and max 1:2.5 to avoid claustrophobia.
- In case of square court, it should be maximum 1:4 ratio to avoid fear of getting lost.

### Layout of Play areas and Public spaces:

- Children's play areas should be located in close proximity to residential dwellings to ensure high levels of natural surveillance by parents.
- Play provision for specific age groups should be segregated through the use of effective boundary treatment to limit misuse of facilities by other age groups.
- Public spaces should be located in the view of dwellings and vice versa.

### Specific Factors

#### Toilets

Human walking speed is 60 m/sec. At no place toilets should be more than 5 min walks that gives us the spacing of toilets as  $5 \times 60 (2) = 600$  m.

#### Drinking Water

Human walking speed is 60 m/sec. At no place drinking water facilities should be more than 5 min walks that gives us the spacing of toilets as  $5 \times 60 (2) = 600$  m.

#### BUILT FORM:

Form of a building plays an important role in deciding about the image of a locality.

Monotonous and repeated form gives the user a dull image of the area.

While dynamic form with play of terraces, solid and void, light and shades creates interest in built form and gives the community an identity and sense of pride among users.

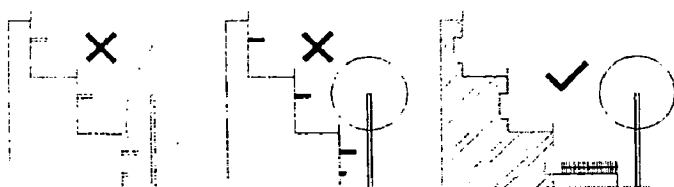
- Built form should have a character, play of solid and void, terraces, light and shade to create an interest and break the dull image.

- Building and spaces not only have to be in scale with people, they have to be in scale with each other
- Sharp corners, niches and hidden spaces should be avoided.
- Projections/chajja or canopies should be used according to the architectural style of the city/ area.
- In a winding atreet different height of buildings should be designed to break the monotony, like some G+1, G+2, G+3 etc, the buildings at the turns could be given more height and some unique visible feature to make it a landmark.
- Double height balconies should be provided to discourage the unauthorized construction that impedes façade character.

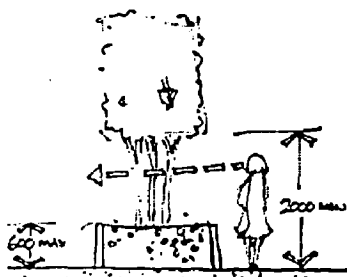
### LANDSCAPE:

Landscape design helps to improve the appearance of an area. It adds texture and color and softens harsh building materials and outlines. Used wisely it can also make a positive contribution to humanization of the stretch. It can protect buildings, spaces and people from harsh climatic conditions. They create a feeling of confidence in an area. It enhances the usage and image of an area.

- Trees should be planted all along the roads to create a lively environment. A lighter foliage variety should be used to provide visual permeability whilst still offering amenity screening.
- Trees should be located away from the buildings where they can hide the prominent building features.



- Trees should be located away from the window, where they obscure surveillance.



- Trees should not obscure lighting.
- Trees should be trimmed up to the height of 2m to allow surveillance.
- Street furniture like bollards, benches, dustbins should be located away from the carriageway to avoid collision.
- Shrub planting immediately adjacent to footpaths, should have a natural growth height of no more than 1 meter.

## **PARKING:**

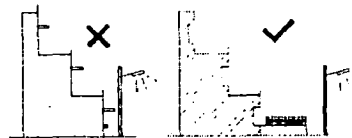
The most common problem on our streets is of parking. Theft in our Urban localities of vehicles is a common hearing. Reason being parking is not properly designed or if designed is not adequate to the need.

- In commercial buildings the parking shall be provided in thje basement as a separate floor. This should be taken up as the builder because it fetches them more money but if it is not done than it should be enforced by means of Bye-Laws.
- Off street parking should not be allowed except for the convenient shopping areas where parking is generally done for a very short period.

## **LIGHTING:**

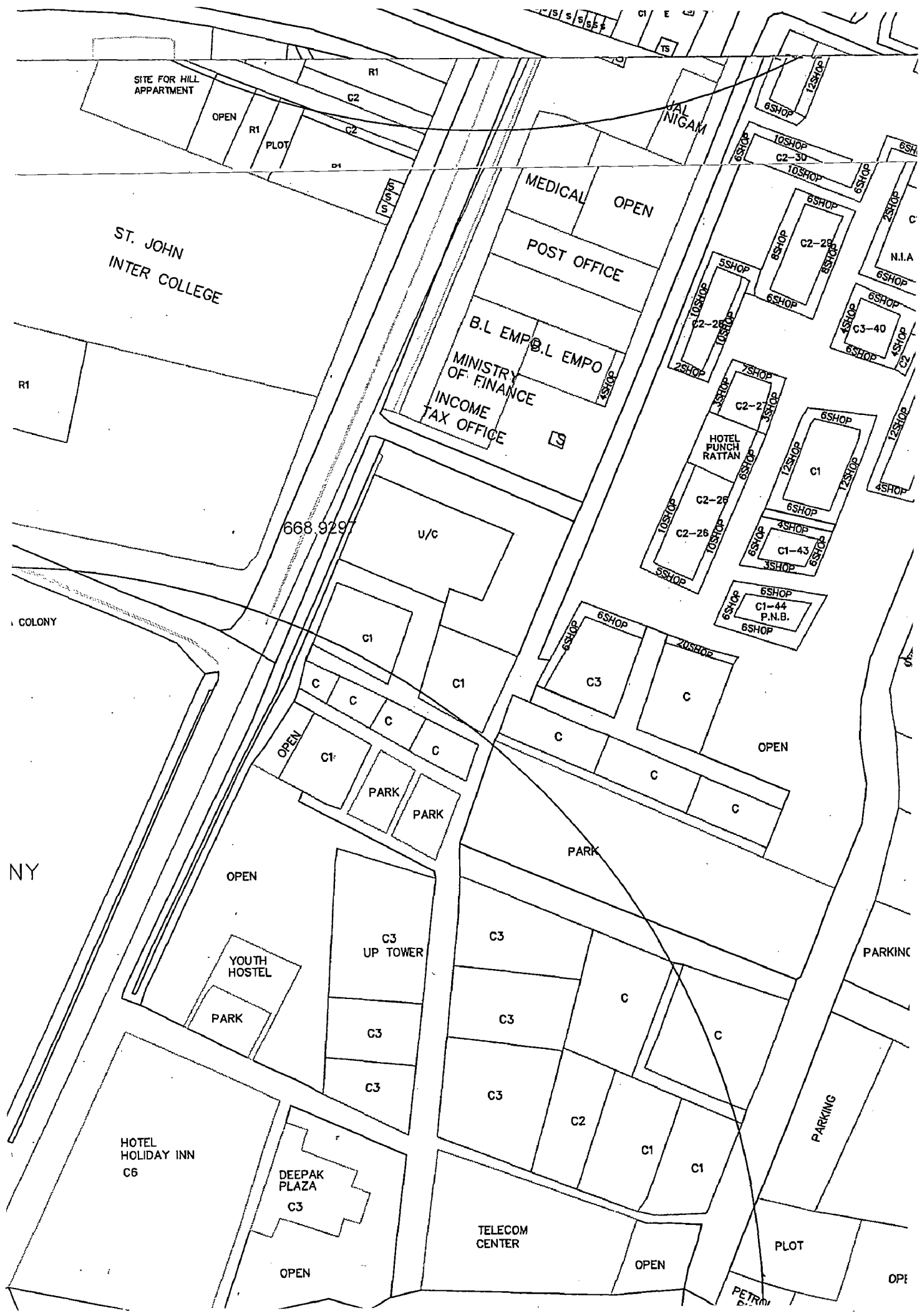
Lighting should be designed to enhance the illumination level both for the motorist as well as the pedestrians during the hours of darkness.

- Trees should be planted on the median, the road being majorly North –south oriented would remain shaded from the same.
- Lighting for the motorist should be at the height of 5m Sodium vapour lamps.
- Lighting for the pedestrians along the paved path at a height of 3m, diffused lent post lantern.
- Lighting should be such that it maximizes natural surveillance and creates a feeling of security.
- Special provisions should be made to light Landmarks, parking space and open areas (parks).
- Light fittings should be robust and vandalism free.
- Street light poles should be away from dwelling edges to avoid climbing
- Should not create glare and should be such that a person can recognize face from 10m.



## **Street SERVICES:**

Services are perhaps the most critical on our streets. In most of our localities, services are not designed properly and generally crete nuisance during post occupancy session.



SITE FOR HILL APPARTMENT

ST. JOHN INTER COLLEGE

MEDICAL OPEN

POST OFFICE

B.L EMP B.L EMPO  
MINISTRY OF FINANCE  
INCOME TAX OFFICE

HOTEL PUNCH RATTAN

668,929

u/c

COLONY

NY

OPEN

YOUTH HOSTEL

C3 UP TOWER

HOTEL HOLIDAY INN C6

DEEPAK PLAZA C3

TELECOM CENTER

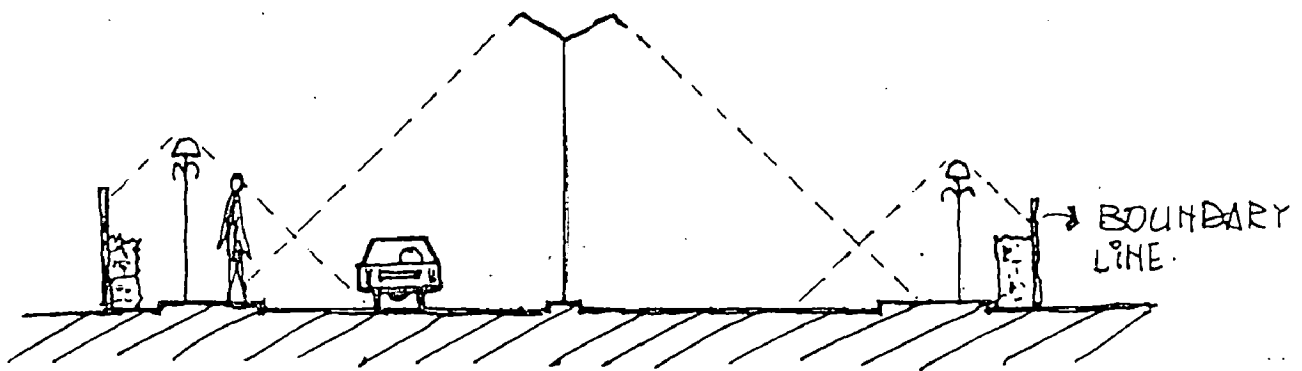
PARKING

PARKING

PLOT

OP

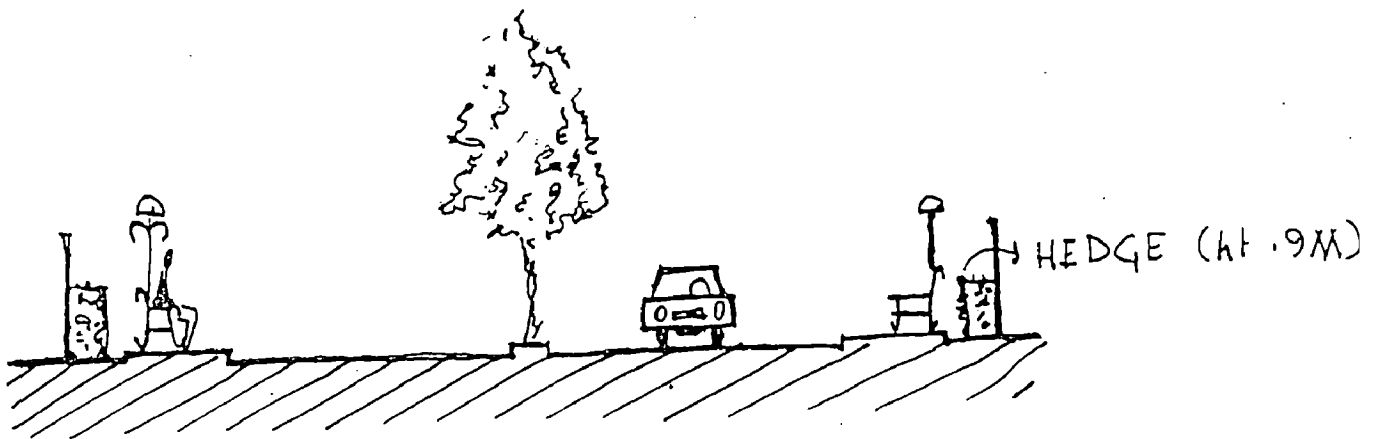
PETRO



### P:1 LIGHTING FOR PEDESTRIAN.

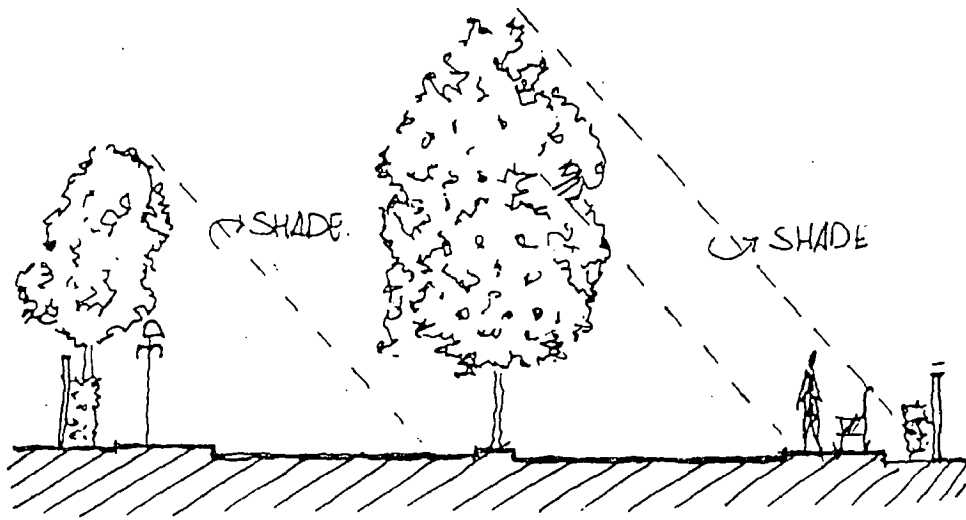
SPEC.

- HT. 2.1M
- TYPE DIFFUSED
- SPACING 3.5M C/C
- LOCATION BOTH SIDE
- ORNAMENTAL.



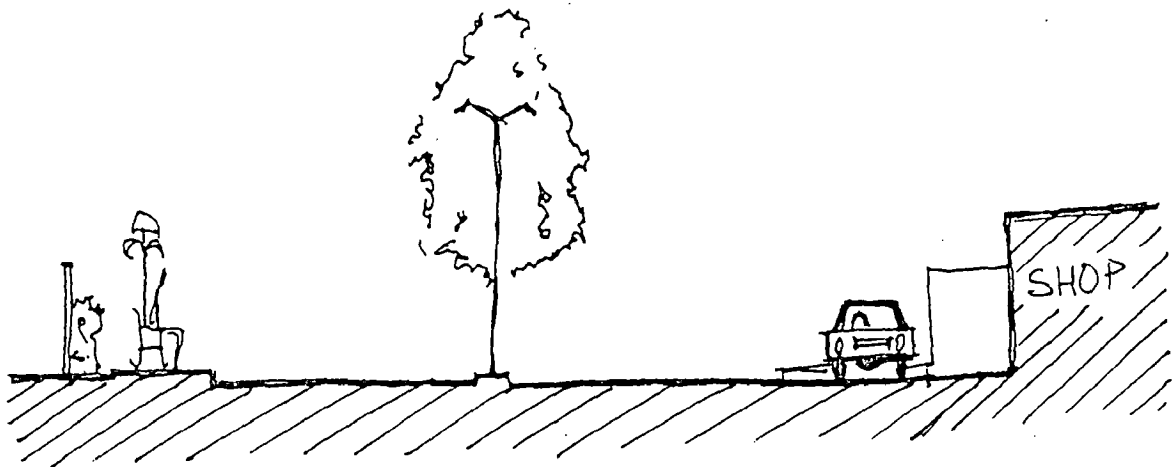
### P:2 STREET BENCHES

- HT. 0.45M
- TYPE - CAST IRON/CEMENT CONC.
- SPACING 100M C/C
- IN GROUPS - BOTH SIDE
- FACING ROAD & PARK.



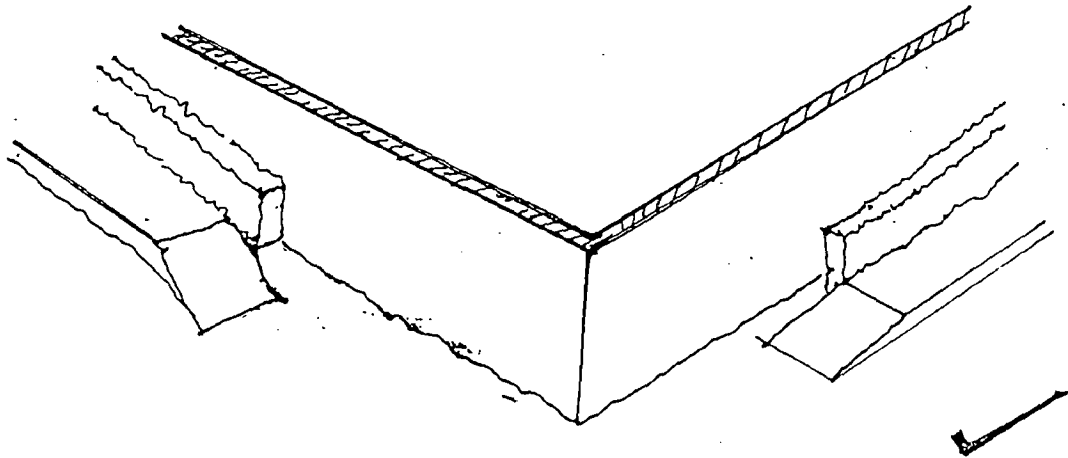
P:3 TREE ON MEDIAN & WEST SIDE.

- TYPE - SHADY
- HEIGHT - 12-15M
- DECIDUOUS
- SPACING - 6.0M @ C/C.

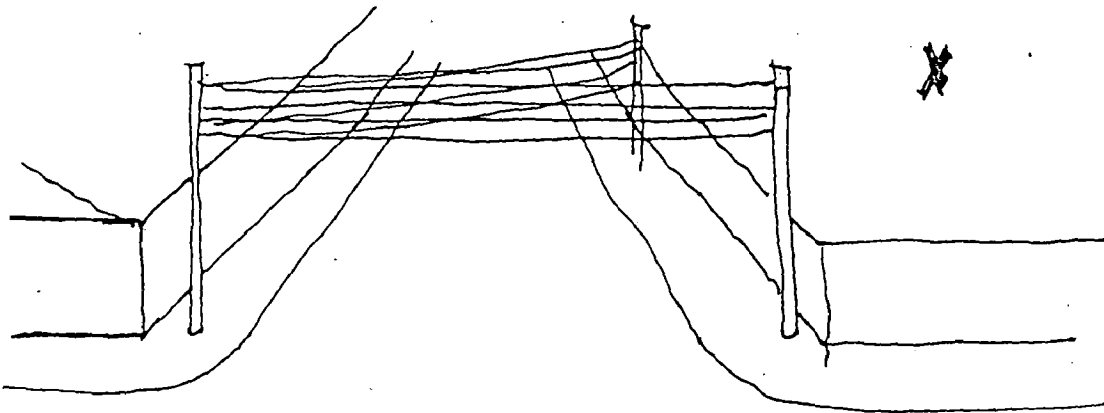


P:4. OFF STREET PARKING.

- ONLY AT CONVENIENT SHOPPING
- CHARGE HEAVILY



P:5 RAMP FOR DISABLED. (SLOPE 1:12).



P:6. DIAGONAL WIRES [INCORRECT]



- Electric poles and wiring can be taken underground if some agency takes up the job, as has been done in Nagpur.
- If the above proposition is not possible than the columns should be painted in bright colours to make the environment lively. The paint should be in three tiers, bringing down the scale of the column. The paint should be retro reflective.
- The electric poles should have a crash guard against them so that an unruly vehicle or animal might not crash against it, or may not deform it.
- Transformers should be bound in a cage with proper warning signs on it, and it should be placed well off from the carriageway or the walkway.
- The electric and telephone wires should cross the road minimum number of times and wherever they cross, it should be perpendicular to the road.
- Drains and manholes should be well covered to prevent someone falling into it..

#### **Paved Path**

- The paving should be made continuous along the stretch of the road. The choice of material should be robust considering maintenance problems in future.
- Use hardy, easily-replaced and standard size materials. Cement conc flooring tiles of size 450x450 mm are proposed.
- Avoid removable materials such as paving bricks.

#### **Street Furniture**

- Benches should be installed after every 100 m. the benches should face the open area and also the street.
- The lighting near the benches should fall from side, to avoid glare.

#### **Visual**

##### **Boundary**

- A clear distinction between public and private spaces, whether it should be through physical barrier or through visual barrier and should define the territory of private owners.

- Boundaries should be transparent or kept low to allow for visual interaction and surveillance. If height of boundary to be raised, it should be raised by fixing vertical railings.
- In public buildings the boundary can be replaced by dense flowering shrub that adds to the olfactory comfort of the users of the street.
- Boundary wall material should be vandal free and robust.
- Boundary on two sides of the street should have same detail.

### **Building Façade**

- The building façade should bear the character of the city / area. This can be achieved by using arches and jharokhas as elements.
- The façade treatment should respect the local wisdom and material availability by using stone.
- Use of glass should be restricted to 25% of façade area, on the west facing buildings on M.G.Road as they cause glare to the people on streets.
- Staggered facades- the set backs should not be too different on the adjoining sites just because of their different size. This should instead be regulated by the position on the street.

### **Maintenance and Control**

- Bills sticking- this should be stopped and the concerned person/ agency should be fined.
- Tree guards to be repaired and painted in bright colors.
- Zebra crossings to be made at junctions.
- Traffic signal lights should be repaired and maintained regularly.
- Parking on street should be charged.
- Construction sites should be well fenced and if a building is undergoing face lift its façade should be covered by a tapestry.
- Trees which are fell down need to be taken out from the root.
- Welcome sign to the city of Taj put up by Municipal Corporation need to be scaled down.
- The stretch could be divide into three parts from Bhagwan Talkies to Diwani Crossing, from there to sursadan auditorium, and the third up to st. john's

crossing. These visual districts should have façade restriction to make the things more harmonized.

- Traffic rerouting (one way) should be considered for the evening and night movie shows time.

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DEPARTMENT OF ARCHITECTURE AND PLANNING  
INDIAN INSTITUTE OF TECHNOLOGY, ROORKEE  
ROORKEE 247667

M.Arch Dissertation, I.I.T Roorkee

DISSERTATION TITLE:  
DESIGN GUIDELINES FOR HUMANE STREETS  
Check List

City: \_\_\_\_\_

Date: \_\_\_\_\_

Road Name: \_\_\_\_\_

Type: Commercial/ Residential/ Institutional

Age: \_\_\_\_\_

**Form of the street**

-Straight / Curvilinear / Circular / Undefined

**Length of the street**

---

**Width of the Street**

---

**Width of the metallic portion**

---

**Height of Abutting Buildings**

---

**No. of floors**

---

**Traffic**

-Is it one way or two way

-No. of Lanes

-Is there is divider Yes( ) No( )  
(Specify Width)

-Zebra Crossings Yes( ) No( )

-Service Lane Yes( ) No( )

-Guidelines for Lanes Yes( ) No( )

-Cat-eyes/ Reflectors Yes( ) No( )

-Cyclists Track Yes( ) No( )

-Pedestrian Track (Specify width if yes) Yes( ) No( )

-Both side Yes( ) No( )  
 -Level Diff Between Paved & Road

---

-Is the surface slippery Yes( ) No( )

-does the surface has indicators Yes( ) No( )

-What are the modes of transport?

Cars Yes( ) No( )

Scooters/ Bikes Yes( ) No( )

Buses Yes( ) No( )

Taxi/ Three Wheeler Yes( ) No( )

Rickshaw Yes( ) No( )

Bicycle Yes( ) No( )

Animal Cart Yes( ) No( )

Push Cart Yes( ) No( )

**Facilities**

-Is there is provision of Parking space?

Yes (specify)/ No

-Is it full?

Yes / No (specify)

**Are sufficient amenities here?**

-Toilets Yes( ) No( )

-Drinking Water Yes( ) No( )

-Seating Space Yes( ) No( )

-Zebra Crossing Yes( ) No( )

-Lighting Yes( ) No( )

-Letter Boxes Yes( ) No( )

-Telephone Booths Yes( ) No( )

-Sun Cover/ Shade Yes( ) No( )

-Green Areas Yes( ) No( )

-Dustbins/ Spittoons Yes( ) No( )

-Parks Yes( ) No( )

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**M.Arch Dissertation, I.I.T Roorkee**

DISSERTATION TITLE:  
DESIGN GUIDELINES FOR HUMANE STREETS

**Survey Questionnaire**

(Information collected will be entirely used for the academic/study purpose)

City: \_\_\_\_\_

Date: \_\_\_\_\_

Road Name: \_\_\_\_\_

Type: Commercial/ Residential/ Institutional

Name: \_\_\_\_\_

Age: \_\_\_\_\_

Sex: \_\_\_\_\_

Occupation: \_\_\_\_\_

**Q.1 How far do u stay from this road?**

-Within 2 Km / 2-8 Km / More than 8 Km

**Q.2 How often do you visit this place?**

-Daily / Twice or Thrice a week / Fortnightly / Very Rare / I m here for first time.

**Q.3 Your purpose of visit generally is?**

-My workplace/ residence is here / Shopping / Entertainment / Leisure

**Q.4 Whom do u come along with?**

-Alone / Family / Friends

**Q.5 Do you enjoy being here?**

-Enormously / To an extent / No / Can't say

**Q.6 How long do you stay here?**

-0-30 min / 30-60 min / 1-2 hours / 2 hours or more

**Q.7 How do you come here?**

-Car / Scooter/ Bike / Bicycle / On my own Two feet / Public Transport

**Q.8 Do you get Parking space? (only answer if you come by personal vehicle)**

-Yes / No / Sometimes

**Q.9 Do you think there are sufficient amenities here?**

-Toilets Yes( ) No( )

-Drinking Water Yes( ) No( )

-Seating Space Yes( ) No( )

-Pedestrian Walkway Yes( ) No( )

-Zebra Crossing Yes( ) No( )



- |                      |        |       |
|----------------------|--------|-------|
| -Lighting            | Yes( ) | No( ) |
| -Letter Boxes        | Yes( ) | No( ) |
| -Sun Cover/ Shade    | Yes( ) | No( ) |
| -Green Areas         | Yes( ) | No( ) |
| -Dustbins/ Spittoons | Yes( ) | No( ) |

**Q.10 Do you think road is safe.**

-From pickpockets / For women / For children / For Elderly People / From stray animals / Electric Cable Snapping

**Q.11 What is good about this road? (Choose one or more options)**

- Road width /
- Trees/ Landscape
- Billboards
- Character of street
- Ambience
- Facilities

**Q.12 Have you ever witnessed an accident on this road?**

-never / once or twice / more than a couple of times

**Q.13 Have you ever met with an accident on this road?**

-never / once or twice / more than a couple of times

**Q.14 Have you ever witnessed eve-teasing on this road?**

-never / once or twice / more than a couple of times

**Q.15 Is it Polluted?**

-Highly / A bit/ Parts of it / One of the cleanest I've seen

**Q.16 Is it Beautiful/ Visually Pleasing?**

-Yes / No / It's O.K

**Q.17 Which buildings here do you like more?**

-Old / New / None

**Q.18 Would you come here more often if above factors are improved?**

-Definitely / Maybe / Can't Say

**Q.19 Name any other street you like? (Any city)**

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