EVOLVING DEVELOPMENT CONTROLS FOR JAIPUR CITY
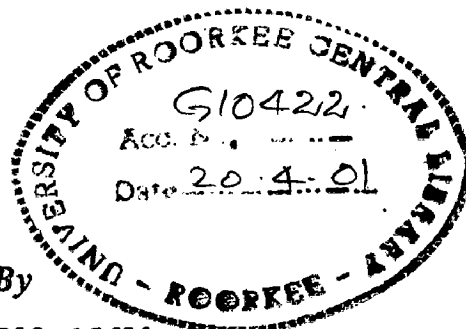
A DISSERTATION

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

MASTER OF ARCHITECTURE

By

CHARU JAIN

DEPARTMENT OF ARCHITECTURE AND PLANNING
UNIVERSITY OF ROORKEE
ROORKEE-247 667 (INDIA)

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CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the thesis entitled **EVOLVING DEVELOPMENT CONTROLS FOR JAIPUR CITIY** 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 University is an authentic record of my own work carried out during a period from Ist June 2000 27th Feb. 2001 under the supervision of **Ms. RITA AHUJA** .

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

(Candidate's Signature)

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

(GUIDE)
Ms. RITA AHUJA
Asstt.Prof.
Department of Arch. & Planning
University of Roorkee, Roorkee

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CHAPTER 1

"INTRODUCTION TO THE PROJECT"

CHAPTER I

"INTRODUCTION"

1.1 IDENTIFICATION OF THE PROBLEM

A uniform characteristic of post-independence urban expansion is the singular lack of the inherent vibrancy of traditional Indian towns, derived from a highly integrated structure. In this maze of architectural and urban complexity, we have lost sight of what should be foremost among the regulators: **"the fulfillment of human aspirations and purpose in our surroundings."**

Older and historic cities with unique image and identity as well as with a considerable urban and architectural value exist in various parts of the world. Today's cities are in a serious degraded edifice of uncontrolled noise, air and water pollution, inconvenience, discomfort, congestion, traffic dangers, visual assaults and lack of any sense of order. The traditional Indian towns or colonial settlements have now been inundated by waves of migration, unchecked urban growth and incoherent built form.

As cities grow, their historic cores, in time, become surrounded by new formal and informal urban developments with different architectural and urban characteristics. As a result of the conflict between tradition and modernization in the urban fabric, the overall

Evolving Development Controls For Jaipur City

internal organization and physical layout of these developing cities reveals no cultural identity, continuity or unity.

The main problems, which are threatening the historic city today, are:

1. The neglected areas which have a great potential, the vacant historic buildings and the public spaces around them;

2. The incompatible uses given to these spaces, such as repair shops, which do not fit the characteristics of the historical environment;

3. The new developments which are in contrast to the form, volume, scale, proportion and identity of the old buildings;

4. The chaotic use of advertisement boards. The new development shows a completely different structure to the character of the city.

Architecture is no longer seriously considered as an instrument for structuring the urban landscape, making contemporary Indian cities visually and perceptually chaotic. It is becoming clear from the present state of our cities, that income distribution maps and other statistics are not in themselves sufficient to explain a city's existence, aspirations or urban form. All descriptions of the city are quantitative, giving statistics, economic formulae and other administrative issues. There are no architectural renderings or

projected images of C.B.D, main avenues, bazaars etc. There are no attempts to make it explicit, which would give the city legibility.

Lack of urban design controls for new developments produces an incoherent city form and destroys the structure and identity of the old. Many contemporary cities, zoned on a two dimensional set of land use package can be seen lost some of the desirable qualities and vitality of earlier traditional models and to have become impossibly inconvenient to use. There are no guidelines or conceptions of what the crucial spatial components of the city might look like.

A whole panoply of control systems, methods and techniques have been applied, through the medium of **Building ordinances and regulations** with apparent object of ensuring adequate functional and visual standards. But in general these measures have failed to produce satisfactory forms and patterns. It is seen that **Building byelaws** not only permit, but have practically forced, enormous building volumes and bulk to be loaded onto the sites. Thus the city has been reduced to a network of streets and pavements, lined with facades of unrelated buildings.

Most two dimensional, negative control systems have in fact, been producing ever more city development and in process of attempting to solve one set of problems have created an ever greater degree of dissatisfaction with urban development. It is a by-product of these methods.

In modern cities, the most significant elements relating to the form of their development have been those concerned with communications. This led to, " the speed and scale which have been made possible by modern technology, are destroying traditional patterns of spatial order. The huge highways represent a super human scale, thus while organizing the city, the order must be maintained at various levels from private to public. We have to urgently realize that movement is only one of many functions, which have to be catered for, and that arises from physical development in terms of building and people" as said by Kenzo Tange.

Though it has been comparatively easier to develop new areas at low densities in areas surrounding existing metropolises, this is a mistaken policy. In most cases, illusion persists that, because the capital cost of an apartment near the city center is higher than the dwelling in suburbs but on the contrary, when all social costs relative

to suburban development are taken into account, a different picture emerges.

The basic understanding of spatial relationships, circulation pattern and three dimensional form can be of real value only if woven into the whole fabric of the city at every point, as we can not overlook the fact that the element which is so significantly missing from the contemporary city is the one in which most contribution should be made. To convert the disadvantages of a city's implicit program into assets is the role of architect & planner. They have to weave contemporary aspirations, values and forms into urban structures.

A matrix or framework has to be evolved which is clearly apparent and yet which does not inhibit individual architectural expression or future development either in general or detail.

Certain methods and techniques have been applied, through the medium of building ordinances, and regulations with apparent object of ensuring adequate functional and visual standards. But in general, these measures have failed to produce satisfactory forms and patterns.

1.2 OBJECTIVES

Having studied the available literature in this field of learning, and having discussions with various experts, the following set of objectives are framed to achieve the desired results. They are:

1. **To assess the development controls of walled city of Jaipur.**

2. **To analyze the city's development in chronological order.**

3. **To identify the control parameters which decide the functions of the city.**

4. **To evolve a set of guidelines for development controls of Jaipur city.**

1.3 SCOPE

The present study aims to study the impact of existing development controls in the "Walled city of Jaipur", and evolve new plausible development controls. If the proposed development controls are implemented successfully, the desired vision will be achieved upkeeping the principles of urban design by incorporating the present and future needs and aspirations of the people.

1.4 CONCEPT

The existing controls never commensurate with the needs and aspirations of the local people in the city. The city has been growing in a haphazard manner and lead to various types of problems. These problems have multiple linkages, and have multiple effects. Having studied these problems and their effects, **it is of interesting to frame a realistic development controls for the development of the city in an organized manner by considering the following various aspects such as:**

- **To safeguard and improving the living conditions, and the environment.**

- **To produce a homogeneous heterogeneity by giving flexibility for individual expression.**

- **Envisaging a 3 dimensional development.**

- **To balance the natural resources and their optimal uses to protect the heritage in accordance with present and future needs.**

1.5 RESEARCH DESIGN

Visual survey and survey research methods have been employed in the present investigation..

1.6 DATA

This will include various types of data that are collected and helpful in this investigation. They are primary, and secondary sources of data.

1.6.1 SECONDARY SOURCES: Published literature, and unpublished documents, etc. pertaining to present investigation.

1.6.2 PRIMARY SOURCES: A primary survey will be conducted at the grassroot level, and the data would be used in this investigation.

1.7 SURVEY TOOLS AND TECHNIQUES

It deals with the tools and techniques, which are used to identify the parameters required for framing development and their relative importance.

TOOLS: Schedules and questionnaire will be developed based on the need and requirement of the investigation and employed then.

TECHNIQUES: Relevant-sampling technique will be employed.

1.8 RESULTS AND DISCUSSION

The inferences drawn based on the above analysis would be discussed thoroughly for preparing a set of development control parameters.

1.9 RECOMMENDATIONS

A set of plausible control parameters would be prepared and recommended to achieve the scope of present investigation.

1.10 CONCLUSION

This investigation will conclude with some plausible recommendations for the development of the city.

1.11 LIMITATIONS

1. Since the study is time bound, and limited to six month, the investigator limited the scope of the work by recommending some plausible development control parameters for the development of Jaipur City.

2. The recommendations made in the study would be useful to Jaipur city only, since the study is concentrated only on Jaipur city.

3. **Being an architect, the development controls that I considered in the study are purely architectural development controls.**

INTRODUCTION

The internal organization and physical layout of an urban settlement is determined by various factors. The interplay of these factors creates a diversified array of urban settlements, many of which contain a historic core with a vast architectural and urban heritage.

As cities grow, their historic cores, in time, become surrounded by new formal and informal urban developments with different architectural and urban characteristics. As a result of the conflict between tradition and modernization in the urban fabric, the overall internal organization and physical layout of these developing cities reveals no cultural identity, continuity or unity.
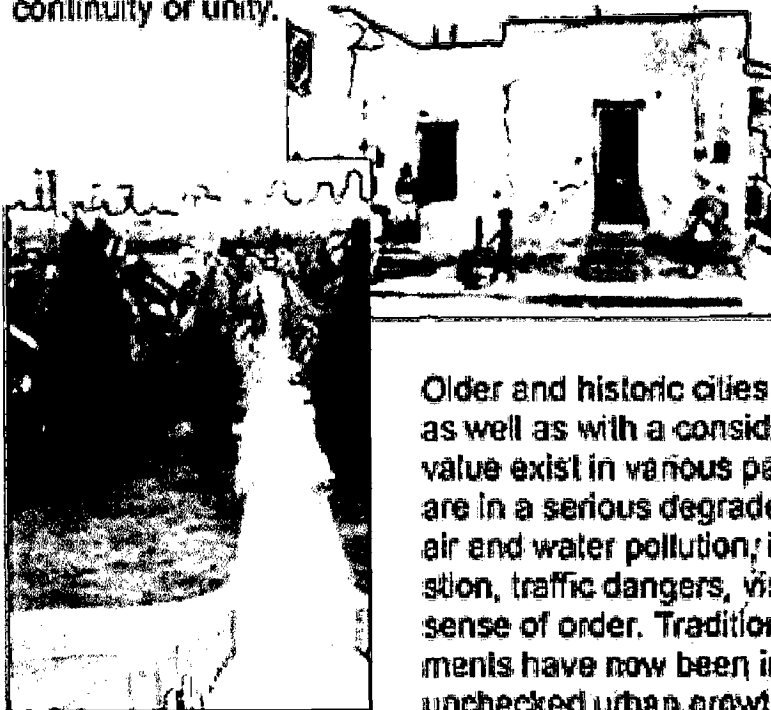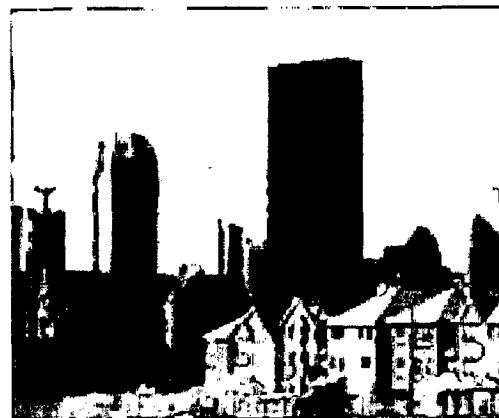
Older and historic cities with unique image and identity as well as with a considerable urban and architectural value exist in various parts of the world. Today's cities are in a serious degraded edifies, uncontrolled noise, air and water pollution, inconvenience, discomfort, conge stion, traffic dangers, visual assaults and a lack of any sense of order. Traditional Indian towns or colonial settle ments have now been inundated by waves of migration, unchecked urban growth and incoherent built form.

The main problems, which are threatening the historic city today, are, the neglected areas which have a great potential, the vacant historic buildings and the public spaces around them; the incompatible uses given to these spaces, such as repair shops, which do not fit the characteristics of the historical environment; the new developments which are in contrast to the form, volume, scale, proportion and identity of the old buildings; the chaotic use of advertisement boards. The new develop ment show a completely different structure to the chara cter of the city.

THE PROJECT

Architecture is no longer seriously considered by planners as an instrument for structuring the urban landscape, making contemporary indian cities visually and perceptually chaotic. It is becoming clear from the present state of our cities, that income distribution maps, other statistics etc. are not in themselves sufficient to explain a city's existence , aspirations or urban form. All descriptions of the city are quantitative, giving statistics, economic formulae and other administrative issues. No architectural renderings or projected images of C.B.D, main avenues, bazaars etc. There are no attempts to make explicit a visual structure, which would give the city legibility.
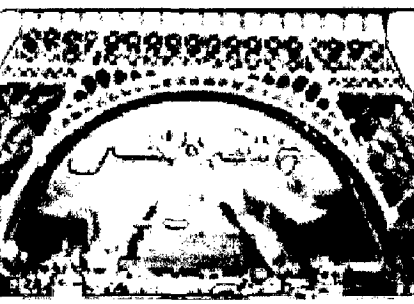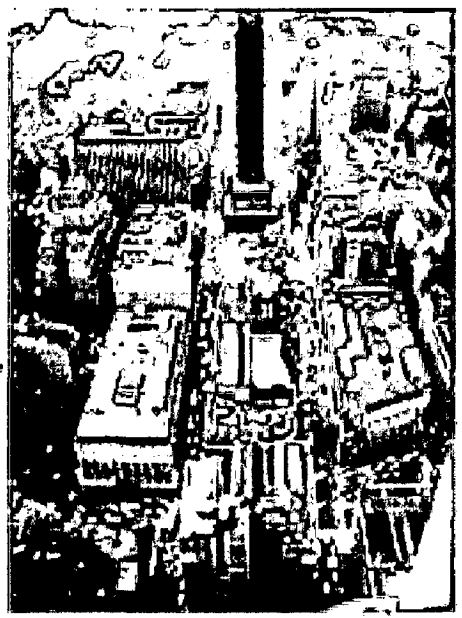
NEED OF THE PROJECT

Lack of urban design controls for new developments produces an incoherent city form and destroys the structure and identity of the old. Many contemporary cities, zoned on a two dimensional set of land use package can be seen to have lost some of the desir able qualities and vitalities of earlier traditional models and to have become impossibly inconvenient to use. There are no guidelines or conceptions of what the cru cial spatial components of the city might look alike.

A whole panoply of control systems, methods and techniques have been applied, through the medium of Building ordinances and regulations with apparent object of ensuring adequate functional and visual standards. But in general these measures have failed to produce satisfactory forms and patterns. It is seen that Building byelaws not only permit, but have practic ally forced enormous building volumes and bulk to be loaded onto the sites.

Most two dimensional, negative control systems have in fact, been producing ever more city development and in process of attempting to solve one set of problems have created an ever greater degree of dissatisfaction with urban development. It is a by -product of these methods.

CONCEPT
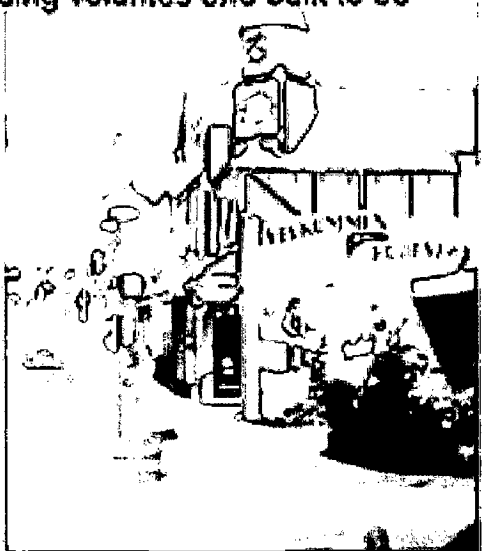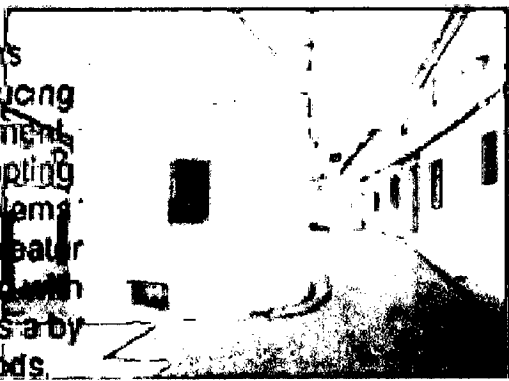
The existing controls never commensurate with the needs and aspirations of the loca people in the city. The city has been grow ing in a haphazard manner and lead to var ious type of problems. These problems have multiple linkages, and have multiple effects Having these problems and their effects in mind , it is of interesting to evolve guidelines for a realistic development controls for the develop ment of the city in an organised manner by considering the following various aspects, such as:

To safeguard and improve the living conditions, and the environment.

- To produce a homogeneous heterogeneity by giving flexibility for individual expression.
- Envisaging a 3 dimensional development.
- To balance the natural forces and optimize their uses
- To protect the heritage and interpret it for the present day and age.

Having these concepts in mind, a set of guidelines would be prepared to evolve development controls for the development of the city.
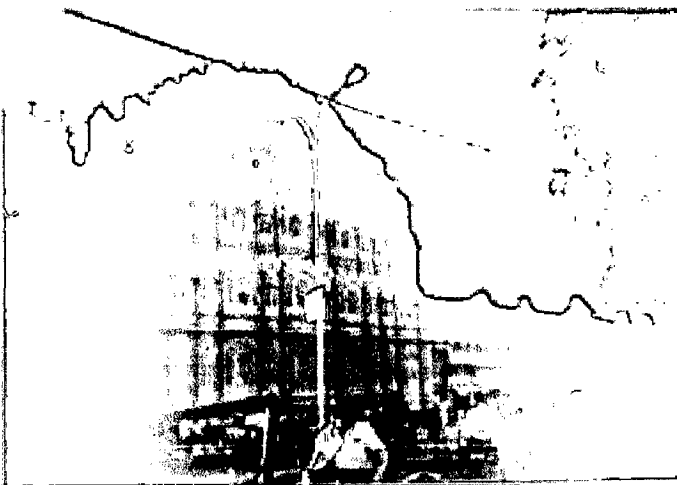
CHAPTER 2:

"REVIEW OF LITERATURE"

CHAPTER 2

"REVIEW OF LITERATURE"

The collected literature studied thoroughly and grouped into various groups presentation. They are:

1. THE FUNDAMENTAL VOCABULARY

2. THE BUILDING BYELAWS OF ANCIENT INDIA

3. CHARACTERISTICS OF TRADITIONAL TOWNS

4. INDIAN STANDARDS AND CODES

5. NEW PARAMETERS FOR THE PRESENT AND FUTURE DEVELOPMENT

2.1 THE FUNDAMENTAL VOCABULARY

It deals with the basic concepts involved in planning any settlement. These basic concepts are the basis of development controls.

2.1.1 THE BASIC CONCEPT OF SPACE

"space is the sum of all places, a dynamic field with direction and qualitative qualities"

Aristotle

Architecture is fundamentally the shaping of space, which distinguishes architecture from other arts in its spatial quality. Space is volume defined by physical elements. Man lives in atmospheric space, which achieves form, volume, comprehensibility and scale, only when it is defined by tangible visible elements, and only to extent that it is so defined. Every physical element above or below the horizontal ground plane, on which we are standing, defines space, qualifies it, and gives it height and depth.

The physical city is a system of activity areas, spaces, masses and circulation systems. For the creation of better living environment and to get desired visual and perceptual results, the city must be human in scale, and the array of masses, the deployment of spaces, mixing of urban activities must be proper.

2.1.2 SCALE

Scale is relation between the dimension of the parts and the whole, which gives us sensation of bigness and smallness, complexity or simplicity, unity or disorder as we pass through or stay in it.

A scale is any system of measurement convenient to us. Another aspect of measurement is relative proportion known as

"module". The full extent of a building or a city whose design is based on a module consists of elements occurring at regular intervals.

In urban design, "scale", means that a city and its parts are interrelated and also related to people and their abilities to comprehend their surroundings. The range of scale effects extends from intimate scale to monumental scale.

SCALE AND HUMAN VISION

Our eyes have a general field of view and a detailed field of view. The former sees general shapes, the latter, details of objects.

The connection between these distances and urban design is: **The "intimate" spaces of a city are usually not greater than 80 feet across, the "urbane" spaces, not greater than 4,000 feet, beyond this, human beings cease to play a part.**

1. When a facade height equals the distance one stand from a building (a 1 to 1 relationship) or the cornice is at a 45° angle from the line of horizontal sight, we feel well enclosed since the building is considerably higher than the upper limit of our field of forward view (30°).

2. When a facade height equals one half the distance we stand from a building (1 to 2) it coincides with the 30° upper limit of our

normal view. This is the lower limit for creating a feeling of enclosure.

3. When facade height equals one-third our distance from the building (1 to 3), we see the top at about an 18° angle. It is the minimum sense of enclosure.

4. Beyond this, the sense of enclosure is lost.

The advantage of thinking in terms of urban space is that we can embrace a myriad of urban elements as an entity rendering these elements more distinctive and valuable than they are alone.

2.1.3 URBAN MASS

Mass is solid three-dimensional form. Urban may be the buildings, ground surface, vegetation etc. in a space. Our eyes and light conditions govern the way we see mass.

The general surface, buildings, and objects in space constitute the other basic element: urban mass. We can arrange these elements to form urban space and to shape urban activity patterns on small and large scales.

Our eyes and light conditions govern the way we see masses. From 45° angle, we tend to notice details more than the whole facade; at 30° angle, we tend to see object as a whole composition; at 18° angle, we tend to see object in relation to surrounding objects;

at 14° angle, we tend to see the object as a forward edge in an overall scene.

The appearance depends largely on light conditions. Under conditions of bright, clear sunlight the individual parts of objects stand out; as light diminishes the whole composition presents itself to our view.

2.1.4 URBAN ACTIVITY AND CIRCULATION

The arrangement of urban activities is a basic element of urban design. It is so important that we often recall a particular city by recalling the experiences we had there.

The key to the patterns of activity in a city is intelligent disposition of major activities in relation to routes of movement.

Urban design on a small scale of a group of buildings accommodates a variety of functions. As the scale increases, the complexity increases, but the objective is the same. On the city scale, the design of urban functions is a matter of allocating major hubs of activity to the most desirable places.

The principles of design of urban scale, urban space, urban masses, urban activity areas, and urban circulation patterns form the basic palette for urban design.

2.1.5 URBAN AESTHETICS

A city is an assemblage of buildings and streets, systems of communications and utilities, places of work, habitation, leisure, and meeting. The process of arranging these elements together, both functionally and beautifully, is the essence of urban design.

"Beauty in cities is not an afterthought; it is a necessity." Man can not live long without beauty. Order and beauty in man's surroundings are as much a prerequisite to human health as fresh air. J.B. Jackson observed landscape, "a city exists only by grace of the life which pulsates in the streets and squares.... Art can only adorn something which the spirit has created".

Henry Vincent Hubbard defined beauty as the **"perceived harmonious relationship of all the elements of a thing observed"**. It applies to the relationship of a city's parts, and to daily living in all its details, since the quality of life of a city's inhabitant is largely determined by the form of a city.

2.1.6 TOWNSCAPE

Cullen argued that just as there is an art of architecture, so there is an art of relationship, in which all the elements which go to the making of an environment, buildings, trees, nature, water, traffic,

advertisements and so on are woven together in such a way that drama is released.

According to Cullen **"it is almost entirely through vision that the environment is apprehended"**

".....Vision is not only useful but it evokes our memories and experiences, those responsive emotions inside us which have the powers to disturb the mind when roused. It is this unlooked-for surplus...."

We are dealing, he says, with this unlooked-for surplus, which we appreciate in three ways, These are matters of:

1. **Serial vision** which is stimulated when, in addition to the view which is immediately present, the existing view, there are also hints of a different, emerging view. A long straight road or an open square can only give us the first of these whereas delight and interest are stimulated by contrasts, the 'drama' of juxtaposition.

2. **Place** - especially the sense of being in a particular place-a street or square-of being 'here' with the equally strong sense that around and outside it there are other places which we may think of as 'there'.

3. **Content** which is a matter of architectural style, scale, materials and layout. Cullen cites colour, texture, style, character, personality and uniqueness.

2.1.7 IMAGE OF THE CITY

In course of time people become aware of many cohesive linkages and urban indicators, which formulate a particular mental image of the city. Lynch was concerned, above all, with **The Image of the Environment** for, as he says **'Every citizen has had long associations with some part of the city, and his image is soaked in memories and meanings'** As he also says: 'Moving elements in the city, and in particular the people and their activities, are as important as the stationary physical parts.

When he points out that 'Nearly every sense is in operation' as we perceive the city, Lynch's primary concern is with the visual quality of the city which in particular he looks for **clarity and legibility** in the cityscape, the ease with which its parts can be recognized and ... ordered into a coherent pattern'. We read it, he says, by:

'The visual sensations of color, shape, motion, or polarization of light, as well as the other senses such as smell, sound, touch.'

To know where we are within the city, we have to build up a workable image of each part and each of these images will comprise, first of all, **identity** - our recognition of its **'individuality or oneness'** within the city as a whole - secondly our recognition of its **relationship to other parts of the city, and also to ourselves** and thirdly, **its particular meaning for each of us**, 'whether practical or emotional.'

1. **Paths, the channels of movement which people take**, regularly, occasionally or may, potentially, take. They may include paths, streets, walkways, bus or tram lines, canals, railways and so on. As Lynch says, we observe the city as we are moving through it and for many people, the paths themselves, and those elements of the city they perceive as they move along them predominate in their images of the city. They are, as Lynch put it 'coordinate axes';

2. **Edges** which for Lynch are **"linear elements which people do not use as paths."** They perceive them, rather, as linear breaks or boundaries of some kind. They may be physical boundaries such as walls, railway cuttings, canals, shorelines, or they may simply be boundaries between adjacent developments. Whilst not so dominant as paths such boundaries are **'important**

organizing features' for many people especially when, in the form of say, water or city wall they play the role of 'holding together generalized areas';

3. *Districts* which for Lynch are 'medium to large sections of the city which people visualize as having two-dimensional extent. Not only do they form districts on the map, they are also recognizable, especially from within, **as having some common, identifying character, which indeed may be so strong that one has a distinct, mental impression of entering 'inside of', This may be recognizable also from outside.** Most people, according to Lynch, find this idea of district to be most important in building up their 'Image of the City'. Indeed, according to the city- and the individual perceiver-they may be more important than paths;

4. *Nodes* are strategic points within the city to or from which the observer travels. They may be crossings or convergence of paths, junctions, places where one changes from one mode of transport to another. Or they may be concentrations of some kind, which are important because of their physical form: such as urban squares, street corners. They may be condensers of particular uses. Some, nodes in fact, will be 'the focus and epitome of a

district, over which their influence radiates and of which they stand as a symbol';

5. **Landmarks** too are **reference-points but the observer does not actually use them**. They consist, rather, of 'simply defined physical objects' such as a building, a sign, a store or even a mountain. A landmark in this sense will be **a physical object which, because of its form, may be singled out from the surrounding environment.** They may be large, man-made objects such as a tower, a spire or a dome, soaring over the rooftops and acting as a radial reference from many points within the city. They may be distant mountains, which serve a similar purpose; the sun itself, even though it moves, may act as a landmark in this sense. Its movement, after all, is slow and its directions known.

6. **Landmarks also occur at smaller scale;** a tree within an urban square, a particular sign, a shop front, a door or even a doorknob. These, and other urban detail...fill in the image (for) most observers.

Having identified these elements as making the city imaginable, they can be used during the process of design.

2.2 THE BUILDING BYELAWS OF ANCIENT INDIA

Some of the Building Byelaws prevalent in the ancient India are:

1. First layout the town and then only plan the houses.

2. First plant the trees and erect the premises there after.

3. As far as possible the height of buildings in the same street should correspond, this is to say, one should not be lower and another higher It is obvious that absence of a uniformity in the height of buildings on the same street detracts from the beauty of the street

4. A deviations from the fixed measurements of lengths, breadths, and heights of the respective buildings of the different classes of people is not conducive to be good and should not be made.

This means and ensures an all round uniformity of the buildings on the same street, for only a particular class was allowed residence in the same street. This rule and the preceding one also require that heights of the various stories of the different buildings should correspond. Haphazard irregular heights of the stories of the buildings are distressing to the eye. It is only a system, **a regularity even in the variations that augments artistic beauty.**

The foregoing byelaws prove the existence of co-operation in the construction of buildings. The description of an ancient city given by John Marshall in order to show that the above rules were

more or less observed in actual practice. "The city of Sirkap (in the ruins of Taxila) shows several large blocks of dwellings, separated one from the other by narrow side streets. Although the plans of these houses exhibit considerable variety, they were all based on the same principles. The unit of their design is the open quadrangle surrounded by chambers and this unit is repeated two, three, four or more times according to the amount of accommodation required by the occupants, the small rooms fronting on the street being usually reserved for shops. The walls are constructed either of rough rubble or of diaper masonry."

2.3 CHARACTERISTICS OF TRADITIONAL TOWNS

The traditional towns and cities of India, though very varied, have certain strong common characteristics. In fact, the form generally represents a fusion of the geometric framework with organic growth, and it is through the organic development that the sequence of eloquent townscape spaces have emerged, linking and unifying the fabric as it evolved through the ages.

2.3.1 THE HISTORIC INDIAN CITY

India has always been a land of great cities. Civilization in the sub-continent is said to have had its highest institutional expression in the cities, where all types of people met and its "great tradition" was elaborated and refined.

URBAN CHARACTER

Once one crosses the city's threshold, often a large gateway of stone and timber, one encounters a beehive of activities. The large regular streets merge with the narrow streets which wind through *mohallas* and at several points widen into *chowks* (squares), the largest open space formed by crisscross streets. These *chowks* and streets become settings for cockfights, storytelling, preaching and hookah-smoking; streets that are noisy markets full of hawkers, food stalls, etc,.during the day and silent by night. In the Indian city, it is

the street and its contiguous spaces that have always been the most important public urban spaces. The outside large open space gradually merges with the house through verandahs and thresholds, They are the heart of the settlement.

STREETS

Interaction between cultural institutions and the community or an individual is extremely vital for a civilization. Hence there is a peculiar relationship between buildings and street; between the void and that which defines the void, be it a house or a shop. The building usually gets extended onto the street, and the public and the semi-private domains merge,.

As one walks on, what amazes a pedestrian is the variety of functions and activities taking place along a short length of the street. Provisions are available next door, vegetables down the road, and the repair shop is a stone's throw away. The doctor's clinic is next to the tailor's shop, which is neighboured by the jeweler. A five-minute stroll takes one past a school, a *dharamshala* and a temple, all interspersed between houses and shops, and the pattern repeats itself several times, with innumerable permutations and combinations. Finally, the apparently endless street breaks free of the buildings and people, then brings one to the ghats or banks of a

river, or maybe even to an ancient water tank. For water is a sacred element and traditionally cities in India have almost always been established near a source of water, be it a river, a village tank or a step-well.

If one had to describe the city, one only needs to talk of the streets, open spaces and long covered or open linear spaces shielding private life and giving public life the major view.

ENERGY AND THE TRADITIONAL INDIAN CITY

The traditional Indian city has always been "energy-conscious". This may be partly attributed to the Vastu-Shastras, Hindu treatises on architecture and planning, which strongly recommend that settlements be in total harmony with nature. This calls for man's recognition of the natural forces such as the need to create shade for the hot afternoon sun, and terraces or courtyards open to the sky for the early morning sun. This implies a judicious use of the natural resources, and a built form suited to the local climate and environment.

India's traditional settlement pattern has been one of mixed land use. The concept of zonal distribution of land use was introduced by the British when they came to India. Not only is this system in disagreement with the Indian urban life style and economy,

but it also "wastes" energy by the unnecessary scattering and segregation of activities, thereby increasing commuting distances and inconvenience.

Apart from transportation and basic utilities, energy is also consumed by the buildings in a city. Buildings have to be made thermally comfortable. In the traditional Indian settlement, the expenditure of energy for this purpose is extremely low. The reasons for this is built form rooted in and responsive to the local climate and environment: building elements that cut down the energy input required to achieve conditions of comfort.

Today, in a world where natural resources are no longer in plenty ad are being depleted at an alarming rate, energy and the nature of settlements that should be planned or allowed to develop becomes an important issue.

2.3.2 BREAKDOWN IN THE CONTINUITY

With the decline of Mughal rule in India, the sequential chain of indigenous town planning broke down. It is the colonial inheritance that still dominates our thinking in planning and urban design. Apart from the fact that it was basically an alien imposition, this was further complicated by the growing technological needs of the Industrial

Revolution. In contrast to the close knit fabric of the traditional towns they became low-density middle class suburbs.

The layout dictated the straight roads and the houses, set well back in their own havens of privacy. With such layouts there could be no sense of enclosure of urban design and the city became a sprawl blurring the hitherto sharp definition of urban space and surroundings.

2.3.3 POST INDEPENDENCE DEVELOPMENT

Post-Independence planning and urban design throughout India has taken European concept as its model. The whole concept is reversed and where previously, with narrow streets and close built houses designed around internal courtyards, with narrow streets and close built houses designed around internal courtyards, it had been possible to retain a strong sense of privacy within individual units. The concept of the isolated high rise tower block or a series of separated multi storied buildings seems to be a direct offshoot of the Modern Movement. Coupled with this approach came the concept of areas or buildings, zoned for specific use only. In the Indian context, this had little or no validity as it merely served to cut across the existing framework of all traditional towns and cities, where a close link prevailed between dwelling units and the place of work , and

invariably a mixture of use even within the same building was common.

2.3.4 NEED FOR A NEW FRAMEWORK

- Related to the subject of set-backs and controls is also the need for urgent re-evaluation of the validity of high rise development in our context. There is no doubt that with the growing pressure of urbanization greater intensification of development is inevitable. But it is also clearly established that considerably higher densities can be achieved with comparatively low-rise structures.

- The need to development a new framework of controls is urgent, a framework that could also build into it greater consideration for townscape and the development of a system of urban spaces.

- The development of an indigenous framework for urban design could in individual towns and cities attempt to give identification to local customs and characteristics suggesting deeper socio-economic and cultural roots.

Some recent housing projects have attempted to recreate these values in current terms. Raj Rewal's Asian Games Village complex provides a system of enclosed housing groups and defined gateways, attempting to interpret the traditional expression of family

2.4 INDIAN STANDARDS AND CODES

It includes the basic standards and codes related to the development controls. It is mainly based on byelaws operated in U.K, U.S.A and Canada. The main parameters to be considered according to Indian Standard Code of Building Byelaws:

1. FIRE SAFETY

Requirements Pertaining to the Exposure of Exterior Walls

The fire-resistance rating of exterior walls and their distance from the plot line shall be as below:

	Public Buildings	Residential Buildings
Fire-resistance Rating	2 hours	2 hours
Minimum Distance From the Plot Line	3.6 m	1 m

2. OPEN SPACE REQUIREMENTS

Open Air Space - Every room intended for human habitation shall abut on an interior or exterior open air space of the width or dimensions specified in the table below or on an open verandah opening on to such interior or exterior open space as:

Where height of building (above plinth) adjoining the open air space does not exceed	Minimum width of open Air space throughout
m	m
4.9	3.0
6.0	3.3
9.0	4.0
12.0	4.7
15.0	5.4
18.0	6.1
21.0	7.4
24.0	9.0
27.0	10.6
30.0	12.2

3. COVERED AREA

The maximum covered area of buildings of different classes shall be governed by the following:

(a) In a bazar or market area, the covered area shall not exceed 75 per cent of the site, provided that sufficient off- street parking facilities for loading and unloading of vehicles are provided on the same plot as the building.

(b) In an industrial area, the covered area shall not exceed 60 percent of the site area.

(c) In residential areas, the covered areas shall be as given in Table

COVERED AREA

Area of The Plot	Maximum Permissible Covered Area
Less than 200 sq m	60 percent of the site area on the ground and first floor and nothing on the second floor except a *barsati* not exceeding 25 percent of the ground floor.
200 sq m to 500 sq m	50 percent of the site area of 150 sq m whichever is more
501 sq m to 1000 sq m	40 percent of the site area or 250 sq m whichever is more
More than 1000 sq m	33.3 percent of the site area or 400 sq m whichever is more

(a) In the case of buildings of mixed class, the covered area shall be determined by the rules pertaining to the particular class for which the particular floor is used or intended to be used. In case where there are two different classes of occupancy on one floor, the covered area shall be governed by the open spaces required to be left for that particular class of occupancy for each portion of the building.

3. PROJECTIONS

No projection of any sort whatsoever extending more than 23 cm (or 9 in.) below a height of 4.3 m(or 14 ft).

Sunshades Over Windows and Ventilators - Projections of sunshades over windows or ventilators when permitted by the authority having jurisdiction shall fulfil the following conditions.

(a) Notwithstanding anything contained in these byelaws, no projection of any sort shall be permitted over the land and the road or over any drain or over any portion outside the boundaries of the site below a height of 4.3 m from the ground level.

(b) Sunshades provided above a height of 4.3 m from the ground level shall be permitted to project up to a maximum width of 60 cm if the road over which they project exceeds 9 min width.

(c) No projection of any sort whatsoever shall be permitted on roads less than 9 m in width or on rods having no footpaths.

4. PLINTH REGULATIONS

Main Buildings —No plinth or any part of a building or outhouse shall be less than 30 cm or 1 ft) above the determined level of:

(a) The central part of the abutting street,

(b) The footpath of the abutting street.

(b)MAINTENANCE: the authority is empowered to demand owners for proper maintenance.

(c)VERANDAHS AND ADVERTISING SIGNS: the appearance of all the verandahs, advertising signs and similar projections shall be subject to the approval of the authority

(d)UNFINISHED BUILDINGS: no building shall be left unfinished which is unsightly.

(e)CLEARING OF SITE: as soon as any building is completed, all refuse shall be removed by the owner.

(f) MASTS: all wires, poles, masts, struts, and similar fixtures shall be straight and of good appearance.

(g)OPEN AIR DUMPS: permanent dumps to be allowed only in enclosed places.

(h)UNSIGHTLY MATERIALS: the use of any disfigured or damaged material shall not be allowed

(i) PARKS AND GARDENS: trees and plants which conflict with the aesthetic appearance of the neighborhood shall not be planted

(j) DECORATION: it will be allowed in major buildings only after the approval of the authority.

(k) COMPOSITION: any type of facade treatment shall only be allowed where no aesthetic disfigurement can result to the composition as a whole.

## 2.5 NEW PARAMETERS FOR THE PRESENT AND FUTURE DEVELOPMENT

- New balance will be struck between scientific-technological advancement and human development; emergence of bio architecture and eco-technologies.

- Future demand of infrastructure will overtake the level of building and housing construction

- The structure of the city will be determined not by its geometry but by the human activities within it.

- Environment, employment and equity will be the major concerns of the city's development.

- Water will be a critical issue and a major problem in urban areas.

- Solar energy will hold the key to power supply during the next century. Renewable and non-polluting energy sources will overtake present power sources.

- There would be commercial use of solar energy.

THE FUNDAMENTAL VOCABULARY

A scale in any system of measurement convenient to us and whatever it is, we are measuring.
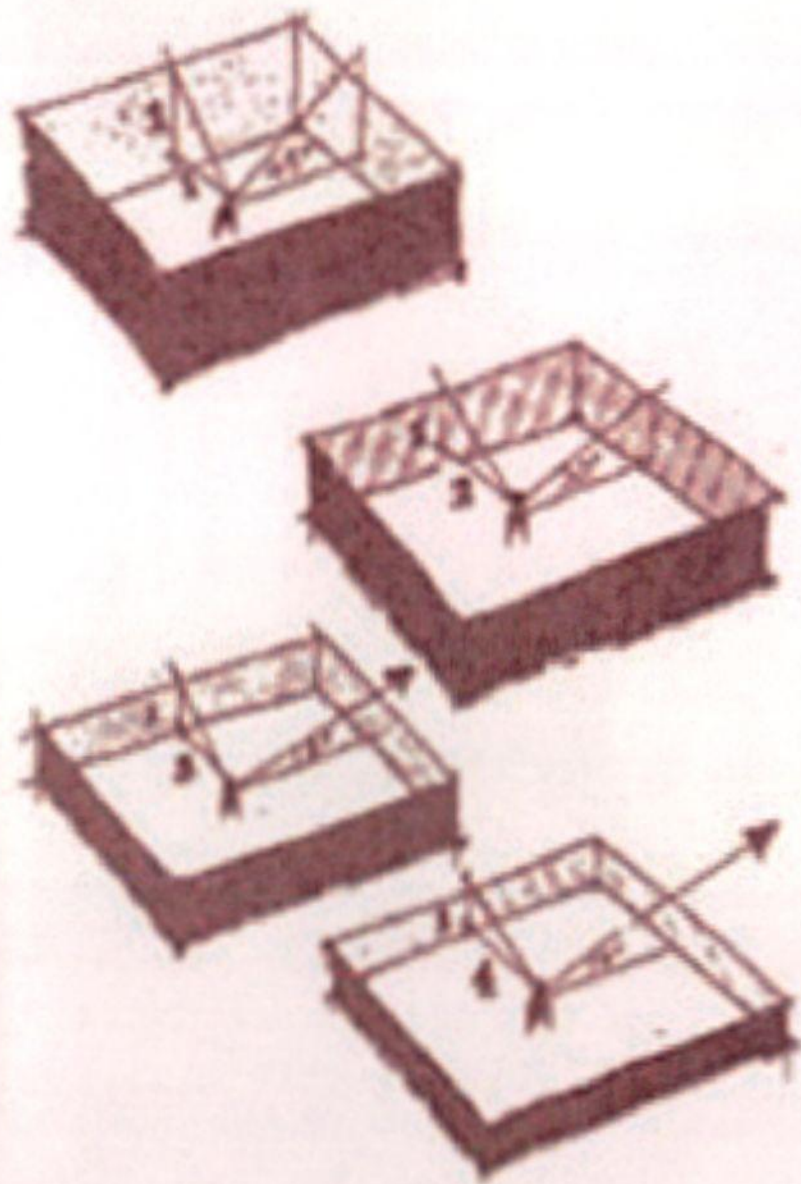
Our eyes have a general field of view and a detailed field of view. The farmer sees general shapes, the latter, details of objects.

A person who stands 3-10 feet is in 'close' relationship to us. We can recognise a friend's face up to 80 feet. We can discern body gesture up to about 450 feet and finally, we can see people up to 4,000 feet.
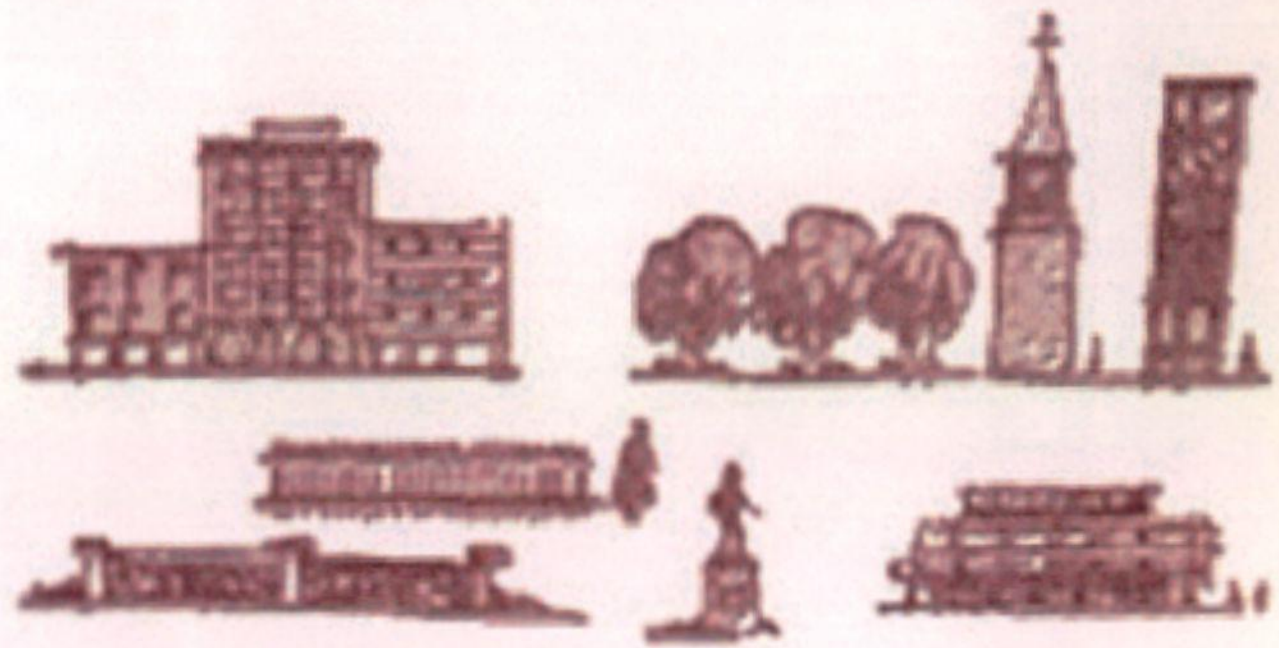
The general surface, buildings, and objects in space constitute the other basic element:urban mass. We can arrange these elements to form urban space and to shape urban activity patterns on small and large scales.
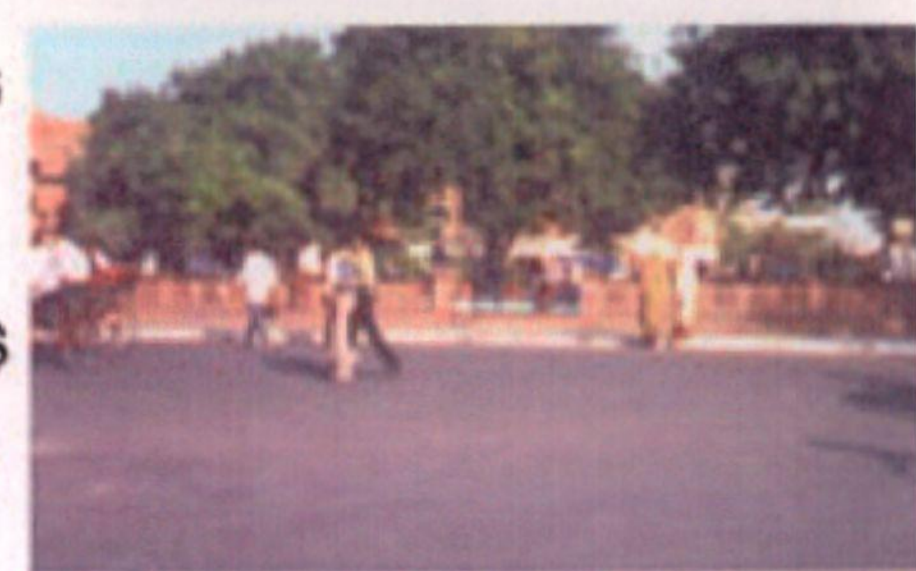
The arrangement of urban activities is a basic element of urban design. It is so important that we often recall a particular city by recalling the experiences we had there.

The key to the patterns of activity in a city is intelligent disposition of major activities in relation to routes of movement.

BUILDING BYELAWS IN ANCIENT INDIA

rst layout the town and then only plan the houses.
rst plant the trees and erect the premises there after.
 far as possible the height of buildings in the same
eet should correspond, this is to say, one should not
 lower and another higher It is obvious that absence
 a uniformity in the height of buildings on the same
eet detracts from the beauty of the street
 deviations from the fixed measurements of lengths,
eadths, and heights of the respective buildings of the
ferent classes of people is not conducive to good and
ould not be made.

 means and ensures an all round uniformity of the
ldings on the same street, for only a particular class
 allowed residence in the same street. This rule and
 preceding one also require that heights of the various
ries of the different buildings should correspond.
phazard irregular heights of the stories of the buildings
 distressing to the eye. It is only a system, a regularity
n in the variations that augments artistic beauty.

CASE STUDY ONE

THE URBAN PROBLEMS OF GAZIMAGUSA AND PROPOSALS FOR THE FUTURE

Some policy recommendations for planning and design solutions are provided as a basis for the integration of developing, neglected quarters of the city.

The internal organization and physical layout of an urban settlement is determined by various factors, including environmental issues, social and cultural values and economic and political forces.

PROBLEMS

1. The neglected areas which have a great potential, the vacant historic buildings and the public spaces around them;

2. the incompatible uses given to those spaces, such as repair shops which do not fit the characteristics of historic environment;

3. the new developments which are in contrast to the form, volume, scale, proportion and identity of old buildings;

4. the chaotic use of advertisement boards or commercial writings on the facades.

5. The newly developing quarters show a complete different structure

6. The new quarters show a random development without any architectural identity or image.

7. Lack of defined open spaces and green areas.

PROPOSALS FOR THE FUTURE

1. To create rich, vibrant mixed used environment.

2. Conserving the best of the past.

3. Unique characteristics of the walled city; the height, scale and bulk of buildings; the color, material, texture; edges; roof profiles; landmarks should be preserved.

4. More sensitive, friendly developmen in which color, pattern, texture, materia as well as technological excellence co

5. Open sites and spaces should be er by tree planting.

6. A strong control mechanism should established.

SHAHJAHANABAD, THE WALLED CITY OF DELHI

Shahjahanabad has the typical streets and street hierarchy by now familiar to you from other cities mentioned. Chandni Chowk, its main thoroughfare, is extremely congested. Its secondary streets are the primary bazaar streets that radiate out from the mosque; they house most of thewholesale trade that goes on in the city. Structures project into the streets and the peddling that also goes on in them block traffic and make vehicular travel through these areas virtually impossible. Transportation is mainly by two wheeled carts and bicycles

The tertiary streets lead into the residential areas. They are entered through a gate that symbolizes for the residents the identity of each mohalla. The buildings that line these tertiary streets also have retail shops on the lower floors that supply the mohalla's inhabitants with household goods and groceries.These residential lanes can also accom modate only pedestrian and two-wheeled traffic.
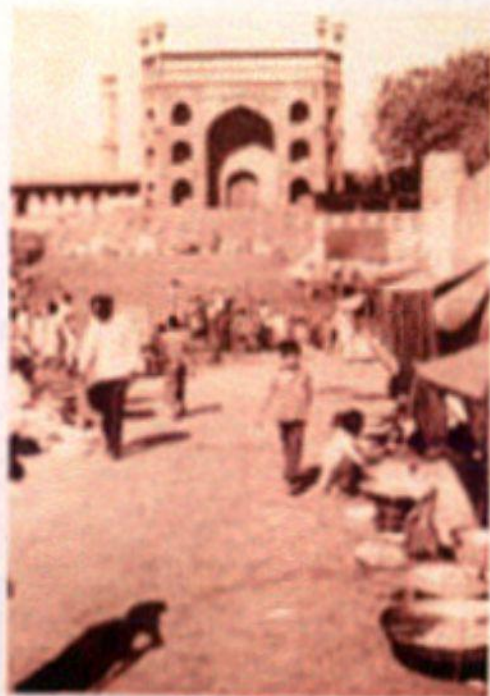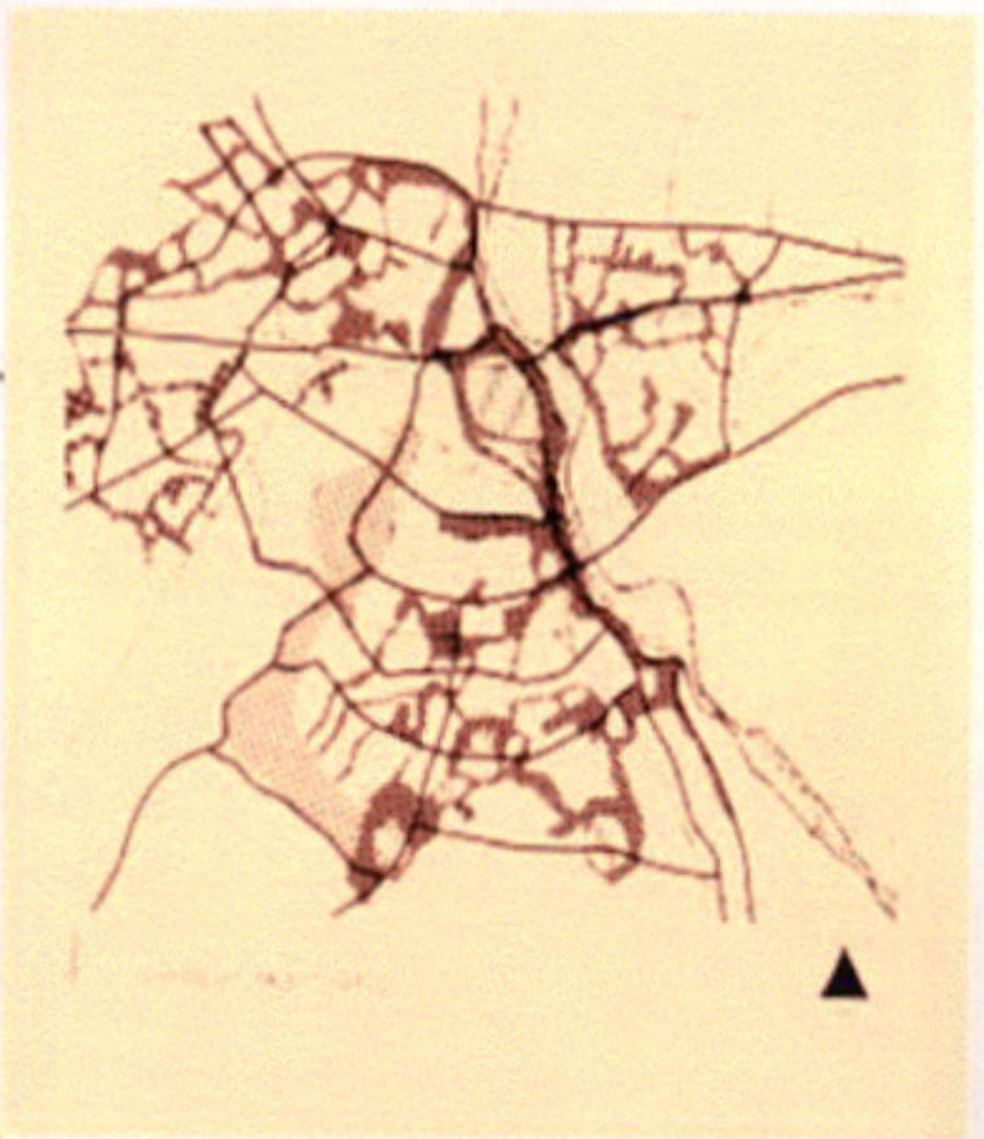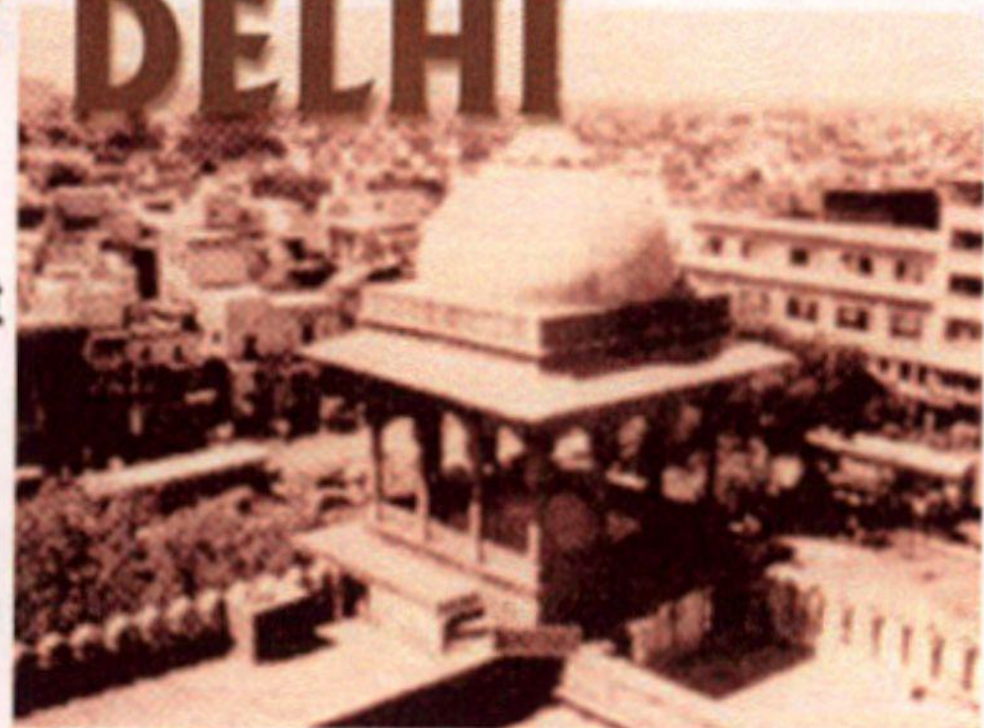
Most of the streets are dark alleys, very narrow and dingy cul de sacs in marked contrast to the houses which are court yard type.

Adaptive reuse within any old city always has two aspects, and Shahjahanabad is no exce ption. One aspect is the conser vation of historic monuments and areas,and it elicits questions of integration and revitalization; the other is the treatment of vac ant spaces, and it poses question about the nature of the infill that ought to be designed for traditio nal areas.

AHMEDABAD

URBANISM, TRADITION AND CONTINUITY IN
AHMEDABAD

The city's medieval fortification, the present urban core,
is still regarded as one of the finest examples of urbanism.

MORPHOLOGY OF THE CITY

The urban sectors of Ahmedabad were called puras.
Thegeneric morphology comprising the overall urban
fabric Ahmedabed, was the pol . Each pura consisted of a no
of pols.The extroverted spatial character within the pol is
ccentuated by chowks. Chowks are associated by upasrais
(temple shrine) which were meeting spaces for community.
The character isfurther demonstrated by otlas (raised plinth)
which extended to the streets.

The city draws its character from the micro
levels of the pol.'civitas' in Ahmedabad is
dissipated over the microcosms within the social
fabric - a figure ground of a multi nucleated and
introvert system, tenuously held together within
the wider chassis of the walland 'centre'.With the
hot, arid climate of Ahmedabad the dense and
compact morphology has obvious environmental
implications.
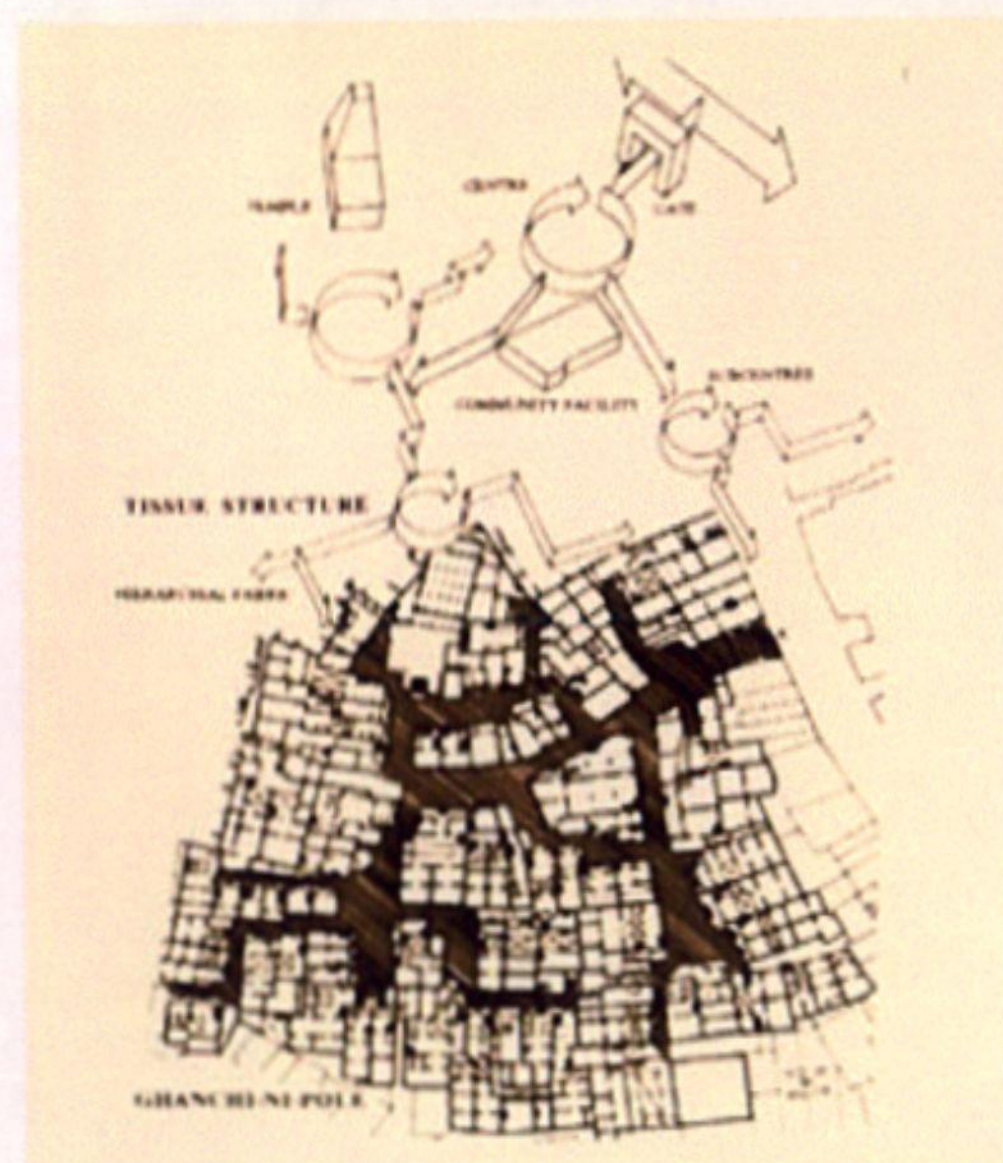
MODERN AHMEDABAD

Ahmedabad is a contradiction with that of its past. It is ironic that not only is all historical continuity severed, but that fundamental relationships are revoked. The reversal of urban morphology from its traditional counterpart has resulted in a woeful 'positive-negative' phenomenon - the transformation of a compact fabric transforming into a series of individual buildings on plots. The fabric that was once humane, architecturally rich, articulated in a hierarchy of comprehensible levels and that provided security, stability and harmony, has given way to a random and sporadic one with endless stretches of housing 'societies' interspersed with ugly concrete mega tower blocks that blight the landscape
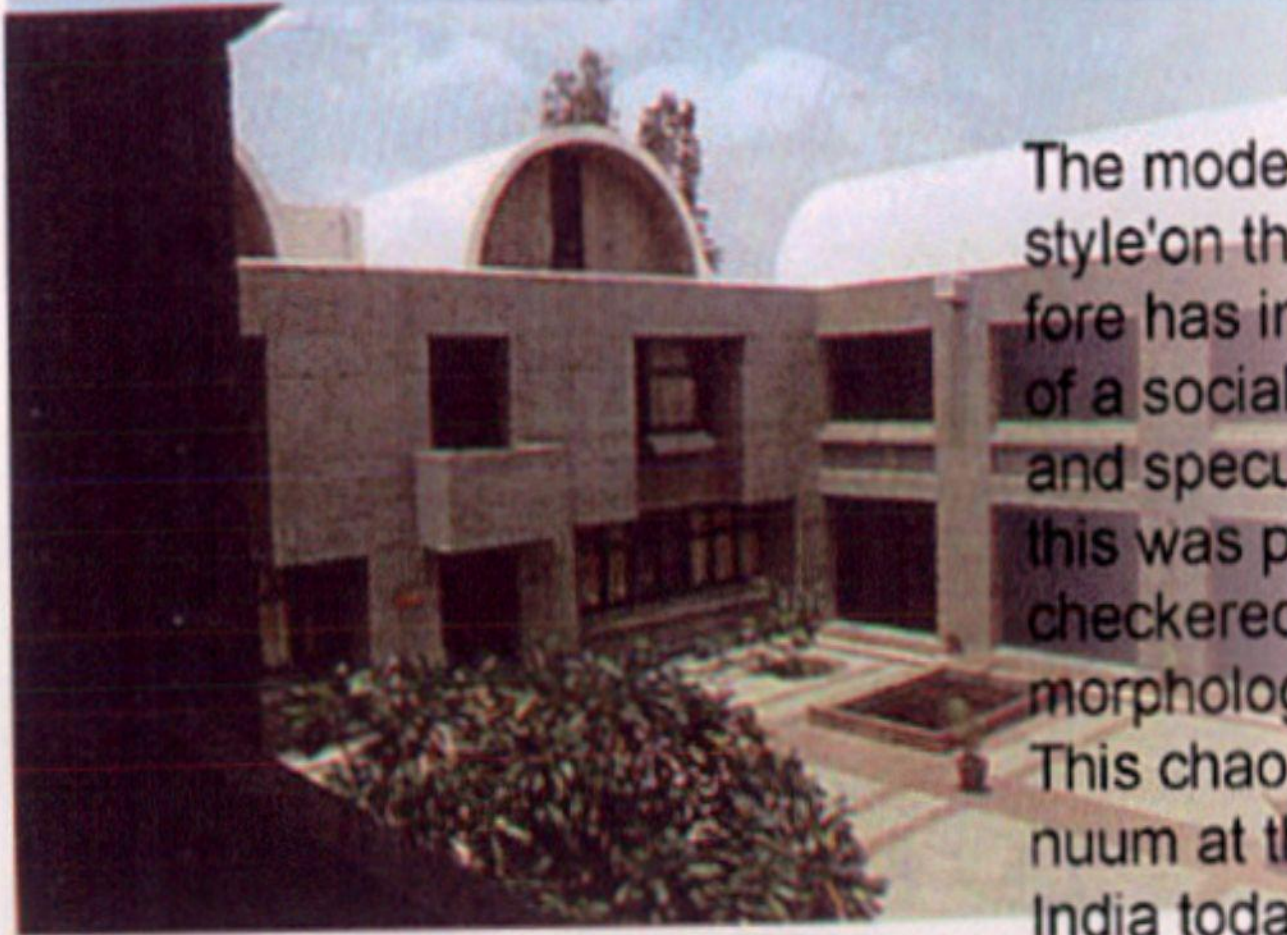
The modernistic intervention and the'international style'on the architectural and urban milieu,therefore has in the western sense been the deterioration of a social and academic ideal to a purely economic and speculative one. From the Indian viewpoint, this was perhaps yet another transformation in its checkered history. The modernist impact on the morphology of the Indian city has been disastrous. This chaos, however, is offset by the dynamic continuum at the sociocultural level. Modernity in urban India today sustained an exuberance essentially due to the socio matrix of the context, which replicates and reinterprets traditional values, belief patterns and contentions

It is perplexing that this drastic summersalt in the urban morphology and ambience has been a very recent phenomenon, due essentially to the proliferation of the 'international style' within the last three decades. The impact of modernism has been disastrous, in contrast to that of colonization.

CHAPTER 3

"CASE STUDIES"

Two studies have been analyzed thoroughly, to satisfy the requirement of the investigation, and are presented. They are :

1. ARANYA : AN APPROACH TO SETTLEMENT DESIGN

2. VIDYADHAR NAGAR: AN INDIAN CITY FOR TODAY

3.1 ARANYA: AN APPROACH TO SETTLEMENT DESIGN

3.1.1 INTRODUCTION

In India, urban housing suffers from shortages and distributional problems and is thus one of the important areas of public concern. Indore is the commercial centre of the state of Madhya Pradesh. Like most other cities of India, Indore is also experiencing acute shortage of housing. **Aranya** has been proposed by Indore Development Authority to alleviate the housing shortage. An innovative approach is used for the design and development of the township. The Aranya township is sited on the Delhi-Bombay highway, approximately 6 km from the city centre of Indore.

Indore is located on latitude 22°-43″ Nand longitude 75°-54″E and is at 556 m above mean sea level. The major climatic factors

affecting the nature of built form are solar radiation, ambient temperature, relative humidity, prevailing wind and rainfall. The mean maximum temperature in May is 42°c and the mean minimum temperature in January is 4.8°c. Relative humidity is low almost throughout the year, except for the three rainy months when it ranges from 68-90%. The severity of climate during the summer months requires the protection from solar radiation

3.1.2 OBJECTIVES

The objectives of Aranya are based on a strong ideological basis. The fundamental values of the society are the essence of planning it. The main objectives of Aranya are:

- **Vitality**

A township, which supports its vital functions, meets the requirements of human beings.

- **Imageability**

A settlement, which can be clearly perceived, and its components can be easily differentiated.

- **Equity**

To create a community witch will serve all groups of society with equitable access to environmental quality and other resources.

Evolving Development Controls For Jaipur City

- **Efficiency**

a township which optimizes the use of all resources - physical, natural, fiscal and human, to the advantage of the community.

- **Flexibility**

To develop a township that is flexible to incorporate future needs easily.

- **Feasibility**

To ensure development within a given legal and organizational framework.

3.1.3 SCOPE

The study is an attempt to provide solutions to the various problems created due to the rapid urbanization. The shortage of housing, especially for the weaker section of the society, which has tendency to create slums.

The settlement is designed, keeping in mind, the economical aspects, improvement of environment, aesthetics, functional aspects and flexibility.

3.1.4 CONCEPT

The chaos in urban areas is the result of the lack of a philosophical backbone to the planning process. Hence, the plans of

contemporary settlements do not control the development in a meaningful way.

In the development of Aranya, the following aspects are considered:

- **Indigenous character of built form suitable to the lifestyle of people.** It provides a setting for the continuation of fundamental values of society. In traditional Indian towns and cities, the level of publicness and the degree of privacy is maintained through a spatial order.

- An innovative approach of **site and services.** Being a site and services project, Aranya differs substantially from conventional housing. The basic building cores are provided on serviced plots, the built form can be extended by the occupants.

- **Reconsideration of norms and standards**

  The conventional norms, standards and building bylaws followed since the British period are quite irrelevant, as they call for excessive provision of various amenities and their working details. To optimize on costs, using the existing norms is a half-hearted approach will not result in any appreciable saving to enhance affordability. Hence, there is need to evolve new

standards, which are relevant and affordable in the present socioeconomic context.

- Marketability of land. The site provides opportunity for some non-residential development, to enhance the marketability of the project. The commercial uses are uses are organized around the major road network to generate more revenue.

- Economy of infrastructure and road network.

3.1.5 METHOD

The checklist method is used to identify the desirable design considerations.

3.1.6 FINDINGS

The different parameters on which the design of settlement will be based are listed under following heads:

- **Settlement Structure**

The elements of settlement structure are:

1. Size and hierarchy of settlements:

Size and hierarchy in terms of population and area in relation to basic functions.

2. Spatial definition and boundaries:

The importance of the nature of boundaries at different levels with respect to desired spatial distinctiveness.

3. Population structure and composition:

Degree of homogeneity with respect to social, economic and cultural characteristics. The way in which it can be achieved in practice.

4. Relationships to other settlements and amongst various hierarchies within itself:

Degree of openness, nature of interaction, sharing of facilities.

- **Settlement Design**

Decisions regarding the settlement structure are followed by those concerned with spatial arrangements within the settlement. The scale and associated functions become very critical at this stage. The interactive decision areas are as follows:

1. Suitable relationship amongst density, building design, cost and environment:

The built mass with respect to height and the process of incremental construction with respect to available capital.

2. Road network:

Nature of hierarchy of road network with respect to adjoining activities and expected nature of traffic.

3. Open space system:

Nature of open spaces; their amount and distribution in a hierarchy within the settlement with respect to location, control and desirable physical characteristics.

- **Supportive Facilities And Utilities**

The idea of hierarchy within the settlement structure incorporates the need for supportive facilities at various levels. The main aspects to be covered are:

1) Nature and magnitude of facilities.

Type of facilities with respect to the socio-cultural attributes of the people; reconsideration of standards of facilities and amenities.

2) Location of facilities

Suitable location in relation to the movement networks, open space system and distribution of population.

- **Legal And Orgenizational Structure**

1. Forms of tenure

2. Need and type of local control

3.1.7 RECOMMENDATIONS

The following development controls are incorporated in the Aranya township:

1. Hierarchies of spatial organization

2. Hierarchy of open spaces

Evolving Development Controls For Jaipur City

3. Hierarchy of commercial spaces

4. Hierarchy of major road network

5. Discouraging through traffic on spine road by creating staggers

6. Large shops are facing the spine roads while smaller around a courtyard at backside

7. The maximum number of floors for the town centre are five and heights gradually taper down, both along the street and within each cluster, to two or three floors

8. Segregation of pedestrian and vehicular movement

9. Defined entry points for each sector

10. Sense of boundary to each sector

11. Each dwelling opened on at least two faces to permit natural light and cross ventilation

12. Plots were made narrow and deep to reduce the length of access roads

13. Use of conventional building material and construction techniques

14. The house form incorporates traditional elements like platforms, porches, courtyards and roof terraces

15. Houses provided with an additional access at the back

3.2 VIDYADHAR NAGAR: AN INDIAN CITY FOR TODAY

3.2.1 INTRODUCTION

Vidyadhar Nagar is being planned at the threshold of the 21st century in close proximity to the walled city of Jaipur. It would cater to the housing needs of entire cross section of society, particularly the urban poor. It incorporates the needs of our own time and future. Apart from the aim of decentralising the pressures from the parent city in terms of housing, infrastructure, economic, educational and cultural activities and providing for the deficiencies in the existing city, Vidyadhar Nagar is also seen as a model for urban development.

In spite of Vidyadhar Nagar housing a small share of Jaipur's population, it is important that it comprises a socially balanced community, with adequate representation of every socio-economic group. A heterogeneous nature of population would also provide answers for variations in the built form of the city. The township is intended to provide for a population ranging between 1,00,000 and 1,50,000 persons.

3.2.2 OBJECTIVES

The main objectives of Vidyadhar Nagar are:

- **Optimal use of man's time and energy**

- **An Energy-conscious City fabric**

- **Flexibility**

- **Harmonious urbanism**

- **Human pedestrian scale.**

3.2.3 SCOPE

The physical fabric of Vidyadhar Nagar and its urban character have evolved on the basis of lessons from both old Jaipur and contemporary Jaipur. Based on environmental and resource concerns. The proposals for the Vidyadhar Nagar judiciously combine the positive aspects of both, the old and the contemporary. They also include resource conserving and recycling systems, which will lend it a character of the future of all cities.

3.2.4 CONCEPT

Very broadly, a built form should be rooted in proper activity location and should be

- Responsive to **the local climate and cultural environment**

- Appropriate **energy recycling** of human and other resources.

- A built environment conducive to the **economic and social lifestyle** of the people

- Cultural and contemporary needs of people

  For Vidyadhar Nagar, the major determinants of the built form are drawn from the studies of old Jaipur. They are:

- Hierarchy of activity spaces;

- **Imageability** related to symbolic form;

- Strong **identity**;

- Efficient accessibility; and,

- Optimal use of **non-renewable resources**.

3.2.5 FINDINGS

The physical fabric of Vidyadhar Nagar and its urban characters have evolved on the basis of lessons from both, Old City and the contemporary city. Added to this is the vision of a **city of the future based on environmental and resource concerns.**

1. Streetscape

The ills of contemporary city planning where buildings are set back and the streetscape is nothing but a stretch of asphalt with boundary walls and barbed wire fences running for kilometres have been recycled in favour of building right up to the plot front with special controls to ensure that the street and buildings are intimately

related to each other. The appropriate road sections and controls for facades have been proposed.

2. Architectural Control

The desired vision is proposed to be achieved through a set of controls by way of guidelines.

These guidelines will include building heights, relationship to street, activities on ground and upper floors, fenestration, material and color controls.

3. Green Streets

It will be the most distinguishing feature of Vidyadhar Nagar's urban characters. The pedestrian paths are proposed through a diagonal network of open spaces linked all across the city. They will link all the sectors and majority of community facilities.

4. The Town Centre

A linear form was selected for the activity areas, giving better accessibility to each function along it. This "spine" would be pedestrian dominated and bursting with activity. The entire spine is seen as a pedestrian mall, with the transition from commercial to cultural functions achieved through open spaces.

5. Residential Development

An adequate mix of plotted and group housing for various income groups would be ensured. Within this activity, care would be taken to see that each group retain a certain identity and character of its own.

The sectors would be bounded by 30 m wide roads on four sides, and its internal street pattern would serve both vehicular traffic and pedestrian movements.

6. Energy Conservation and Recycling

Since resources are finite and energy saved is cheaper than the energy generated, a city should be consciously designed to use natural resources, recycle waste and save human energies.

A significant portion of the resources in urban areas are consumed in the provision of basic services. All efforts must be made to minimize these and to re-use them as much as possible.

7. Water Recycling

In this area, water is the most precious commodity and must be conserved. The area experiences water shortage in the critical months of summer and a report of Geological Survey of India warns of the inadequate recharge of underground water reservoirs.

3.2.6 RECOMMENDATIONS

The main development controls of Vidyadhar Nagar are listed below:

CONTROLS FOR GROUP HOUSING DEVELOPMENT

1. In an area meant for group housing, plotted development shall not be permissible.

2. No duplex unit shall be allowed

3. The ground coverage shall not exceed 40%

4. The permissible height shall not exceed 15 m.

5. Maximum number of floors shall be G + 3 with a maximum FAR of 1.40. **In no case blocks will be constructed less than G + 2.**

6. A set back of 6 m shall be left along the sector road, 3 m along residential road and side set back shall be 3 m

7. **Elements of Architectural control:** The elevations shall be on the pattern adopted in the surrounded areas based on the local Jaipur style as simple adoptions from them.

8. **Canopy** - The canopy will be permitted except within the permissible building area. However, a supported porch as per desired details is permitted within their set back up to 13 sq.m.

9. **Balcony:** Balcony is permitted in all upper floors on all sides within the plot line provided that all such balconies taken together

in length shall not be more than 60% of the exposed sides of the building on that floor.

Front Setback		Rear Setback		Side Setback	
Min.	Max.	Min.	Max.	Min.	Max.
0.75	1.00	0.75	1.00	0.75	1.00

10. **Floor Projections**: In case the upper floors are projected, such projections together with balconies, jharokhas and window shades shall not exceed the maximum limit given for the type of setback.

DEVELOPMENT CONTROLS FOR CENTRAL SPINE

Special controls for architectural and urban from in commercial blocks of central spine of Vidhyadhar nagar are:

1. Basement

(i) Only single basement will be permissible.

(ii) The maximum clear height of the basement will not exceed 4 m.

2. Plinth

Plinth level will be

Min – 0.5 m

Max – 1.50 m

3. The **column grid** towards proposed arcade side and opposite side will be 3m x 3m or in multiples thereof.

4. **Steps** for providing entry to one building block will be allowed beyond property line only towards arcade side, total length of the sides along with both the face will not exceed 1/3rd of the façade length.

5. No projection of any type will be allowed upto lintel level of the Ground floor except point 4 above. At Ground floor lintel level, 's chajja of max. 0.75m Depth will be allowed in max 1/3rd length of each façade.

6. **Height**

The max permissible Height of the blocks (excluding top parapet) will be as follows:

G+3 = 15.00m

G+4 = 18.00m

G+5 = 21.00m

G+6 = 24.00m

7. **Color**

The entire building will be painted in Jaipur pink colour.

All the elevations of the blocks shall be based on local Jaipur style or simple adoptions from them.

DEVELOPMENT CONTROLS FOR URBAN FORM OF OFFICE COMPLEX

Each building shall have a set of column on front

The **dimension of column base** is also specified

Size and height of bracket is specified

The columns shall be backed by a set of *jharokhas* of approved design and texture

The **external surface treatment** of the building is specified

Height of the building is restricted

ARANYA:"AN APPROACH TO SETTLEMENT DESIGN"

INTRODUCTION

Aranya has been proposed by Indore Development Authority to alleviate the housing shortage. An innovative approach is used for the design and development of the township.
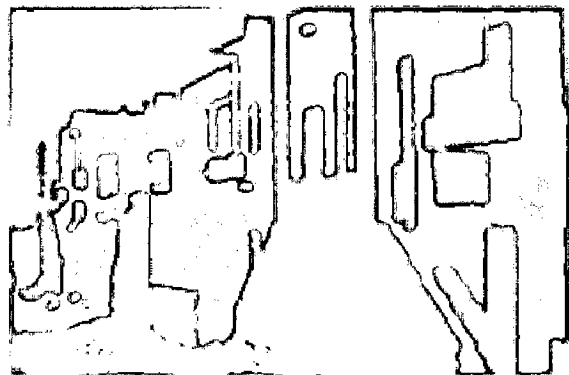
OBJECTIVES

The objectives of Aranya are:

1 Vitality	4 EFFICIENCY
2 Imageability	5 FEASIBILITY
3 Equity	6 FLEXIBILITY

SCOPE

The study is an attempt to provide solutions to the various problems created due to the rapid urbanization. The shortage of housing, especially for the weaker section of the society, which has tendency to create slums.

CONCEPT

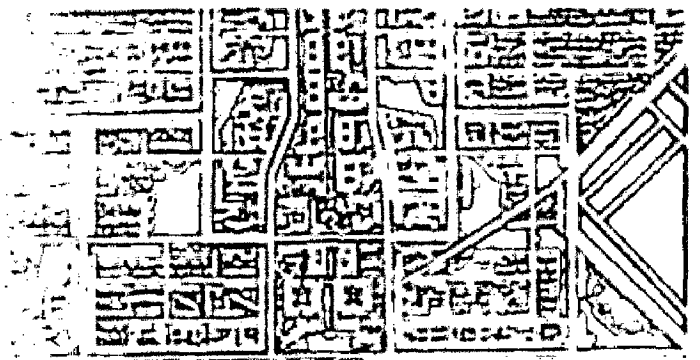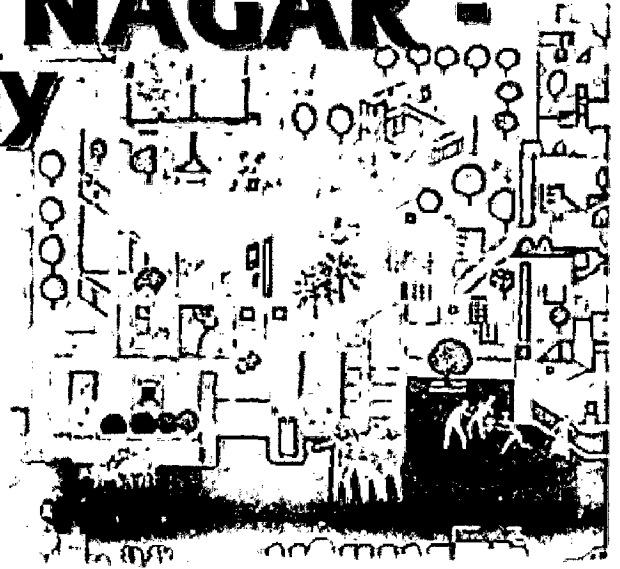In the development of Aranya, the following aspects are considered:

☐ Indigenous character of built form suitable to the lifestyle of people.

☐ An innovative approach of site and services.

☐ Reconsideration of norms and standards
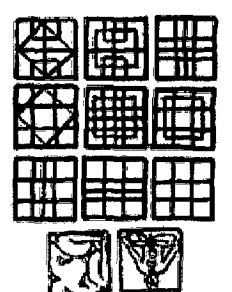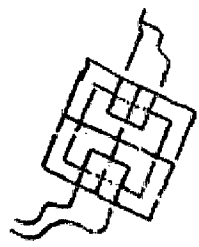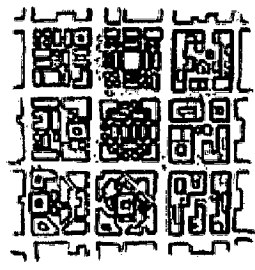
VIDYADHAR NAGAR -
a case study

GOALS

- Human scale
- Harmonious urbanism
- Optimal use of man's time and energy, material resources.
- An energy conscious city fabric
- Flexibility and growth within an overall framework

URBAN CHARACTER AND PHYSICAL STRUCTURE

Streetscape: building right up to the plot fronts with spatial controls to ensure that the streets and buildings are intimately related to each other. Appropriate road sections and controls for facades. Façade conceived with a balance of unity and diversity of building expressions would strengthen the overall harmony of the urban character.

VIDYADHAR NAGAR - development controls

DEVELOPMENT CONTROLS FOR GROUP HOUSING

■ Plotted development is not permissible

■ The ground coverage and F.A.R is fixed

■ Maximum and minimum height is specified

■ Front setback from roads is specified

■ The minimum and maximum dimensions of projections is given

■ Floor projection limit is also given

■ Façade can be designed only in the traditional style

DEVELOPMENT CONTROLS FOR CENTRAL SPINE

■ Minimum and maximum plinth level is specified

■ The column grid is also specified

■ Steps for entry will be allowed beyond property line only

■ The maximum height of blocks are specified

■ The entire building will be painted in Jaipur pink color

■ All the elevations of the blocks shall be based on Jai

CHAPTER 4:

"STUDY AREA PROFILE"

CHAPTER 4

"STUDY AREA PROFILE"

4.1 LOCATION

4.1.1 REGIONAL SETTING

Jaipur of the capital of the state of Rajasthan. It is situated amidst the Aravali hill ranges at an altitude of 430 m above mean sea level and lies on latitude 27^0 55' N and longitude 75^0 55' E.

It is easily accessible by road from Delhi, Agra, and Ajmer. It is also well connected by air and railways.

4.1.2 PHYSICAL FEATURES

Jaipur nestles amongst the hills of the Aravalli Ranges, which run diagonally across Rajasthan in a north-east to south-west direction, just west of Jaipur. The crests of the Aravalli Ranges are adorned with forts and towers.

4.1.3 CLIMATE

The climate of the city is dry and the temperature fluctuate between 41^0C and 25^0C (maximum and minimum mean temperature, respectively) in summer and between 25^0C and 6.5^0C (maximum and minimum mean temperature) in winter.

Evolving Development Controls For Jaipur City

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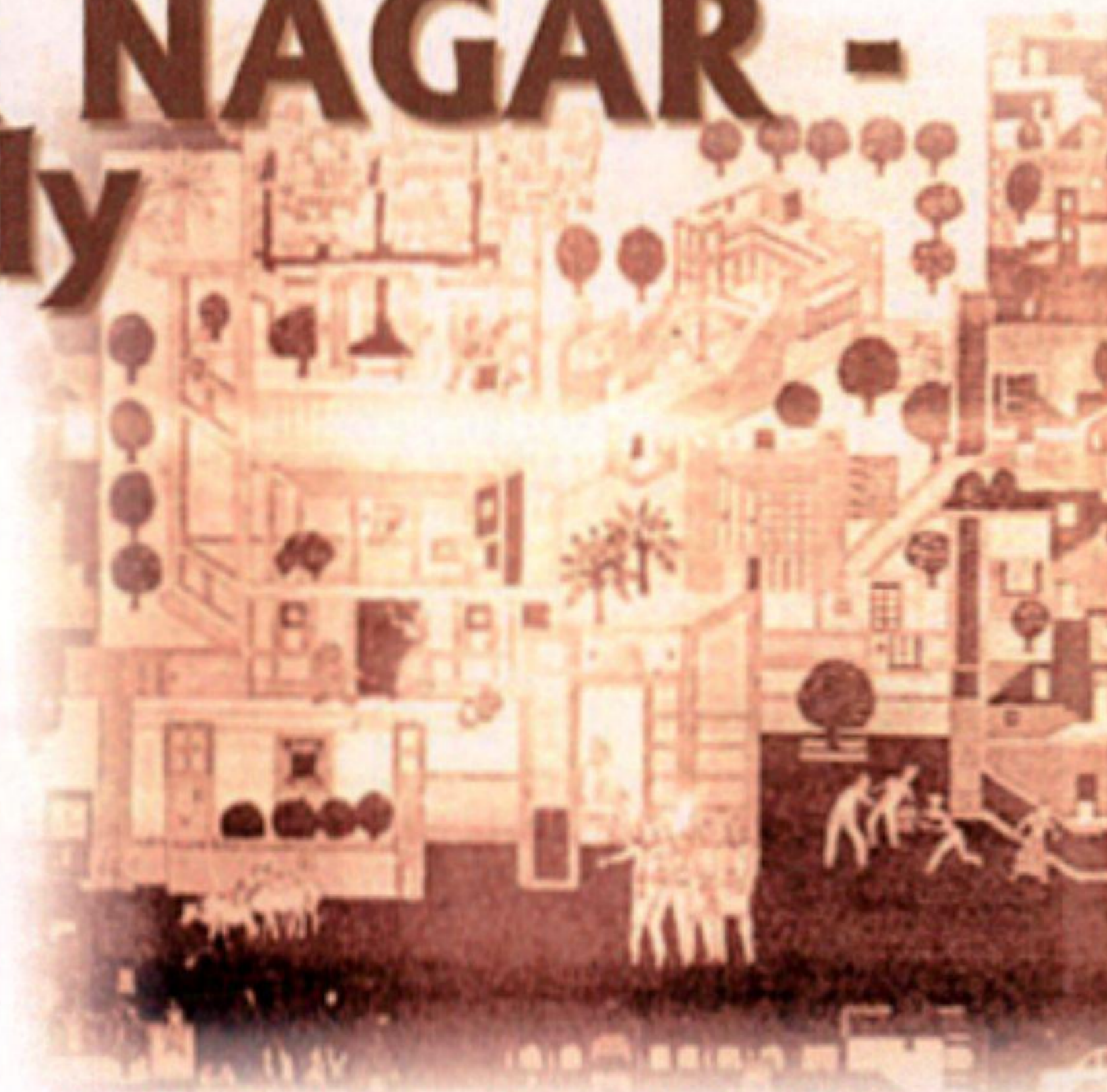

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VIDYADHAR NAGAR -
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Evolving Development Controls For Jaipur City

seen in the growth of population . In 1824, Jaipur population was estimated to be 60,000 while by 1870, it had increased to 1,37,787 of which about 90,000 lived within the city walls and about 48,000 or more lived outside.

The expansion of city beyond its fortified walls took place during the region of Ram Singh and Sawai Madho Singh between 1870 and 1881. The major development took place towards south of walled city. Now the city has also grown in South-Western direction.

activities are administrative services, and trade and commerce. The economic structure of the city has changed marginally over the past two decades, and manufacturing industries have remained important sectors of trade and commerce.

Trade and commerce account for 23.9% of the total workforce as per 1991 census. The share of trade and commerce has been steadily increasing from 16.49% of total workforce in 1961 to 23.97% in 1991.

The fact that there has been at least a two fold increase in every category of land use illustrates the rapid urban development in the last decade.

4.2.4 SOCIAL BASE

Most of the population living in Jaipur constitutes people of two categories

1. People involved in trade and commerce

2. Service class people which are mostly immigrants

The characteristics of both the classes are entirely different.

4.2.5 PHYSICAL DEVELOPMENT

Till the start of 20th century, most of the population of Jaipur was contained within the walled city, with very little spill over outside, Jaipur thrived between 1835 and 1881 and its direct effects were

4.2 TREND OF GROWTH

4.2.1 HISTORICAL BACKGROUND

Two hundred and sixty seven year old Jaipur is an excellent example for understanding the traditional architecture and planning concepts of India. Its founder, king Sawai Jai Singh (1700-1743) was well versed in the arts and sciences . He wished to establish a new capital city reflective of his wider consciousness. Assisted by Vidyadhar Battacharya, his able architect, Jai Singh founded Jaipur on November 17, 1727

4.2.2 DEMOGRAPHY PROFILE

Jaipur achieved metropolitan status in 1981 when its population was 10.15 lakhs. The decadal growth rate for 1981-1991 was 49.2% and population was 15.18 lakhs in 1991.

The sex ratio as per 1991 census for whole of the city was 869: 1000 population projections indicate that the population of Jaipur city would be around 30 million by 2011.

4.2.3 ECONOMIC BASE

Being the capital of the state, Jaipur continue to be the principal administrative, commercial and distribution center of Rajasthan. The fact that Jaipur has been a major tourist destination area, has also to be taken into account. It is apparent that Jaipur's major economic

STUDY AREA PROFILE

LOCATION

Jaipur of the capital of the state of Rajasthan. It is situated amidst the Aravali hill ranges at an altitude of 430 m above mean sea level and lies on latitude 270 55' N and longitude 750 55' E.

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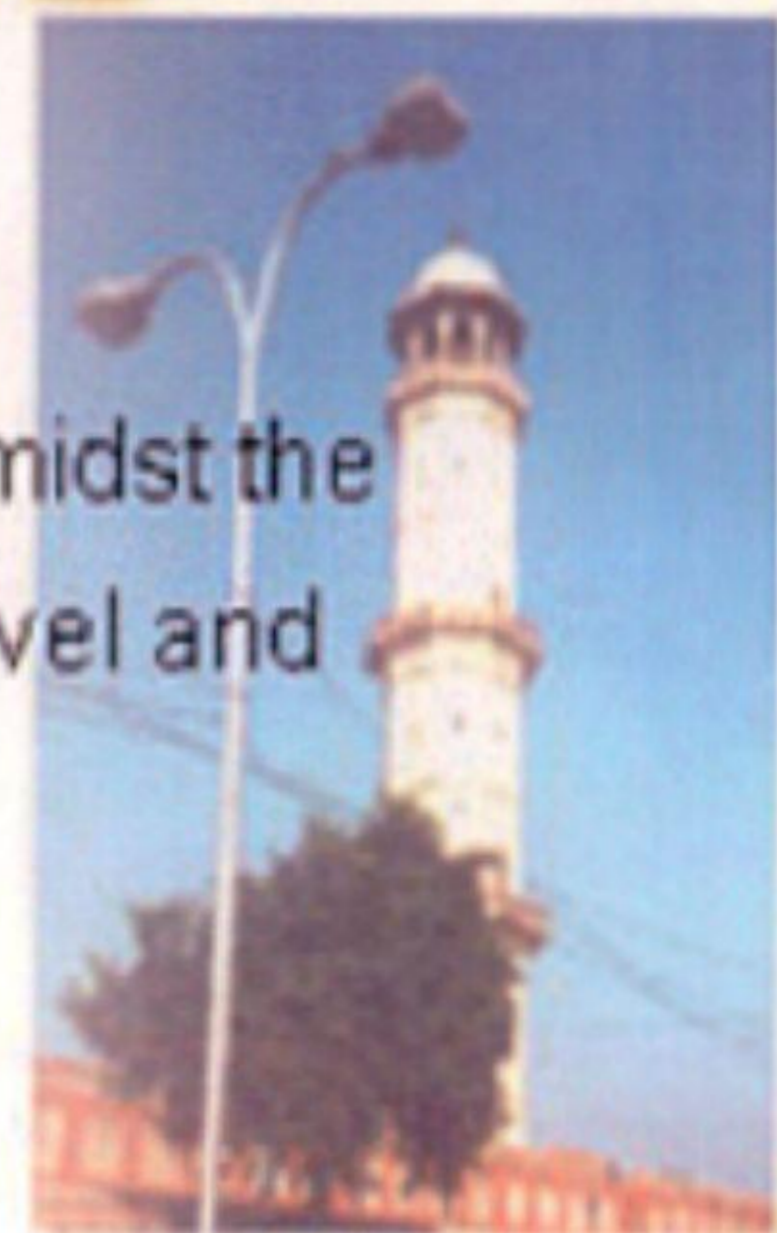## SOCIAL AND ECONOMIC CHARACTERISTICS

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POPULATION GROWTH

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CHAPTER 5

"DEVELOPMENT CONTROLS:AN OVERVIEW"

CHAPTER 3:
"CASE STUDIES"

CHAPTER 5

"DEVELOPMENT CONTROLS: AN OVERVIEW"

5.1 DEFINITIONS

5.1.1 DEVELOPMENT CONTROLS

Development control in other words is a tool for regulating development according to master plan, Zonal development plan, Layout plan, and to ensure provisions of adequate social and physical infrastructure.

Development control is a useful tool in the hands of authorities to ensure fruitful realization of any comprehensive planning exercise. Its role is limited to set legal guidelines that aim at regulation of physical development in an urban settlement within the overall framework of plan.

Building byelaws and architectural control form part of development controls which in turn form an integral part of development plans.

5.1.2 BUILDING BYELAWS

Local authority byelaws may be defined in simple terms as a law which operates over the area of the authority, having been made by the authority under a power conferred by status.

Lord Russel C.J said

"a byelaw of the class we are here considering, I take to be an ordinance affecting the public or some portion of the public , imposed by some authority clothed with statutory powers ordering something to be done or not to be done, and accompanied by some sanction or penalty for its for its non observance. It necessarily involves restriction of liberty of action by persons who come under its operation, but for the byelaw, they would be free to do or not to do as they pleased. Further it involves this consequence that, if vanity made, it has the force of law within the sphere of its legitimate operation."

The byelaws dealing with the building are known as building byelaws. The building byelaws are designed to ensure that the design and construction is in accordance with established principles and practices, in conformity with the physiological ordering that the community desires which in turn has socio-economic implication for the community.

TYPE OF BUILDING BYELAWS

1. SPECIFICATIONS TYPE

2. PERFORMANCE TYPE

1. The **specifications type** which mention different specifications for different constructions from the listed materials.

2. The **performance type** which set forth the minimum standard to be followed in the construction of a building. These are more flexible and adaptable to the changing conditions.

5.1.3 ARCHITECTURAL CONTROL

Architectural controls are local ordinance regulating the construction and design of buildings. This aspect of control usually deals with architectural features and encourages a certain architectural style.

TYPE OF ARCHITECTURAL CONTROL

1. FACADE CONTROL

2. FRAME CONTROL

3. MODULE CONTROL

1. FACADE CONTROL

It is the control of the architectural elements which appear on the facade of a building. It comprises of controls like:

- Elements to be used on the facade are specified

- Proportion of openings to the wall surface

- Sizes of the elements are fixed

2. FRAME CONTROL

Frame control is forming a frame by the control of height, projections etc. The building portion, which can be of any design, can stay behind this frame.

3. MODULE CONTROL

Module control is either horizontal module fixation or vertical module fixation or both. It creates a balance in massing and reduces the chances of heterogeneity in facade treatment.

5.2 AIMS AND OBJECTIVES OF DEVELOPMENT CONTROLS

1. In the maze of architectural and urban complexity, we have lost sight of what should be foremost among the regulators: **the fulfillment of human aspirations and purpose in our surroundings.**

2. To regulate the development in a **systematic and harmonious** manner.

3. To prevent excessive dissimilarity, in the external appearance.

4. To safeguard and improve living conditions and environment.

5. To prevent overcrowding of people and dwellings.

6. Provision of adequate light and ventilation.

7. Creation of an urban environment to work, live and create.

8. To ensure a given standard of comfort and **psychological satisfaction.**

9. To conserve our **natural resources.**

   " Towns should be built so as to protect their inhabitants and at the same time make them happy"

   Aristotle

5.3 THE HISTORY OF DEVELOPMENT CONTROLS

First settlements were made along river valleys which started growing into villages and villages into towns and towns into cities Any town or city needs to have proper planning to have a planned growth and healthy living. Then further this planning needs to have certain regulations, to further facilitate proper development. If we see through history carefully we would find that the inhabitants of even the oldest civilizations were not oblivious of these planning principles. They too observed certain rules and regulations for their city building.

This part will deal with the development controls prevalent in our historical settlements. The study is divided into four parts.

5.3.1 EGYPTIAN PERIOD

The following rules and regulations for buildings can be evaluated from the remains of Kahun during the Egyptian civilization:

1. The place of work was kept in close proximity of place of living

2. **Straight streets** met at right angles to each other

3. **Narrow alleys** gave access to houses

4. Cells made of sun, dried bricks arranged around **central courtyard** where cooking and other domestic activities could be performed

5. Bigger cells for supervising staff

Evolving Development Controls For Jaipur City

6. **Every house had a staircase** leading to roof for outdoor sleeping

7. **Ventilating device** (known as mulguf) was installed in every house to provide some degree of cooling for interior rooms

5.3.2 ADVANCED STATE OF PLANNING AND ARCHITECTURE IN INDUS VALLEY

Excavation at Mohanjodaro and Harrappa have revealed the remains of large cities in flourishing condition at a very early date (3000 B.C.). It is apparent that a relatively advanced civilization flourished here.

1. The principle roads were made at right angles to each other running north-south and east-west.

2. **Sewer,** covered or uncovered was provided for drainage

3. **Public bath and public well** for drinking water were provided

4. Absence of palaces for rulers

5. Houses had **central courtyard,** in which all rooms opened

6. Bath was on one side near the entrance verandah alongwith a well

7. **Height Control:** No house has been found higher than three storeys

8. **Material Control:** Upper storeys were built of wood while the lower one were of burnt bricks (floors were wooden)

9. Bricks were set in a bond resembling English bond and mortar made of coal tar and sea shell line was used

So, we can say that in their own way they were observing health and hygiene, building material and height regulations.

5.3.3 GREEK PERIOD

1) An architect from Miletus by the name of HIPPODAMUS gave them positive theories about "grid iron" pattern for city planning which was followed for all cities to obtain rational arrangement of buildings and circulation.

2) Civic defense required the construction of a defensive wall, which gave physical limits to the city.

3) Aristotle described the ideal size of a city, or polis, between 10,000 to 20,000 people.

4) Greek buildings gave a sense of human measure to the urban landscape.

5) The Greeks thought of cities as areas of finites size, comprehensible to the human eye.

6) Public buildings like Agora (market place), stoa (colonnaded building for multipurpose use), temple, Boulenterion (meeting place for democratically elected councils), Assembly halls,

Prytaneion (house for Chief dignitary) etc. were kept in the centre of the city

7) Proportions and sizes were based on human measurements.

8) Repetitive use of elements such as colonnades and pediments.

9) All rooms in the house looked upon a common courtyard

10) Blocks were shaped to provide appropriate orientation within them

11) Chief apartments were kept on north side facing the winter sun with other on east and west sides

12) Shop cum flats existed (shops on ground floor and flats on first floor)

5.3.4 ROMAN PERIOD

The Romans were calculating organizers. They excelled in technical achievement and were skilled in Building. Greek forms were reduced to set systems, which could be readily applied, for construction. In spite of the mechanical way in which they tackled problems their planning was controlled by certain regulatory factors, which were as follows:

1) A pattern of straight streets, crossing at right angles enclosing rectangular blocks .Town was divided into four quarters by `cardo' and `decuminus'.

2) The Romans used a set of proportions that would harmoniously relate the various parts of buildings to each other but not necessarily to human measure.

3) The size of a column determined, by rules of proportions, the sizes of all other elements. The basic dimension was called 'module'.

4) Height limit of seventy feet for all tenements. (Fixed by Emperor Augustus since people started speculation and building 7-8 storeys height buildings) Restriction was enforced not to build higher than four floors with floor to floor height of 15 ft.

5) No owner might pull down a house or let it fall save with the consent of town council unless he is going to build as good as one at its place (This solved their housing problems)

5.3.5 MEDIEVAL CITIES

The overall impression of the medieval cities is unified by the constant interplay of basic themes:

1) The siting of the town to be derived from the consideration of vista for military defence

2) The central market place had to be arcaded on all sides so as to almost exclude wheeled traffic

3) Houses had to be completed within a specific time.

4) Each dwelling had to be built along the full length of occupier's frontage and to a fixed building line

5) Each plot had to be sufficient enough to allow ample garden space

6) Row housing was developed for conserving the heat in colder countries. Behind these rows of dwellings open space had to be left.. (In them domestic animals were kept and garden cultivated)

7) A standard height of seventy feet to the crowning cornice for each building was laid down

8) Main road was straight from town gate to the plaza.

9) All winding streets converging into a main plaza.

10) Use of same material throughout.

11) Characteristic roof overhang on the houses.

12) Similar doors and windows.

13) Buildings of approximately same height.

5.3.6 RENAISSANCE PERIOD

1) A town has to be planned in a round shape so that the enemy could be seen from several sides.

2) They found that polygon was an advantageous shape for fortification and that converging streets were a useful means of focusing on an important central building.

3) The principal streets, rigidly straight and consisting of identical Porticoed houses defined as with a ruler and a string and which, to be truly beautiful, should show at the end of a perspective view, a great edifice.

4) There was strictly uniformity in building. The houses were to be identical and face one another exactly. Those houses which mark the emergence to the square, although of a lesser character, are all equal in height to the mansions of the noble

5) In Versailles, plots of land wee to be granted to anyone at a nominal yearly charge on the condition that all buildings were executed symmetrically according to the plans and models of the Superintendent of buildings. This shows that regulations of set back laws, height restriction, building line and façade control etc. existed.

6) Recoiling from the hazards of overhanging upper storeys, a building ordinance in 1619 decreed that the wall of building would henceforth be built vertically from foundations to roof.

7) In rebuilding Rome, obelisks were built to mark the key points of the city. They were to act as guideposts for the whole city plan.

8) The Renaissance plaza is one of the elements of urban design par excellence.

9) A plaza should not be too long in relation to its width; otherwise the cornice at the far end would be too far below the eye's field of vision.

10) Statues should be placed at heights, so that they would be seen silhouetted against the sky, above cornice lines.

11) If plaza is very large, fountains should be introduced to attract observers at vantage points.

5.3.7 INDUSTRIAL DEVELOPMENT

With the nineteenth century came the dawn of machine age. Until that time all goods had been processed and assembled by hand. "The real tragedy of the "Industrial Revolution", as a modern writer has said: lay in the fact that it demanded an utterly different type of mind to effect the necessary adjustment of life to its new conditions than had sufficed for the requirements of eighteenth century civilization." We may discern three periods of this industrial town production.

(a)   No control period

(b)   Semi-control period

(c)   Control by Bye-laws

NO CONTROL PERIOD

There was practically no control or guidance of any sort, courts and alleys of any density and width, under ground cellars, flood lands and marshes, anything might be utilized and anyhow. It was considered convenient to crowd houses as close as possible; no one stopped to think of the double disadvantage of making the houses unhealthy and giving workers no room for expansion.

SEMI CONTROL PERIOD

By about 1840 it was realised that something must be done, and from then onwards a series of sanitary and public health act were passed which effected some slight improvement in such matters as drainage, cleaning, water supply, lighting, etc. but had little effect upon planning. One special type of house unit continued to be built a unit that tended to produce a certain type of street-plan the back to back house. This type of a house had one side exposed to air and light only, the other three were enclosed by side and back neighbours. It was a low-grade house type, making the street or front garden the only yard for all those household affairs that need to be

done in the open air. It produced of course, an extremely compact street plan.

CONTROL BY BYELAWS

The third period of Industrial England was ushered in by the great 'Public Health Act of 1875. An enormous advance in many directions, it perpetuated the planning of the town by duplicating the House unit the cellular form of growth in its extremist form. **The model Byelaws prescribed the size of room, the space behind the house and the width of road in front.** The chief practical defect of the systems beyond lack of any general plan, were found in the roads-these were not graded to suit traffic requirements as they had been in ancient Greek towns, but standardized to a width (usually 36 ft.) which was too wide and expensively paved as an approach to houses and which at once proved too narrow if it changed to become traffic route. Another singular use of roads was that of breaking up the length of terraces-which otherwise were only limited by the length of the owner's property.

DEVELOPMENT CONTROLS :an overview

Development control in other words is a tool for regulating development according to master plan, Zonal development plan, Layout plan, and to ensure provisions of adequate social and physical infrastructure.

Development control is a useful tool in the hands of authorities to ensure fruitful realization of any comprehensive planning exercise. Its role is limited to set legal guidelines that aim at regulation of physical development in an urban settlement within the overall framework of plan.


AIMS AND OBJECTIVES

1. In the maze of architectural and urban complexity, we have lost sight of what should be foremost among the regulators: the fulfillment of human aspirations and purpose in our surroundings.
2. To regulate the development in a systematic and harmonious manner.
3. To prevent excessive dissimilarity, in the external appearance.
4. To safeguard and improve living conditions and environment.
5. To ensure a given standard of comfort and psychological satisfaction.
6. To conserve our natural resources.

BUILDING BYELAWS

Building byelaws are defined as series of standards and specifications designed to ensure safeguards in the erection of building to protect the human beings and regulating the development
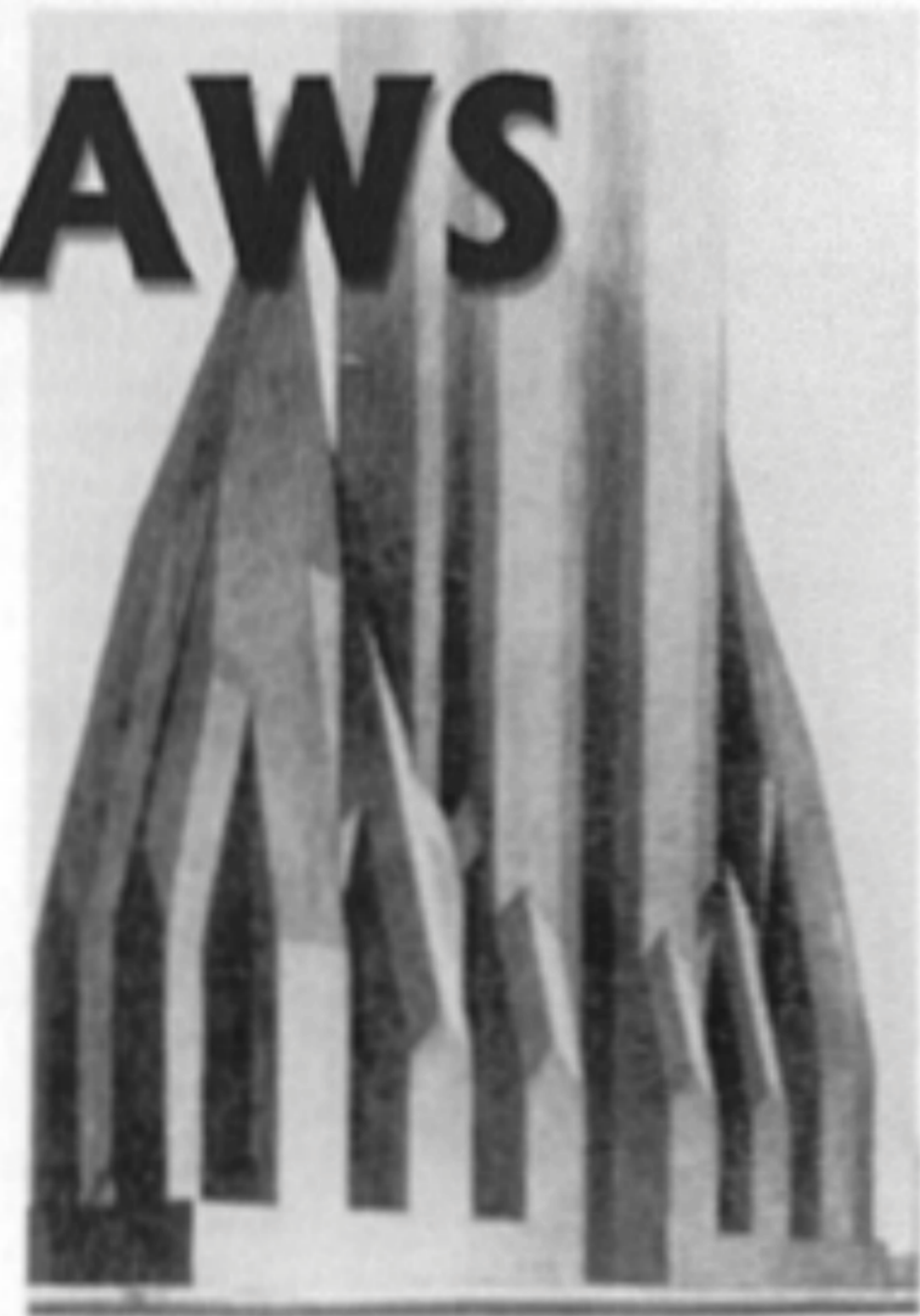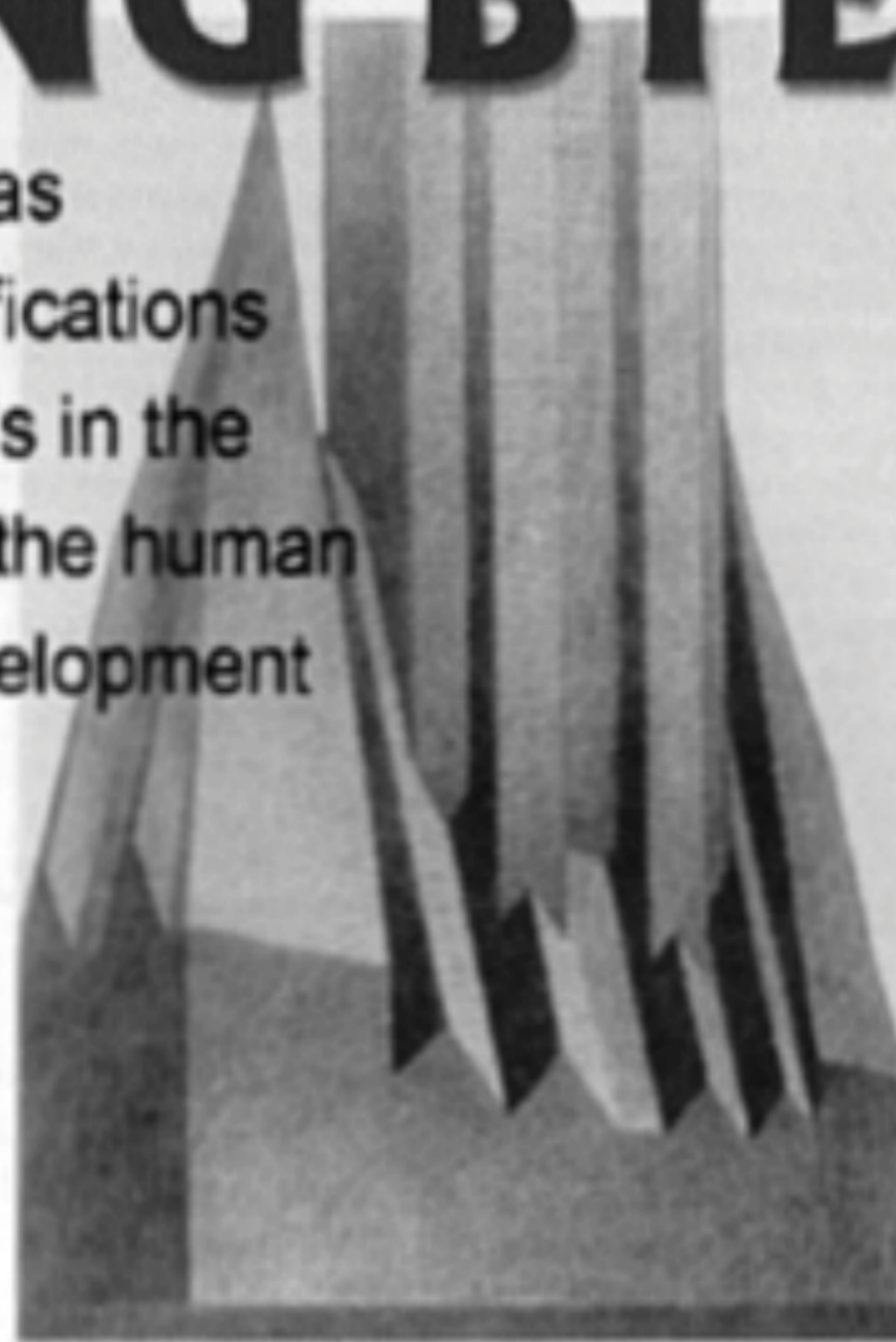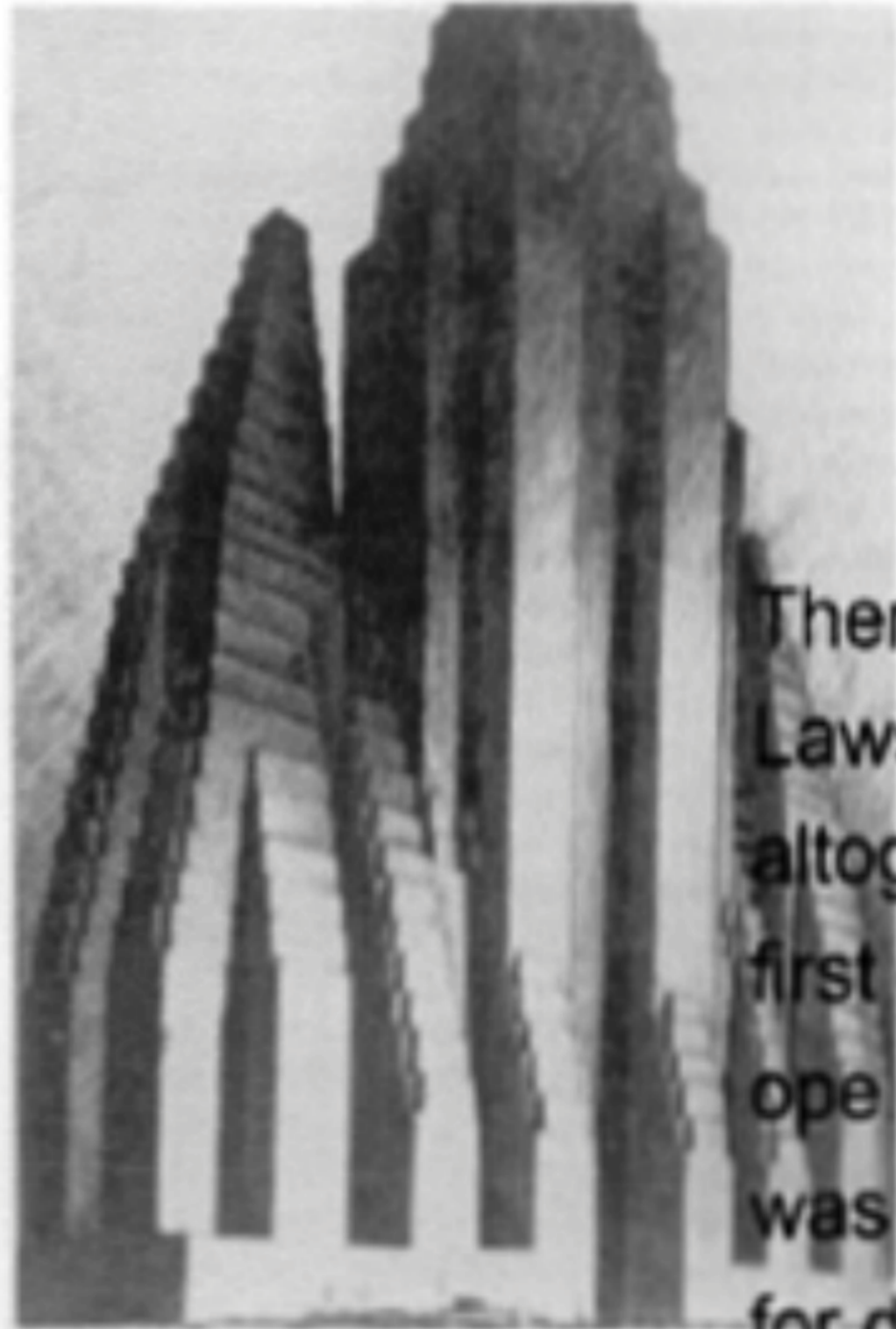
There was much study of these Zoning Laws. There were five Ferriss drawings altogether rendered, dramatically to show first of all, the permissible building envelope In subsequent drawings that envelope was compromised, successively against need for daylight penetration, the realities of steel frame construction.

1. First layout the town and then only plan the houses.
2. First plant the trees and erect the premises there after.
3. As far as possible the height of buildings in the same street should correspond, this is to say, one should not be lower and another higher It is obvious that absence of a uniformity in the height of buildings on the same street detracts from the beauty of the street
4. A deviations from the fixed measurements of lengths, breadths, and heights of the respective buildings of the different classes of people is not conducive to good and should not be made.

This means and ensures an all round uniformity of the buildings on the same street, for only a particular class was allowed residence in the same street. This rule and the preceding one also require that heights of the various storeys of the different buildings should correspond.

HISTORY OF DEVELOPMENT CONTROLS

GREEK PERIOD

1 Civic defense required the construction of a defensive wall, which gave physical limits to the city.
2 Aristotle described the ideal size of a city, or polis, between 10,000 to 20,000 people.
3 Hippodamus proposed regular   street layouts along gridiron patterns.
4 Greek buildings gave a sense of human measure to the urban landscape.
5 The Greeks thought of cities as areas of finites size, comprehensible to the human eye.
6 Proportions and sizes were based on human measurements.
7 Repetitive use of elements such as colonnades and pediments.

ROMAN PERIOD

1 Town was divided into four quarters by `cardo' and `decuminus'.
2 The Romans used a set of proportions that would harmoniously relate the various parts of buildings to each other but not neces sarily to human measure.
3 The size of a column determined, by rules of proportions, the sizes of all other elements. The basic dimension was called 'module'.

RENAISSANCE PERIOD

The overall impression of the medieval cities is unified by the constant interplay of basic themes:
1 Main road was straight form town gate to the plaza.
2 All winding streets converging into a main plaza.
3 Use of same material throughout.
4 Characteristic roof overhang on the houses.
5 Similar doors of windows.
6 Buildings of approximately same height.

CHAPTER 6:

"WALLED CITY OF JAIPUR: A STUDY"

CHAPTER 6

"WALLED CITY OF JAIPUR-A STUDY"

6.1 WALLED CITY OF JAIPUR

Two hundred and sixty seven hears old Jaipur is an excellent example for understanding the traditional architecture and planning concepts of India.

Its founder, King Sawai Jai Singh (1700 – 1743) was well versed in the arts and sciences, especially astronomy. He wished to establish a new capital city reflective of his wider consciousness. Assisted by Vidyadhar Battacharya, his able architect, Jai Singh founded Jaipur on November 17, 1727.

6.1.1 PLAN CONCEPT

The knowledge of ancient scriptures inspired Jai Singh to conceive this city according to the ancient Indian concepts of town planing. This involved linking the city with the heavens, by symbolically re-creating the universe in the form of the sacred Vastu-Purusha Mandala (Vastu = Environment, Purusha = Energy, Mandala = Chart). The central position of Brahma in a Mandala was interpreted as the King's position in a monarchy. The central location

of palace complex and observatory in Jaipur is the symbolic representation of the city in the image of the universe.

The prastara concept of town planning was adopted, as described in Mansara.

Mansara's description of 'Prastara' plan may be described as a town in which form is either square or oblong. It can be divided into 4, 9 or 16 wards by an appropriate number of roads. The roads run east-west and north-south dividing town into several wards. The zoning was also done according to Vastu-Shastras. Wards with larger plots are inhabited by people of lower ranks. This not only conformed with the then prevalent social hierarchy but also strengthened the city's economic base.

Adoption of Prastara Plan

The site of walled city of Jaipur is in the valley region formed by hills of Nahargarh to the north and east.

The final plan of the walled city has emerged out of the following sequences.

1. Orthogonal cluster of 9 square with two major roads running east-west and north-south

2. The north-western square was placed in the south-eastern corner, as it would have fallen off the will of Nahargarh.

3. Two squares were joined in the centre to accommodate the palace, its gardens and administrative offices.

4. The *southern central square was divided into two small chowkries to make a road directly leading from the boundary wall to palace complex.*

A ridge ran at 15° to E-W axis over which the major east-west road was built, hence the whole plan was tilted at 15°. The 15° tilt has several advantages.

(a) Persons moving in the morning and evening hours *do not face the angle of sun directly.*

(b) It allows early morning sun in winter and avoids evening sun in summer

(c) It facilitates natural surface drainage

6.1.2 Street Pattern

The road network in Jaipur is well thought out and follows definite hierarchy:

1. The major E-W and N-S roads formed the sector boundaries and are 108' wide

2. Next in hierarchy is a network of 54' wide secondary roads which run within a sector, dividing it further and linking the sector to bazaar streets.

3. A further grid of 24' and 13.5' wide tertiary streets in true Prastara chess board pattern subdivides sectors into "mohallas".

6.1.3 CHOWKRIS

The size of chowkris (sectors) is about 600 m x 600 m, which is ideally suited to the pedestrians. A person at the centre of the sector is only 400 m (a five minutes walk) away from commercial activities along the major roads. The mohallas vary from 160 m x 160 m to 110 m x 100 m in size in different chowkris. They house people of different ranks according to the varying plot sizes. Community ties are strengthened by accommodating inhabitants of same caste, pursuing same trade and sharing common facilities, in a Mohalla.

Structure

Structure of a chowkry is formed by streets, chowks, temples, gates, and small squares known as chowks.

- Temples often act as landmarks

- Gates act as transition points from main bazaar streets to chowkris.

- Chowks are very intimate and serve as an extension of living space where people can interact with each other

6.1.4 OPEN SPACES

Chaupar

The most distinguishing feature in old Jaipur's urban structure is the Chaupar, occurring where the rajmarg intersects. There are three chaupars, measuring 100 m x 100 m. The chaupars serve as gathering spaces, particularly far the festive occasions. They also contained deep 'baoris' (step wells) which were used for baths and prayer.

6.2 CLIMATIC CONCERN

The design and planning of old Jaipur reflects an excellent response to the harsh climate of the region. Major and minor roads are oriented so as to provide them with optimum amount of shade.

1. The close built urban structure reduces the surface are of the built form in relation to its volume, thus decreasing the amount of solar radiation absorbed.

2. Houses are attached together in groups to maximise the number of common walls and courtyards which are not exposed to solar radiation.

3. The narrow, shaded spaces between buildings help to induce cross ventilation due to temperature variation between shaded and sunny areas

4. The planning at the dwelling level is basically introvert, around a court which also helps in passive cooling

5. Openings in external walls are few and small, to exclude the hot summer winds by overhangs known as chajjas

6. Roofs are heavily insulated by degrees of surkhi embedded with stone chips

6.3 CONSTRUCTION MATERIALS AND TECHNIQUES

6.3.1 CONSTRUCTION MATERIALS

The construction techniques changed a little. The materials used were more or less same like use of sand, lime, stone marble and use of stone *jali* or plaster *jali* and stone door window frames with wooden panels.

6.3.2 CONSTRUCTION TECHNIQUES & METHODS

The construction techniques always depend on the availability of building materials, skill, knowledge of craftsman and design of building etc. In case of Jaipur, random rubber stone masonry or dressed stone masonry is used for construction of walls. The columns and lintels are of dressed stone. The *Jalis* are carved out of stone or made of lime mortar. The roof is flat and is supported by walls or stone beams.

6.4 USEWISE CLASSIFICATION OF BUILDINGS

There are predominantly 3 types of buildings, which reflects the architectural style of Jaipur:

1. **Temples** of Jaipur are of different sizes and are of two types mainly Hindu and Jain. The total number of temple buildings is quite large.

2. The **Palaces** are few and are located in *Sarhad Chowkri*. These though important do not represent the general style adopted in the city.

3. The third type of buildings is *Havelis* and other smaller residential building. This is by far the largest element responsible for giving a unique character to the city.
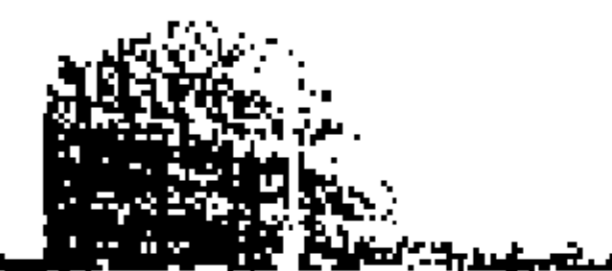
6.5 ELEMENTS OF ELEVATIONAL FEATURES

The style of Jaipur can be analyzed and identified based on different building features. These are plinth, columns, arches, openings, niches, domes, chajjas, Jharokhas, Balconies, Chattries, Roof, Jalis, Todas, paintings and frescoes, formation of open spaces, form of building etc.

1. **PLINTH**: The plinth of buildings is generally high with moldings at upper level. The material of construction is stone.

2. **COLUMNS**: The columns are generally having square bases and caps which are mostly round, tapering and fluted with flattened bulbous portion at bottom and top. The slender twin columns having tapering fluted shape and rectangular base and cap are also prevalent. In some cases the columns are square or rectangular in section having no moldings.

3. **ARCHES**: The arches are of mainly tow types, pointed arch and cusped arch. Trefoil arch is also some times used. Flattened arch spanned by lintel is also used for doorways. The origin of cusped arch is in Mughal style and this is extensively used in Jaipur.

4. Pointed arch and trefoil arch are also of Mughal origin but it's general shape is based on Hindu corbelled arch.

5. Flattened arch is constructed by combination of bracket and lintel. True semi circular arch or bulbus arch is not seen in traditional Jaipur style of architecture.

6. **OPENINGS**: large opening like main entrance gate is spanned by cusped or pointed arches. Smaller openings are spanned by stone lintels.

7. **NICHES**: Small niches are generally formed over the main entrance gate where statue of god *Ganesha* is placed. Smaller niches on both sides of main gate are provided as a part f general decoration.

8. **DOMES:** Domes are generally found over chattries, and oblong domes (Bangaldar roof) are found over balaconies, jharokhas, baradaries etc. The domes are also found predominantly in Jain temple and in some cases in Hindu temples. The domes are slightly of bulbous types and are springing from an octagonal base, which in turn is generally placed over a square base. The springing point is decorated with lotus flower and the top is covered with an inverted lotus flower. The domes are capped by finials made out of plaster or metal.

9. **CHAJJAS**: The chajjas are of simple slanting type made out of projected plastered stone slabs. These are in some cases supported by stone brackets.

10. **JHAROKHAS**: These are partly projected balconies covered with oblong domes and *pardiwalls* on three sides and are generally fitted with small or *jalis*, for light and ventilation.

11. **BALCONIES**: Balconies in traditional sense are rarely found but balconies at roof level serving like a Baradari is frequently seen. These are mostly observed in public buildings instead of residential houses. These are generally open on all sides and are covered with oblong domes.

12. **CHATTRIES**: This element has been widely used for public buildings where these are placed at the roof level on four corners of building. This is square in plan having four columns, which, in turn support sloping *chajja* and a dome over it. The dome springs from an octagonal base placed over a square base. Inverted lotus and a finial at the top cap the dome

13. **ROOF** : As the stone is easily available, the roof is made of stone slabs. The flat roof thus constructed is covered with lime concrete, *surkhi* etc. Ceilings are beautifully painted in some cases.

14. *JALIS* : The *jalis* are either made out of lime mortar or stone. The Jalis are fixed to cover in certain cases as panels in walls or as a part of railing in Jharokhas etc. In a few cases colored glass pieces are fitted in small jalis (placed above windows) which create in interesting pattern.

15. **TODAS OR BRACKETS**: The brackets have been used to support *chajjas*, balconies, lintel beams etc. These are generally made of stone slabs cut to form a cusped shape. Sometimes skillfully molded brackets are used to support balconies.

6.6 EVOLUTION OF ARCHITECTURAL STYLE

Architectural style of any period depends on construction techniques, materials used and previous architectural style, impact of new style and artisans.

The architectural style prior to the foundation of Jaipur city was basically Indo-sarcenic with greater influence of Hindu style. The impact of Mughal style was felt more from 1700 onwards. Therefore, the architectural style of Jaipur City has more Mughal influence than that of buildings of Amer. The impact of artisans is no less. Basically the *Bangaldar* roof of Bengal style is extensively found in Rajasthan due to migration of artisans from Delhi to Jaipur as the *Mughal* empire was gradually loading its power and riches and this led to slump in construction of lofty buildings, palaces etc. However, the style of temples remained more or less same. The Hindu temples had typical fluted Hindu *Shikhara* over Sanctum and octagonal sloping roof over *mandap*. The temples were constructed in trabeated style. The Jain temples had bell shaped domes over sanctum and octagonal sloping roof over *mandap*. But even here Sarcenic or Mughal influence is felt in cusped arches.

LESSONS FROM TRADITION

Two hundred and sixty seven year old Jaipur is an excellent example for understanding the traditional architecture and planning concepts of India. From the road network to the dwelling unit, all aspects of habitat are well thought out in Jaipur. Sited in a valley formed by hills to the north and east, old Jaipur is oriented so as to take advantage of the sun angles, wind direction and natural topography to facilitate surface drainage.
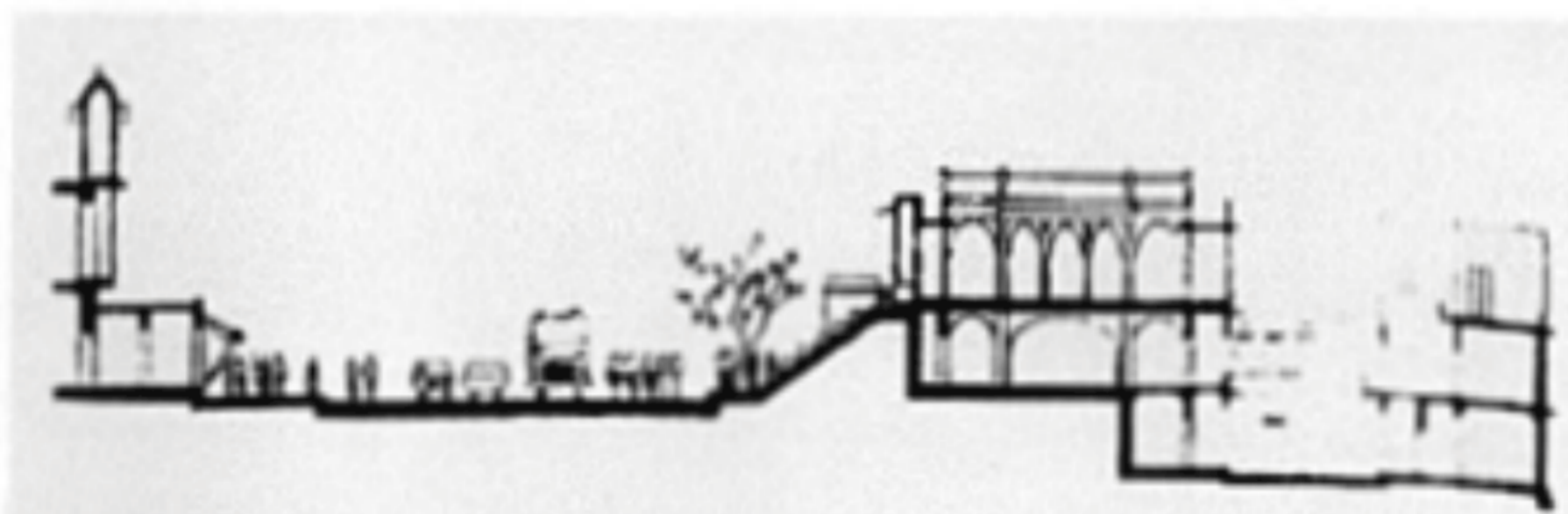
ENVIRONMENTAL CONCERN

Jaipur's climate may be classified as Tropical Hot Dry, with temperatures ranging from 5°C in January to 45°C in May. The average relative humidity throughout the year is less than 50%, and rises to nearly 80% during monsoon months, when the city receives most of its rainfall.

Jaipur's predominant wind direction is from the north -west, day and night, throughout the year. The city is prone to dust storms in summer.

The design and planning of old Jaipur reflects an excellent response to the harsh climate of the region. Major and minor roads are oriented so as to provide them with optimum amounts of shade.

The narrow, shaded spaces between buildings not only become extensions of the built form but also help induce cross ventilation due to temperature variations in the shaded and sunny areas. Thus, climatic constraints have been exploited to create intimate outdoor spaces, which also relate well to the human scale. At the dwelling level, one observes that the plan organization is basically introvert, around a court, with facades and openings indicative of a sensitive response to the climate. Openings in external walls are few and small, so as to exclude the hot summer winds and dust.

JAIPUR NOW

Till the turn of the 20th century, most of Jaipur's population was contained within the walled city, with very little spillover beyond. In the 1930s, several major residential schemes were proposed in the areas outside the walled city. They were planned according to British town planning concepts rooted in the garden city principles. In stark contrast to the old city, these schemes had large residential plots and sprawling bungalows, and conse quently very low density development.

CURRENT GROWTH TRENDS

Distinct class patterns developed almost simul taneously with the residential development. Outmigration of the elite from the old city to these new areas began and resulted in settlemen mainly in the areas south of the walled city because of the status and prestige

CHAPTER 7:

"DEVELOPMENT CONTROLS IN JAIPUR CITY:

A CHRONOLOGICAL STUDY"

CHAPTER 7

"DEVELOPMENT CONTROLS IN JAIPUR CITY: A CHRONOLOGICAL STUDY"

7.1 WALLED CITY OF JAIPUR

DEVELOPMENT CONTROLS

1. BUILDING LINE

- The control of building line was very rigid which was strictly prescribed by the Government .

- Even the steps were provided within the building line.

2.MATERIAL CONTROL

The material used was sand, lime, marble stone and the use of stone or plaster *jali* and stone door/window frames with wooden panels. The construction techniques always depend on the availability of building materials, skill, knowledge of craftsman and design of building etc. In case of Jaipur, random rubber stone masonry or dressed stone masonry is used for construction of walls. The columns and lintels are of dressed stone. The Jalis are carved out of stone or made of lime mortar. The roof is flat and is supported by walls or stone beams.

P.I. Development Controls For Jaipur City

2. COLOR CONTROL

All the major street facades of the walled city are painted pink. The residential   inner development is painted in cream color.

3. SHAPE/SIZE OF SHOPS

The shape and sizes of shops were uniform (controlled) by the Government in the major commercial spines of the walled city. The size was fixed according to the need of commercial activity, which was to be housed there. The number of shops on a road was also fixed.

4. SIGNAGE CONTROL

The signage was also controlled by the Government. In the walled city, the background color for signage in white, foreground is black. The font size for signage of each shop is also same. This element gives a unity to the city.

5. PUBLIC SPACES

- Intimate outdoor spaces between buildings are provided which relates well to human scale.

- Chaupars were under the jurisdiction of king's government, which maintained stringent architectural rules the chaupars are 3 times the width of bazaar streets.

6. LANDMARKS

- Major landmarks are located in the palace complex i.e. Hawa Mahal and Ishar lat

- The temples and other public buildings located at chaupars also serve as landmarks.

- In chowkries, the purpose is served by temples and some havelis.

7. PEDESTRIAN PATHS

- In the commercial streets, an arcaded colonnade is provided in front of shops for the pedestrian traffic.

- The residential streets were meant mainly for pedestrians so there was no need of separate pedestrian paths.

8. ELEMENTS

The architectural style of the walled city can be analysed and identified by the following elements:

Plinth, column, arches, niches, dome, chajjas, jharokhas, balconies, chattries, jalis, todas and paintings.

9. TRANSITION ELEMENTS

At every transition point, arched gateway is provided which also gives identity to that area. A definite hierarchy exists in the transition elements.

Evolving Development Controls For Jaipur City

1) Entrance to the city.

2) From commercial street to the cluster (chowkri).

3) From a street to other.

4) From vehicular street to pedestrian path in the commercial spine.

10. PROVISION OF COURTYARD

- Each house was provided with a court open to sky, which provides passive cooling by trapping layers of air at night.

- This trapped air is prevented from heating up during the day by controlling the court's height-width proportions. In a large house, a series of small courts were provided instead of a large court.

- The numbers of open courtyards vary from one to seven depending upon the size of structure

11. OPENINGS

Most of the buildings seem to have a continuous and regular proportion of window to wall throughout

12. EDGES

The edges of the walled city are defined by a strong fortification. The fortification was done for defense purpose but it naturally gave a limit to the city.

The sector boundaries are clearly demarcated by major commercial roads.

13. ENERGY CONSERVATION

- Close knit urban structure decreases the amount of solar radiation absorbed.

- Creation of intimate outdoor spaces.

- Very few and small openings in external wall.

- Organization of plan around a courtyard-passive cooling.

14. WATER CONSERVATION

Baoris (Stepwells) were provided in chaupars which served as underground storage tanks.

7.2 DEVELOPMENT DURING BRITISH PERIOD

It identifies the change in development controls during British period. The study is divided into 2 parts.

- Commercial development – M.I ROAD

- Residential development – C SCHEME

DEVELOPMENT CONTROLS

1. BUILDING LINE

Building line was controlled by specifying the front set back. Thus a line parallel to the front line of the plot at a distance of the minimum width of the front yard served as building line.

2. MATERIAL CONTROL

The use of construction materials used was almost same. The main materials used were sand, cement and stone.

3. COLOR CONTROL

Mirza Ismail. Road (commercial spine): The facades of the main commercial spine of Mirza Ismail road were painted in pink and cream.

C scheme (residential area): In C Scheme, there is no color control.

4. SHAPE/SIZE OF SHOPS

The width of the different shops varies but the height of the shops is same. Therefore some harmony exists.

5. SIGNAGE CONTROL

In the British period, the area for signage is almost same for all shops but there is no control on color, font size, and material of signage boards.

6. PUBLIC SPACES

There were no proper public spaces suitable to the needs of Indians but some parks were provided in the residential development at public spaces, which do not serve the purpose fully.

7. LANDMARKS

Mirza Ismail Road (commercial spine):

- Clock tower is the major landmarks of Mirza Ismail Road

- Buildings at the nodes incorporate some special elements and serve as minor landmarks.

C.Scheme (residential sector):

- In C scheme, it is very difficult to visually identify any area in the absence of any landmarks.

Evolving Development Controls For Jaipur City

8. PEDESTRIAN PATHS

Mirza Ismail Road (commercial spine):

- An arcaded colonnade was provided along the shops for pedestrians.

C Scheme(residential sector):

- In the residential areas there are no separate pedestrian paths.

9. ELEMENTS

Mirza Ismail Road:

- The architectural style of Mirza Ismail Road is also derived from the traditional elements of Jaipur city. The main elements which are used are domes, *chajjas*, *jalis*, columns, arches, *chattries*.

C Scheme:

- There is no harmony in the elements used in the residential development.

9. TRANSITION ELEMENTS

Mirza Ismail Road:

- Arcaded corridor serves as transition element from the major street to shops in the commercial spine.

C Scheme:

- Transition elements do not exist in the residential sector

10. PROVISION OF COURTYARD

Courtyard is eliminated and outdoor space is provided in the form of front, side and rear setbacks.

11. OPENINGS

Mirza Ismail road:

- Most of the buildings seem to have a continuous and regular proportion of window to the wall surface throughout.

12. EDGES:

The edges of this development are not well defined.

13. ENERGY CONSERVATION:

No provision for any form of energy conservation is seen in the development during British period.

14. WATER CONSERVATION

There is no provision for water conservation in the British period.

7.3 CONTEMPORARY DEVELOPMENT

Study of the contemporary development of Jaipur City. The controls in the contemporary development in the Jaipur City are identified in chronological order.

DEVELOPMENT CONTROLS

1. BUILDING LINE:

Building line is controlled by specifying the front set back. Thus a line parallel to the front line of the plot at a distance of the minimum width of the front yard served as building line.

2. MATERIAL CONTROL:

No material control exists in the contemporary development.

3. COLOR CONTROL

In the contemporary development of Jaipur city, there is no color control. But some buildings have facades in pink stone and same flats are painted pink.

4. SHAPE/SIZE OF SHOPS

There is no harmony in the shape and size of shops along a road or in a commercial complex. There is no control regarding the fixed size and shape of shops.

5. SIGNAGE CONTROL

There is no provision of signage control at all in the contemporary period. It destroys the overall character of the place.

6. PUBLIC SPACES

- *Provision of parks, at residential level.*

- Lack of intimate outdoor space and spaces for large gatherings and festivals.

7. LANDMARKS

There is no conscious attempt to create landmarks, but incidentally some buildings are serving as landmarks.

8. PEDESTRIAN PATHS

There is no separate provision for the pedestrians in the commercial as well as residential areas.

9. ELEMENTS

Amalgamation of different styles can be seen in the contemporary development. The elements used vary in accordance with the different styles adopted.

10. TRANSITION ELEMENTS

The transition elements do not exist in the contemporary development.

11. PROVISION OF COURTYARD

The courtyards rarely exist in the contemporary period.

12. OPENINGS

There is no regular proportion of window to wall.

13. EDGES

- *There is no limit for extension of the city.*

- The different roads form edges to different colonies but cannot be identified.

14. ENERGY CONSERVATION

No provision for any form of energy conservation is seen in the development during contemporary period.

15. WATER CONSERVATION

No provision for water conservation.

Contemporary Development Controls For Jaipur City

CHAPTER 8:
"ANALYSIS"

CHAPTER 8

"ANALYSIS"

8.1 IDENTIFICATION OF DEVELOPMENT CONTROL PARAMETERS

This part of the chapter deals with the identification of major parameters that govern the development of the city in the present context. The parameters are identified on the basis of the above studies. The major parameters are:

1. HEIGHT CONTROL

It is the control of the total height of a building excluding any ornamental feature. The height control can be achieved in two ways:

* Minimum height control

* Maximum height control

2. BUILDING LINE

It is the line up to which the plinth of a building adjoining on a street or on an extension of a street or on a future street may lawfully extend. It includes the lines prescribed in any scheme. The building line is the basis of the continuity of a group of buildings. The line of

facades along a street or around a space condition the way the individual buildings are seen.

3. MATERIAL CONTROL

Material control means the use of same material in the facades of all the buildings in a given area. The prevalence of a traditional local material can give a strong sense of unity to a town. It is often possible to maintain the same materials in new buildings, where the tradition can be reinterpreted to modern structural requirements.

4. COLOUR CONTROL

The use of colors is a significant aspect of beauty in cities and the visual impact of color is also very strong. The color control is a major parameter, which gives identity and imageability to a settlement. A harmonious relationship among different parts of the city can be achieved through color control.

5. SHAPE/ SIZE OF SHOPS

The width, depth and height of different shops are predetermined and fixed by the authorities in order to maintain harmony. The size and shape of shops accommodating the same commercial activity can be same.

8. LANDMARKS

The prominent visual features of the city are its landmarks. Some landmarks are very large and are seen at great distances like Hawa Mahal. While some landmarks are very small and can only be seen close up, like a statue or a fountain.

Landmarks are an important element of urban form because they help people to orient themselves in the city and identify an area. A good landmark is a distinct but harmonious element in its urban setting.

9. PEDESTRIAN PATHS

We can segregate pedestrian and vehicular traffic through the provision of separate pedestrian paths

10. CONTROL OF ELEMENTS

The architectural style of an area can be analyzed and identified by the repetitive use of some specific elements. It also depends on construction techniques, materials used, previous architectural style, and impact of new style and artisans. The elements vary according to the different periods, places and craftsmen. The use of a given set of elements in different ways can give rise to an aesthetically pleasing settlement.

11. EDGES

The termination of a district is its edge. It also gives a physical limit to an area. The edges can be distinct or gradually blend into other districts. The purpose of an edge can be served by:

- Fortification

- Plantation

- Sea shore

- A hill range

- A wide road

12. BALCONY

A balcony is a horizontal projection, including a hand rail, or balustrade to serve as a place for outdoor activities. A balcony should be open at least on two sides.

13. ENERGY CONSERVATION

Since resources are finite and energy saved is cheaper than the energy generated, a city should be consciously designed to used natural resources, recycle waste and save human energies.

14. WATER CONSERVATION

In this area, water is the most precious commodity and must be conserved. The area experiences water shortage in the critical

months of summer and a report of Geological Survey of India warns of the inadequate recharge of underground water reservoirs.

15. PARKING

This parameter deals with the provision of parking for each building with its site boundary.

16. GREEN AREAS

The provision of green areas at required places and the type of vegetation to be planted there is also very important.

8.2 DRAWING INFERENCES FROM THE CHRONOLOGICAL STUDY

Inferences are drawn from the previous studies and the present investigation to frame guidelines for the development controls of Jaipur city:

1. Height control

Both, maximum and minimum height control existed in the walled city while in the contemporary development, only maximum height control is found.

2. Material control

In the past, the materials used were almost same but in the contemporary period, a number of materials are used in construction of different buildings.

3. Building line control

The building line control in the walled city was very rigid which was replaced by the control of front set back in the British and Contemporary period, which was not so rigid.

4. Color control

Jaipur is still known as 'the pink city' but the identity of 'Pink City' is lost in the contemporary development. But some common people and architects are conscious about the identity of 'pink city'.

5. Shape/ size of shops

The shape and size of shops can be controlled to some limit. At least the height can be kept same.

6. Signage control

A rigid signage control existed in the walled city while there is no control over signage in the contemporary period.

7. Open spaces

Hierarchy of open spaces required to suit different purposes is not seen in the contemporary period.

8. landmarks

It is very difficult to identify the various parts of the city in the absence of landmarks in the contemporary period.

9. Pedestrian paths

There is a complete lack of separate pedestrian paths in the contemporary period.

10. Control of elements

There is no control over the use of elements of a particular architectural style, which are results in a settlement without any unified character.

11. Transition elements

The transition elements existed in the walled city and to some extent in the British period.

12. Balcony

Balconies are hardly found in the contemporary development of Jaipur city.

13. Edges

The edges of the sectors are not well defined. It is also very difficult to differenciate them visually.

14. Courtyard

The practice of providing courtyards is lost in the contemporary period.

15. Energy conservation

There is no provision for energy conservation in the contemporary development.

16. Water conservation

There is no provision for water conservation in the contemporary period.

8.3 RESULTS AND DISCUSSIONS

1. Material control

The main reasons due to which there is no material control in the contemporary period are:

- Easy means of transportation

- Invention of new materials

- New construction technologies

2. Height control

- There is no rigid minimum height control

- The need of minimum height control is not realized

3. Building line control

- The building line is not specified

4. Color control

The main reasons for the change in color code from the walled city to the contemporary period are:

- In the present development controls, there are no strict rules about color control

- Attitude of people is changing

- Difference in personal interest of people from different backgrounds, religion, caste, and professions.

5. Shape/size of shops

- There is no control on the shape/size of shops

- It also varies with the affordability of people

6. Signage control

- There is no control on signage in the present period

- The importance of signage control is ignored

7. Open spaces

- Hierarchy of open spaces is not included in the development controls.

- *Spaces are provided according to the alien concepts which does not suit with the Indian lifestyle*

8. landmarks

The main reason for the lack of landmarks in the contemporary period is:

- The importance of landmarks is not realized

- The sense of possession and identity is being lost in the common people

9. Pedestrian paths

The main reason for the lack of pedestrian paths in the contemporary period are:

- There is a sharp increase in the number of vehicles
- More importance is been given to the vehicular traffic
- The architects and planners don't consider the importance of separate pedestrian paths

10. Elements

- elements to be used are not controlled
- adoption of different alien styles
- importance of our traditional style is not realized

11. Transition elements

- the need of transition element is not realized
- no attention is paid towards urban aesthetics

12. Courtyards

- The provision of courtyard is not included in the controls
- The open space provided in the form of courtyards is replaced by setbacks

9. Pedestrian paths

The main reason for the lack of pedestrian paths in the contemporary period are:

- There is a sharp increase in the number of vehicles

- More importance is been given to the vehicular traffic

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- The open space provided in the form of courtyards is replaced by setbacks

13. Water conservation

In this area, water is the most precious commodity and must be conserved. The area experiences water shortage in the critical months of summer and a report of Geological Survey of India warns of the inadequate recharge of underground water reservoirs.

14. Energy conservation

A significant portion of the resources in urban areas are consumed in the provision of basic services. All efforts must be made to minimize these and to re-use them as much as possible.

The byelaws of the western countries are straight away adopted by the Indian authorities, without considering the lifestyle of Indians and the urban character of traditional Indian cities.

PARAMETERS	WALLED CITY	BRITISH PERIOD	PERIOD	INFERENCE
PEDESTRIAN PATHS	In the commercial streets, an arcaded colonnade is provided in front of shops for the pedestrian traffic. The residential streets were meant mainly for pedestrians.	In the commercial spine an arcaded colonnade was provided along the shops for pedestrians but in the residential areas there are no separate pedestrian paths.	There is no separate provision for the pedestrians in the commercial as well as residential areas.	There is a complete lack of separate pedestrian paths in the contemporary period
CONTROL OF ELEMENTS	The architectural style of the walled city can be analysed and identified by the following elements: Plinth, column, arches, niches, dome, chajjas, jharokha, brackets, chatries, jalis, minarets, domes.	The architectural style of Mirza Ismail Road is also derived from the traditional elements of Jaipur city. The main elements which are used are domes, chajjas, jalis, columns, arches, cha	Amalgamation of different styles can be seen in the contemporary development. The elements used vary in accordance with the different styles adopted.	There is no control over the use of elements of a particular architectural style, which are results in a settlement without any unified characte
TRANSITION ELEMENTS	At every transition point, arched gateway is provided which also gives identity to that area. A definite hierarchy exists in the transition elements.	Arcaded corridor serves as transition element from the major street to shops in the commercial spine. Transition elements do not exist in the residen tial sector	The transition elements do not exist in the contemporary development.	The transition elements existed in the walled city and to some extent in the British period but they are totally lost in the contemp orary period
PROVISION OF COURTYARD	Each house was provided with a court open to sky, which also provides passive cooling by trapping layers of air at night. This trapped air is prevented from heating up during the day by controlling the court's height-width proportions.	Courtyard is eliminated and outdoor space is provided in the form of front, side and rear setbacks.	The courtyards rarely exist in the contemporary period.	The importance of courtyards is not realized in the contemporary period.

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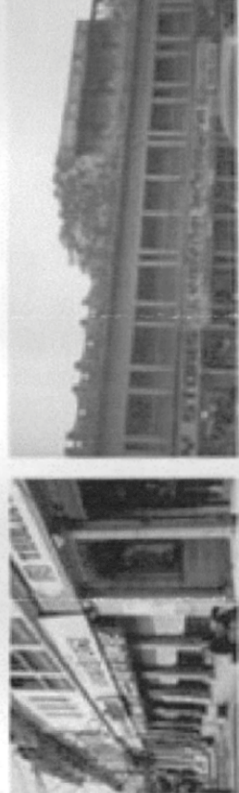| PARAMETERS	WALLED CITY	BRITISH PERIOD	CONTEMPORARY PERIOD	INFERENCE
COLOR CONTROL	All the major street facades of the walled city are painted pink. The residential inner development is painted in cream color.	The facades of the main commercial spine of Mirza Ismail road were painted in pink and cream. In the residential area of C Scheme, there is no color control.	In the contemporary development of Jaipur city, there is no color control. But some buildings have facades in pink stone and same flats are painted pink.	Jaipur is still known as 'the pink city' but the identity of Pink City 'is lost in the cont emporary development. But some common people and architects are conscious about the identity of 'pink city'.
MATERIAL CONTROL	The material used was sand, lime, marble stone and the use of stone or plaster jali and stone door/win frames with wooden panels.	The use of construction materials used was almost same. The main materials used were sand, cement and stone.	No material control exists in the contemporary development.	In the past, the materials used were almost same but in the contemporary period, a number of material are used in construction of different buildings.
BUILDING LINE CONTROL	The control of building line was very rigid which was strictly prescribed by the Government. Even the steps were provided within the building line.	Building line was controlled by specifying the front set back. Thus a line parallel to the front line of the plot at a distance of the minimum width of the front yard served as building line.	Building line is controlled by specifying the front set back. Thus a line parallel to the front line of the plot at a distance of the minimum width of the front yard served as building line.	The building line control in the walled city was very rigid which was replaced by the control of front set back in the British and Contemporary period, which was not so rigid.
CONTROL IN SHAPE/SIZE OF SHOPS	The shape and sizes of shops were uniform (controlled) by the Government in the major commercial spines of the walled city.	The width of the different shops varies but the height of the shops is same. Therefore some harmony exists.	There is no harmony in the shape and size of shops along a road or in a comm ercial complex. There is no control regarding the fixed size and shape of shops.	There is no control regarding the fixed size and shape of shops in the present period.

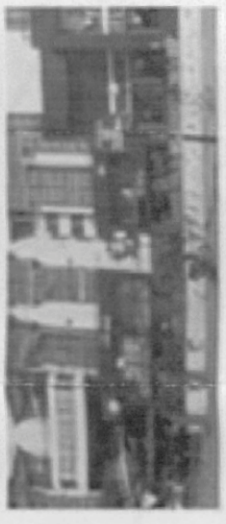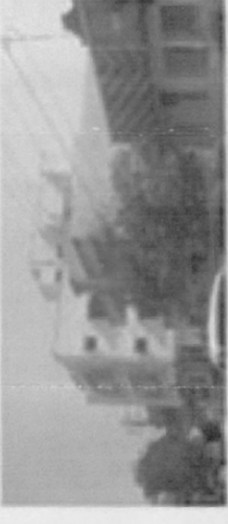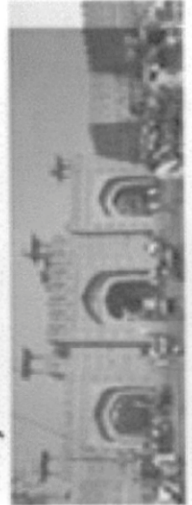| PARAMETERS	WALLED CITY	BRITISH PERIOD	CONTEMPORARY PERIOD	INFERENCE
SIGNAGE CONTROL	The signage was also controlled by the Government. In the walled city, the background color for signage in white, foreground is black. This element gives a unity to the city.	In the British period, the area for signage is almost same for all shops but there is no control on color, font size, and material of signage boards.	There is no provision of signage control at all in the contemporary period. It destroys the overall character of the place.	A rigid signage control existed in the walled city while there is no control over signage in the contemporary period.
HEIGHT CONTROL	Minimum as well as maximum height control existed in the Walled City	maximum as well as minimum height control existed in the commertial spine but not in the residential sector	there is maximum height control but no minimum height control	The control of minimum height is ignored in the contemporary period
OPEN SPACES	Intimate outdoor spaces between buildings are provided Chaupars maintained stringent architectural rules the chaupars are 3 times the width of bazaar streets.	Some parks were provided in the residential development at public spaces, which do not serve the purpose fully.	Provision of parks, at residential level. Lack of intimate outdoor space and spaces for large gatherings and festivals.	Hierarchy of open spaces required to suit different purposes is not seen in the contemporary period.
LANDMARKS	Major landmarks are located in the palace complex i.e. Hawa Mahal and Ishar lat The temples and other public buildings located at chaupars also serve as landmarks.	Clock tower is the major landmarks of Mirza Ismail Road Buildings at the nodes incorporate some special elements and serve as minor land marks. In C scheme, it is very difficult to visually to identify any area in the absence of any landmarks.	There is no conscious attempt to create landmarks, but incidentally some buildings are serving as landmarks.	It is very difficult to identify the various parts of the city in the absence of landmarks in the contemporary period.

PARAMETERS	WALLED CITY	BRITISH PERIOD	CONTEMPORARY PERIOD	INFERENCE
OPENINGS	Most of the buildings seem to have a continuous and regular proportion of openings to wall throughout.	Most of the buildings seem to have a continuous and regular proportion of openings to wall throughout.	There is no regular proportion of openings to wall.	A regular proportion of openings to the wall surface which was there in the walled city does not exists in the present period.
EDGES	The edges of the walled city are defined by a strong fortification The sector boundaries are clearly demarcated by major commercial roads.	The edges of this development are not well defined.	There is no limit for extension of the city. The different roads form edges to differ ent colonies but cannot be identified.	The edges of a city or a sector are not well defined in the contemporary period.
ENERGY CONSERVATION	Close knit urban structure decreases the amount of solar radiation absorbed. Organization of plan arounda courtyard for pass ive cooling.	No provision for any form of energy conservation is seen in the development during British period.	No provision for any form of energy conservation is seen in the develop ment during contemporary period.	There is no provision for energy conservation in the present controls.
BALCONY	Balconies are mostly observed in public buildings and havelis. It is suited to the climate and lifestyle of people.	In the development during British period, balconies are hardly seen in the residence.	Only some buildings have balconies.	The importance of balconies in the Indian conditions is not realized in the present period

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HAPTER 9

RECOMMENDATIONS

recommendations are divided into two parts:

For the conservation of the walled city

For the new development of Jaipur city

COMMENDATIONS FOR THE CONSERVATION OF THE WALLED CITY:

HEIGHT CONTROL

In order to achieve a harmonious built form, it is necessary to have **minimum**

well as **maximum** height control.

CONTROL OF ELEMENTS

The elements to be used in the facades should be specified on the basis of

ditional elements which exist in the walled city.

COLOUR CONTROL

II the major streets of the walled city should be painted in the Jaipur pink color

y.

PROVISION OF COURTYARD

Provision of courtyard in the residences should be included in the

/elopment controls of walled city.

BALCONY

The provision of the typical balcony of the walled city should be included in the

elopment controls.

6. RESIDENCES OVER SHOPS

The residences should be allowed over shops in the walled city in order to

keep the commercial areas alive even after the other activities are closed down

and also to continue the tradition.

7. SIGNAGE CONTROL

In the walled city, there should be a rigid signage control as it existed during

that period in all the major commercial streets.

8. MATERIAL CONTROL

Use of new materials should not be allowed in the walled city.

9. INTERNAL CHANGES

Internal changes in the old construction in the walled city should be allowed

subject to maintaining the same height, use, coverage and outer walls.

RECOMMENDATIONS FOR THE NEW DEVELOPMENT OF JAIPUR CITY

1. HEIGHT CONTROL

In order to achieve a harmonious built form, it is necessary to have minimum as well as maximum height control.

2.CONTROL OF ELEMENTS

The elements which are used in the facades should be specified Traditional architectural elements should be evaluated and reused to suit today's requirement.

3.COLOR CONTROL

In order to achieve the identity of 'the pink city', all the major streets should be painted in Jaipur pink color.

4. PEDESTRIAN AND VEHICULAR PATHS

There should be a clear segregation in the pedestrian and vehicular traffic, especially in the commercial spines.

5.HIERARCHY OF PUBLIC SPACES

There should be a well ordered hierarchy of open spaces according to the requirement and lifestyle of people, ranging from intimate spaces nea residences to large grounds for gatherings.

0.SIGNAGE CONTROL

There should be a fixed area and position for the signage boards to achieve a unified urban character.

1.MATERIAL CONTROL

With the emergence of new materials and technologies, we can not have rigid material control but their use can be controlled so that the new materials can be used in harmony with the old.

2.LANDMARKS IN EACH SECTOR

The multistory buildings can serve as major landmarks in the modern period. The distribution of the multistory buildings should be such that they can also serve as reference points for the different parts of the city.

Minor landmarks such as sculptures, fountains and other landscap elements should be provided at nodes.

3.HIERARCHIAL ORDER OF BUILT FORM

In order to achieve a hierarchical order in the organization of built form and to create a sense of focus, the built form of town centre should be raised.

4.SPECIFICATIONS FOR PAVEMENTS

The footpath pavement detail should be specified and fixed keeping in mind:

Achieving a unified character

Maintaining harmony with nature

• Allowing breathing space for earth

■ Raising the ground water table

15.INCREASING GROUND WATER LEVEL BY RAIN WATER

Pits should be constructed in the set back area of plots to collect the rainwater. The number of pits may vary according to the area of the plot. The pits should be interconnected to raise the ground water level.

16.HEATING WATER BY SOLAR ENERGY

It should be necessary for all the major public buildings to install solar energy device, like:

17. PARKING

To avoid congestion on the roads, the parking facility for all the commercial centers, offices, institutes and other such buildings should be provided within the site itself.

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