

**Structuring Public Place Through the Design of Access Systems:**

The Design of Urban Public Place:  
An Addition to the 'New Market' of Calcutta, India

by  
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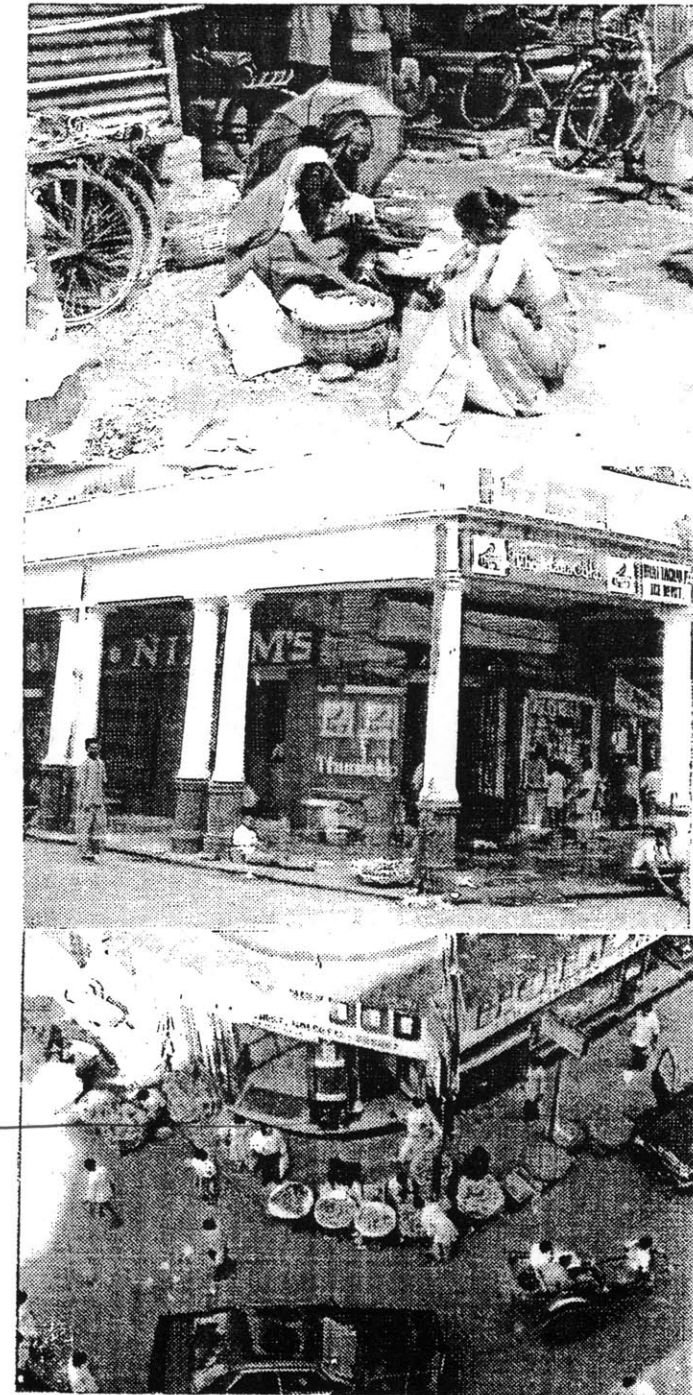


Fig. 1. Street scenes: New Market and Salt Lake Market.

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Architecture on May 12, 1995 in partial  
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**ABSTRACT**

The addition and re-design of a 19th century covered market in the heart of Calcutta, India, is the design project to explore the larger topic of place-making within a specific culture.

In Calcutta the divisions of society within the city are becoming increasingly polarized along the lines of religion and wealth, creating a real need for a public place accessible to income and class groups from all over the city. The 'ground level' public spaces of colonialism-parks and gardens-have been taken over by the city's poor. The only zone of interaction for the city's varied population is the street; a few 'street-like' built spaces-covered street-edge arcades and the 'interior streets' of the city's covered markets-still function as public places, creating a civic col-

lective realm.

An analysis of these public places shows that rather than a static conception of public place as open 'plaza' or 'square' (which would most likely be built upon and privatized), the routes of access-the 'interior' streets-within these places are used as public places. At a small scale, a variety of environments are created by local intensifications of the access zones. At a larger scale, differentiation in the access (or 'interior street') network creates differential degrees of access that serve the needs of various groups still remaining public at the collective size.

The thesis proposes that the static polarities of 'public' and 'private' space be replaced by looking at the continuum of differential access that creates particularity within the built environment, yet structures the experience as a whole.

In Calcutta, the complex divisions within society are congruent with the need for the fine gradations of accessibility that are seen in the built environments of its public places. It is the need for different degrees of accessibility that differentiates the design of public place in Calcutta from that in Western society.

The architecture of Hermann Hertzberger and Aldo Van Eyck has done much to reformulate the idea of public place as 'interior streetscape'. To underscore the difference with the Indian context, the thesis examines the assumptions of individual and collective that are implicit in their designs.

The thesis also analyzes the intricate degrees of accessibility created by the access systems of traditional Indian built environments at the collective size.

Drawing from these sources, the design project focusses on the design of addition to the old covered market as public place, focussing on the design of the access system as the organizational structure of the built environment. Through the design of the built environment's access system the aim is to accommodate the often conflicting needs of groups within it as well as allow for its collective use.

Thesis Supervisor: Maurice Smith  
Title: Professor Emeritus of Architecture

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And to wife, Surobhi, with whom the adventure began; thank you for waiting

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## INTRODUCTION

*"Find the form of society and build its counter-form...but what happens when society has no visible form?"*

*-Aldo Van Eyck, Team X Primer, 1963*

### A. The need for public place in India

In India, as in most poor countries, the public place has always been the street. Within the lanes and alleyways of the traditional quarters of cities and towns, children play, vendors hawk their wares and residents gossip. Old people on their balconies watch the ebb and flow of life on the street going by with a blare of transistor radios, the leisurely amble of a cow, a solitary car weaving its way through. There is a density and vitality of life that most Western architects and planners would envy, having learned their lessons from Jane Jacobs.

At first impression, the density of the population and the everpresent watchful gaze may make India seem like one of the most public places on earth.

Yet, this mixture of activities at street level hides a rigid stratification within civil society. A city will, invariably, be divided into various quarters, each housing or catering to a group defined by ethnicity, religion, or wealth. The territories of each group may be rigidly marked- such as

the high walls of the rich- or more subtly demarcated, as in the narrow lanes leading off main streets that create the boundaries of a Muslim or Hindu neighbourhood. While each separate group might have its own institutions and meeting places- religious temples and mosques, clubs- society as whole has very few common meeting grounds.

With the influx into cities of the rural poor, (and, in the case of Calcutta of refugees from Bangladesh), the civic spaces left by British colonialism- neighbourhood and city-scale parks- have either been privatized, or left to the poor. In the case of Calcutta, the "public" ground level of the city has literally become the realm of the poor. The "public realm" has become the left-over space between the rigid demarcations of privacies.

A society such as that of Calcutta is tenuously woven from threads of disparate communities with very different beliefs. The disintegration of traditional communities that has accompanied economic development has been accompanied by a dangerous search for identity through communal means. Paradoxically, the tolerance and secularism expressed when each community was physically intact is being replaced by much narrower outlooks. Calcutta has always depended on cosmopolitan 'neutral grounds' where communal tensions are defused.

To feel themselves as part of a larger 'imagined community' that transcends individual difference, people need to experience the expression of this community in real, physical terms.



Fig. 2. A street corner serves as meeting place and ad hoc market.

## B. The potential of the project

In Calcutta, there are a few functioning public places that offer clues to the what the design of a truly public space may be. Not surprisingly, these places are 19th century commercial structures that coincided with the creation of the first mass consumer markets.

In the old covered market (called the "New Market" since its construction in 1874), and along the arcaded front of Chowringhee, the city's prominent commercial street, all classes of people meet to haggle and argue over commodities ranging from second-hand clothing or refrigerators. These places are very different in nature to the specialized local markets that each community has- they take place outside the enclosures of any particular quarter, and have become a neutral meeting ground for many different communities.

In their varied ranges of public and private, these public places re-create the variety of zones of exchange associated with that of the streets of the traditional quarter, except now at a city-scale and within a 'neutral' sphere.

Commerce has historically been a generator of exchange among different people, but the civic gestures that accompanied 19th century commercial building- arcades, exterior public seating, water fountains- has now been reduced to Western-style closed shopping malls restricted to all but a specific clientele. Ironically, a shrinking of the public potential of the commercial sphere has coincided with the growth of a vast middle class who possess neither the benefits of the public spheres of the poorer, 'traditional' neighbourhoods, nor access to the private landscapes of the rich..

In 1983, a section of the hundred year old 'New Market' burnt down. Large tracts of adjacent land are slated for redevelopment. Without understanding the role of the market as a public

place, developers are proposing to tear down the old structure and re-develop the area as a 'modern plaza' or 'heritage area'. The same mistakes of the West in the destruction of 19th century infrastructure ( the demolition of the Les Halles Market in Paris, the destruction of the old Pennsylvania Railway Station in New York) are being repeated in India.

This thesis aims at a design solution to the redevelopment of the New Market area without destroying the original structure. The proposed program is to be based on a redevelopment report by the Calcutta Municipal Corporation and includes the relocation of a number of existing functions (a fish market, a piggery, an informal vegetable market), a large number of new shops to replace those lost in the fire, housing for market-workers and new office space. The design challenge is to incorporate a number of private uses in the new additions and still maintain the high levels of public accessibility that the market affords today. Since pressures on land demand vertical development, the design exploration is of creating a gradation of public and private space within the section of the built fabric.



Fig. 3. Street adjoining New Market taken over for use by informal vendors.

## I. DESCRIPTION OF THE CONTEXT AND SITE: THE GROWTH OF PUBLIC PLACE IN CALCUTTA AND THE ROLE OF THE NEW MARKET

### IA. The development of public space in Calcutta.

IA (i). The over-all shape of the city

The history of Calcutta is the history of the growth patterns of its markets. The site on which the British founded the city in 1690 had housed the "Barabazaar" (Great Bazaar) for the last 300 years. Under the British, the city grew as a trading center, each market having a specialized function:

*"The principal Bazaars in the Northern Division are the Radha Bazaar, the Old New China Bazaar the Burra Bazaar and Tiretta's Bazaar. In the former, liquors, oilman's store, furniture and clothing... may be obtained at moderate prices, providing the purchaser has all his wits about him...Tiretta's bazaar is the haunt par excellence for birds and other livestock...In the Bara Bazaar will be found piece-goods, cashmere shawls, jewellery, precious stones, and hardware of every description."*<sup>1</sup>

By 1974 there were 186 markets within the Calcutta metropolitan area; most markets are the purview of a religious or ethnic community, and are the business center of that community. Markets in North Calcutta are run by mostly Hindu communities; the Barabazaar has historically been home to the traders and money-lenders of the Marwari caste, and the Park circus area has Muslim meat markets. Entering a market is not simply a commercial enterprise, but allowance into the world of a specific community. The city is composed of many quarters, described as "mohulla" or "parah". The boundaries of these

communities sometimes re-inforce existing landscape demarcations, such as lakes, or the Hooghly river and are demarcated by landmarks; they allow change, but are enforced by the community within it. Religious festivals are celebrated according to these community demarcations. According to a contemporary urban historian, these markets are "...one of the most neglected public amenities in the city. Yet they are major centres of the city's vitality and its distinctive spirit."<sup>2</sup>

The city is locally given shape by these territorial demarcations and formed at the largest size by a division into the British residential area of the South and the northern "Native City". Both these distinct areas are divided by a 'grey area' in-between that includes the original British Fort William and the "maidan" (the area left around it, originally as a 'field of fire'), the colonial business district, and the residential quarters of other 'mixed' communities belonging to neither world (Jews, Armenians, Portugese, Chinese). The territorial divisions within the city can be read as "...geographical expression of social power".<sup>3</sup> These territories are created by various boundaries creating differential access:

- i. The Southern British suburbs of Calcutta at Alipore. Starting across the Alipore River. Access limited to few approach roads and bridges
- ii The 'cordon sanitaire' of the open maidan dividing the city. Access across this space limited.
- iii The 'grey area' around the main North-South road of Chowringhee, housing a 'formal' zone of exchange- business and administrative institutions
- iv. The 'grey area' itself, a zone for people of mixed descent, a space of growth for socially-mobile Indians, housing also schools, restaurants, night clubs, and the New Market.

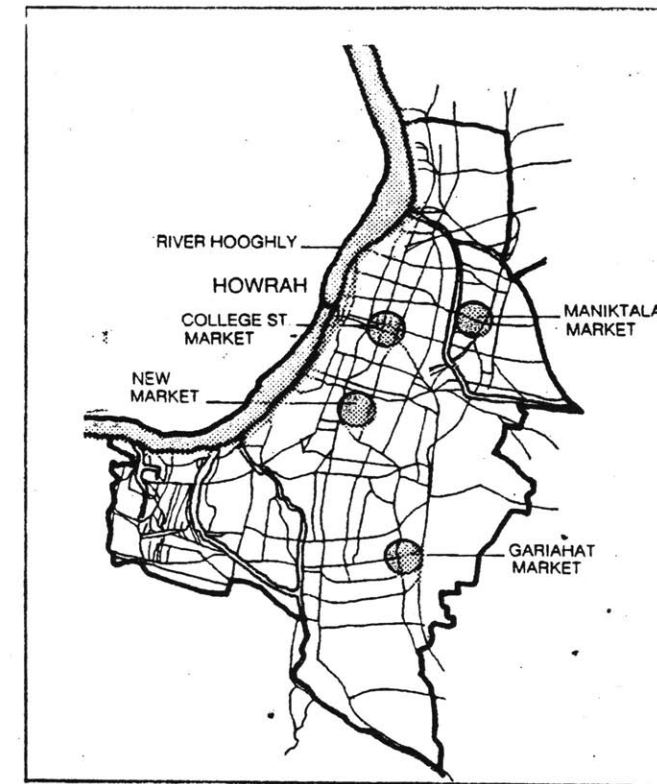


Fig. 4. Calcutta: map of markets.

Connected to Chowringhee by a number of thoroughfares and containing an extensive street grid.

v. North Calcutta, the 'native city'. A limited number of accessible streets defining perimeters of neighbourhoods served by lanes.

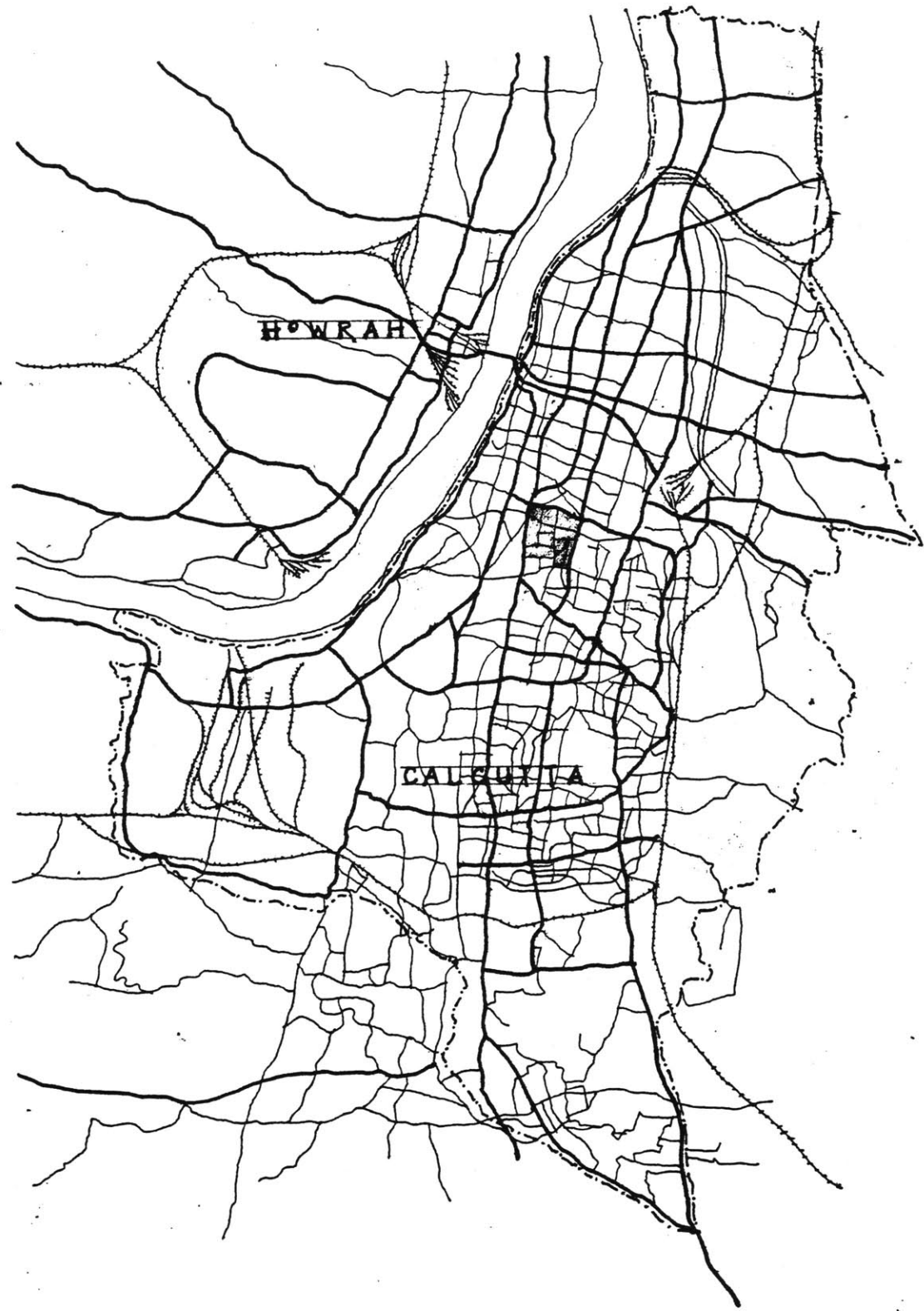


Fig. 5. Calcutta: city scale map.



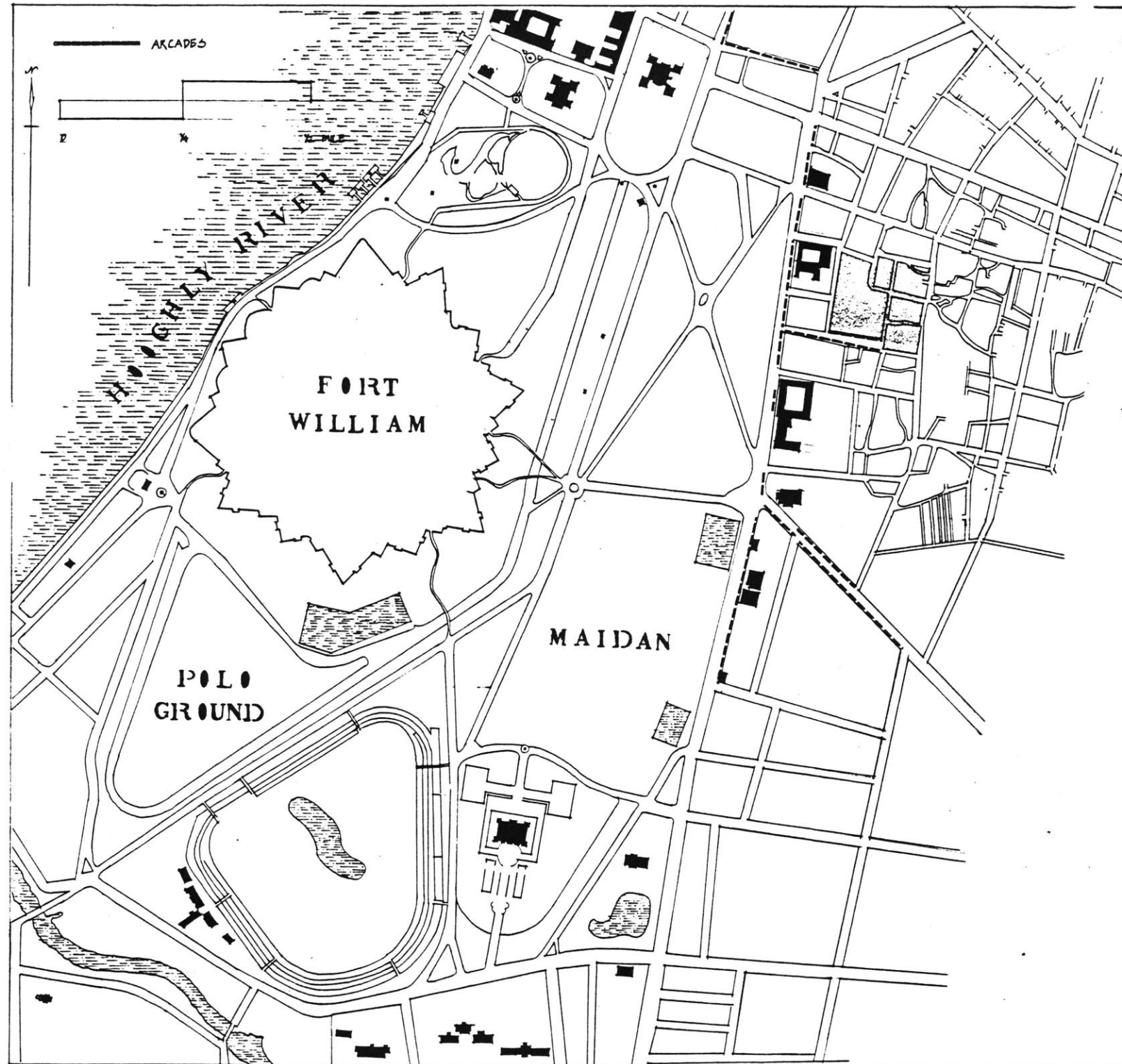
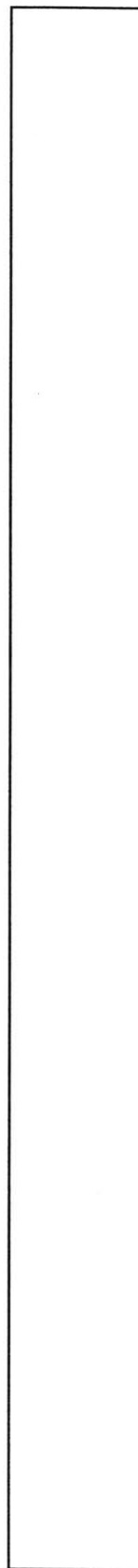


Fig. 6. Calcutta: central area showing maidan, colonial buildings and location of the site.



IA (ii). The division of the city into colonial and native space Nineteenth century engravings and descriptions of the "Native City" bazaars emphasized the chaotic mix of activities within them, and their inaccessibility.

Nineteenth century engravings and descriptions of the "Native City" bazaars emphasize the chaotic mix of activities within them, and their inaccessibility.

According to the Indian Medical record of 1896, the Northern native city was a "...vast area of Calcutta is a series of tortuous lanes, gullies and streets arranged according to no definite plan."<sup>4</sup> E.P. Richards, preparing a study to create a master-plan for Calcutta in 1913 noted that the native city was a world unto its own, and that the British "possessed little or no knowledge of the dense back-blocks that compose three-quarters of the city...One can walk day after day for hours in the lanes of North Calcutta, without meeting a single European."<sup>5</sup> The isolation of the colonial from the native city cannot be underestimated. Richards estimated that a total of 2,500 acres of property were streetless, served only by lanes and passageways.

The transition from colonial to 'native' world is not merely symbolic, but marked by a change in dimension, lighting and identification-from the large-scale 'civic' world to that of the particular community-

"...the Harrison Road...runs straight from the Howrah Bridge to the Sealdah Railway station. It is of the uniform breadth of 75 feet and is named after Sir Henry Harrison...many an overcrowded tenement and festering lane has been swept away in its construction. It was lighted throughout by electricity...[turning off it] we are now in the heart of the purely Indian quarter. Many of the streets are called after the occupations of the former residents...Suriparah (the place of the wine-sellers), Maidaputty(flour

market)...Aheeritollah (cowherd's quarters)..."<sup>6</sup>

As one proceeded Northward from the colonial area, "...the stable three-storied buildings with spacious verandas and large compounds disappear in degrees, and smaller buildings, on narrow plots of ground and in great proximity to each other line the streets, until at last they form an almost uninterrupted range of all descriptions of houses and huts, inhabited by a mixed Christian and native population."<sup>7</sup>

Although these communities had their own institutions (temples and mosques), as well as localized gathering places in the forms of 'tanks' (water reservoirs for washing and bathing), the access to members outside the community was severely restricted. Within the enclosure of the community (defined by custom, demarcated with landmarks and streets) each neighbourhood functioned as a densely knit 'superblock', accessible only by lanes and footpaths. The real public space within these communities was, as always, the street, protected by the larger community boundaries.

The Hausmann-like boulevards to open up North Calcutta of Green's 1913 master plan were only implemented piecemeal and the distinction between the built fabrics of North and South Calcutta remain to this day.

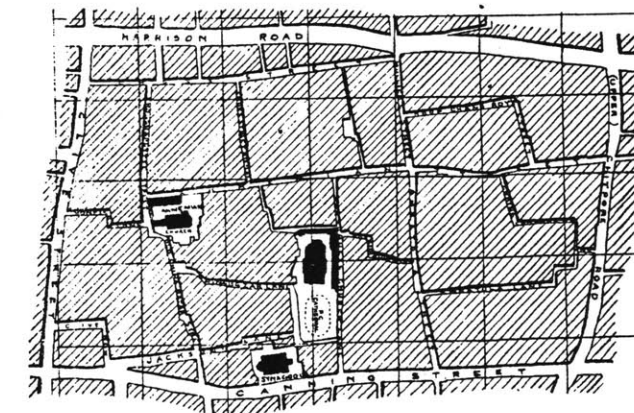
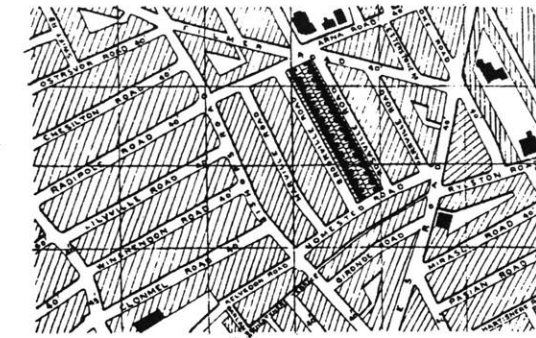


Fig. 7. Comparison of London and Calcutta streets from the 'native quarter' from Richard's Plan of 1914.

IA (iii). The Development of a Civic Realm in the City's 'Grey Area'

Any public gestures made by the British as the Empire consolidated were made along Chowringhee, a major North-South road that ran between the vast open space of the maidan and the 'grey' area of the city. Over a hundred years, this road became the public edge of the city, acting as a containment to the grey areas behind it, and creating a distinctive front along the open space that divided the city.

The open space came to contain the Calcutta race-course, the Queen Victoria Memorial Hall, and a number of public gardens. Along Chowringhee were located the Museum, the Asiatic Society, banks, department stores, the YMCA and Railway Offices; farther North were a Government complex that included the Government House and Law Courts, ending in a large man-made lake or 'tank', around which were ranged the Post Office and Writer's Building. Off the main spine of Chowringhee ran important streets such as Park Street, a street of shops, restaurants and night-clubs patronized by Europeans, and Lindsay street, where the New Market was located.

This entire realm was intended by the colonial powers as an expression of the civic inclinations of the British. It created a zone of exchange between the two communities necessitated by the exigencies of business and administration. It was also an expression of the 'community' of Calcutta

*"Western-style buildings provided the setting in which Indians were exposed to European concepts. An urbanized Indian who studied at University, sat in a local assembly, testified in court, received medical treatment, bought a railway ticket, or mailed a letter did so in European surroundings."*<sup>8</sup>

IA (iv). Classification of Public Space According to Accessibility

This entire area survives, more or less intact today. Since this infrastructure was put into place, the City has changed beyond all recognition. In 1866, the population of the city was 355,000. In 1971 it was 16.3 million, out of which an estimated 5 million are below the poverty line and 56,000 people are officially classified as pavement dwellers.<sup>9</sup>

With the abolition of colonial laws enforcing the access to spaces, it is extremely informative to observe the use of this realm. Real 'public space' must be accessible to all, the villager arrived in Calcutta to experience the big city, the pavement-dweller, the rich person.

A classification of these 'public' spaces according to degrees of accessibility may prove useful

- i. The maidan, originally a field of fire, is with little built definition, and thus is difficult to privatize. It became a space for the Victorian promenade. Today it still serves as a venue for the working class to exercise, play football, for shepherds to graze their herds in the heart of the city. However, as a zone of exchange, it is left to the poor, who have no alternatives. At night, it is a dangerous place. The only time the entire city uses it is when fairs of a temporary nature are held on it.
- ii. Colonial monuments and their gardens, such as the Victoria Memorial, are regulated by the government, who police them and enforce closing times. The gardens offer built definitions-waterways, benches, steps- for temporary occupation, unlike the maidan. The middle-classes will venture here. There are clear territorial demarcations creating pathways. The zones of individual occupation are intensifications of the

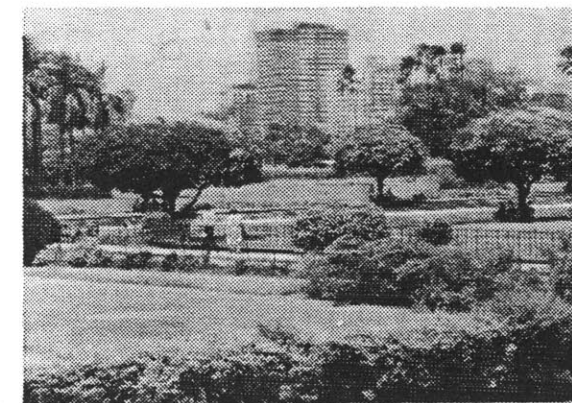
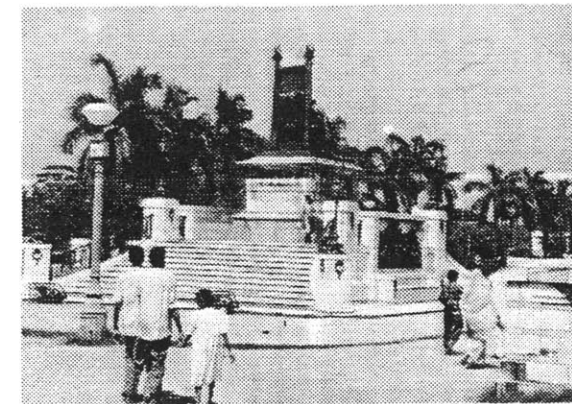


Fig. 8. The Victoria Memorial Monument provides public space in the city center.

pathways. The gardens are structured by their access systems. The spaces are not 'programmed', except for a memorial or museum hall in the center, for which one has to pay a fee. The clearest expression of this is the promenade spaces, such as the esplanade along the river, where 'place' is simply access.

- iii The built edge of Chowringhee is defined by a series of arcades. Small and large sized arcades add up to make a continuous street edge. The use of arcades to create a public zone between the private world and that of the street was recognized in Richard's 1913 plan for Calcutta, pointing out that arcades "...will give valuable and grateful shelter from the painful enervating sun of the tropics, and protection from constant rain during the long monsoon months...There is no valid reason why Calcutta should not come to be known as The City of the Arcades."<sup>10</sup>

The protection from the weather and generous dimensions of the arcades have been used to create an entire world. The edge of Chowringhee is as much a place as is the New Market. Within the arcades pavement vendors set up stalls during the day and display their wares. The columns of the arcade provide a structure to hang their wares.

It is not simply the 'capacity' of the arcade that makes it such a public place. In the Dutch architect Hertzberger's terminology, the arcade would be an 'inbetween' space. Yet, it is the entirety of the arcade- the length of it- that gives it the public nature:

- i The arcade serves as a continuous zone of access belonging to the 'public world'. The position of the accesses of the buildings along the arcade are free to vary- some private accesses to buildings are visible, some recessed, some located in courtyards leading off the arcade. The length of the arcade creates a collective size: the positioning of the accesses leading off it create myriad local conditions of how the private world relates to the public. The variation of spaces along the length of the arcade is 'built' by the positioning of public and private access.
- ii The fact that the arcade is a formalized route of movement means that the amount of space that can be privatized along it is limited. Encroachment into the path of

movement along the arcade by private businesses will only destroy the zone of exchange between the private business and the public world. A minimal dimension is always left for access.

The survival of the arcade system as public place in Calcutta is a clue that even when strict demarcations between public and private are needed, a large-scale formalized system of movement creating differential access provides the opportunity for an exchange between public and private.

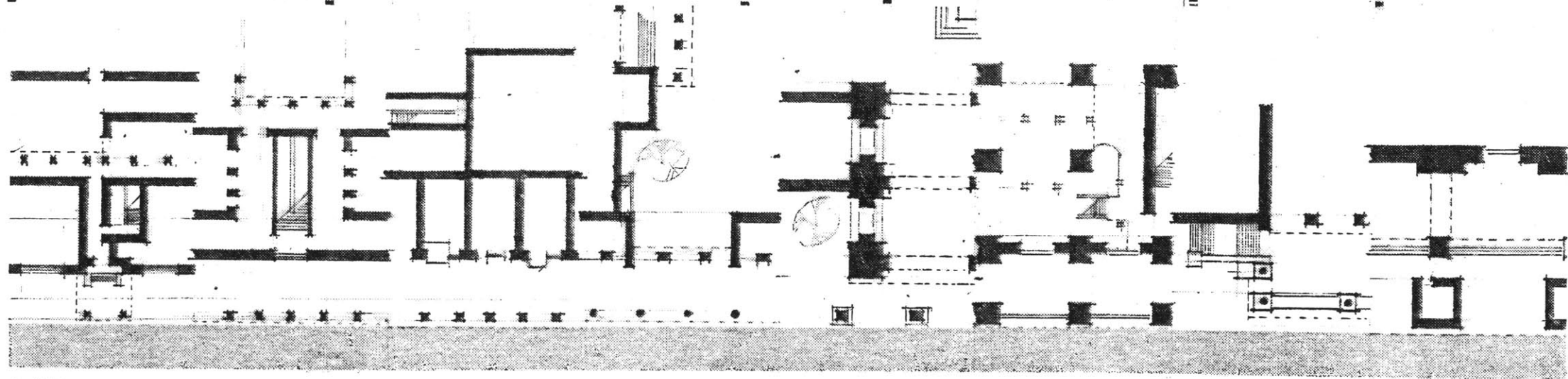
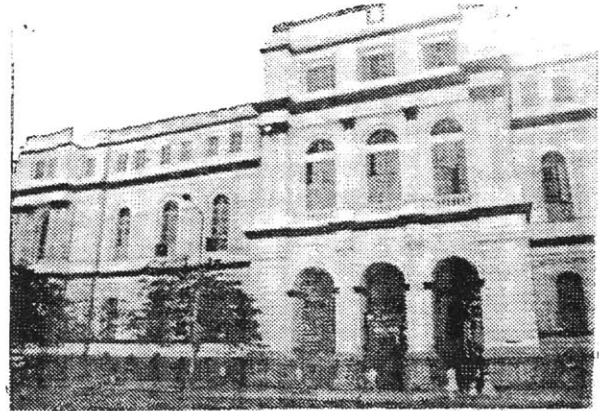
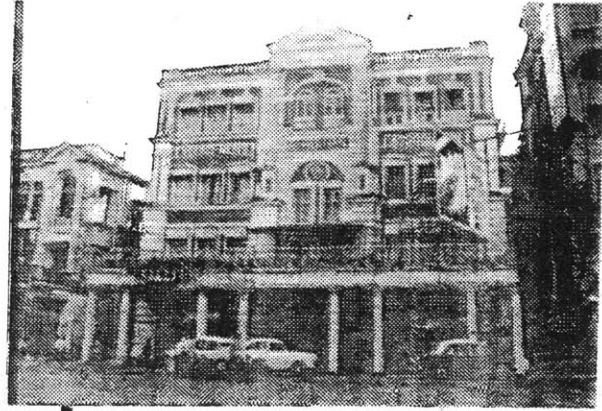
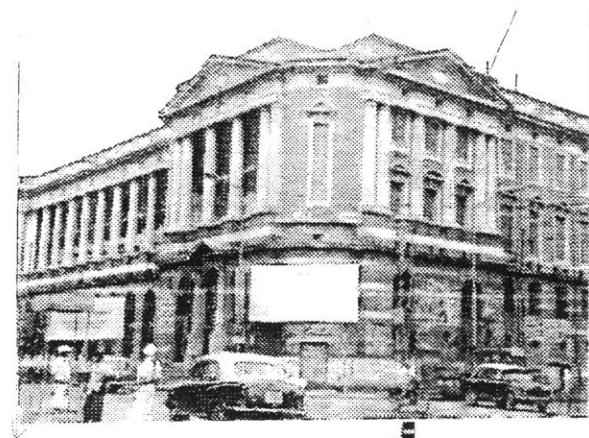
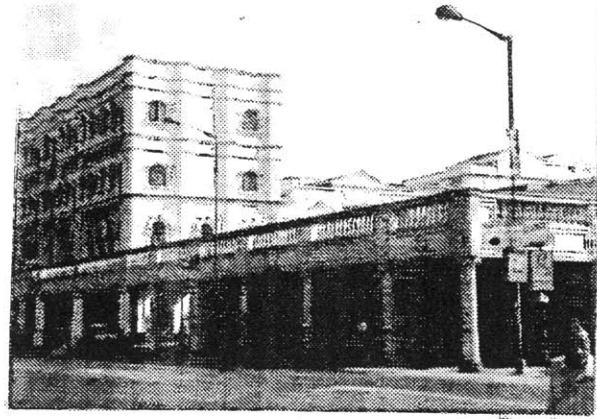
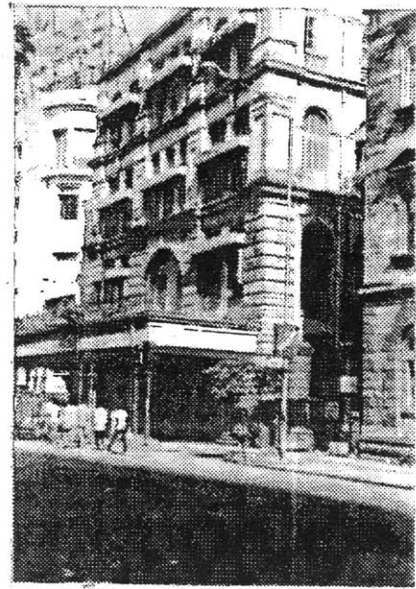
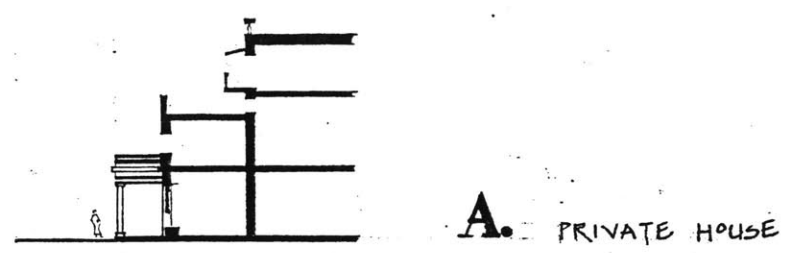
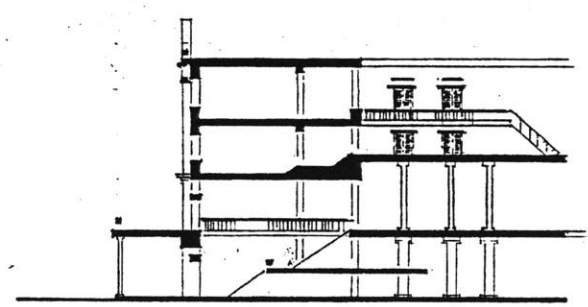


Fig. 9. Arcaded strip along Chowringhee -plan.

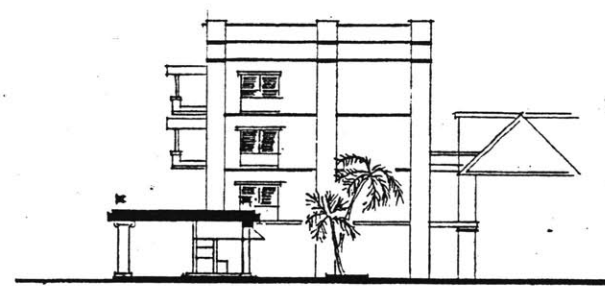




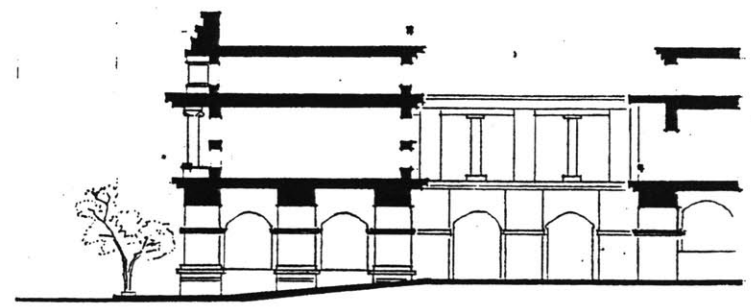
A. PRIVATE HOUSE



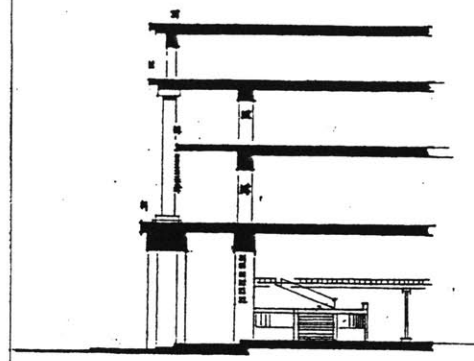
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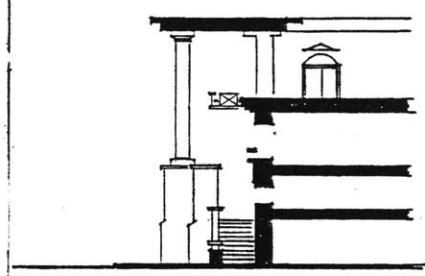
C. GRAND HOTEL



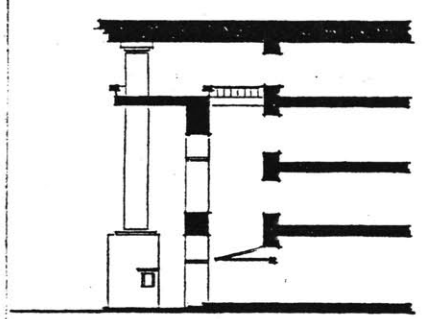
D. INDIAN MUSEUM



E. GOVERNMENT BLDG.

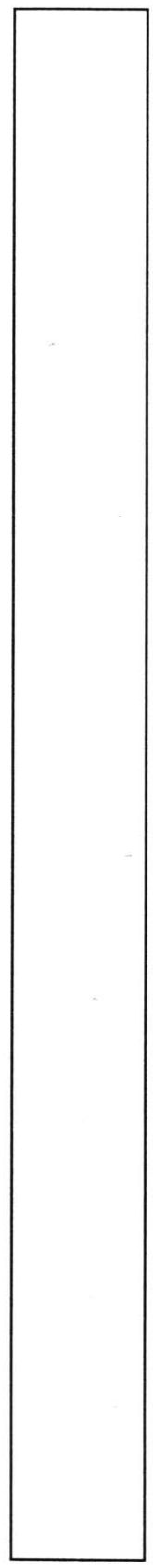


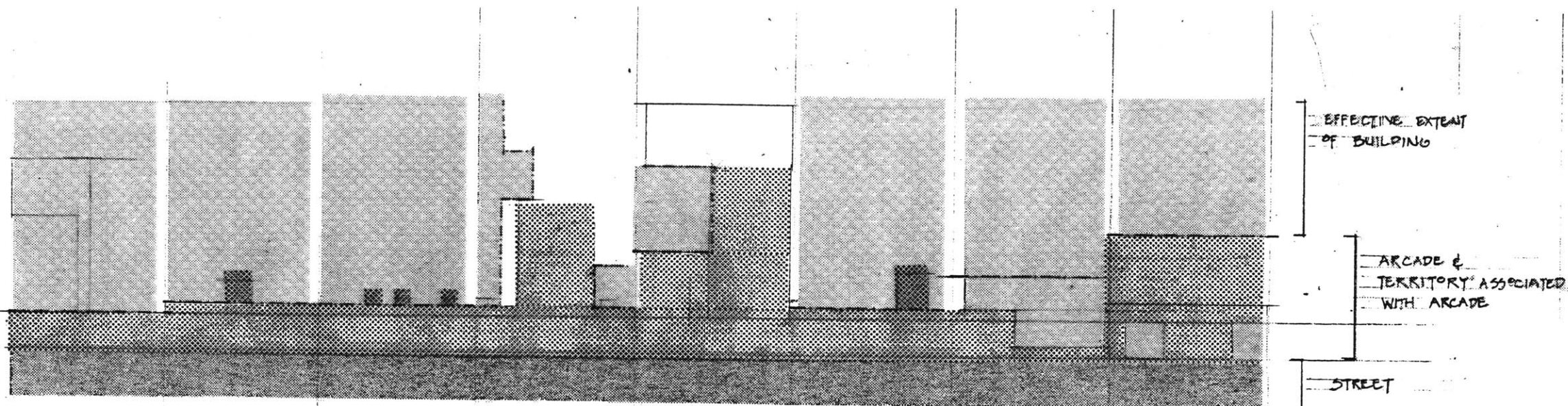
F. GOVT. HOUSING



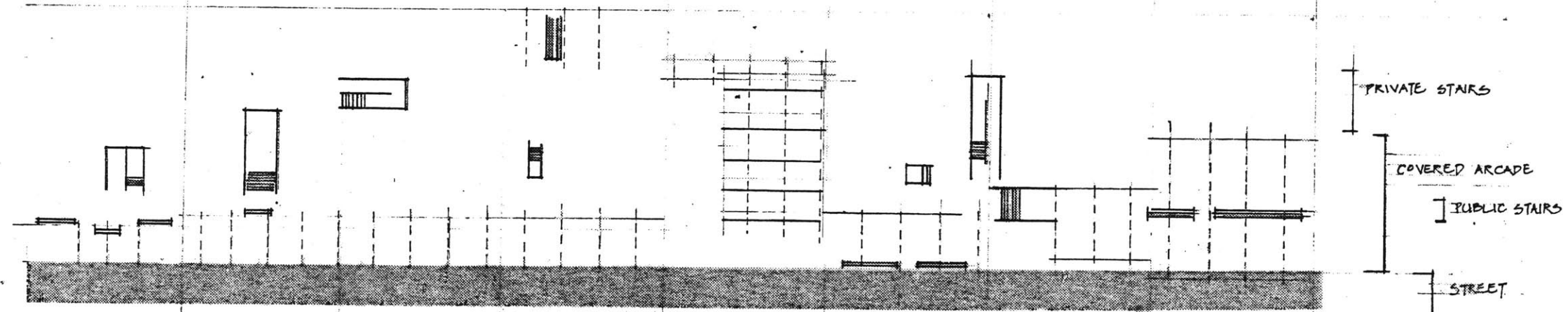
G. COURTHOUSE

Fig. 10. Arcaded strip along Chowringhee -sections.



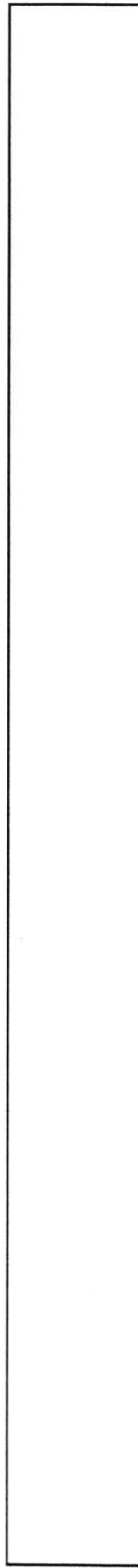


**A. ARCADE AS ZONE OF EXCHANGE**



**B. POSITION OF STAIRS ALONG ARCADE**

Fig. 11. Analysis of arcaded strip.



IB (i). The Role of the New Market as Public Place in Calcutta's History: the Market as Cosmopolitan Space

Descriptions of the market:

*"The Armenians, the Jews and the Chinese even brought their countrywomen with them and settled on the edge of the great Asian Bazaar. The Greeks came too, and the Portugese were already well ensconced. Colesworthy Grant in 1850 described a 'deiversified group' of 'oriental heads' hailing from Turkey to the China Sea, bearing spices, incense and drugs; silks and brocades; furs, fruits and gems; shawls and calicoes, Murshidabad and Benares silks; muslins from Dhaka and broadcloth from England."*<sup>11</sup>

-1850

*"The establishment of a market for the sale of all kinds of food for European consumption, was for years underconsideration: but it was not untill 1866, that it wwas resolved to construct one on a large and complete scale, and the old bazaar called Fenwick's bazar, with it's filthy lanes and bustee surrounding, was taken up for the purpose. The market was opened in 1874. ...Mr. Rudyard Kipling in the last chapter of his Calcutta sketches published under the title of 'The City of Dreadful Night' has given a lively description of the market and its frequenters."*<sup>12</sup>

-1874

*"The New Market in Calcutta is said to be the only one of its kind in the world. It is not only a centre for the sale of Indian produce, but is international in the variety of goods it displays. Manufactured articles, friuts and a wide range of miscellaneous commodites, from all quarters and odd corners of the globe testify to the uniqueness of this Market. Practically everything, as the saying goes, "from a pin to an anchor" is available here."*<sup>13</sup>

-1947

*"No faultless Eden, the market. The twisted limbs of a beggar, children rummaging on a garbage heap with dogs and rooting pigs, the glazed snarl on a tiger-skin rug spoke of injustice, exploitation snd cruelty, but despite all this, despite the hustle and bustle of commerce, there was that quality of innocence about the place. Almost as though everything were part of an elaborate game with unwritten but tradition-honoured rules."*<sup>14</sup>

-1993

The creation of the New Market was in response to the needs of the British community in Calcutta. The colonial elite needed a market that brought together in one place all the commodities they needed. Each of the city's native bazaars tended to specialize in a few commodities, neccisitating shopping expeditions all over the city. More importantly, each native bazaar consituted the province of a particular religious or ethnic Indian group. Entering a native bazaar meant dealing with the colonial subject on his terms, within the space in which he lived and worked.

Within the New Market were brought together communities that had neverbefore earned their livelihood in close proximity to each other. From the Muslim quarter came Muslim butchers, from the Hindu bazaars, shopkeepers, from Chinatown Chinese shoe-makers, and from the 'mixed' areas, Armenian businessmen, Jewish and Portugese pastry cooks. In some cases, the practices of one community were considered abhorrent by another, on religious grounds. (In the eyes of the Hindus, the Muslim butchers who sold beef in the New Market were committing one of the most visible sins- the slaughter of cows.)

The Market- somwewhat like the zoo, with its collection of humdrum and exotic groups taken from exclusive habitats all over the reaches

of the City- became a place where British colonials, assorted Europeans and Indians could rub shoulders. In a severly segregated society that allowed for only formal encounters between the disparate groups, the Market created a cosmopolitan setting. The fact that all communities could shop together in the same place, buying pastries, prams imported from England and cocktail sausages temporarily blurred positions of superiority and inferiority. Even without entering a shop, it provided ample opportunity for different groups to encounter each other at close range.

The Market allowed one to experience, within its aisles, a cosmopolitain array of people whom one might not ever meet in everyday life. It gave the Indians, especially, a sense of belonging to a larger whole, to a vast community of varied interests. One experience that had a novel fascination was the celebration of Christmas ( an exclusively European affair) within the market, when shopkeepers displayed trees, decorations and lighted tableaux.

This cosmopoltanism exercised a powerful effect on the imagination of the city's inhabitants. As a meeting place, as a promise of a wider world, the New Market has been a character in books and films about the city.



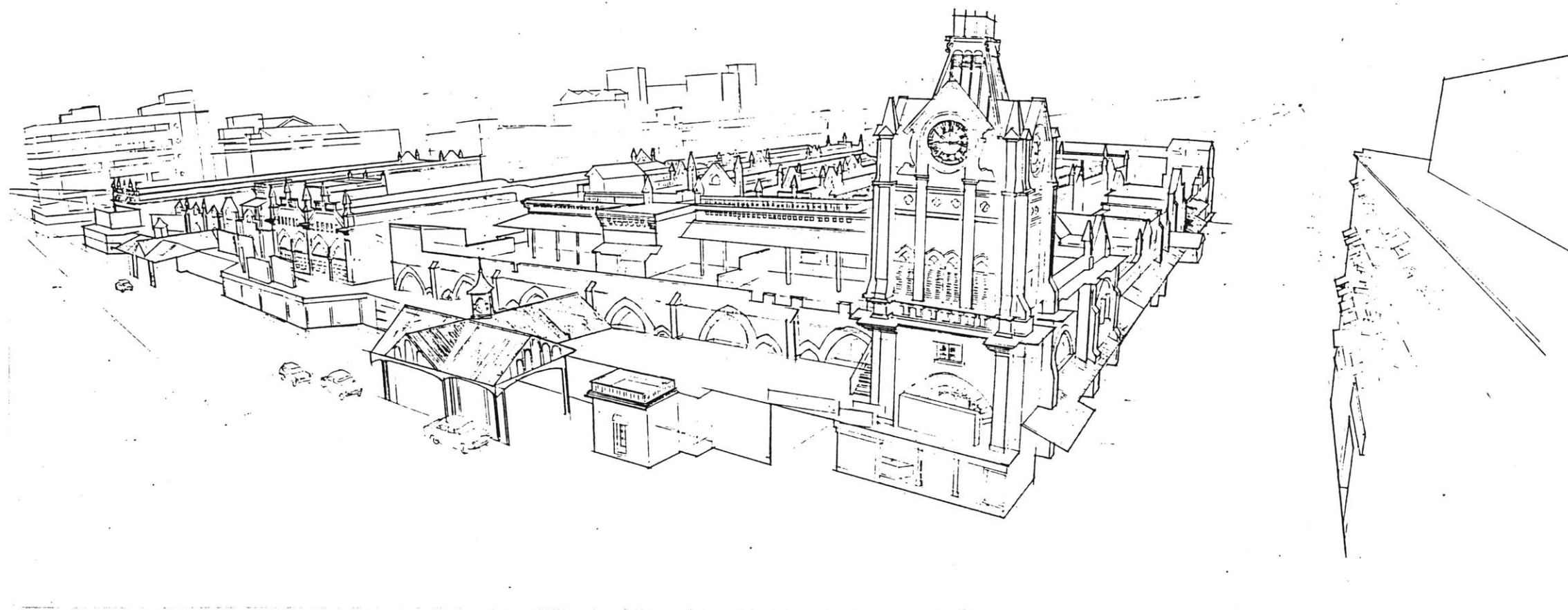


Fig. 12. New Market: perspective view from the South, Lindsay Street.

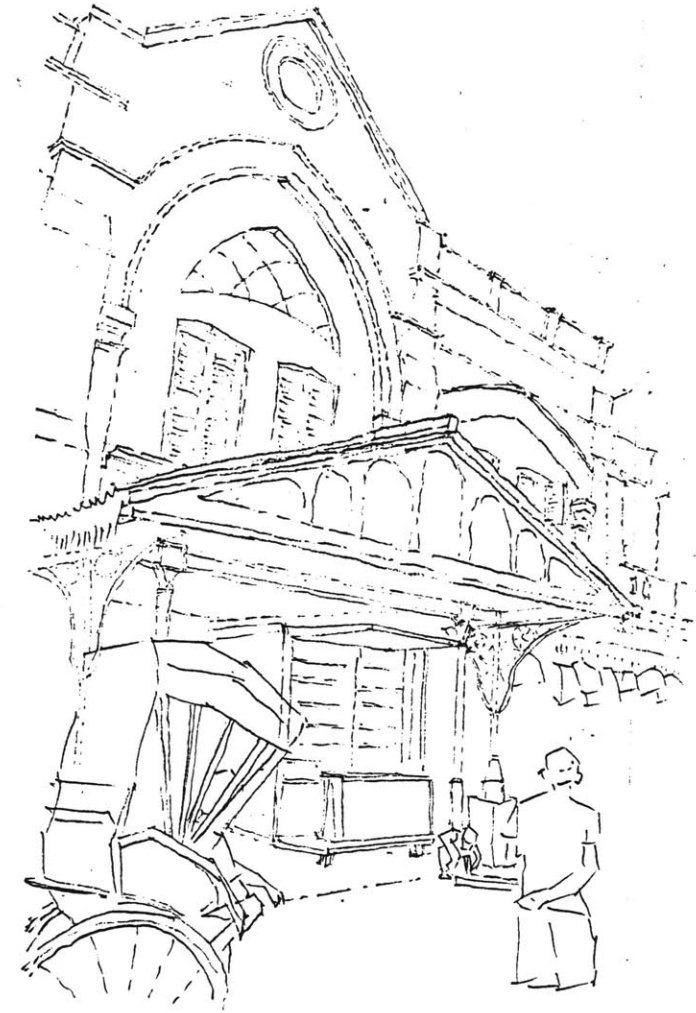
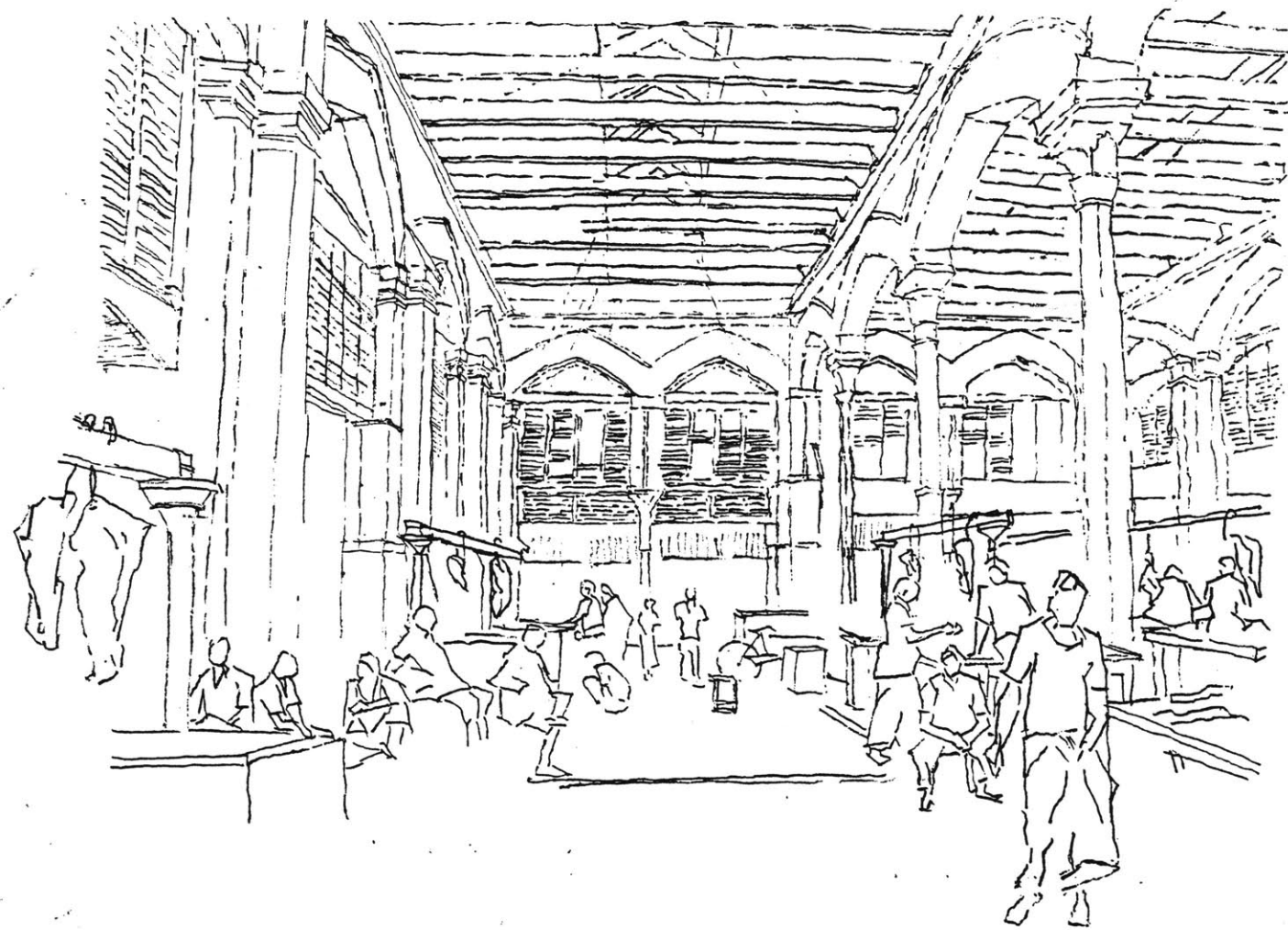


Fig. 13. New Market: sketches of front entrance and butchers' market.

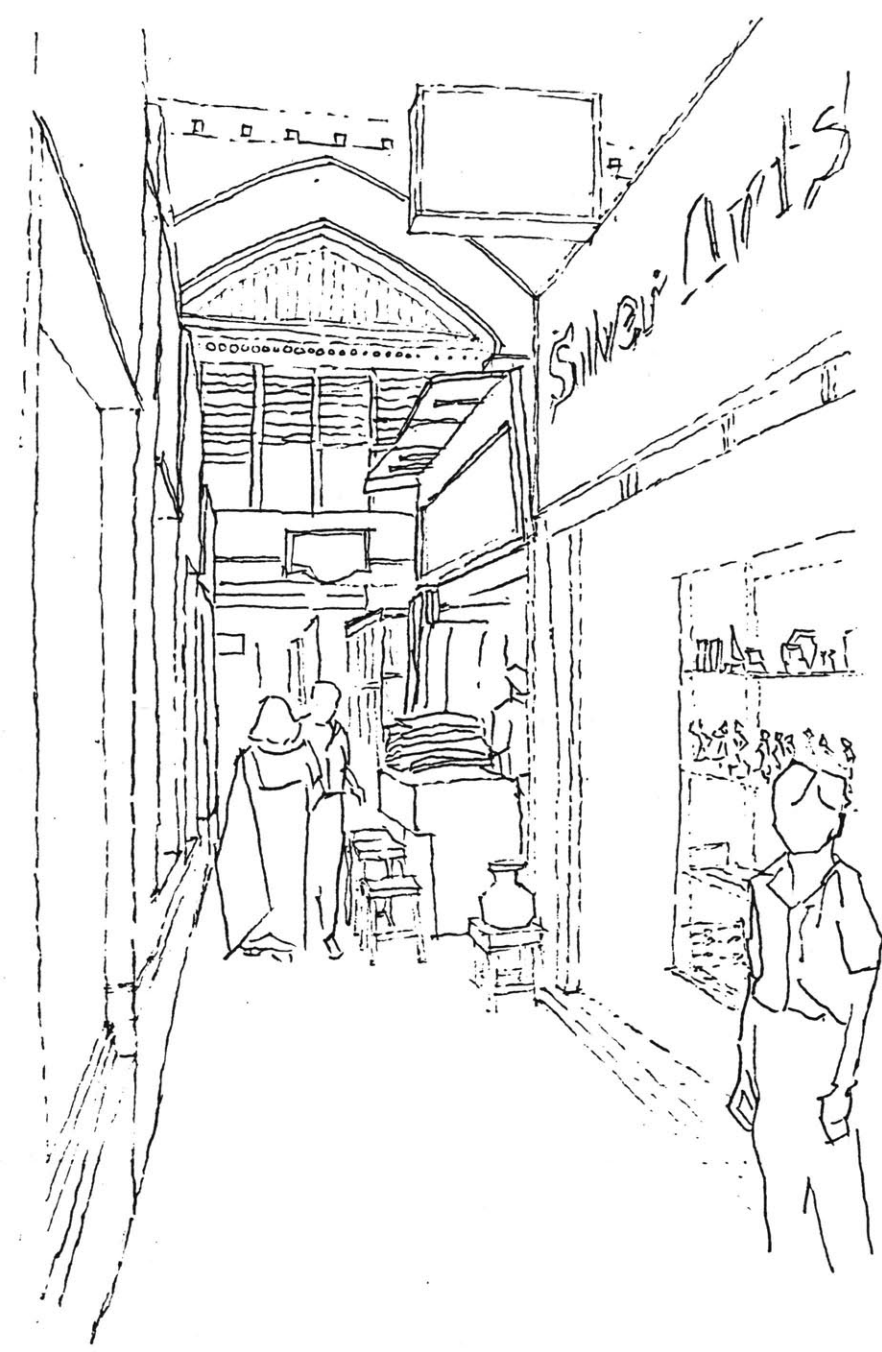
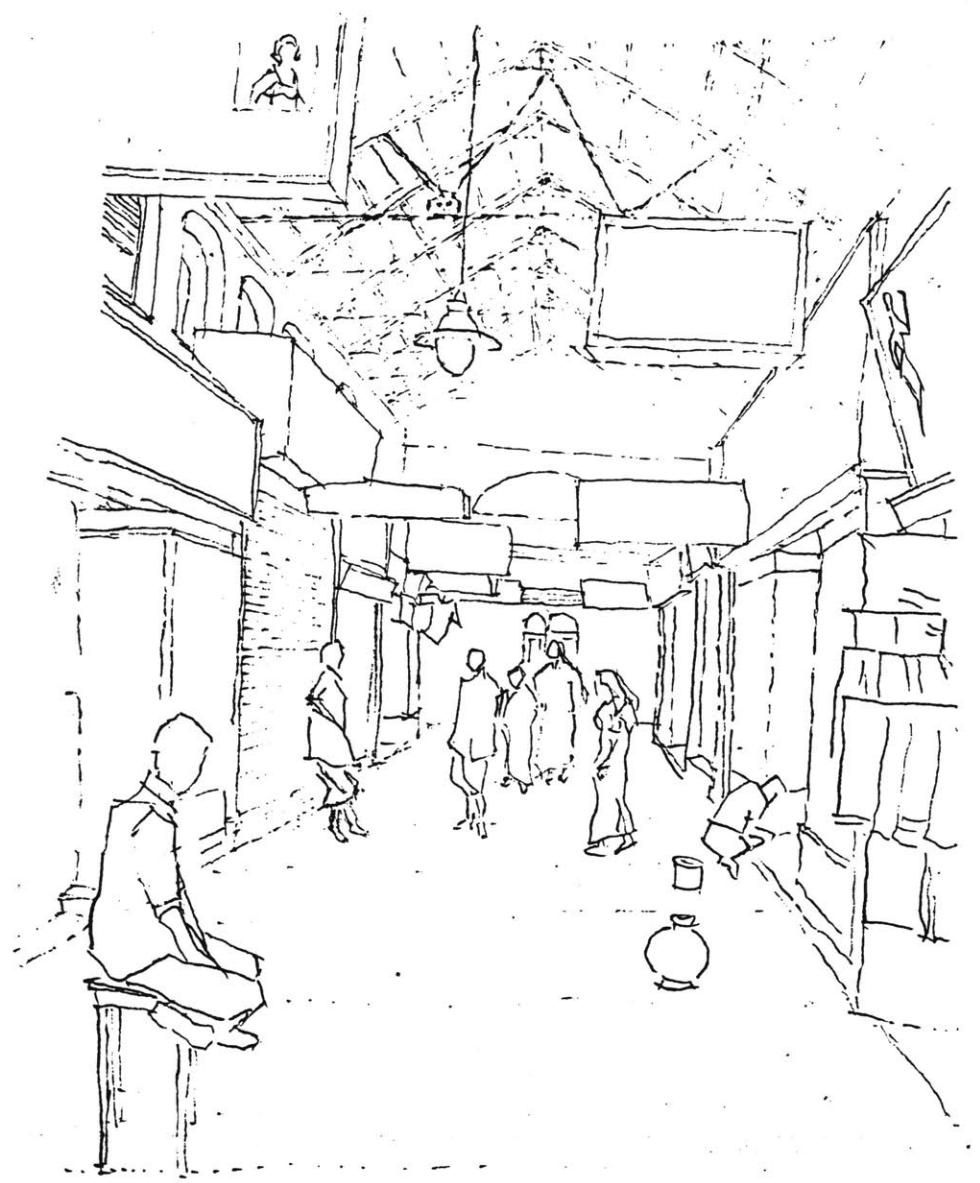


Fig. 14. New Market: sketches of central arcade and side access.

IB (ii). Analysis: the success of the market as public place

The New Market may be interpreted as a successful, if inadvertent attempt at 'place-making', one that has survived the strictures of colonial life and retains its role as meeting-place to this day. The physical structure of the market embodied a new type of social organization- a cosmopolitan commercial arena that brought together traders from many communities; a trip to the Market prompted the visitor to re-think his or her relation to society as a whole.

In enquiring into the reasons for the Market's continuing role as a 'public place', three reasons seem to stand out:

- The accessibility of the market to the city as a whole. The location of the market in a 'grey' zone between the colonial world and the native one made it accessible to both communities. The Market was one institution in a string of public institutions and spaces (monuments, gardens, government offices, the museum) that made up the zone of interaction for the Indian and British communities.
- The structuring of the access system of its built fabric created conditions for the co-existence of the diverse communities that worked there.

The aisles and corridors and courtyards of the market tied the diverse, sprawling environment into a coherent whole, creating an environment imitable and navigable at the largest size. This clear structuring of the access system allowed the demarcations of the New Market into separate 'quarters' for each group; groupings were not demarcated by walls, but by clearly marked paths of access. While the position of each trading

community was set in space, these pathways allowed neutral meeting ground people to wander from one group to the other.

At the same time, a secondary system of access and a series of courtyards set off the main pathways allowed each community to have its own private nucleus, containing mosques, temples, and bathing places.

- At the local level, variations in the dimensions of the Market's corridors and aisles created individual and group sized places. The existence of such small variations may seem insignificant, but provide the micro-environments for people to meet, talk, catch their breath, people-watch and window shop- all activities that enrich and overlay the more commercial mundane functions. It is these opportunities for interaction that turn a trip to the Market into something of a social event.

Without an overt 'public program' to supplement its commercial functions- there are few restaurants here- the activity generated by the commerce, coupled with the opportunities to stop and watch them, provides the entertainment.

The form of the market- its Gothic facade and iconographic Victorian clock-tower- as well as its varied structure (vaulted roofs, skylights) seems secondary in importance to the way the built environment is organized by paths of different degrees of accessibility -both at the city and site size. The new role that the Market played within the city seems to be linked to a new form of spatial organization that is structured not by the overt demarcations of walls, but by routes of movement.



Fig. 15. New Market: location between colonial and 'native' zones.

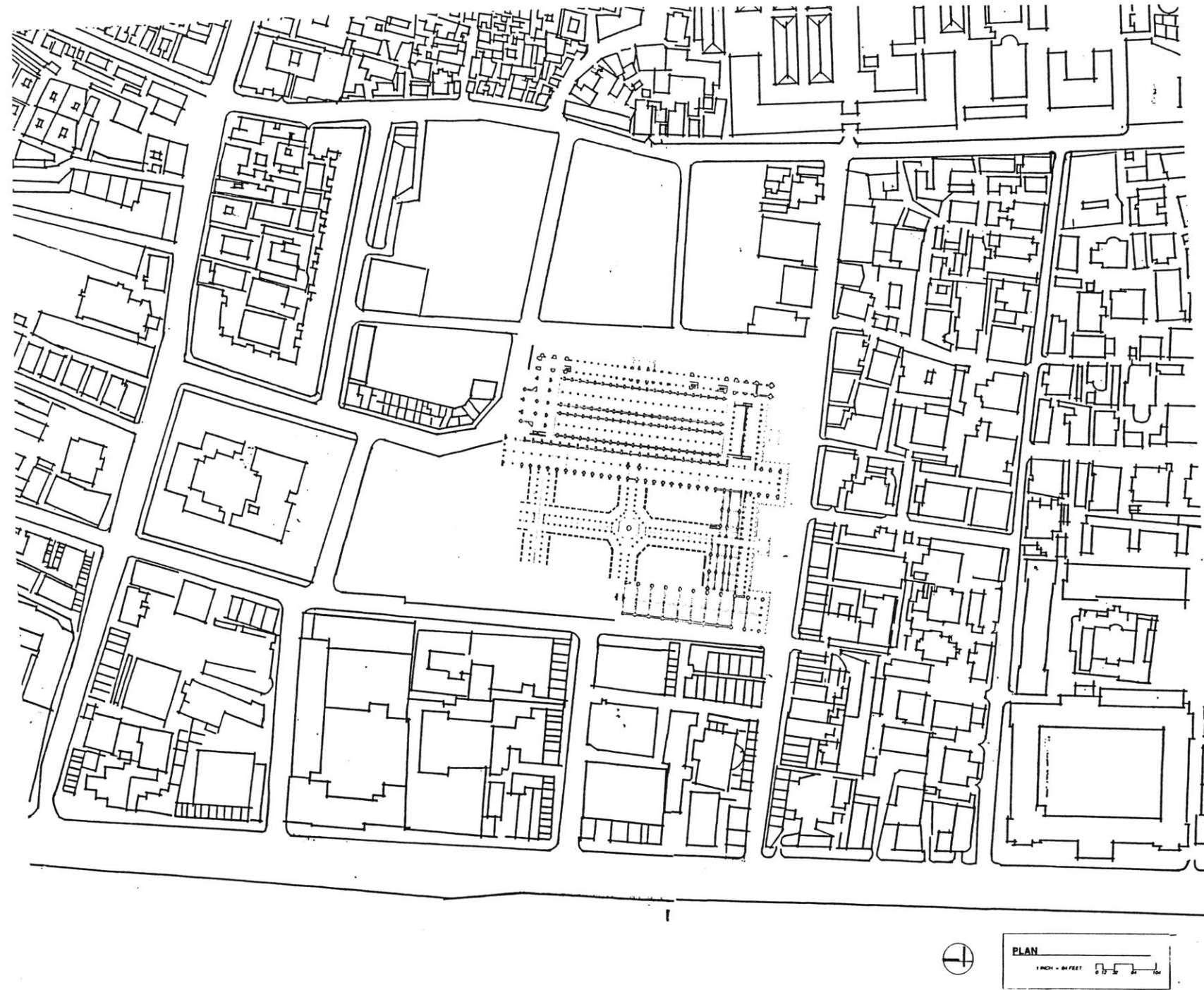
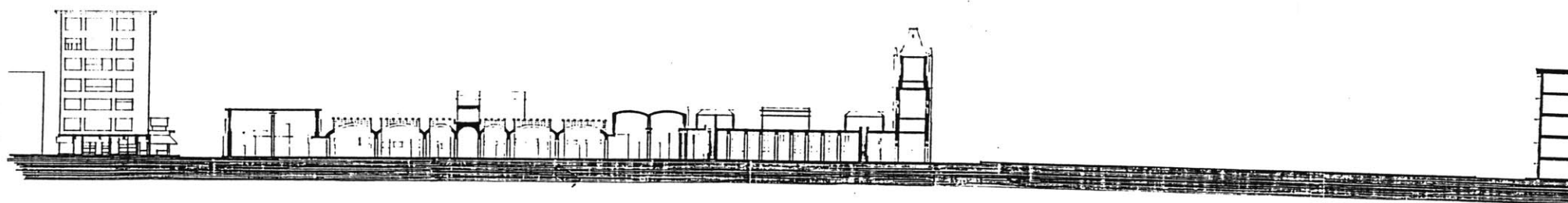
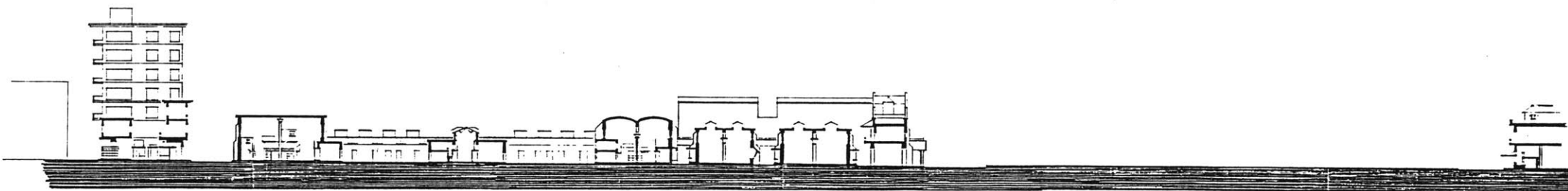
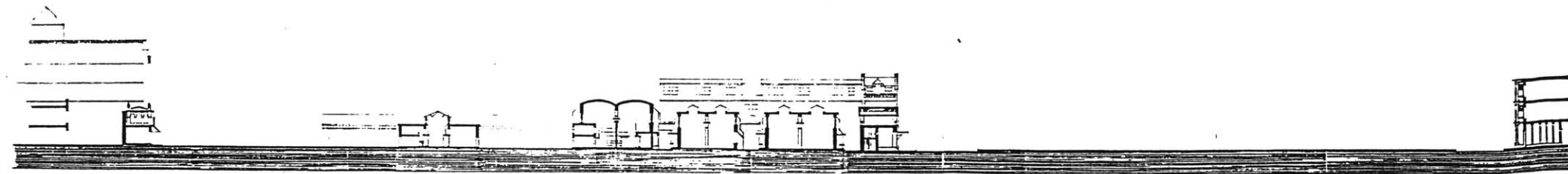


Fig. 16. New Market: site plan.



1 INCH = 30 FEET

Fig. 17. New Market: sections looking North.

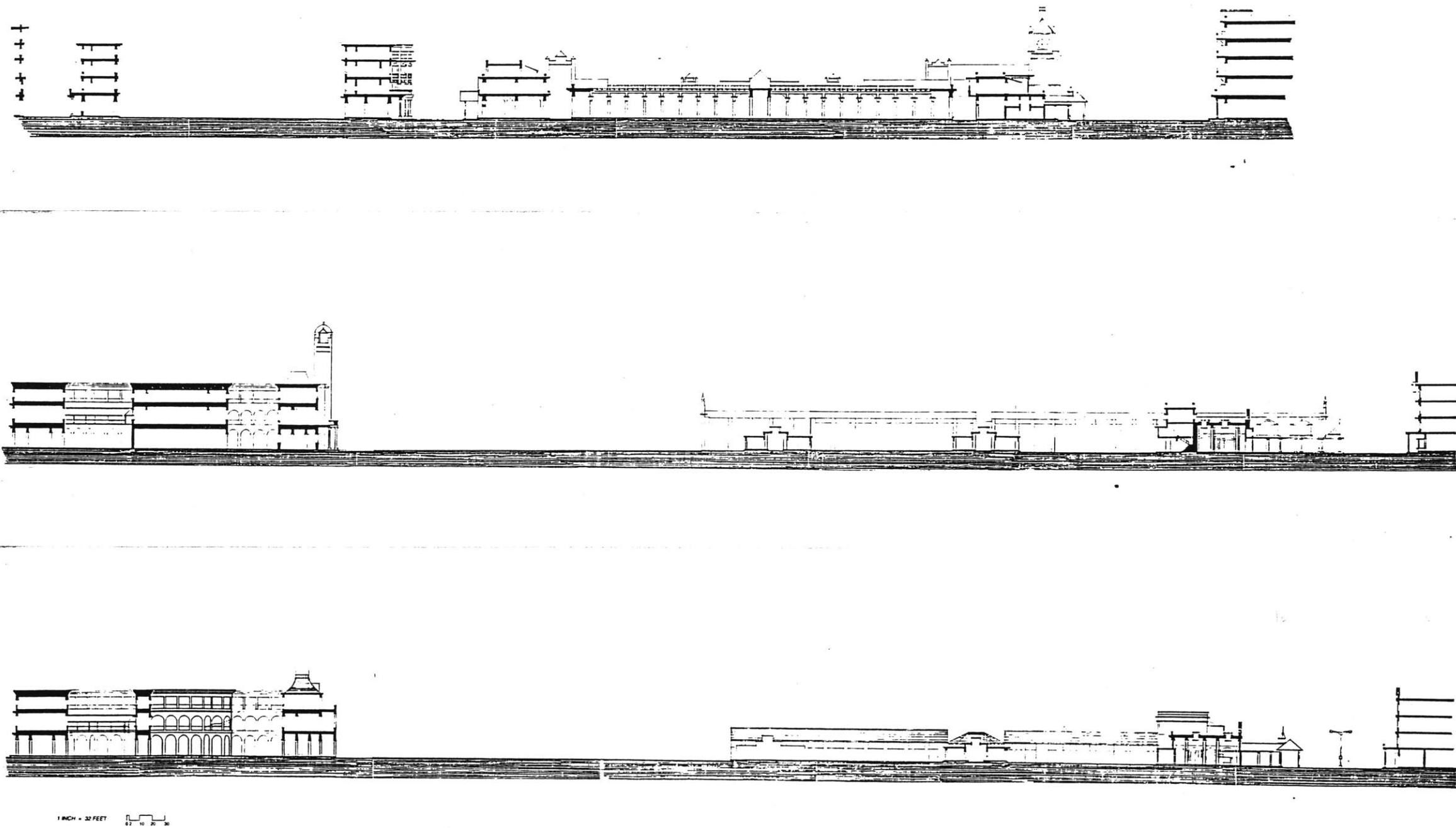


Fig. 18. New Market: sections looking East.

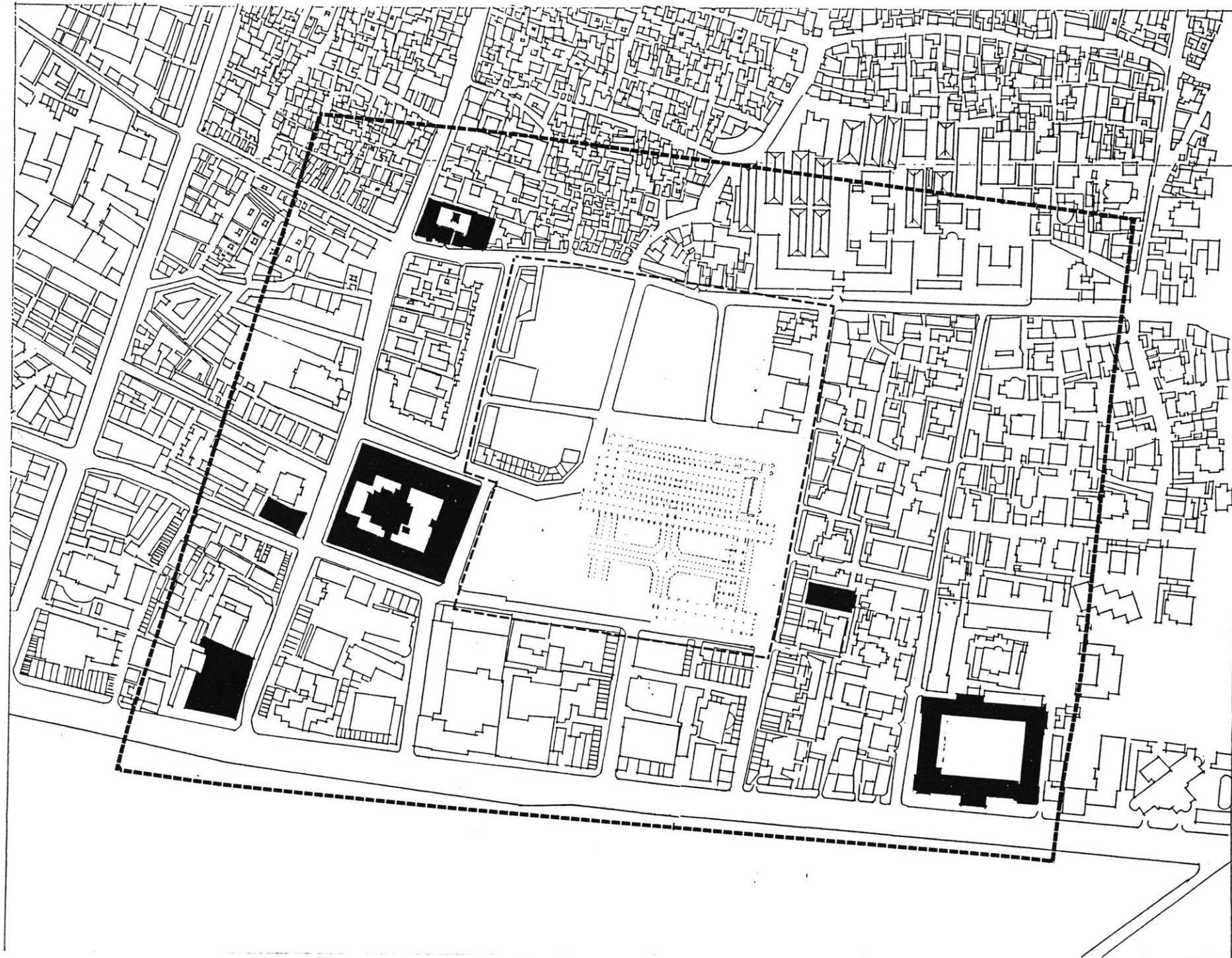


Fig. 19. New Market: area for intervention, study area and important buildings.



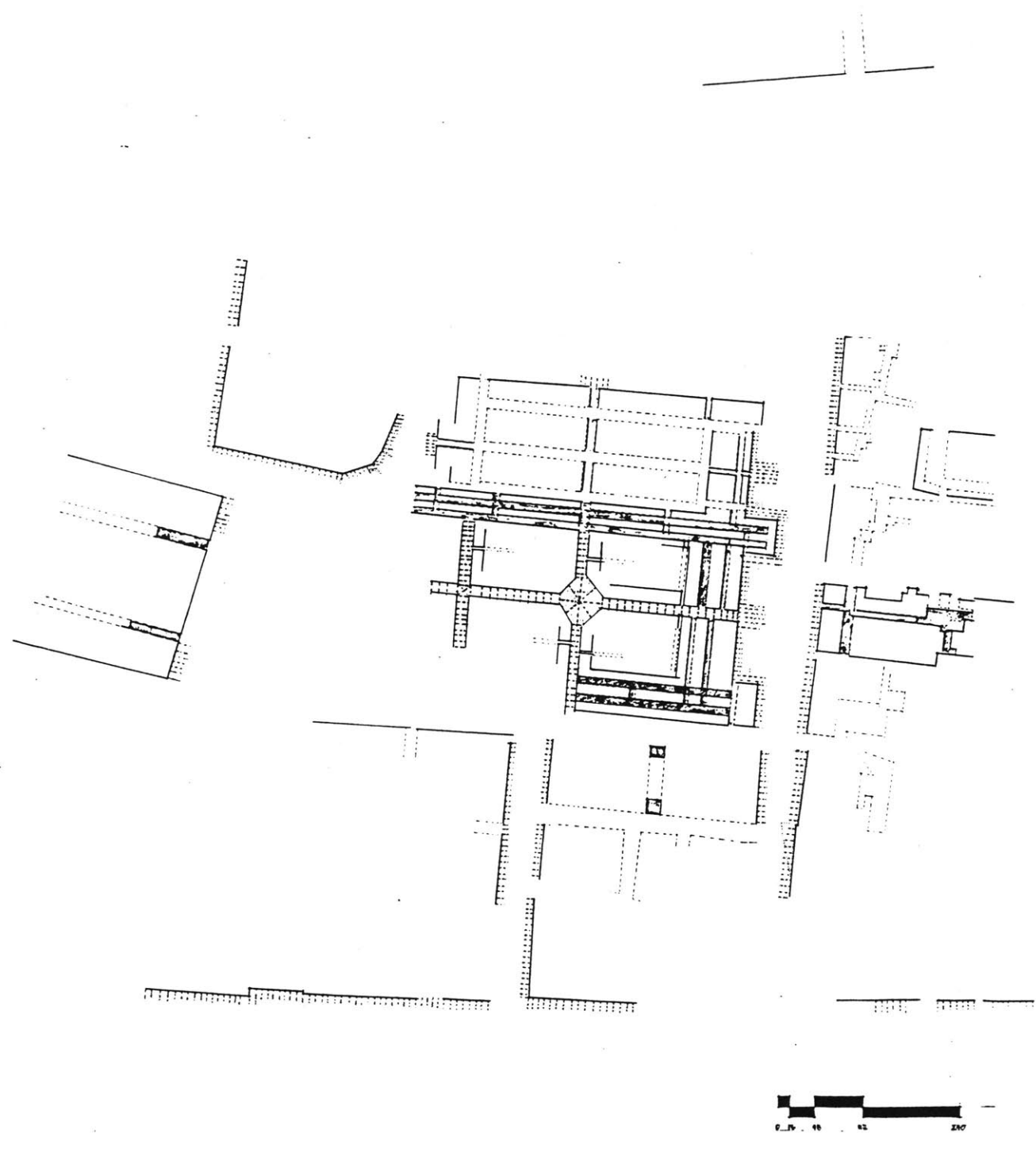
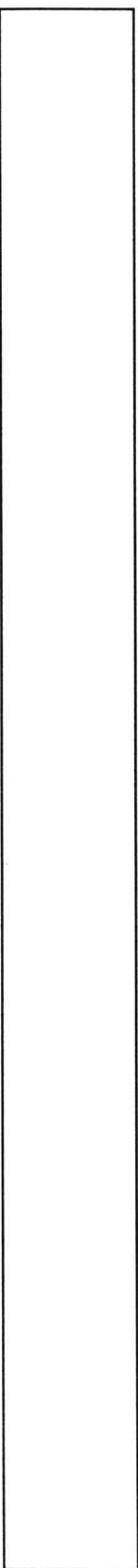


Fig. 20. Connection of market to city-scale arcades.



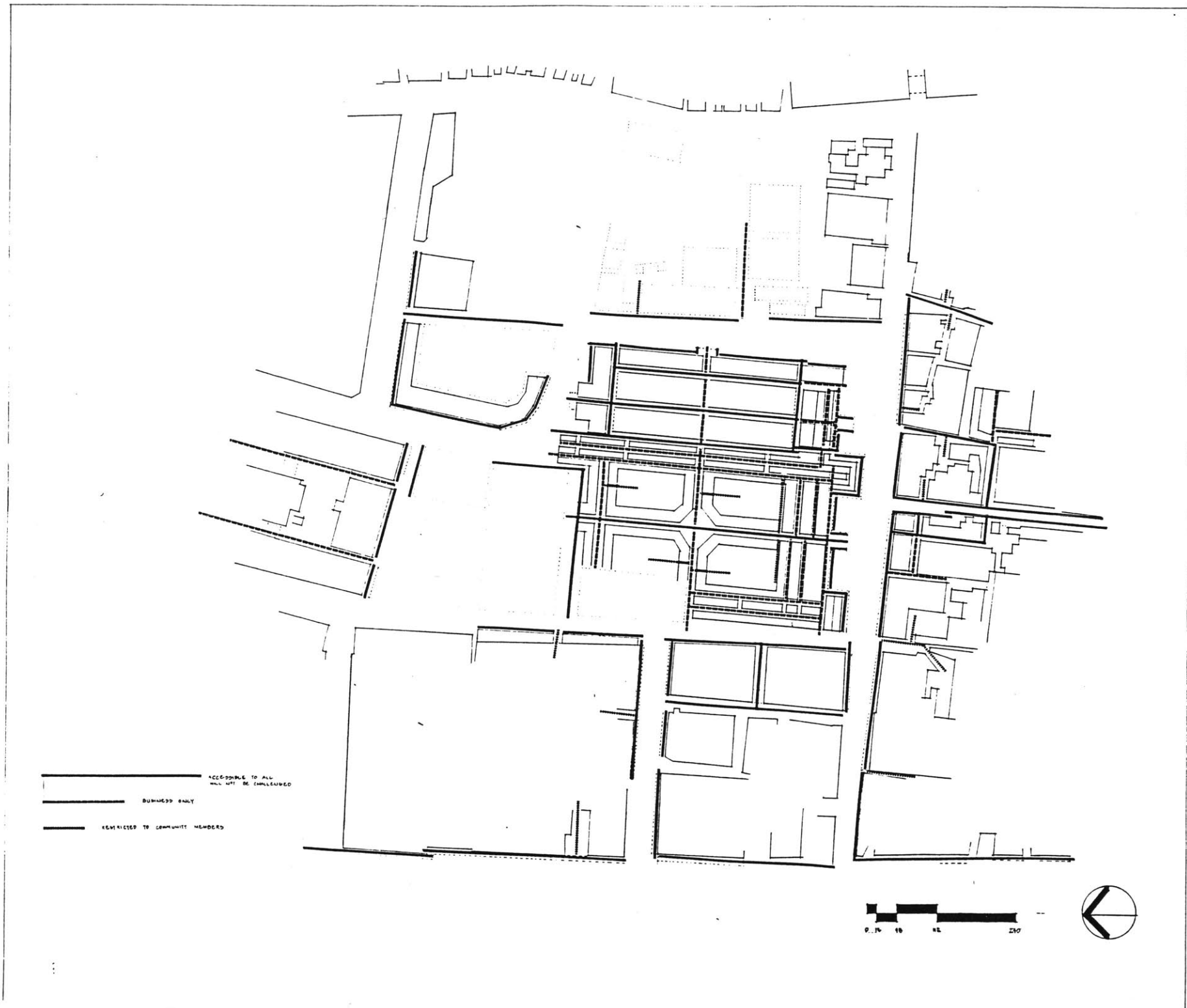
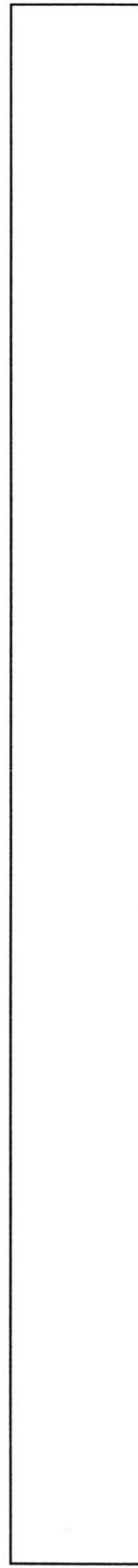


Fig. 21. Analysis of varying degrees of access.



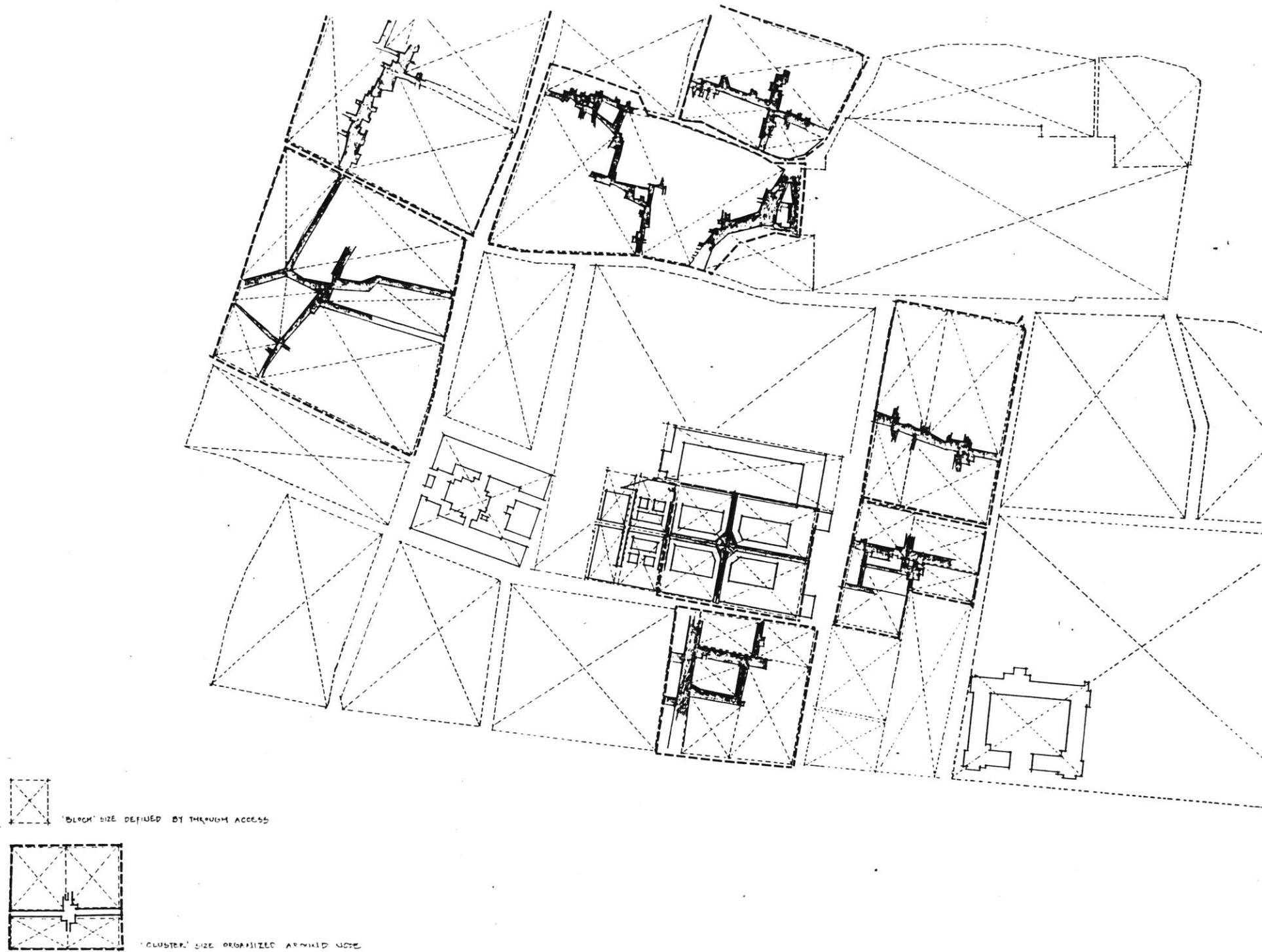


Fig. 22. Analysis of site access showing nodes.

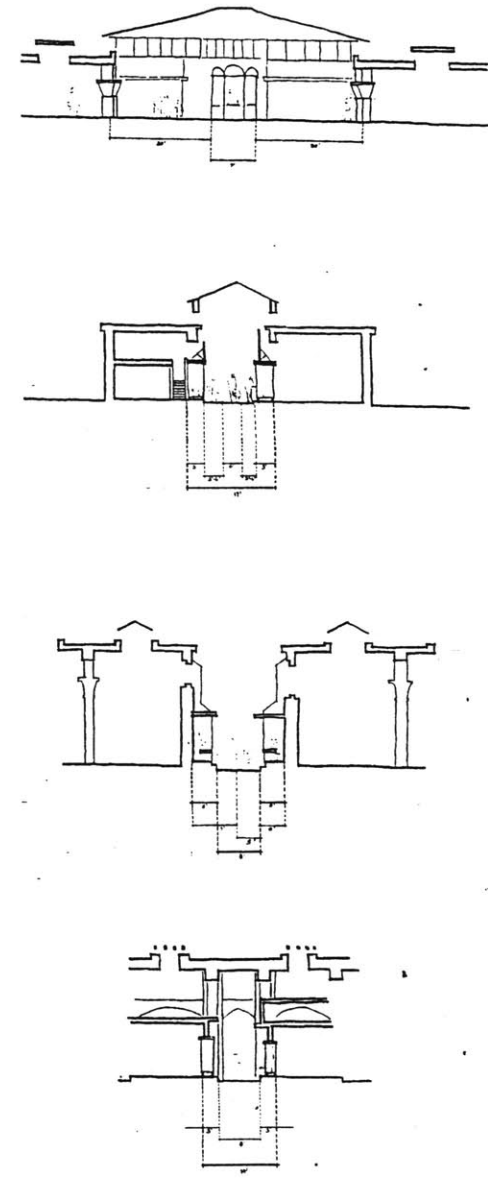
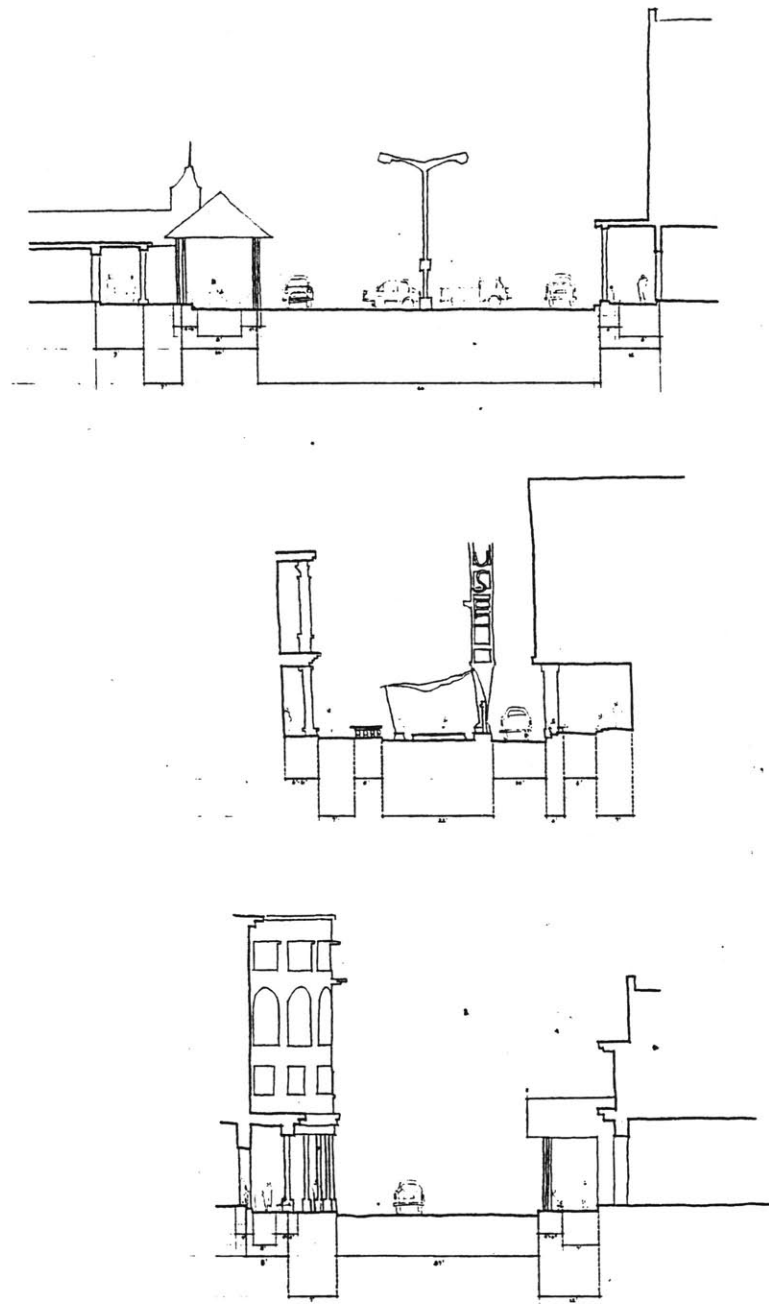


Fig. 23. Dimensions of access: exterior street size and interior access.

## II. THEORY: RESTATING THE DESIGN OF PUBLIC PLACE IN TERMS OF ACCESSIBILITY.

### IIA. Identifying the issues and a definition of accessibility

*place/ fr. Latin platea broad street 1a: a way for admission or transit b:physical environment: space c: physical surroundings:atmosphere*

*access/ fr. Latin accesus approach 2a: permission, liberty, or ability to enter,approach or communicate with or to pass to and from or make use of b: way or means of approach*

*accessible 1: usable for access 2: easy to access 3:open to influence 4:obtainable <sup>15</sup>*

The New Market undoubtedly plays an important role for the city of Calcutta, transcending its commercial function to serve as a cosmopolitan urban place.

A study of its built fabric seems to indicate that 'place-making' in this context has a lot to do with issues of access. Rather than the design of urban public place as stereotypical 'plaza' or 'square' containing programmatic elements that are public in nature, the aisles and corridors of the Market are its public space.

The proposition that emerges from an analysis of the New Market is that successful public space maintains accessible at a collective size, yet accommodates a range of differential degrees of accessibility that serve the needs of varying groups and individuals.

A clarification of the issues involved:

#### i. Place-making versus spatial definition

The belief underlying this thesis is that while architecture as a discipline has its own history and working methods, it is always situated within a particular cultural context. If architecture is to maintain any relevance to the everyday lives of people, it needs to respond to the context-either reinforcing cultural patterns or self-consciously changing them.

Architects are inherently 'place-makers'. The term place is used in place of space. 'Space' implies the manipulation of an abstract, three-dimensional medium, whereas place-making requires an engagement of cultural issues and the specificity of the site.

#### ii. Public and private space

The neutrality of the term 'space' forces the use of qualifiers- 'public space', 'private space', 'female space', and so on.

The terms public and private are axiomatic. The public realm cannot exist without the private one. The two terms also mark the extremes of a continuum of possibilities within the built environment, prompting other definitions such as the 'inbetween'.

It is also clear that the two terms are culturally dependent. (The kitchen in an Indian house may be considered more private than the kitchen of an American one.) Because of the collapse of public and private to cultural norms, the built environment of one culture is often regarded as relevant within that culture only.

#### iii. Replacing the static conceptions of public and private with the continuum of accessibility.

Architectural design is an inherently territorial act- areas are created by deciding on boundaries which are then communicated through a

range of built demarcations- walls, steps, fences, changes in section. These boundaries create degrees of differential accessibility. Instead of the polarities of 'public' and 'private', this thesis proposes that these qualities be discussed according to 'degrees of accessibility' within the built environment.

Access is defined as restrictions and opportunities along the route of movement through the built environment.

In some cases the user of the built environment may be limited to visual accessibility, in other cases there may be restrictions to where she can or cannot go.

iv. The patterns of accessibility within the built environment are the clearest expression, in space, of the society that created it.

The structuring of the built environment through differential degrees of accessibility indicates the relationship of the individual user to the larger collective.

The demarcations that make up the built environments designed by architects influence the relationship of the individual user to the collective size of the environment. Any architectural project- kitchen re-modelling, house, school, market-has implicit in its design the architect's vision of the relationship between 'part' and 'whole'.

The fascist built environments of Albert Speer have been recognized, in their use of architectural scale, perspective and lighting, to emphasize the subordination of the individual to a vast collective. However, architects are hesitant to discuss the attributes of a more 'democratic' architecture- one that creates a collective size, yet allows for different sized groupings within it.

v. Recognizing the relationship of patterns of accessibility within the built environment allows us to learn from the architecture of different

cultures and times. It also enables us to respond to the context within which we are designing.

Different degrees of access within the built environment may also be created by non-territorial means- laws, policing, brute force.

A 'reading' of the built environment must take into account the current living-patterns of the culture (a purely architectural reading of the degrees of accessibility within the built environment of Harlem, New York, will reveal only an 18th century living pattern).

Yet, the architectural act of defining territories and building their boundaries is distinct from non-territorial, culturally specific laws and customs. There is nothing culturally ambiguous about the restriction to accessibility created by a wall. Thus, a discussion of the built environment in terms of patterns of accessibility includes:

- a. An understanding of the range of 'public' to 'private' spaces
- b. The relationship of the project at hand to the larger built environment. (How does a new building relate to a historic context?)
- c. An assumption of the cultural relationship of individual to collective

vi. Implications for the design process:

This shift in emphasis from public/private divisions to degrees of accessibility has certain implications for the design process:

- At the largest scale, access is no longer seen as the corridor space linking public place to private realm, but are the routes of movement that give a coherence to the experience of the built environment. In creating differential access to the parts of the built environment, the attributes of the access 'system' may be said to organize or structure the built environment. (A

commonly known organizational principle is an axial route of movement that organizes space sequentially, implying a gradation of 'front-to back' privacy.)

- At the local level, access is no longer the left-over, unbuilt 'ground' in a 'figure-ground' relationship. Within the larger built environment, the boundary conditions defining access are seen as equally 'designed'. These boundary definitions may be 'built' or 'unbuilt to varying degrees.

In some places the degrees of accessibility may be subtly indicated by a change in level: in other instances clearly built with walls.

The issue of designing a public place is framed, then, not according to a static notion of public place as 'square' or 'plaza': the project is to design an environment with a high degree of accessibility.

#### **IIB. An elaboration on accessibility: the relationship between the access system of the built environment and the culture within which it is situated**

IIB (i). Means of controlling space: territorial and non-territorial strategies

All societies control the space within which they exist. In a microcosmic social organization such as a family household, the children of the family may be told to keep out of the kitchen; such a request may be re-inforced by threats or rewards. The first strategy approximates what architects do- defining a territory ("the kitchen") and then controlling access to it. The second strategy may be labelled a 'non-territorial' strategy, since it requires control of the territory through policing (the equivalent of having a security guard at the gate of a building). Drawing on a study on human territoriality by historical geographer Robert David Sack<sup>16</sup>, this section attempts to connect the way that societies control

their space (accessibility) and the architectural act of 'place-making'.

##### a. Strategies for controlling space

A territorial strategy. Within the social organization of a family, it is not enough for a parent to ban children from 'the kitchen'. First, the area of the kitchen must be defined: by a wall with a door in it, or described to the child as "...the area beyond this table and that chair." A territorial strategy requires that an area be classified, its boundaries defined, those boundaries communicated and enforced.

Sack defines a territory as control of an area by creating differential access to that area-  
"*...in creating a territory we are also creating a kind of place. But it is important to distinguish between a territory as a place and other kinds of places. Unlike many ordinary places, territories require constant effort to establish and maintain. They are the results of strategies to affect, control and influence people, phenomena and relationships. Circumscribing things in space, or on a map, as when a geographer delimits an area...identifies places, areas, or regions in the ordinary sense, but does not by itself create a territory. This delimitation becomes a territory only when its boundaries are used to affect behaviour by controlling access.*"<sup>17</sup>

- Non-territorial strategies. In controlling access to an area, a social organization may rely on non-territorial strategies such as "*...job descriptions (how long you must be seated, where you are and are not to go), legal rights in land, brute force or power, cultural norms and prohibitions about the use of areas, and subtler forms of communication, such as body posture.*"<sup>18</sup>

As with having a security guard at the gate of an apartment block, non-territorial strategies of controlling an area are often layered onto territorial built definitions (the walls and doors of the apartment block, the progression from public to private space).

Advantages of a territorial strategy.

A territorial strategy relies on classification by area, rather than by type.

-The main advantage of classifying by area means that whatever is contained within that area does not have to be specified. This allows the territory to continue existing even if the contents of the territory change. ( A room defined by boundaries- low walls, changes in floor and ceiling height, lighting- will still read as a room even though its furniture may change).

- Communication by boundary. It is easier to enforce than restricting individual access to disparate things within an area. It is easier for a parent to forbid a child entry into the kitchen area, rather than make an extensive list of all the things within the kitchen (stove, knives) to which the child is denied access.

-The definition of the boundary does not have to be clear cut in all cases. A 'fuzzy' boundary may create an ambiguous demarcation of areas; such a deliberately ambiguous boundary can play a role, especially when there exist enough clear-cut examples to establish boundary rules. ( The seating area between a kitchen and dining room may create a fuzzy territory that belongs to both areas, but will be still treated as a boundary of sorts since there are enough clear cut boundaries within the house to define clear-cut boundary conditions.)

(ii). Space-making versus a territorial strategy that creates differential access

While it is clear that non-territorial strategies for controlling access to areas varies over time and place (different 'laws of the land', varying cultural norms), territorial strategies by humans are often seen as instinctive, much like strategies used by animals to claim territory.

A cursory look at kitchens in American and Indian households will reveal that territoriality

is not instinctive but is clearly a geographical strategy that is culture and time-specific. The territory of an American kitchen may be placed close to the main access within the house, and be accessible to the entire family; Indian kitchens are separated from the main access of the house by an intermediate zone (corridor or courtyard) and are meant to be accessible only by women or servants. Although both 'kitchens' serve the same function (the cooking of food) and employ similar built definitions (walls, doors, floor and ceiling height changes), the position of the kitchen in relation to the rest of the house creates different degrees of access to it and may tell us something about the social relations existing within that household.

*"Territoriality forms the backcloth to human spatial relationships. Territoriality points to the fact that human spatial relationships are not neutral. People do not just interact in space like billiard balls. Rather, human interaction, movement and contact...human spatial relationships are the results of power and influence. Territoriality is the primary spatial form power takes."*<sup>19</sup>

The term 'space' favoured by architects implies a neutral arena within which members of society interact. Recognizing the insufficiency of this description, recent terms have emphasized the experience of space as subjective, coining terms such as 'private space', 'female space' and 'male space'. While such descriptions recognize that space is not neutral, divisions such as these do not aid in seeing the connections between separate realms in space.

Territoriality deals with a continuum of human behaviour in space: how differential access is enforced within space by the creation and communication of boundaries. To whom access is given and how this access is created and enforced is the spatial form of the interests and relationships of a society.

(iii). The relationship between the structure

of society and the system of accessibility within its built environment

As architecture students at MIT, there has been an implicit preference for architectural references from traditional, pre-industrial cultures. As models of humanistic architecture, we appreciate the small-scale, richly woven fabric of cities such as Bologna, San Juan, and Jaipur; the hill towns of Spain, Italy and Nepal. It is their human-scale environments, infinite variations on a common theme, that we attempt to emulate. From these places we try to understand the implicit rules that generate such variety. Implicit in this process is an understanding that the built environments we study encode in their built fabrics long-gone ways of life and building technologies. These understandings inform our design of places.

A criticism of this process is that we use the lessons of pre-industrial, highly homogenous societies (even feudal) to design 'democratic' communities for a heterogenous and varied industrial present. The criticism of producing romantic and irrelevant designs can be levelled at this process unless an understanding of built form and its relationship to the particular place and culture that produced it is made explicit. In doing so, an understanding of territoriality may prove useful.

- The structure of traditional societies and their built environments

In many pre-industrial societies, identity was essentially by social relations- one was born into a certain religious/ethnic/ group. Mobility into these groups was limited; one was either a Zulu, or not. Communities were formed according to these social relationships. Such communities defined themselves primarily by religion or blood (Zulu) and only secondarily by area (belonging to the North West corner of Kenya). Be-

cause various communities saw each other as strangers with irreconcilable differences, territoriality (classification by area, marking and communicating its boundaries) was used to defend their land. The walled cities of many traditional cultures testify to the rigid use of territorial demarcations.

Within the socially constructed communities of traditional societies, the first built demarcation separating the community from the outside world was generally a barrier of some kind- fortification or city wall, or in a more subtle form, a series of controlled points of entry. This enclosure at the largest size (the size of the community) was an extreme act of closure. Paradoxically, such a protective enclosure then gave the interior plan of the community a greater flexibility of demarcations. With the threat of the 'outside world' closed off, an intricate series of built demarcations created zones of exchange between the 'public' street and the 'private' dwelling. More importantly, many traditional communities contained a varying hierarchy of society. While accessibility at the largest size was highly restricted, the interior world was structured through an intricate access system. The cohesion of a shared community of interests also resulted in a built fabric of a complex pattern, containing within it a richness of variations.

Paradoxically, because the community is seen as a natural, organic relationship, the attachment to the place is very strong- the seasons, cycles of harvesting, dramatic natural features, are incorporated into religious beliefs. Sacred rivers and sanctified built form illustrate that there is little distinction between place and event: the two are inextricably linked. The idea of 'space' as an abstract, neutral network housing interchangeable

events does not exist. Events take place only at a certain place, at a certain time.

- The societies of industrialized nation-states and their built environments. The specialization and homogenization demanded by capitalist means of production runs counter to the holistic, organic characteristic of traditional societies. Capitalistic production encourages geographic mobility and change. A simple illustration of this are the vast rural-urban migrations of labourers. The experience of 'Modern' forms of social organization is a shift in emphasis from socially-defined to territorially created identities. Religious/ethnic identity becomes secondary to membership within a community defined by area. One can become an American by living within the area of America for some time. Such a territorially created identity is much more inclusive than a socially-created one. "The primary definition of membership within a North American city or state is domicile within the political territory. This definition allows complete strangers to become members of the same community."<sup>20</sup>

The modern city is a territorial creation- defined by area, with its boundaries clearly marked, allowing differential access. Since one does not have to be born in New York to be considered a New Yorker, a territorially created identity is by nature more impersonal than a socially-created identity.

There is, of necessity, a weakening of the bond between inhabitant and place. Instead of belonging to a tight-knit, related 'organic' community, the individual imagines herself to belong to a vast, imagined community of other individuals, connected by the fact that they inhabit the same territory. Rapid change and geographical mobility mean that there is a disjunction between

place and event- no longer are the two inextricably entwined.

The creation of identity purely through a territorial strategy, as in the design of modernist cities such as Chandigarh and Brasilia, relied on a high degree of openness at the city scale, based on the idea of a democratic city. The space to be occupied by each inhabitant was clearly demarcated and marked and functions clearly separated. The fuzzy boundaries of the traditional built environments were done away with, and clear demarcations made between the private realm and shared space allotted at each level of community. For example, despite the abundance of public space in the Indian city of Chandigarh, it remains one of the most private of Indian cities, with little of the variety of environments found in an older Indian city. The access system of the city has little variation, ignoring topography and treating the entire city as an abstract grid. The impersonality of a territorial creation of identity that is supposed to confer the freedom of anonymity and individuality here simply degenerates into a vast and undifferentiated built environment. The reason for this is simply if that a territorial definition of place is taken to an extreme, with all boundaries clearly defined, "...tipping points can be reached making it possible for territoriality to weaken an institution. The territorial units can secede or be captured by another institution."<sup>21</sup> In this case, the well defined boundaries between public and private meant simply that the two realms had nothing to do with each other; places left unbuilt as 'public' were simply claimed, whole, by the private interests.

(iv). The changing means of creating social identity and their implications for designing place today



The metaphorical landscape of traditional communities with their fortified cities, each a distinctive place, is replaced by a view of different landscape: of territorial 'molds' which bear a contingent relationship to the events and things that they contain. A vivid illustration of this relationship is the early 20th century practice of American millionaires of buying entire French chateaux and Scottish baronial castles, then transporting them, brick by brick, across the Atlantic to transplant them in California or Milwaukee. "Geographical mobility and territorial power at the political level, and emptying, filling and arranging at the architectural level, loosen the bonds between events and location and present territory and space as a background for the occurrence of events, a background that can be described abstractly and metrically."<sup>22</sup>

At one hand we have the rich variety of traditional communities that were highly exclusive at the largest size, but contained a fine-grained fabric within; on the other we have the 'democratic' cities of modernism, based on a democratic ideal, open to all, but ultimately alienating.

The search in design is for built environments that mediate these two extremes, built environments that contain the richness of traditional communities and the democratic accessibility of modernist attempts. It is by collaging the two that a territorial strategy can be used to design a continuum of spaces that include the needs for community and individual.

### III. ANALYSIS OF COLLECTIVE SIZED BUILT ENVIRONMENTS AND THEIR ACCESS SYSTEMS

IIIA. (i) Late modernist attempts at place-making in the West- the attempts of Van Eyck and Hertzberger

Dissatisfied with the functionalist orthodoxy of trying to find a specific form and a specific spatial experience for each function, the architects of Team Ten attempted to reformulate the ideas of 'place'. A well known formulation of that effort is by Aldo Van Eyck:

*"Whatever space and time mean, place and occasion mean more. For space in the image of man is place, and time in the image of man is occasion. Make of each a place, a bunch of places of each house and each city, for a house is a tiny city, a city is a huge house"*<sup>23</sup>.

Drawing on the earlier discussion of place-making, it seems clear that for Van Eyck, any attempt at place making had to engage a range of scales- that of the collective (a city or a house) and that of the individual person. The collective scale was needed to provide the framework for a community. The interaction between the individual and the collective was not to be completely determined by the collective scale. Within the total built environment the individual needed to find human-scaled niches and opportunities to identify with (much as in the built access to water in the Indian city of Benares where the vast banks of steps create a collective sized landscape, while small platforms created individual sized territories for people to temporarily appropriate).

The accommodation of the individual within the collective has further been articulated by the architect Hermann Hertzberger. As with Van

Eyck, Hertzberger's architectural solution has been to break down the vast, abstract idea of space into small, associative room and building sized spaces. The collective is created by an association of individuals.

In terms of a design methodology, this philosophy has taken a two-stepped approach:

A. The generation of the building order not through arbitrary design decisions taken according to the architects whim, but through a systematic approach to building order.

The physical framework of the building -the largest size structure- was to contain within its fabric the capacity for many variations. A clear distinction was made between the primary structural system of the building, secondary structure and infill. By testing the capacity of the largest structure to accommodate variations of secondary structure and infill, the largest size structure was modified.

The relationship of 'part' to 'whole' was not pre-determined, but reciprocally arrived at:

*"In simple terms you could say that building order is a unity that arises in a building when the parts taken together determine the whole, and conversely when the separate parts derive from the whole in an equally logical way. The unity resulting from design that consistently employs this reciprocity-parts determining the whole and determined by it-may in a sense be regarded as structure...."*

*The working method implies, in fact, filling in one's own design structure, as it were, and, by feeding back the result, one eventually arrives at an ordering in which the condition for all conceivable infills are already present- in other words, a structure which may be said to be programmed to accommodate all expected infills. In this way it is possible to aim consciously at a unity of spatiality, components, materials and colours, in such a way that a maximum of variety of uses can be accommodated."*<sup>24</sup>

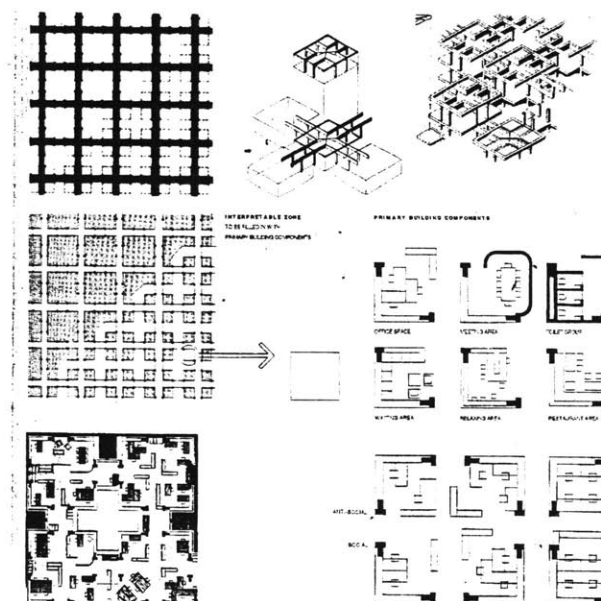


Fig. 24. Structural components for the Central Beheer office building.

This understanding drew from structuralist analysis of language, which posited a systematic theory of 'part' to 'whole': the rules that govern language, paradoxically, create a framework that allows words to be combined in an infinite number of ways, allowing individual expression.

B. Along with an exploration of the interrelationship of 'part' to 'whole' as a means of accommodating the individual within the larger built environment, Hertzberger has explored the possibility of accommodating the individual through the interaction between the individual and the architectural element, or part. Thus, a column is designed to be more than a prop- it also offers room for seating; the landing of a stairway is positioned to encourage the children of adjoining apartments to use it as a playground; a window-ledge is dimensioned so it can also serve as a seat.

*"Within the framework of conditioning that has been given to the form, the user gains the freedom to choose for himself which pattern suits him best, to select his own menu, as it were; he can be truer to himself, his identity is increased."*<sup>25</sup>

The use of these architectural strategies to design 'place' has resulted in built environments with distinct architectural qualities. The most striking ones are:

- The production of variety within the built environment through a variation of the degree of infill of the primary structure. In some cases, the structure is at 'capacity' (completely filled in), and in others it is at minimal capacity.
- The development of an what both Hertzberger and Van Eyck have dubbed an "in-between" zone-

*"The in between concept is the key to eliminating the sharp division between areas with different territorial claims. The point is therefore to create intermediary spaces which, although on the administrative level be*



Fig. 25. Column for the Apollo Schools used as a seat.

*longing to either the public or the private domain, are equally accessible to both sides."*<sup>26</sup>

These zones are marked by ambiguous spatial divisions- half walls, seats, steps, changes in ceiling height.

In all of Hertzberger's buildings- schools, office buildings, student dormitories, apartment houses, urban plans- the particular program of the building does not determine its final form. The program serves only to determine the range of sizes necessary for the individual and collective. Ultimately, each building is an experiment in place making that accommodates and mediates two human needs- the need to belong to some kind of collective, yet retain one's individuality.

### IIIA (ii) The relevance of these explorations in place-making for the Indian context

The endeavor to design and build public space in India is a relatively new one. The rhetoric and work of Team Ten architects is a realization that 'public space' is not exclusively the domain of some large-scale, civic realm- all sizes of buildings, regardless of their program, can contribute to enriching the public realm. In the case of the New Market, which already plays an important role as a public place in the city, the reinforcing of its role is all the more important.

Especially important in a large-scale project such as the New Market addition is the understanding of mediation between the collective size and that of the individual through the systematic use of building order: a unity can be achieved at the size of the built complex without sacrificing complexity at the lower levels.

However, there is a radical difference in Hertzberger's design methodology and one needed to design a successful building in the Indian context.

- Hertzberger has talked about the 'capacity' in his buildings: the 'in-between' zone mediating the public and private territorial divisions has an excess capacity. In these zones, ambiguous physical demarcations encourage exchanges between both spheres: a low wall where people may sit and talk, for example. The success of these in-between zones depends on the fact that they cannot be privatized. This zone of exchange is what the architect Maurice Smith calls 'slack' space.

In the Indian context, population pressures will result in this 'in between' zone being encroached upon, and eventually being privatized. In Calcutta, any territorial demarcation- a step, a change in level, can be an invitation to appropriation.

Hertzberger envisions this zone as the area where the conflicts between public and private are mediated, a

s in his scheme for Diagonal Dwellings-  
*"The areas belonging to the different houses have not been marked, nor does the layout contain any suggestion of private claims. The paving material consists of the usual concrete tiles, which automatically evoke associations with a public road because sidewalks are usually paved with exactly the same tiles. The inhabitants then start removing some of the tiles to put plants there instead...the rest of the tiles are left in place wherever a path to the front door is needed...Each resident uses the area in front of his house according to his own needs and wishes, taking up as much of the area as he requires and leaving the rest as publicly accessible.*

*If the layout had started out from the idea of separate, private areas, then no doubt everyone would have made the best of it for his own benefit, but then there would have been an irreversibly abrupt division between private and public space, instead of the intermediary zone that has now evolved...In this area in-between public and private, individual and collective claims can overlap, and resulting conflicts must be resolved in mutual agreement...here, too, it is decided what individual and collective have to offer each other."* 27

In a context such as Calcutta where nearly a million people are officially classified as 'pavement dwellers' spend their entire lives on the sidewalks, it is clear that such a strategy would not work.

-The varied opportunities for infill within the largest size of structure allow for variation. Some variations of infill are decided by the architect to

fulfill different programmatic needs, other variations- such as the closure of shop fronts along an interior access- are left to the user. In the Indian context, design decisions can still be left to the user, but the architect has to expect that the privatization of space will be at the maximum. Variation might still exist by allowing user participation, but the opportunities for privatization of space will be used to the maximum. The 'system' may be thought of as instantly at capacity. The differentiation of primary structure and infill may allow change over time of function, but the opportunities for growth are minimal.

Encapsulating these two issues, they may be stated differently- if space is left undefined, with no territorial demarcations, there is an inevitability it will be appropriated wholesale (unless the space is at a vast, city- scale); if the mediation between public and private is of an ambiguous, territorial boundary, it will again be appropriated as private space.

The problem seems to be that the way of mediating between private and public, the 'in-between' space, is seen as:

- A problem to be solved through formal means, through the capacity of the physical built structure of the building to mediate the two realms of public and private; thus an emphasis is put on the understanding of the formal behavior of the structural systems and of the various elements

The structuring of the built environment is seen as a function of the physical structure of the building itself

- A local problem. Van Eyck's analogy of the built environment as street and house has served well as a metaphor for replacing the abstract idea of 'space' with a vision of 'place' that incorporates both the individual and the collective. Yet,

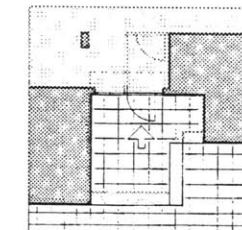
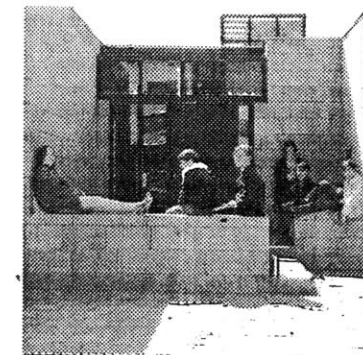


Fig. 26. The 'in-between' zone: seat invariably occupied, located between classroom and access.

Fig. 27. The Indian context: privatization of the 'in-between'; occupation of structure and unclaimed space.

this metaphor has served in Hertzberger's architecture to make the built environment more 'street like'. Corridors are envisioned as 'living streets', and the exchanges take place at the edge of the street and private realm. This understanding of territoriality looks at 'street' at the local level, and not at the territorial implications of a 'street network': how public and private can be built by differential access, not just through 'in-between realms'.

Ultimately, Hertzberger's attitude towards the creation of public space reflects an attitude that is inherently culturally based. The individual is seen as isolated, alienated from a public sphere that is too vast and abstract to identify with. Thus it is the role of the architect to devolve responsibility to the individual; the largest size of community is made of individual-sized places-

*"The architect can contribute to creating an environment which offers for more opportunity for people to make their personal markings and identifications, in such a way that it can be appropriated and annexed by all as a place that truly 'belongs' to them. The world that is controlled and managed by everyone as well as for everyone will have to be built up of small scale, workable entities, no larger than what one person can cope with and look after on his own terms.*

*Each spatial component will thus be more intensively used (whereby the space is enhanced), while it is also more fair to the users to demonstrate their intentions. More emancipation generates more motivation, and in this way more energy can be released which is otherwise suppressed by centralized decision-making. This amounts to a plea for decentralization, for devolution wherever possible, and for the handling over of responsibilities to where they belong- in order to take effective measures to solve the problems of the inevitable alienation from the 'urban disease'." 28*

In the context of India, the problem is also that of creating public space at the size of a collective. Yet, the relationship of the individual to the

public sphere is completely different. The individual does not exist in isolation, but as part of a community with strong religious and ethnic grouping. The society is also faced with enormous income disparities unthinkable of in the West.

What is needed is to create a collective dimension to the built environment- not through its subdivision into smaller sizes- but by organizing the public sphere at the largest size to accommodate the various groupings. The public sphere must be accessible to the rich, the poor, to Muslims and Hindus. It must accommodate difference as well as build zones of exchange. To imagine a public place equally accessible to all at every level would prove to be utopian and unworkable.

While Hertzberger's architectural solution is to blur the distinction between public and private at the level of the 'street'. In the context of India, the solution seems to be to maintain rigid divisions between separate realms, but to create a 'street network' (access system) within the built environment that allows differential access to various interests, yet organizing them into a coherent whole. Much as Baron Hausmann's boulevard's created a public realm and yet allowed the different medieval quarters to continue their different existence, public place is built by the organizational structuring of the access system.

In the Indian context, the possibility for public place lies within an exploration of the access system.

### IIIB. An analysis of access systems in traditional Indian architecture

#### (i) The quality of 'labyrinthian clarity'

In understanding how the reciprocal design of access and built/unbuilt space can be used to generate built environments with a complex and systematic range of possibilities for inhabitation, it is instructive to look at the rules underlying the design of traditional collective sized built environments in Indian architecture.

The clarity of these built environments allow an understanding of them at the largest size: the size of the community. The collective size of the built environment is graspable, and the user is never lost or overawed by the vastness of the built environment. Yet, within this association with the collective size there are a complex and overlapping ranges of sizes- that of the group, of the family, of the individual. The quality of these spaces- complex, yet clear- is what Aldo Van Eyck has called, in his own work, "labyrinthian clarity" or the "organized casbah"<sup>29</sup>

The late Mughal invasions of Northern India resulted in a period of cultural exchange between Muslim and Hindu building traditions. Coming from the much cooler, lush landscapes of Persia, the Mughals re-created their visions of that landscape on the arid North Indian plains, using Hindu craftsmen and building methods. The resulting built environments collaged the Mughal concepts of paradisaical gardens, open pavilions and intricate water systems with Hindu practices of demarcating space through changing floor levels. The Mughal building complexes integrated mundane living functions as well as sacred spaces within their purview.

An apotheosis of the impulse towards the design of a total 'intensified landscape' is the palace complex of Fatehpur Sikri, built by the Emperor A from a monumentality devoid of content and from such conventional notionkbar in the late 16th century. In Fatehpur Sikri, the Mughals

*"..broke aways such as 'street' and 'square' in order to attain forms that were freely adapted to their function and environ ment. When walking through these courts...one has the sensation of being transported into some utopian city of the future."<sup>30</sup>*

Because the 'unbuilt' space was considered as important as the built space it was as designed. The distinction between 'street' and room was abandoned in order to create an entire built environment. This environment exhibits characteristics of the "organic" growth patterns that characterize vernacular architecture: it seems additive, incremental, incomplete and open to change. Yet, palace complexes such as Fatehpur Sikri were built at one time. Pavilions could be later infilled or added, but the overall plan of the complex was determined from the start. The architecture seem to go beyond overt organizational principles (such as axial organization or sequential progression of courtyards) to a more subtle collage of several organizational systems.

The different spaces and buildings conform to certain geometrical ratios and generally consist of rectangles and squares. Formal analysis of such architecture has been limited to an identification of the ratios in existence, and the religious/cultural significance of these ratios. Such an analysis neglects the process of design that combined the various geometry's to create the entire complex. It relegates these buildings to the status of cultural artifacts, expressive solely of their time.

In this section, a hypothesis as to the design principles underlying this architecture will be proposed. The analysis does not ignore the cultural situated-ness of these buildings; however, the geometrical proportions employed themselves incorporate various sizes of uses- quadrangle, court, building, and room. How these sizes are deployed to form the building create an intricate continuum of accessibility. An understanding of the underlying organizational system can inform the current design of complex built environments.

#### (ii) A hypothesis about the design process

A. Multiples of the largest use size are used to demarcate the area. The largest use size may be a quadrangle, a courtyard, a building bay or a room. This is also the size of the largest privacy

B. The largest use-sizes build smaller zones for privacy. The beginning of a 'tartan grid'. Without any indication of what is built or unbuilt, there now exists a framework with dimensions for a large size of inhabitation and an access size

C. The position of the largest privacy within this system -reinforcing an edge, or placed towards one end, begins to indicate gradations of accessibility

D. Within the larger system the placement of a smaller size of privacy creates smaller zones of access. The system now has the propensity for a hierarchy of spaces; 'public' and 'private' is created by position within the system, not by degrees of built closure. Similarly, the smaller sizes are 'built' by the largest sizes

E. Farther positioning of smaller sizes of closed privacies determines a finer range of possibilities of inhabitation

F. The system now contains a variation of sizes and propensities for inhabitation. The structuring of the system is guided by the intent of the

designer, yet does not constrict the outcome. It is not 'neutral' .

G. The propensities of the system are intensified/ modified by varying degrees of built demarcations.

The cohesion to the entire built environment is created by the implied geometry. The richness and variation arises from the fact that the geometry does not have to be complete to be legible. The smallest sized places are reciprocally determined by the largest sizes, and yet are not subdivisions/ multiples of each other. The structuring of the place arises from degrees of accessibility that do not dictate its form.

(iii) Examples

A range of different sizes- from palace complex to house

1. Fatehpur Sikri. Built 1569-1585. Palace complex for the Emperor Akbar

Fatehpur Sikri consists of a city and citadel complex, both built at the same time by the Emperor Akbar. The entire citadel complex was built at one time, and has not been altered since.

The citadel complex is analyzed here- it contained the King's quarters, palaces for the various queens, ceremonial and private courtyards and gardens.

The access system of the citadel complex is defined at the ground level by a series of shaded walkways at the edges of the courtyards. Dimensions of the access are built by the placement of the various building sizes.

Ultimately, it is use that differentiates access from privacy: the definitions are open-ended

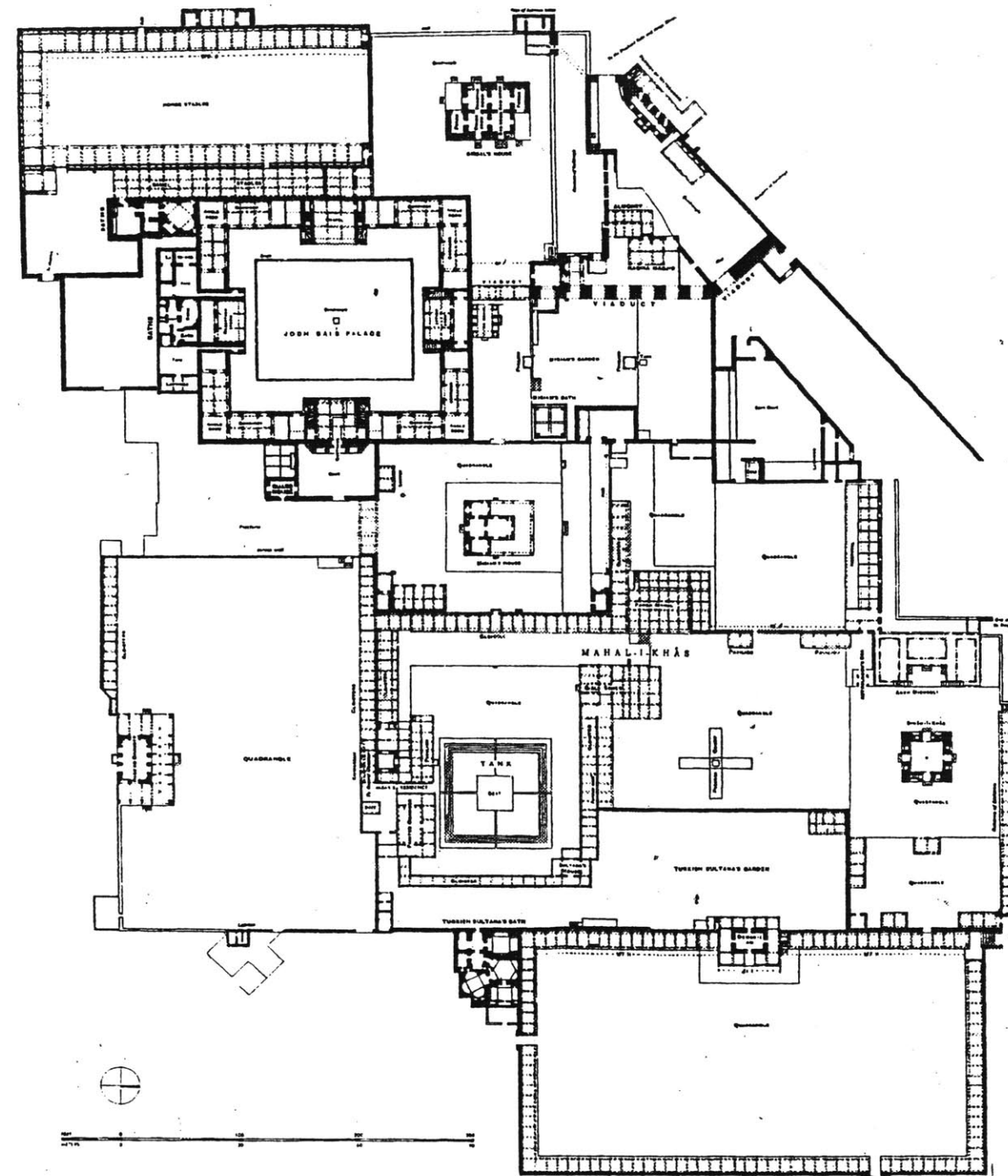


Fig. 28. Fatehpur Sikri: plan of palace complex.



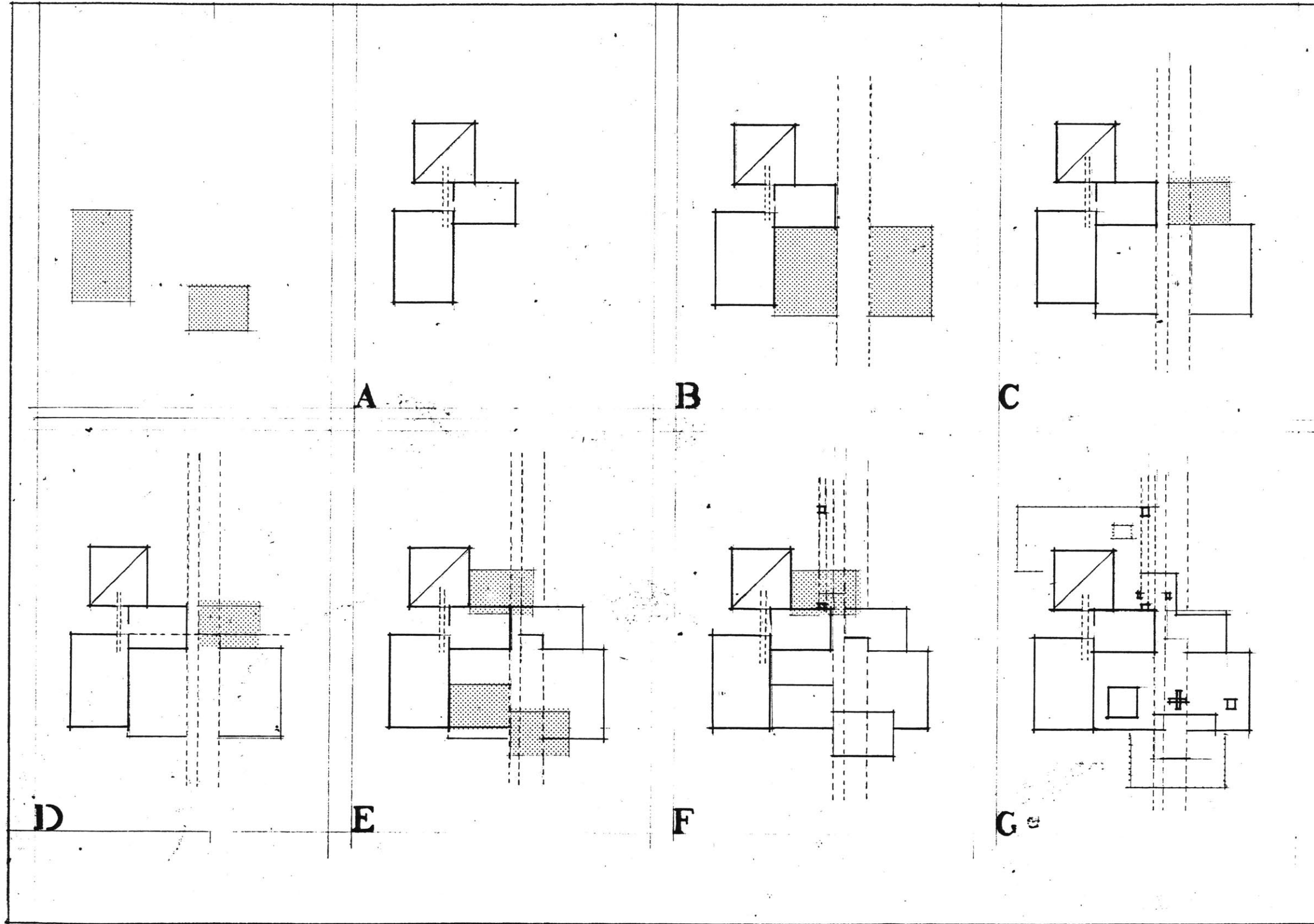


Fig. 29. Fatehpur Sikri: hypothetical generation of plan, starting with basic sizes.

2. Sarkhej. Built 1446-1451. Pleasure, religious and mortuary complex

Sarkhej was built as a retreat in the landscape. On the death of the monarch, the pleasure complex was turned into a mortuary complex, and tombs added along the perimeter of the lake.

The mosque complex is analyzed. Within this complex are a mosque, two tombs, terraces, steps leading to the lakeside, as well as a private courtyard.

The complex seems to be generated by a repetition of sizes derived from the size of the mosque. Access is built by the dimensions between buildings: the unbuilt space has the same dimensioning system as the built form. Access to the water is built by a system of cross movement, built by the placement of a small pavilion and a portico. The arrangement is not so much a system of cross-axes as a system of dimensioning that allows two paths of movement.

Sarkhej functions today as a public shrine, and people travel to visit the tombs of the saints. Even when the complex is full of people, territorial boundaries are maintained: it is clear what is public, and what is not. This may be attributed to the dimensioning system of the built environment, which demarcates the different territories through dimension.

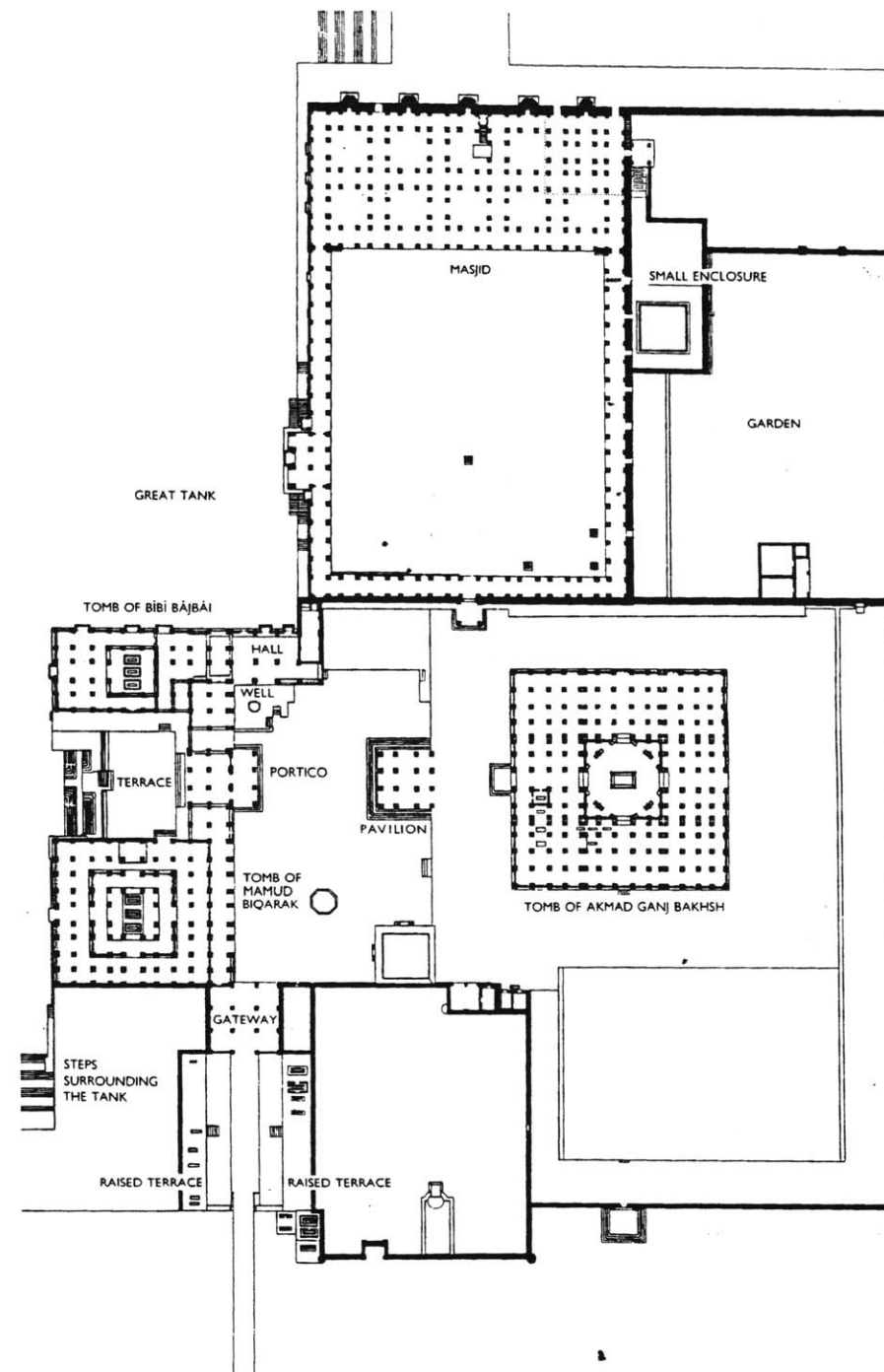


Fig. 30. Sarkhej: plan of tomb complex.

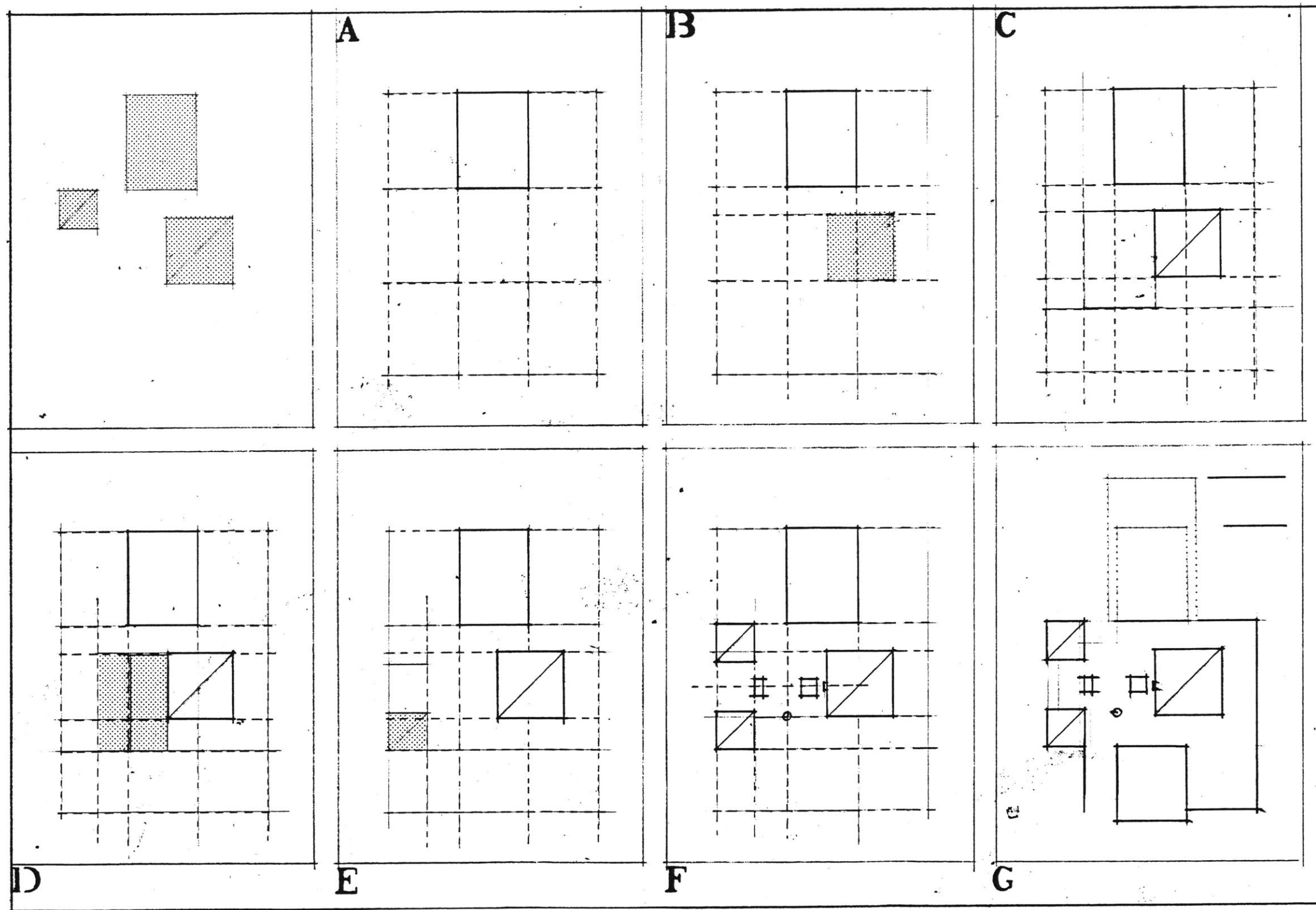


Fig. 31. Sarkhej: hypothetical generation of plan, starting with basic sizes.

3. Reori Talab. Built 1857. Village mosque

Masjid Kalan is a small mosque in a village setting. At first glance it seems very simple and hardly worthy of analysis. Yet, within one open courtyard are built a variety of zones. There are shops at the front, then a portico; a zone for ablutions, then an open space for prayer, and finally a covered prayer space and a niche facing Mecca.

All these zones are built by a repetition of bay sizes that give a coherence to the whole experience. The dimensions of these zones are further reinforced by changes in the ground level: within this simple plan, there are 8 changes in ground level that define different territories. Both sacred and profane uses are accommodated within one plan, and the access is built to reinforce the degrees of privacy needed.

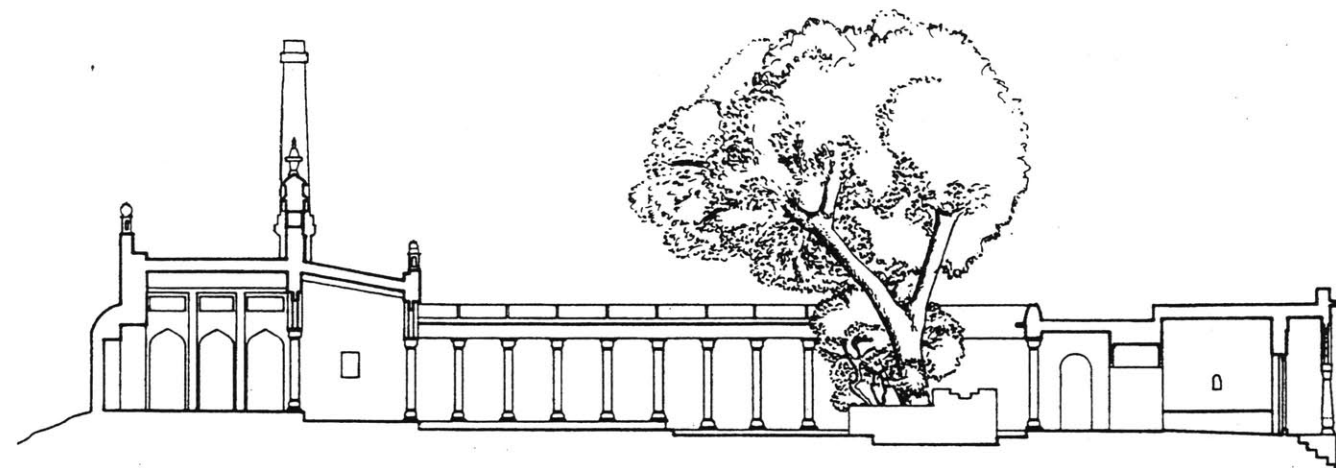
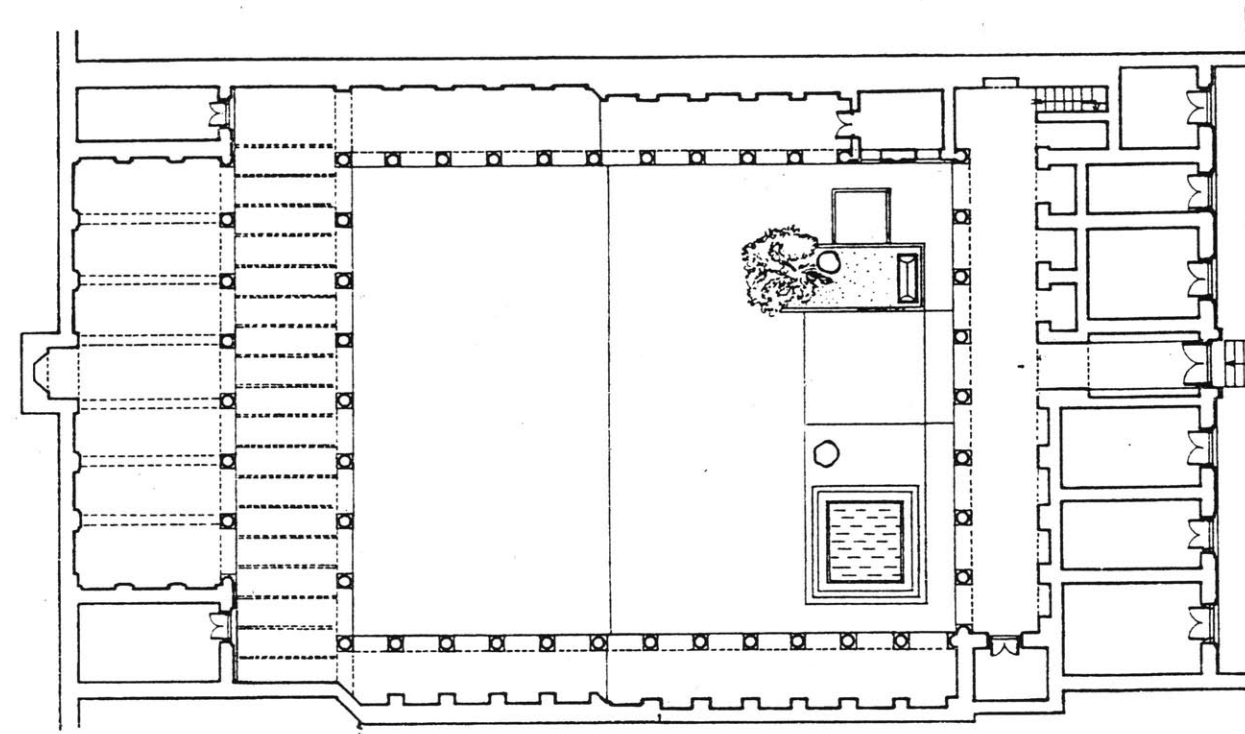


Fig. 32. Masjid Kalan at Reori Talab: plan of mosque with stores at front and section showing subtle changes in level.

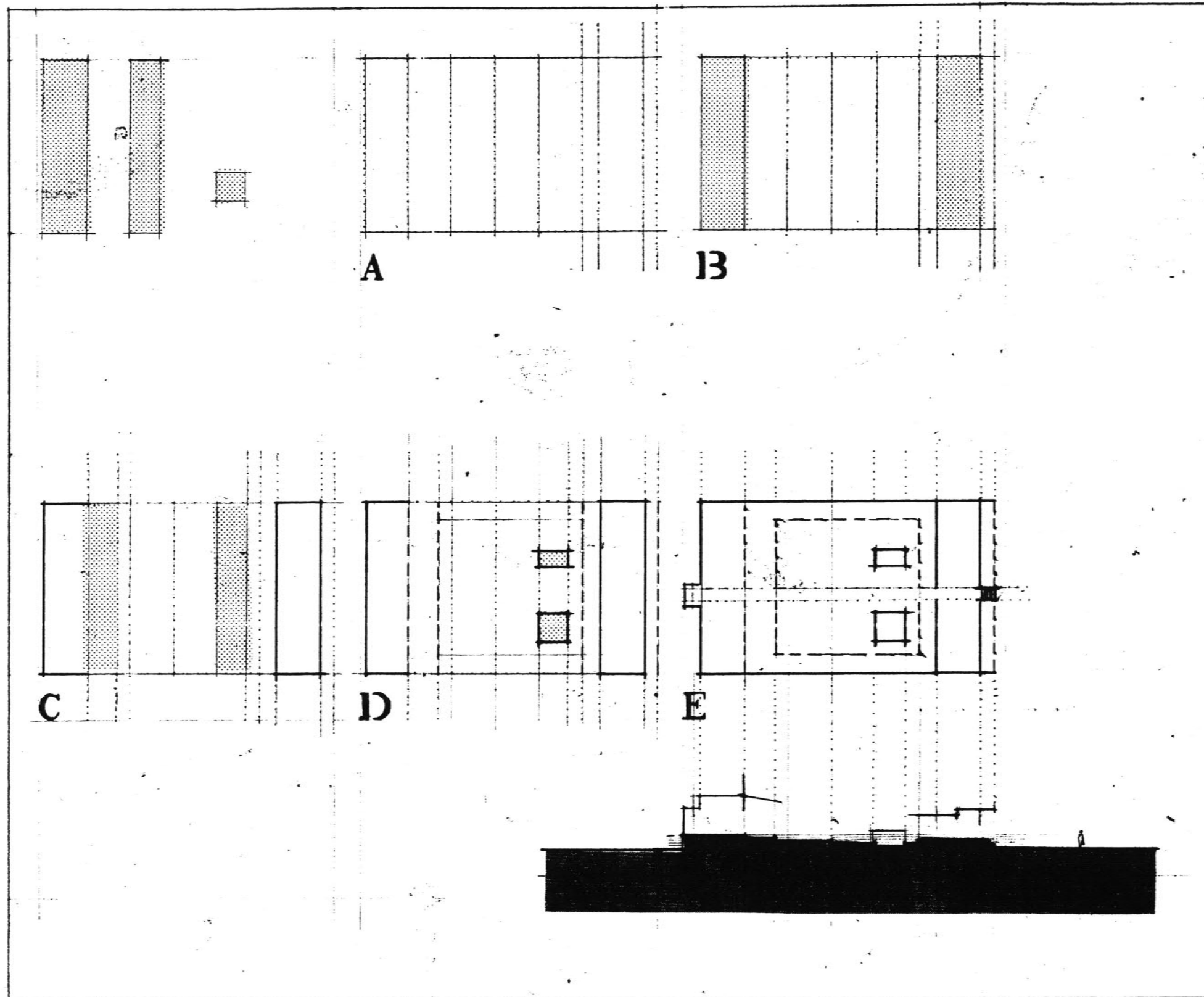


Fig. 33. Masjid Kalan: hypothetical generation of plan, starting with basic sizes.

4. Jaisalmer. 15th century. City mansion for a wealthy merchant

This merchant's house uses multi-leveled courtyards and roof terraces to create a complex vertical zoning. Within the narrow bay of the house are created various degrees of privacy. The most important elements in the design are the placement of the two staircases within the party walls of the house: setting these offset creates different degrees of privacy as one ascends upwards into the house.

Thus, vertical movement actually builds degrees of privacy throughout a densely packed vertical environment.

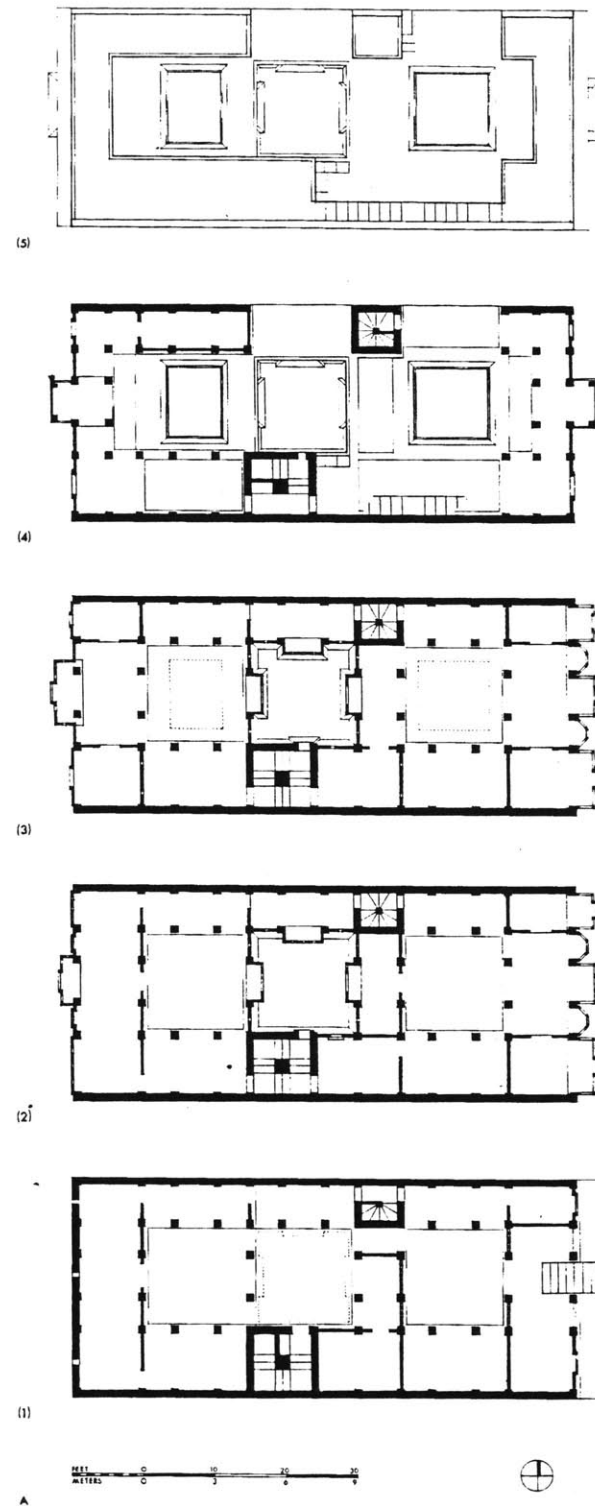


Fig. 34. Jaisalmer, city mansion: floor plans.

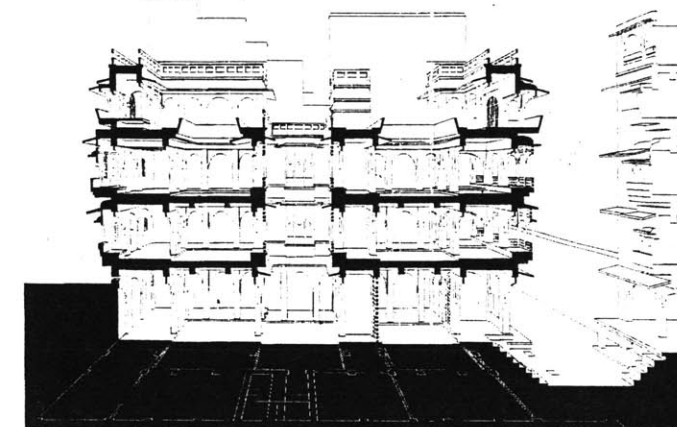


Fig. 35. Axonometric cut through courtyard.

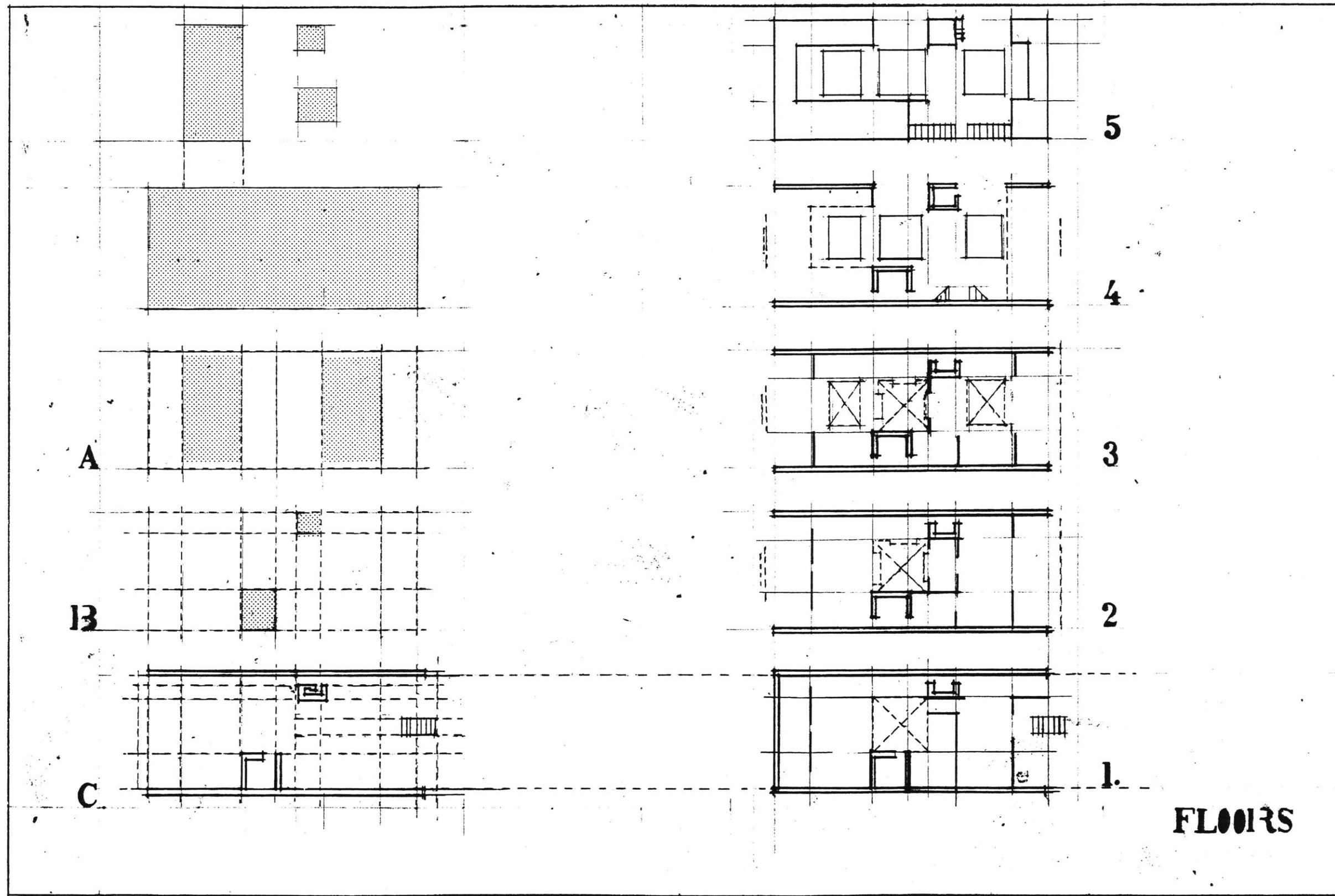


Fig. 36. Jaisalmer, city mansion hypothetical generation of plan, starting with basic sizes.

6. Adalaj. 14th century. Step well-reservoir and cistern for religious and secular purposes

The section of the step-wells in Northern India were designed to assure access to the water, which changed level according to the season. Architecturally, these vast flights of steps serve as a communal section. At Adalaj, a series of stacked pavilions accessed from the main staircase create smaller, individual territories. The 'ground' of the built form varies, whereas the form of the vertical section remains the same- thus it is the experience of movement down to the water that structures the entire experience.

A mundane activity- fetching water- becomes an elaborate access system that serves a place-making function and can accommodate both individual and community.

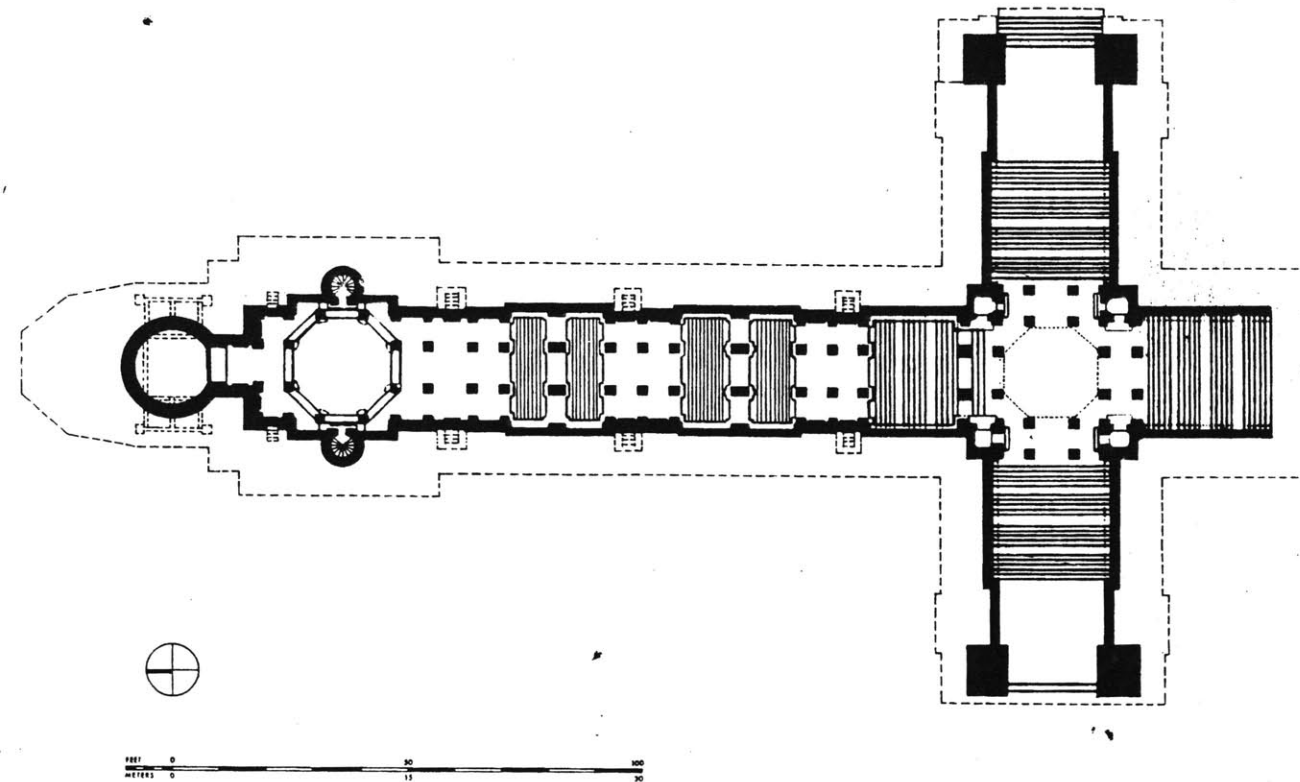
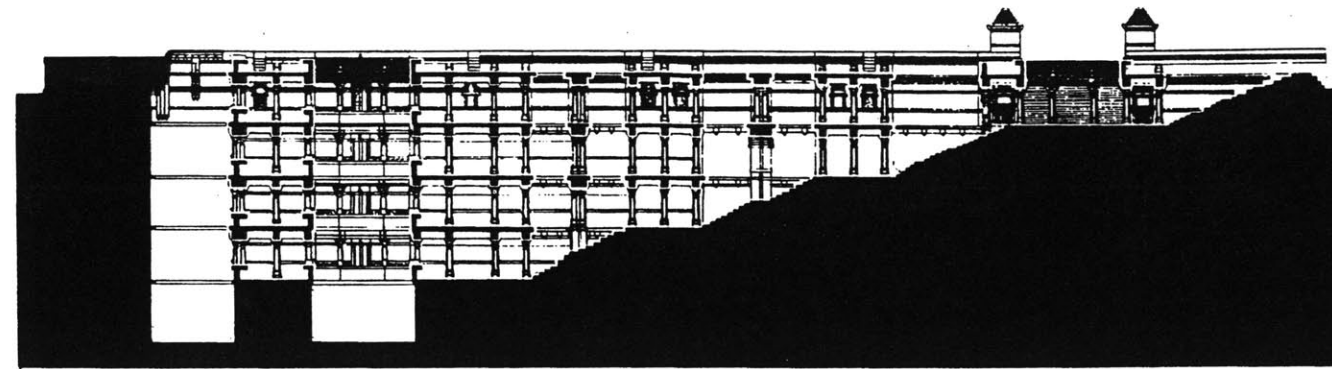


Fig. 37. Adalaj: plan and section of step well reservoir and cistern



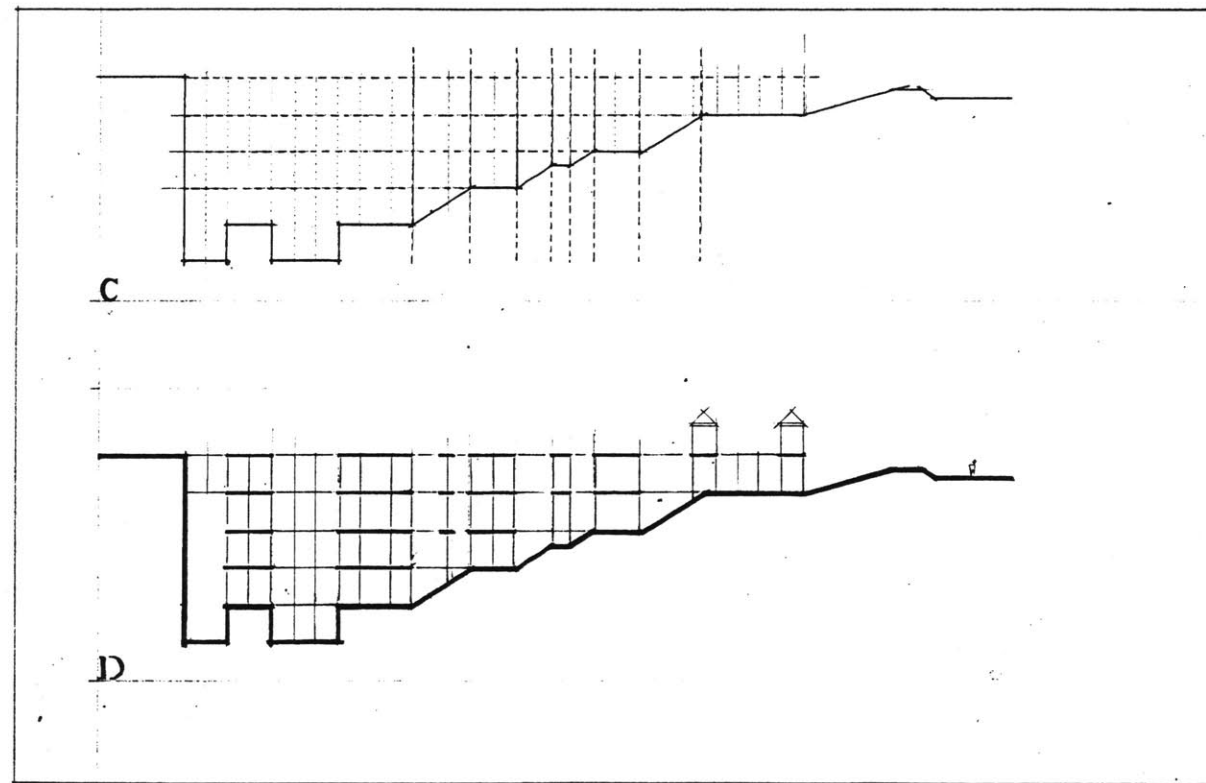
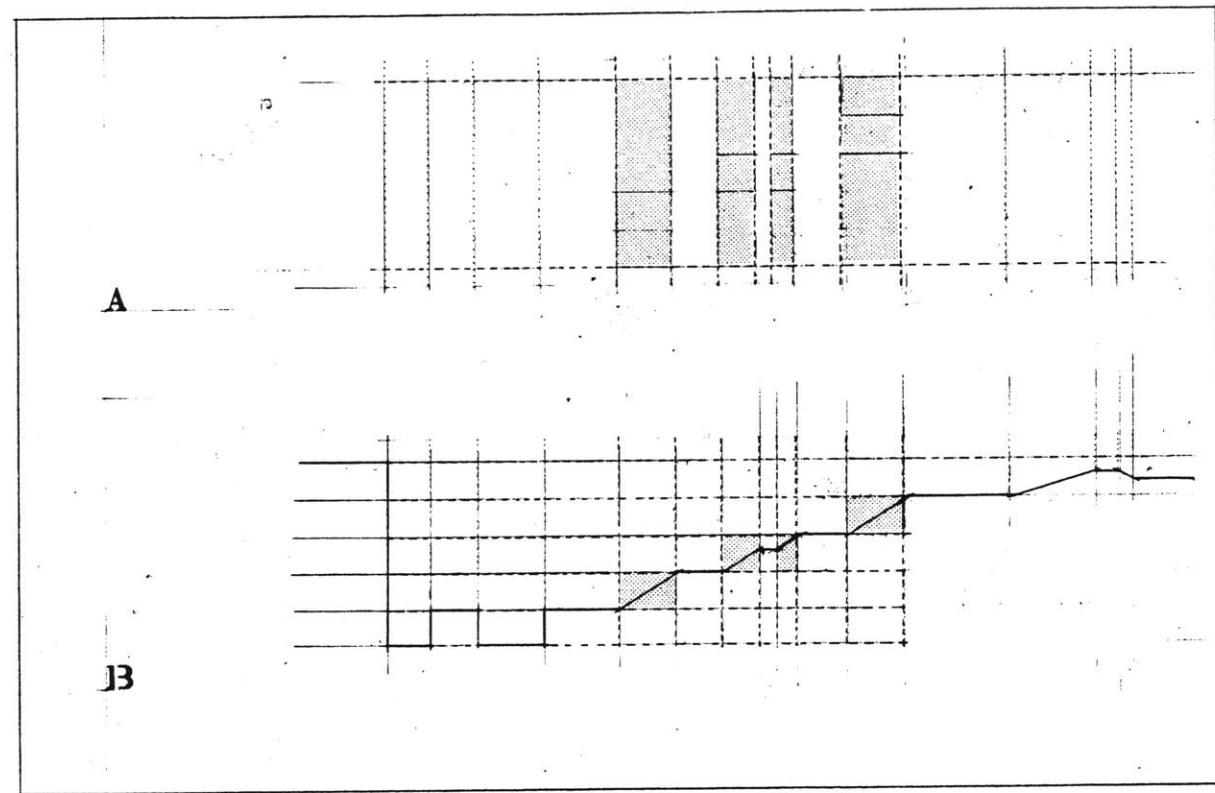
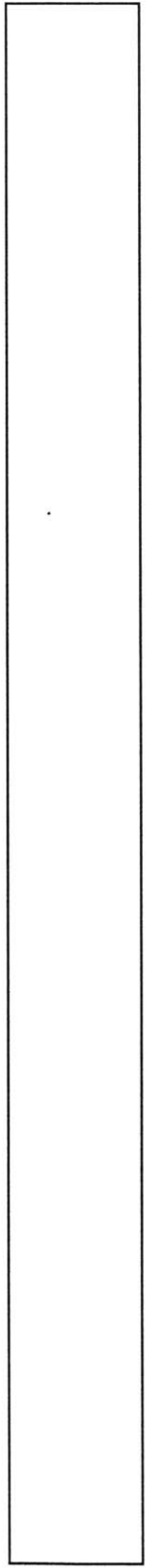


Fig. 38. Adalaj: hypothetical generation of plan, starting with basics sizes.



7. Benares. 1807. Ghat-refectory and built access to the river Ganges

The banks of the river Ganges are built by steps and platforms to serve as ritual access to the Ganges, which is considered to be a holy river. It is on these steps that people bathe, and religious functions take place.

The analysis of this particular section of 'built landscape' looks at the public steps, built at the same time as a housing complex and a refectory for priests. The dimensions found in the housing complexes are echoed in the design of the steps; in effect, the steps and platforms are dimensioned and built to have the same variations of territory as the housing.

The success of the steps as a public environment and the variety of inhabitations found within them testify to the fact that they serve as outdoor rooms, and were designed as such.

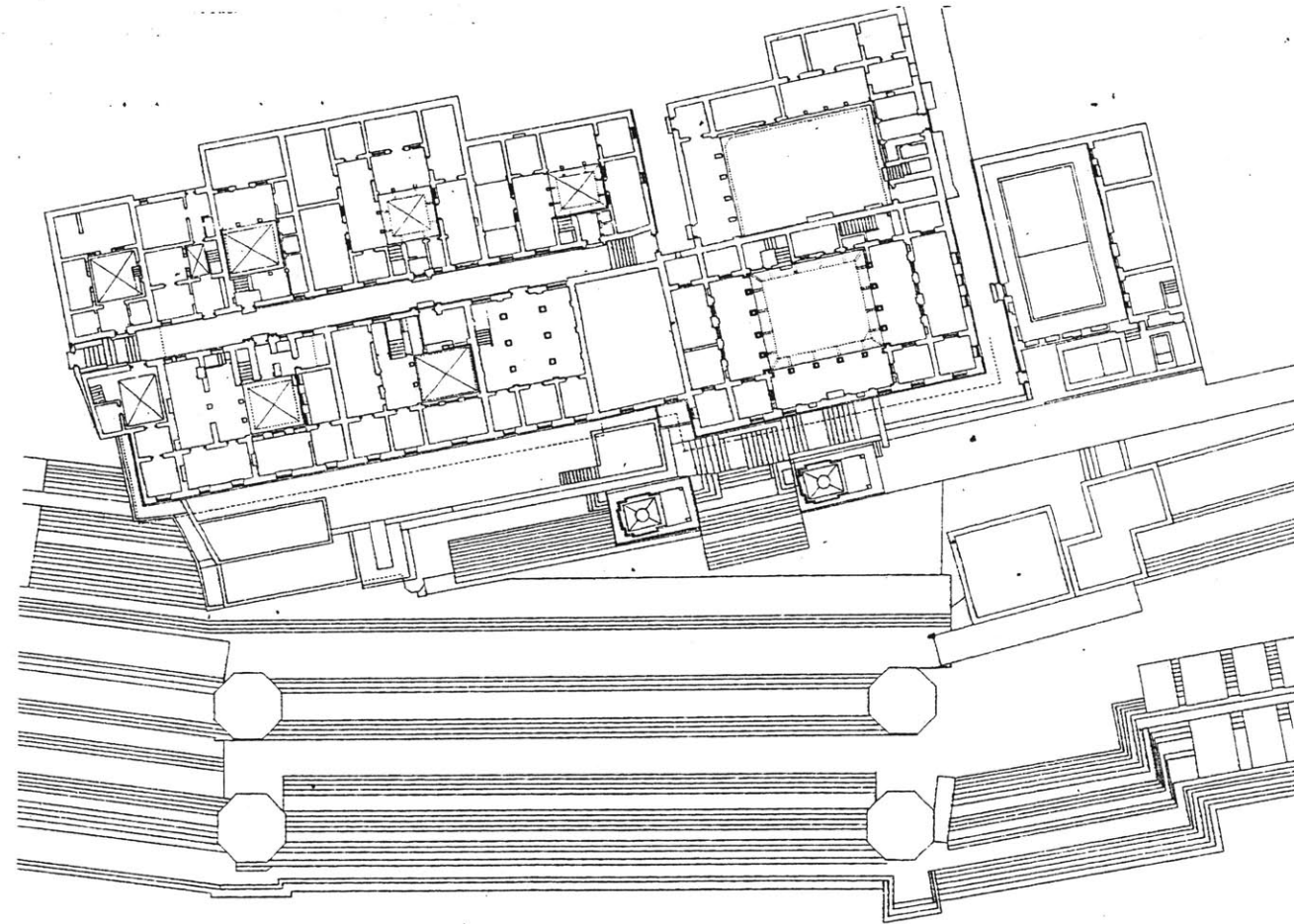


Fig. 39. Benares: plan showing housing and access to the river Ganges.

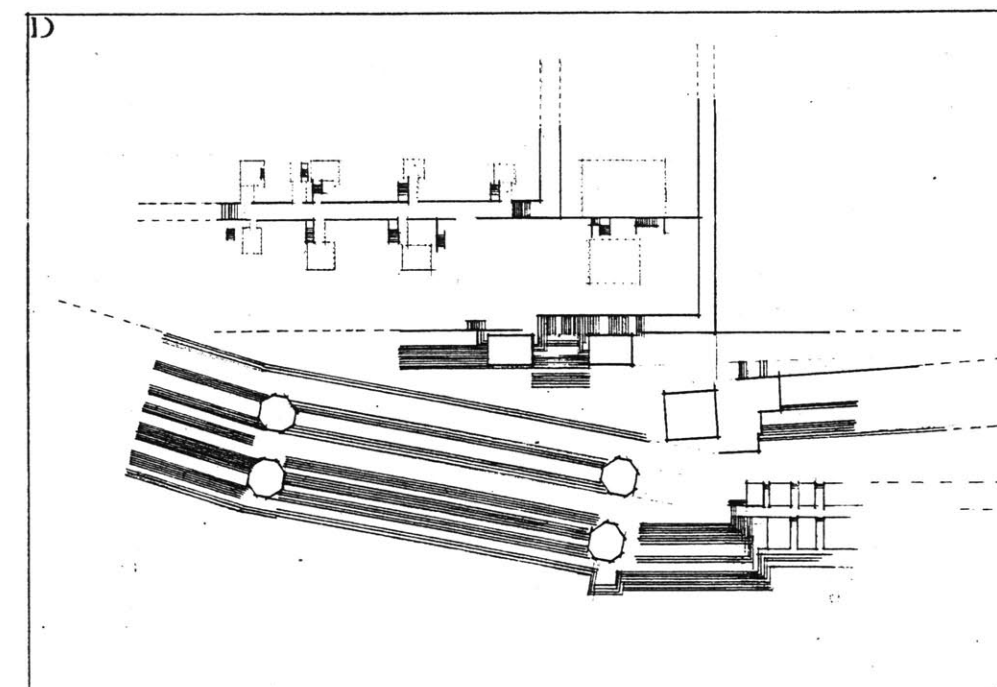
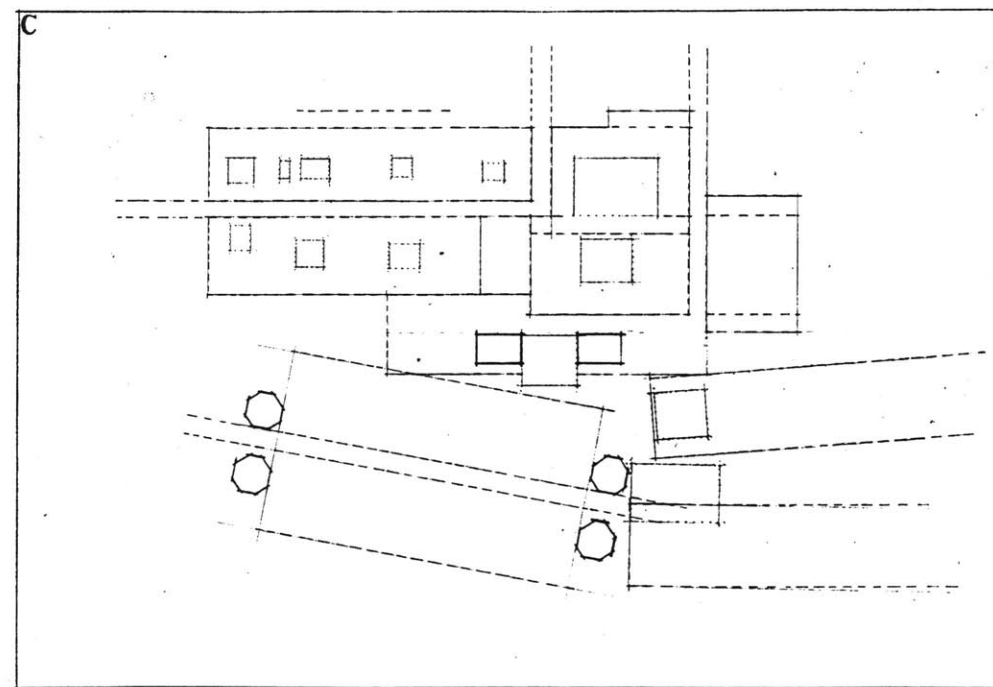
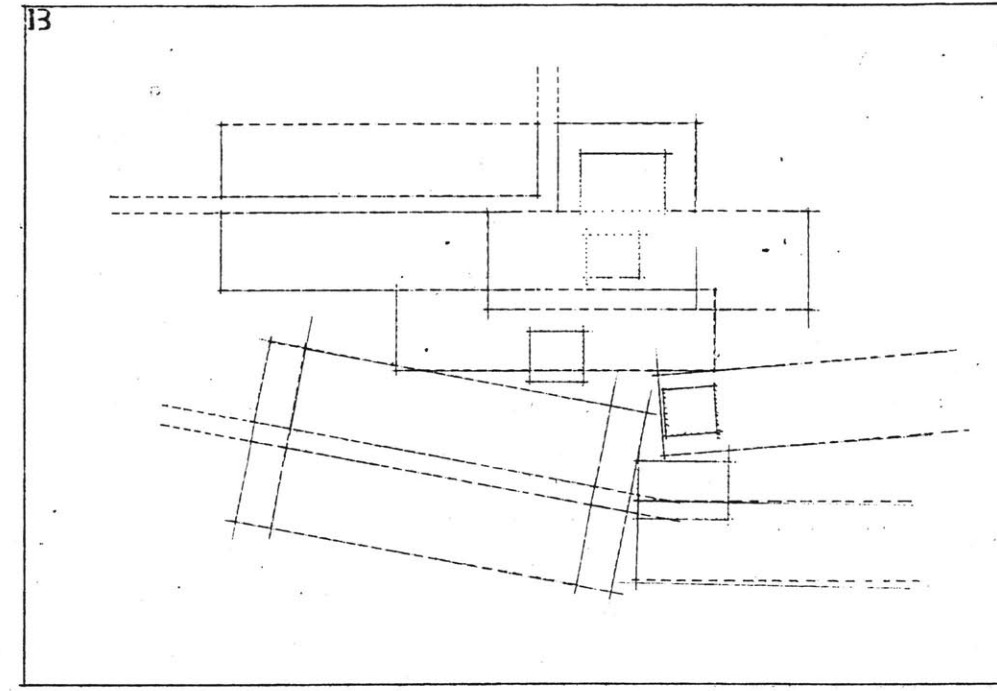
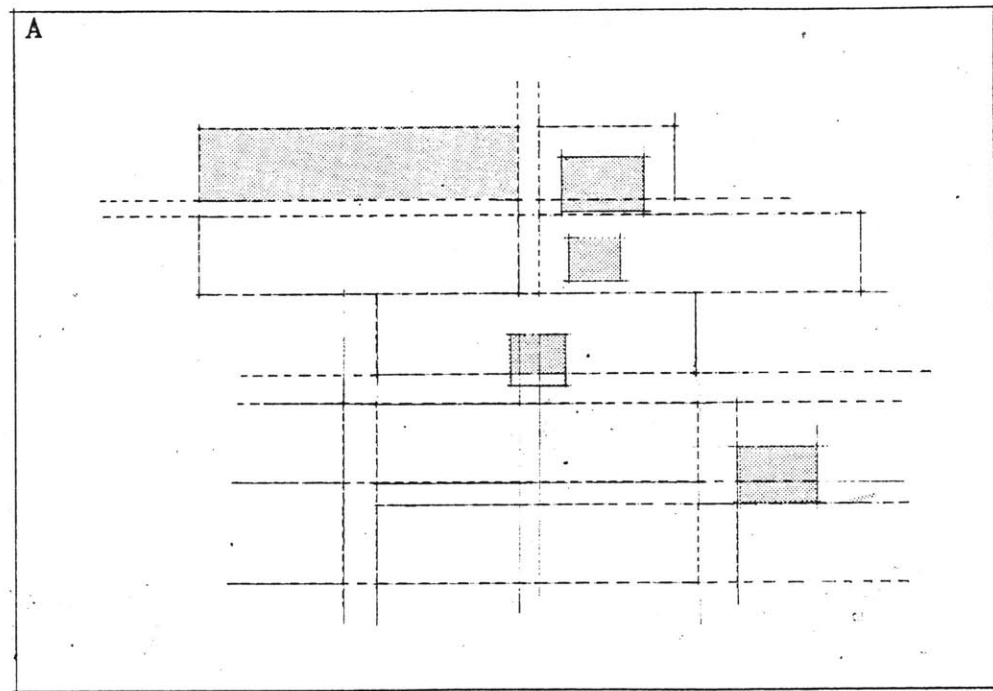
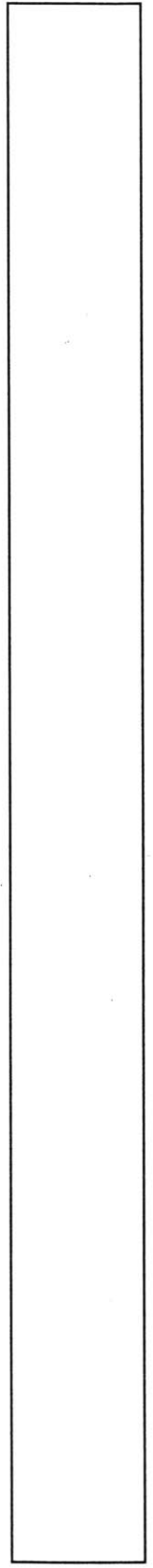


Fig. 40a. Benares: hypothetical generation of plan, starting with basic sizes.





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### III C. Two examples of access in nineteenth-century covered markets

#### (i) Covent Garden, London, England

Covent Garden is a nineteenth century vegetable and flower market, now adapted for use as a shopping mall and tourist attraction. The plan and transverse section reveal that it consists mainly of two large covered sheds, lined with shops. Between the sheds is a covered arcade.

The entire market is essentially access: people may walk through one end and out the other without restriction. The dimensions of the two sheds and the central arcade make each of them suitable for different uses: one shed contains space for stalls, the other has two below-ground areas that serve as sitting out space for cafes. Because of its narrow dimension, the central arcade is the only part that works as minimal access. There is no room to loiter, and people move through it to the more public sheds.

Although the plan and section are minimal, the entire market complex is activated by people moving through the city, using Covent Garden as a pleasant short-cut.

The roof-structure is essential in creating a community-sized environment. Typical of 19th century cast-iron work, its trusses and elaborate framing not only filter light but also create a layered enclosure for the public space. From an upper storey, more private uses look down into the main space.

Essentially a cross between the 19th century arcade connecting two city blocks and a covered market, Covent Garden is a good example of a public place of movement.



Fig. 41. Covent Garden: Views of interior sheds.

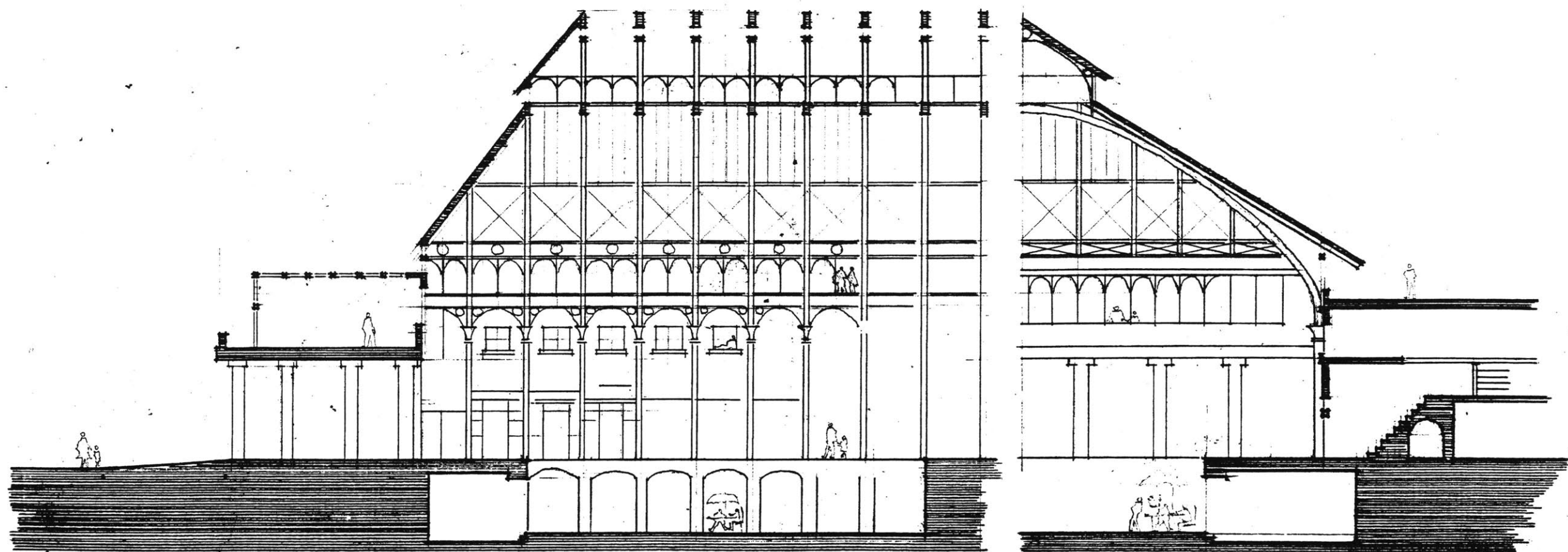


Fig. 42. Covent Garden: longitudinal / transverse section through market shed.

(ii) GUM Department Store, Moscow, Russia

GUM is probably the largest example of a covered arcade. It contains 7000 merchants, but no elevators. It is located on one side of Red Square and is not a part of the larger city access system; by sheer virtue of its size, it forms a separate internal world of shops and restaurants.

It consists of three blocks of parallel building that define passages through. The two central blocks contain stairways that allow access from either side; to move from one passage to the other, one can ascend a short flight of stairs, then descend to the other side. Because of the short, shallow runs of stairs, such movement does not seem to inconvenience shoppers. The stairways themselves are screens at the largest size of the building: one can look from one passage through to the other through the stairwell. The movement of customers is clearly visible and activates the entire space.

There are galleries at two upper levels, linked by two levels of bridges. The interior of GUM allows the user public place within the section of the building: the bridges are essentially viewing points for tired shoppers to rest and look down at the activity below.

Even though GUM houses very exclusive department stores, the dimensions of the access and the opportunities for movement mean that the public at large is able to come here and wander about at will, window shop, and be entertained.

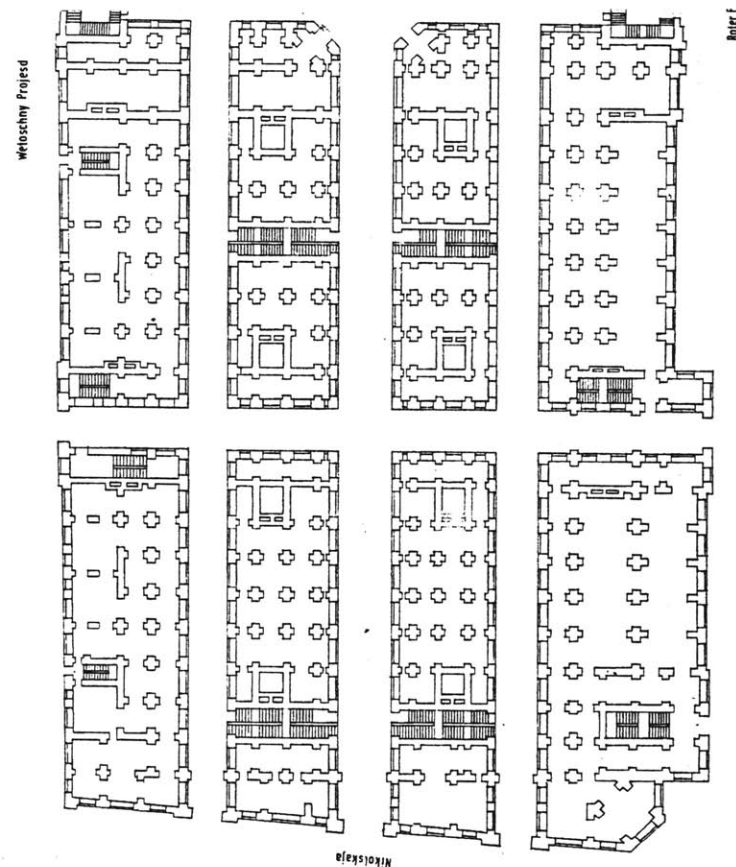


Fig. 43. GUM: partial plan of ground floor.

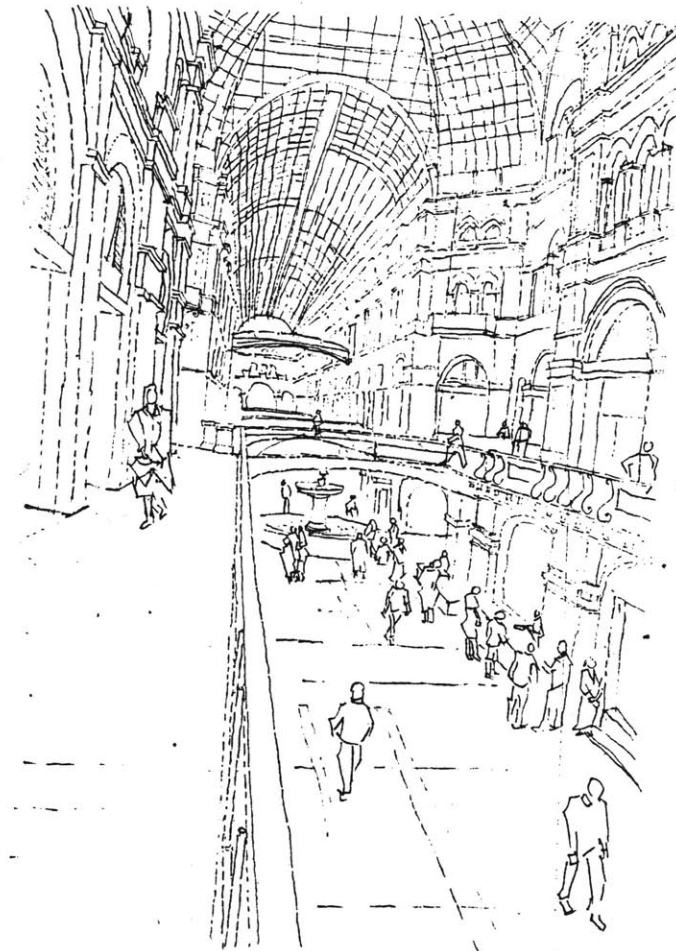


Fig. 43. GUM: sketch view from upper levels, showing bridges.

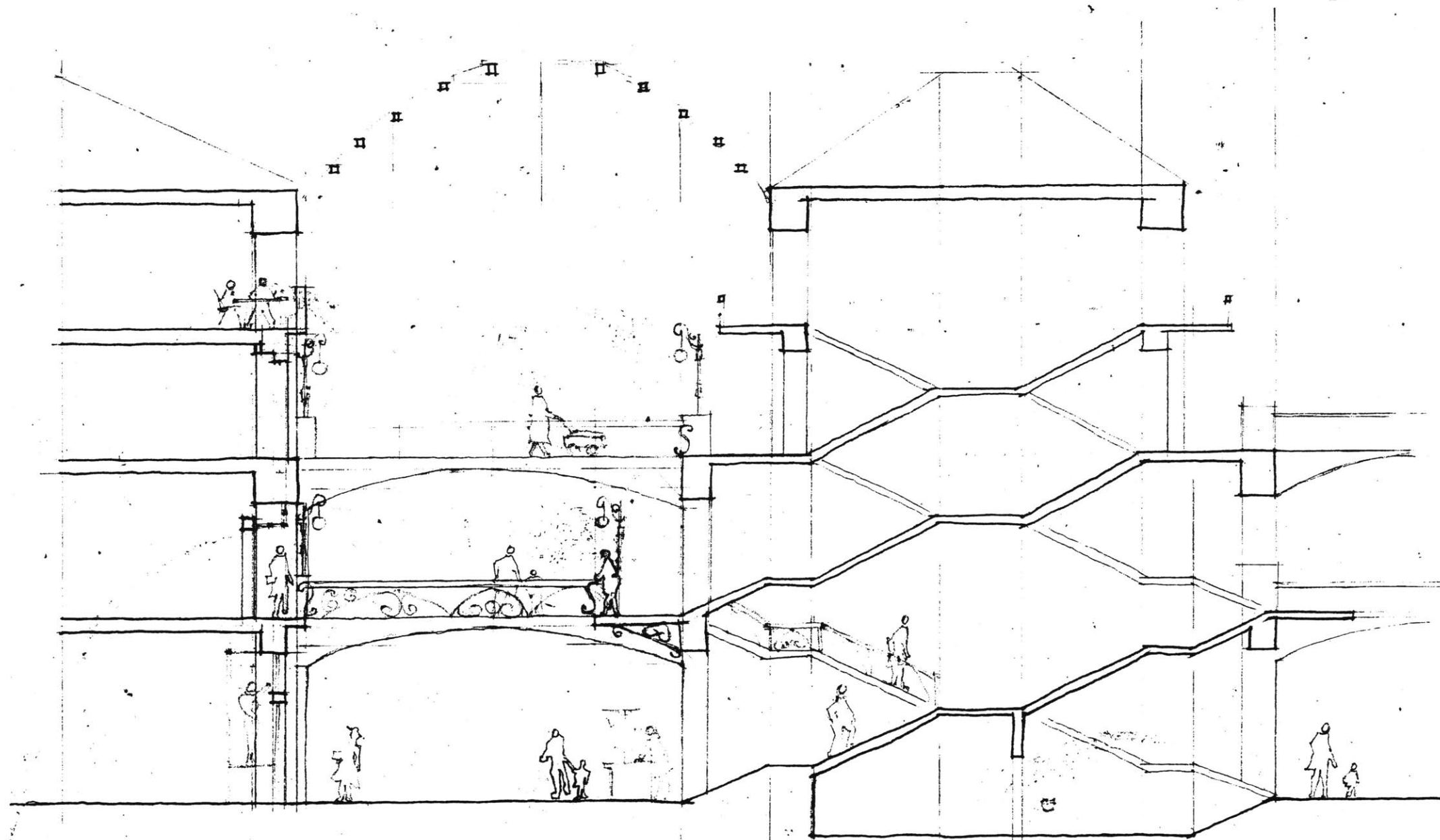


Fig. 45. GUM: transverse section showing stairways and bridges.





#### IV THE DESIGN

IVA. Defining the design problem: design approach

A varying set of attitudes towards the design problem may be characterized as:

A) A redevelopment proposal for the entire New Market area. The redevelopment scheme may be motivated by two important criteria:

- i) A concern for the decaying infrastructure of an important area of the city that contains civic amenities. The redevelopment proposal would center around the re-organization of the infrastructure of the area ( the Market building, roads, sewage, garbage disposal, slum removal). The motivation behind such a proposal would be the extreme physical congestion within the area which has resulted in 'capacity' use of the largely one-storyed built fabric. Any improvement in the area's condition would thus need to provide new infrastructure and room for growth, mainly in the form of high-rise development.
- ii) A redevelopment proposal aimed at maximizing revenue from this area. The New Market area is largely owned by the Calcutta Corporation, but because of increasing population pressure and illegal occupation, the revenue from this area is not sufficient to maintain the aging infrastructure of the area, let alone rebuild it.

A combination of these two attitudes was behind an ongoing series of proposals from the mid-70's to mid-80's. The logical extension of this attitude was that the existing Market was inefficient, and that the most efficient solution would be to raze the existing structure to the ground and build a 'modern', dense, high-rise construction.

The severity of these early proposals was tempered slightly by preservationist sentiments: by the mid-80's, it was proposed that the Market's clock-tower, and parts of the existing facade be retained.

Implicit in these proposals is an attempt to 're-engineer' the social structure of the area, replacing the messy functions of a real market with 'market-like' programs that included offices, banks, hotels and entertainment. These proposals simply ignored the nature of the market as it exists today, which is as a social meeting ground for the varied classes of Calcutta. In effect, the old covered market was to be replaced by a Western-style mall atmosphere.

B) As solely a preservation issue. At the other extreme, supporters of the Market's continued existence argued its case on the basis of architectural merit and historical associations with the City. The Calcutta Corporation's reply to these arguments has been that nostalgia is something a decaying and nearly bankrupt city cannot afford.

C). A recognition of the role of the market in the life of the metropolis. After running through the arguments for demolition in the 70's and 80's, the Calcutta Corporation has changed tack. It has been decided that one way to re-vamp the City's infrastructure is to attract foreign investment into the City. One way to attract foreign investors into the City is to portray Calcutta as a city with a rich historical past. For such a scheme, the Corporation has settled on the New Market area as an 'Image Center', since the area contains, in addition to the original 19th century market, the old Opera House, the Calcutta Corporation building, the 19th century Whiteaway and Laidlaw department store building, the Bourne and Shepherd Photography Studio, the Rani

Rashmoni ancestral residential palace. Funding is being sought from the British Government, as well from British Trading Houses that have historically been associated with Calcutta.

The 'Image center' is envisioned as Calcutta's public center, a showcase of restored buildings and new programming that resurrects the area as the shopping and entertainment center of the city.

The design proposal of this thesis is closest to the third attitude listed. It deals with the problem of re-organizing the area to function as a 'public place'; although increased programming will increase revenue from the area, the project is not seen as primarily an income-generator, as much funding for the restoration/reconstruction will come from foreign funds.

The design problem is seen as one of accommodation of existing patterns of use, culture, and the intensification of the nature of the Market through built intervention and re-organization at the site size. While some new programs are being proposed for the colonial buildings within the area, the program is seen as an extension of whatever exists there now.

A major part of the programming effort is to recognize the complexity of the existing societal structures of the site, and in particular to accommodate and design into the program the 'informal' and 'illegal' stall-structures that occupy large parts of the site.

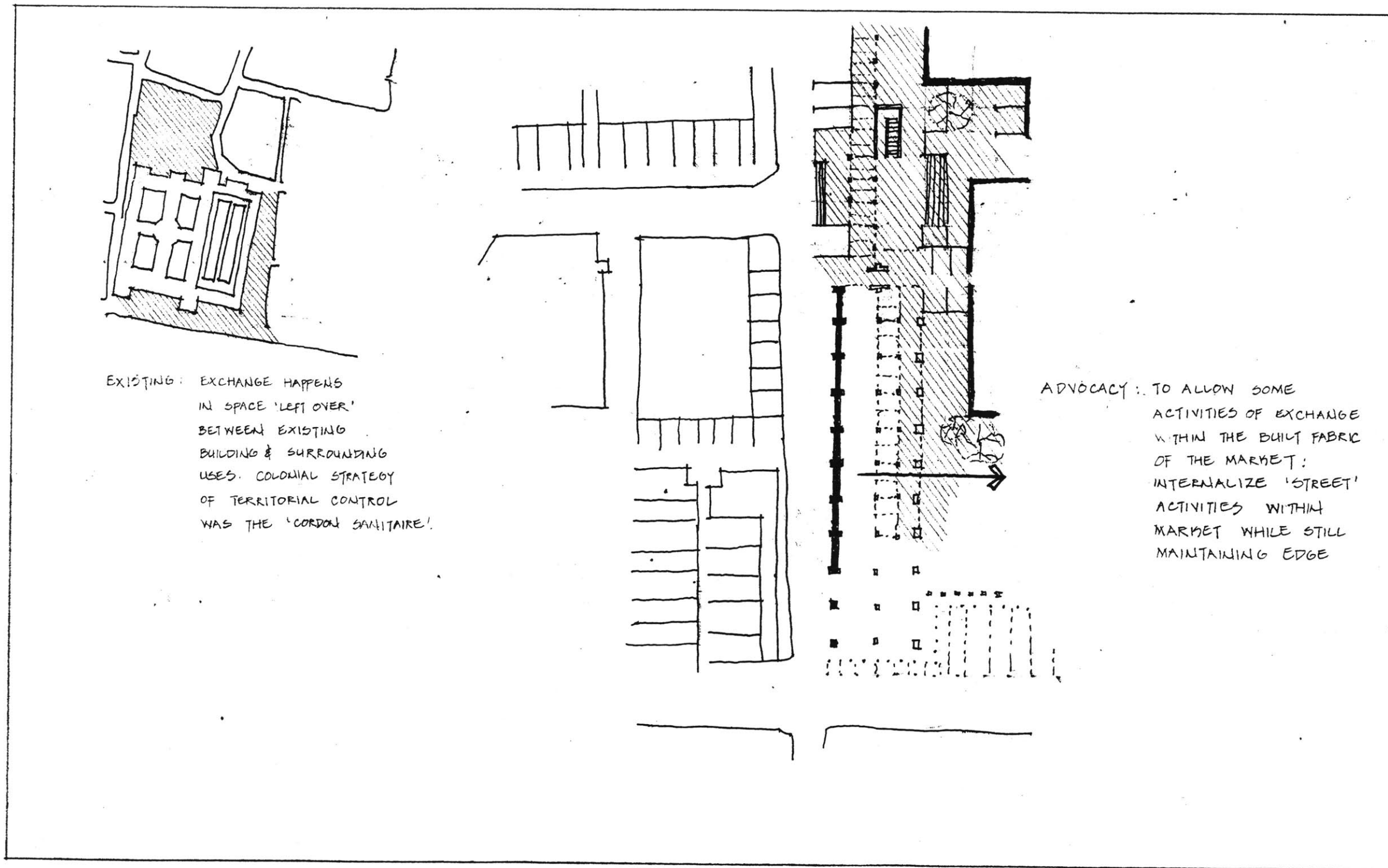
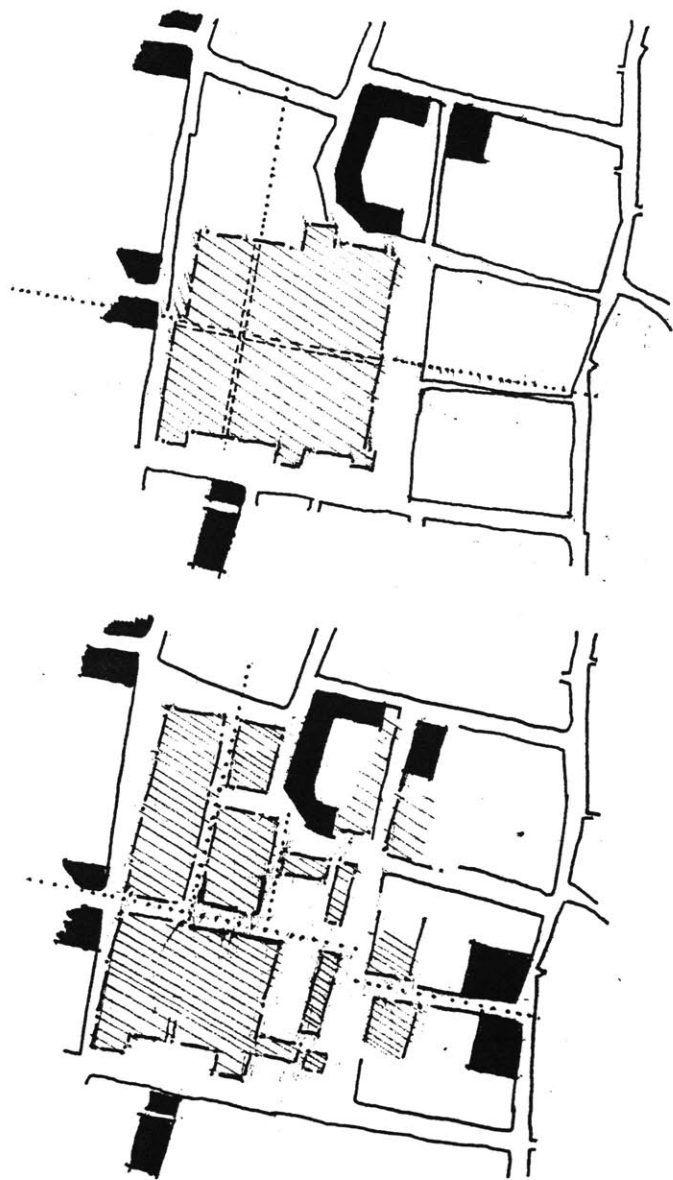
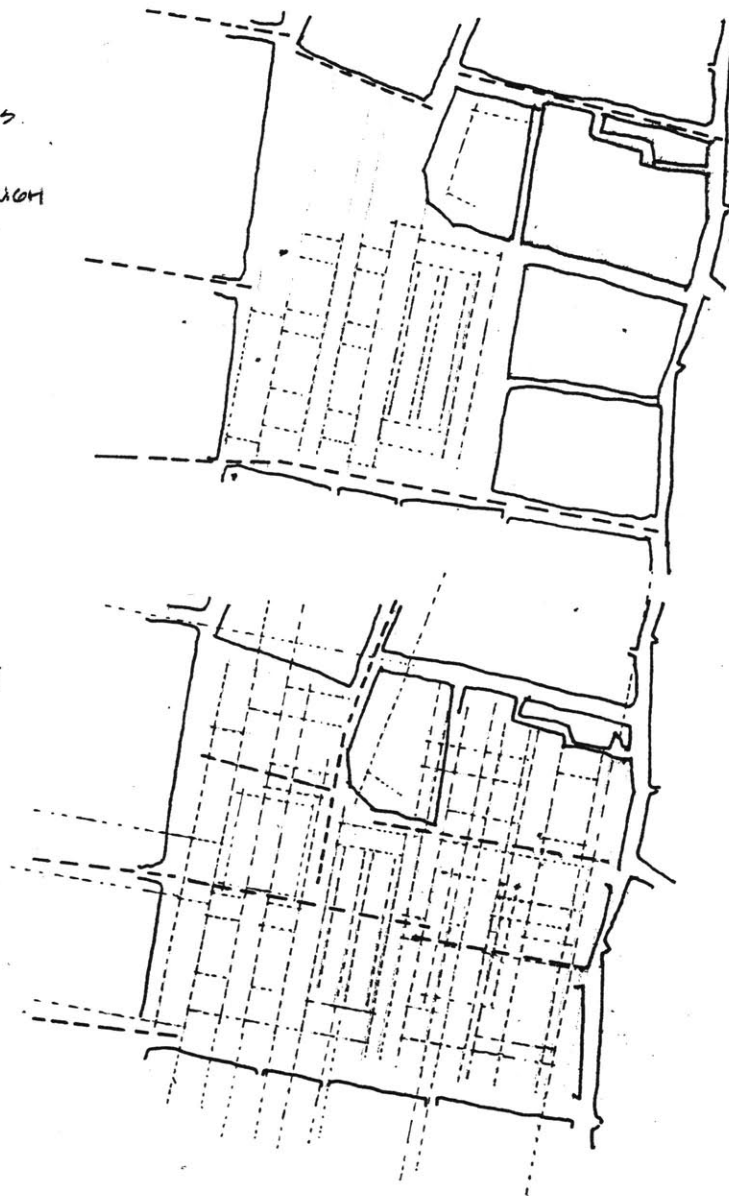


Fig. 46a. Drawings: criteria for design.



EXISTING: THE MARKET OCCUPIES 2 URBAN BLOCKS. IT SHUTS DOWN AT NIGHT RESTRICTING ACCESS THROUGH THE SITE. ACTIVITIES THAT STAY OPEN LATER ARE DISPERSED THROUGHOUT THE EDGES OF THE SITE.

ADVOCACY: THAT THE BUILT FABRIC OF THE REDESIGNED MARKET ALLOW VARYING DEGREES OF CONTROL AT NIGHT, CONNECTING THE ACTIVITIES SCATTERED THROUGHOUT THE SITE BY MEANS OF PUBLIC ACCESS.



EXISTING: THE DOMINANT DIRECTION OF ACCESS WITHIN THE SITE IS IN THE NORTH-SOUTH DIRECTION. ACCESS TO THE SITE IS FROM THE EAST-WEST DIRECTION.

ADVOCACY: TO MAINTAIN EXISTING CLARITY OF ACCESS WITHIN THE SITE, YET PROPOSE NEW PATTERNS OF ACCESS THAT CLEARLY LINK AND DEMARCAT THE SITE TO THE SURROUNDING AREA.

Fig. 46b. Drawings: criteria for design.

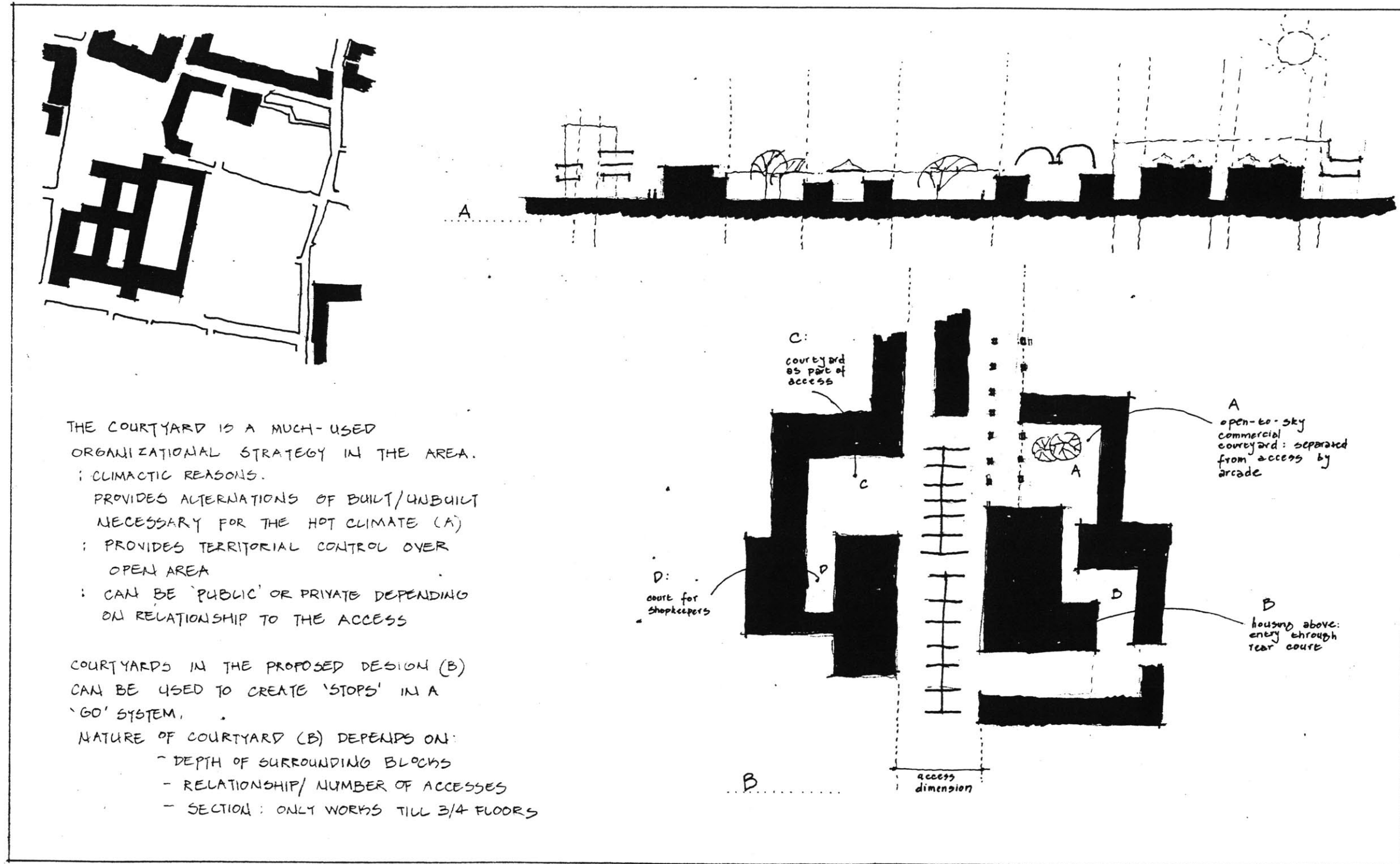
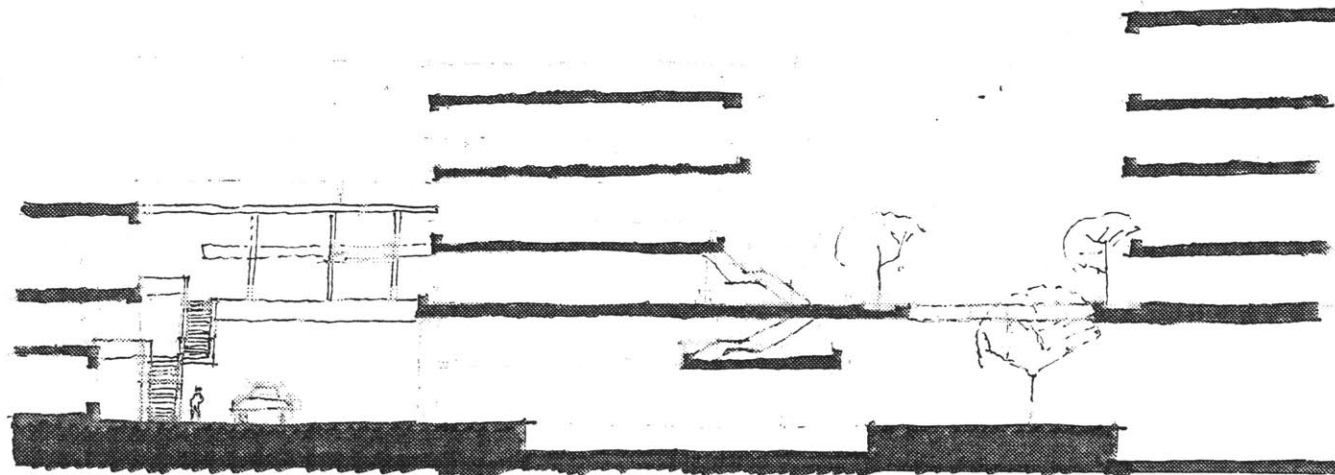


Fig. 46c. Drawings: criteria for design.



Overhead access between Corporation Building and arcade on Hogg Street.

A



THE 'GROUND' LEVEL AT THE SITE IS APPROACHING CAPACITY. THERE ARE ALREADY THREE OVERHEAD BRIDGES AROUND THE MARKET.

A CONTINUOUS 2ND-LEVEL ACCESS SYSTEM WOULD ALLOW 'MESSY' ACTIVITIES TO OCCUR ON THE GROUND; WITH A CONTINUOUS REFERENCE LEVEL, THE GROUND LEVEL CAN BE DISCONTINUOUS (A)

THE DANGER WITH A SECOND-LEVEL ACCESS IS THAT THE GROUND WILL BE LEFT TO THE POOR; A SECTION OF THE BUILDING MUST BE ACCESSIBLE TO ALL UP TO THE HIGHEST LEVEL (B)

B

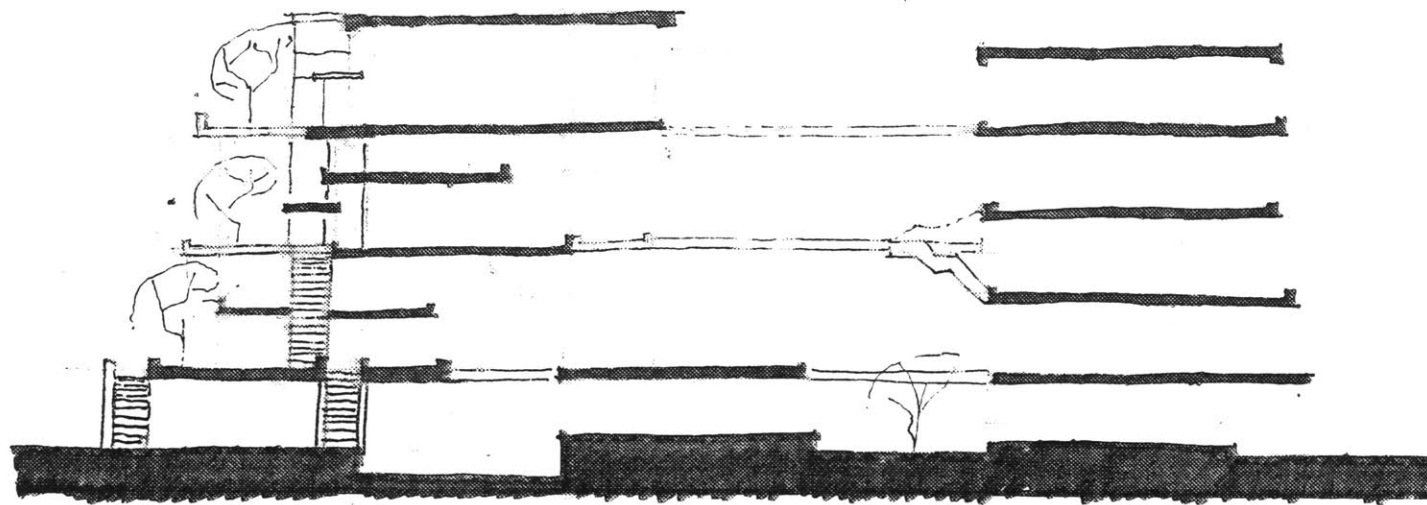


Fig. 46d. Drawings: criteria for design.



Entrance to the Market, Lindsey Street.  
The entrance porch builds a separate zone between street and entry.  
Note that this zone is claimed by hawkers.

WHEN ACCESS IS TRANSFORMED FROM  
'LEFT OVER' SPACE BETWEEN BUILT ZONES (A<sub>1</sub>)  
TO INDEPENDENT SYSTEM (A<sub>2</sub>)  
THEN AN INTERIOR 'ARCADE' ACCESS (B)  
CAN BE BUILT TO GENERATE TERRITORY  
(ZONES A/B/A):  
ACCESS IS TRANSFORMED FROM MINIMAL  
ROOM FOR MOVEMENT TO A PUBLIC 'SPINE',  
GENERATING DIFFERENT TERRITORIES WITH  
DIFFERENT LIGHTING CONDITIONS/ DIMENSIONS/  
RELATIONSHIP TO USE.

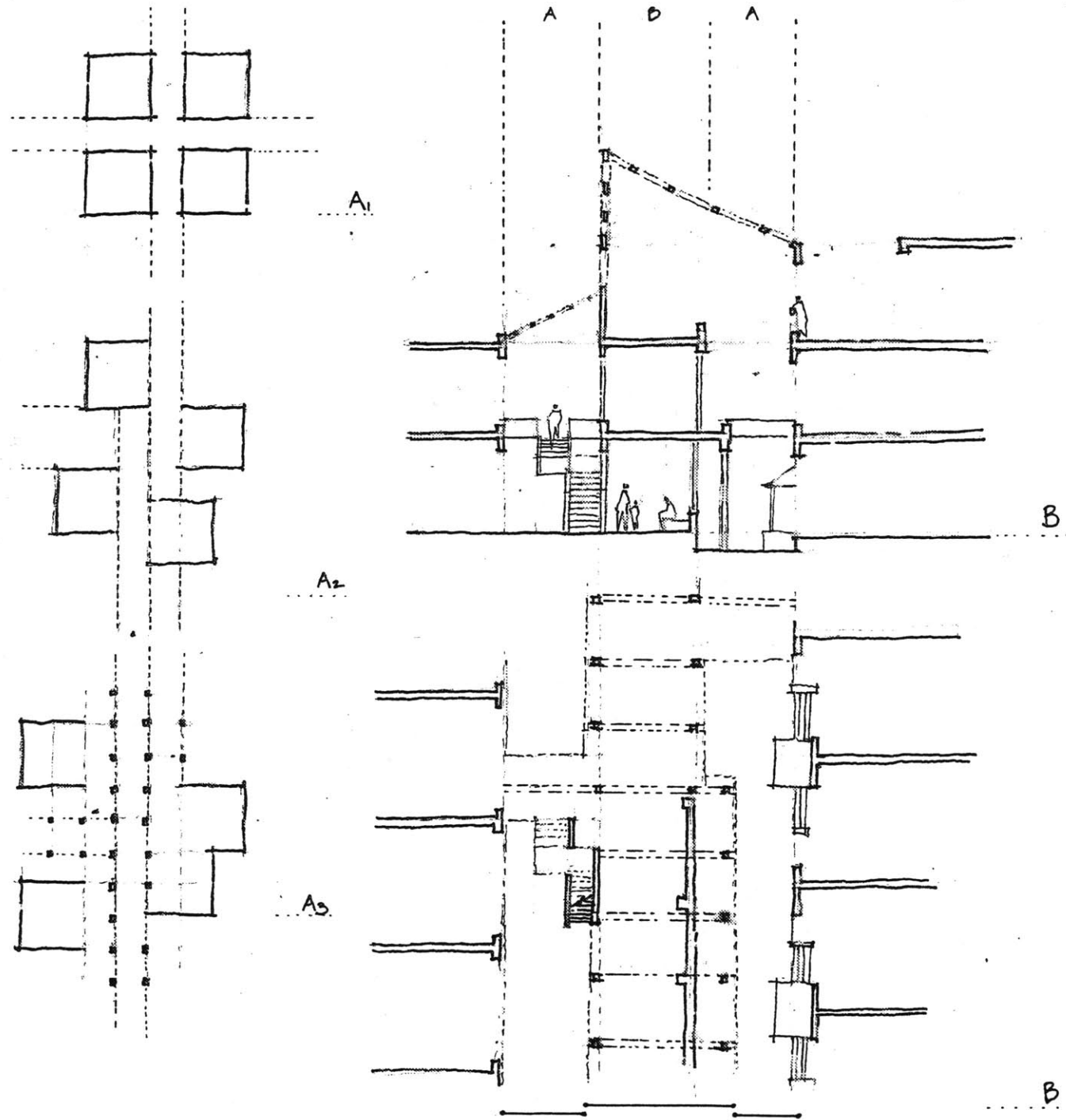
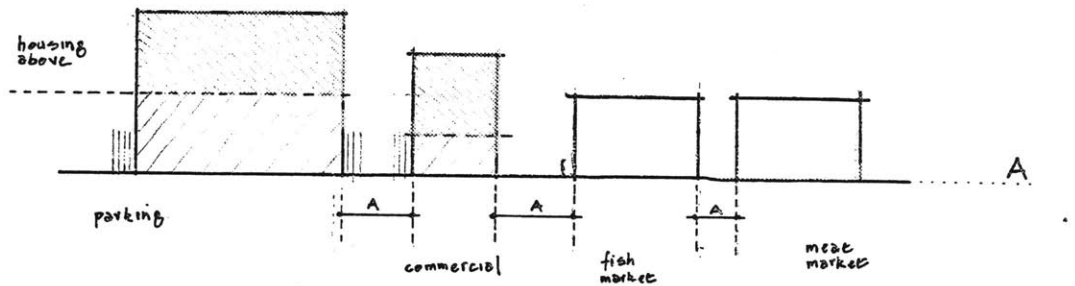
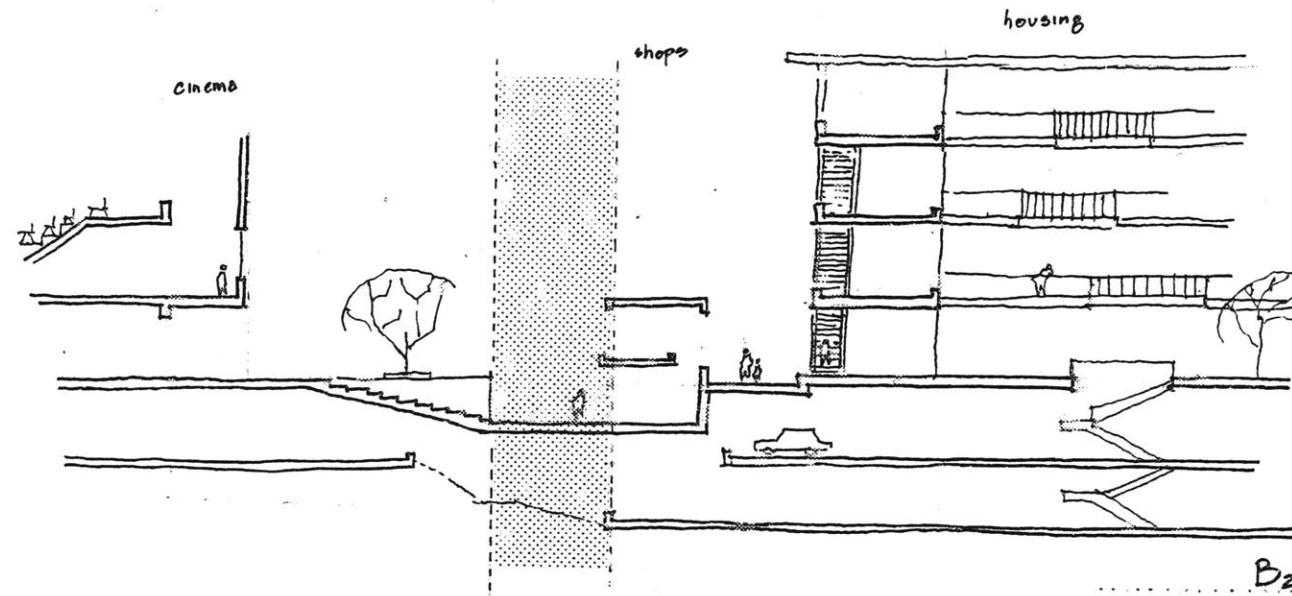


Fig. 46e. Drawings: criteria for design.

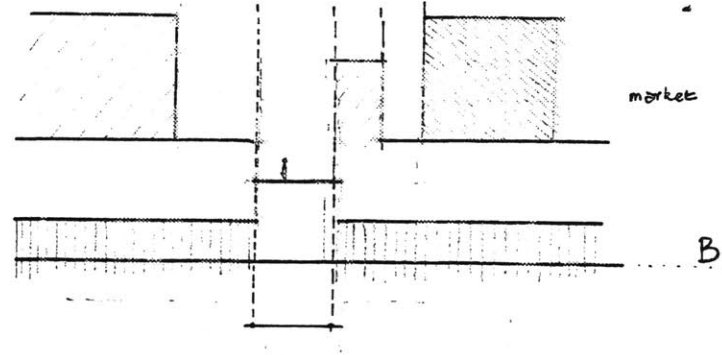


Lindsay Street along East Edge of the Market: Housing and Retail below



A) ACTIVITIES SPREAD  
OUT AT GROUND  
LEVEL CAN BE  
ORGANIZED

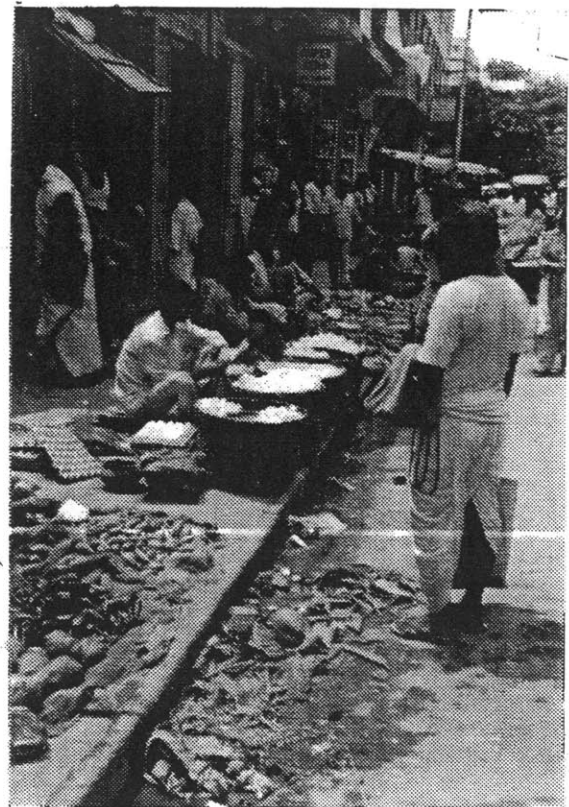
B) IN SECTION  
THROUGH THEIR  
RELATIONSHIP TO  
ACCESS



activities are organized by access zone

B1

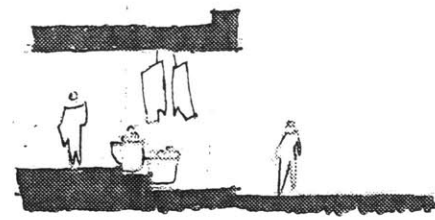
Fig. 46f. Drawings: criteria for design.



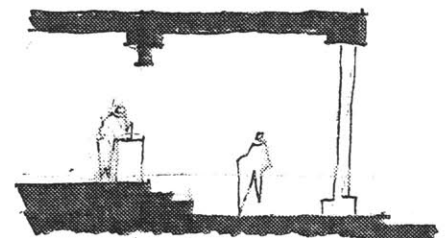
Lake Market, street-edge along Market.

EDGES: THE EDGES OF THE MARKET MUST SUPPORT A VARIETY OF NEEDS:

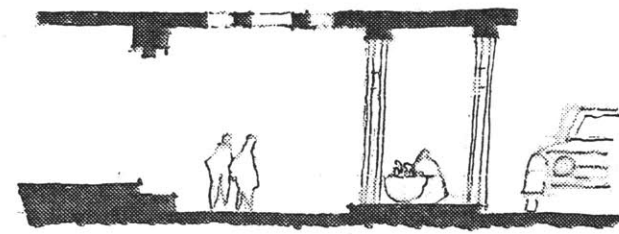
- ..... SHOPKEEPERS DISPLAYS
- ..... COVERED ACCESS FOR SHOPPERS
- ..... ARTISANS (TAILORS, ETC)
- ..... THE 'INFORMAL SECTOR'



A. EDGE TERRITORIALIZED BY SHOPKEEPERS.

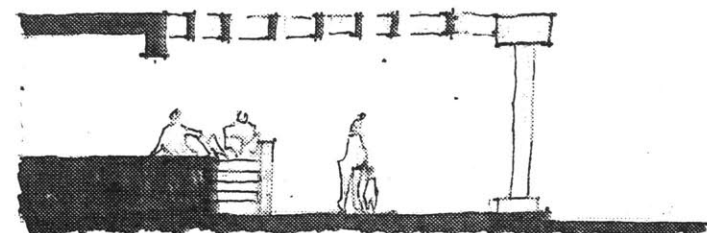


B<sub>1</sub>



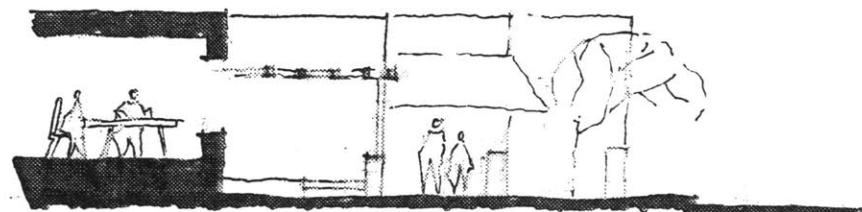
B<sub>2</sub>

COMMUNAL SIZE ARCADE WITH DOUBLING TO ACCOMMODATE VENDORS



C

WORK-SPACE FOR TAILORS/ COBBLERS



P

PRIVATIZED EDGE FOR RESTAURANTS/ RESIDENTIAL

Fig. 46g. Drawings: criteria for design.



Arcade along Hogg Lane at back of New Market.

THE PUBLIC PLACE IS ONE OF MOVEMENT,  
NOT OF REST, AS IN A PLAZA OR A SQUARE:  
THE IMPLICATIONS ARE:

- A) TERRITORY THAT CAN BE TEMPORARILY 'CLAIMED'  
IS LIMITED, AND IS PLACED NEXT TO/WITHIN  
PATHS OF MOVEMENT THAT ACT AS A CHECK OR
- B) WITHIN THE SECTION SO THAT IT IS UNDER  
PUBLIC 'SURVEILLANCE'
- C) TERRITORIAL VARIATION IS CREATED BY  
CHANGES IN LIGHT/SECTION AS WELL  
AS USE
- D) THE PATHS OF MOVEMENT SHOULD INCLUDE  
TERRITORY OF COLLECTIVE SIZE (EG: BANK  
OF STAIRS) CLAIMABLE FOR PUBLIC  
FESTIVALS, SUCH AS 'DURGA PUJA'  
WHEN IDOLS ARE DISPLAYED

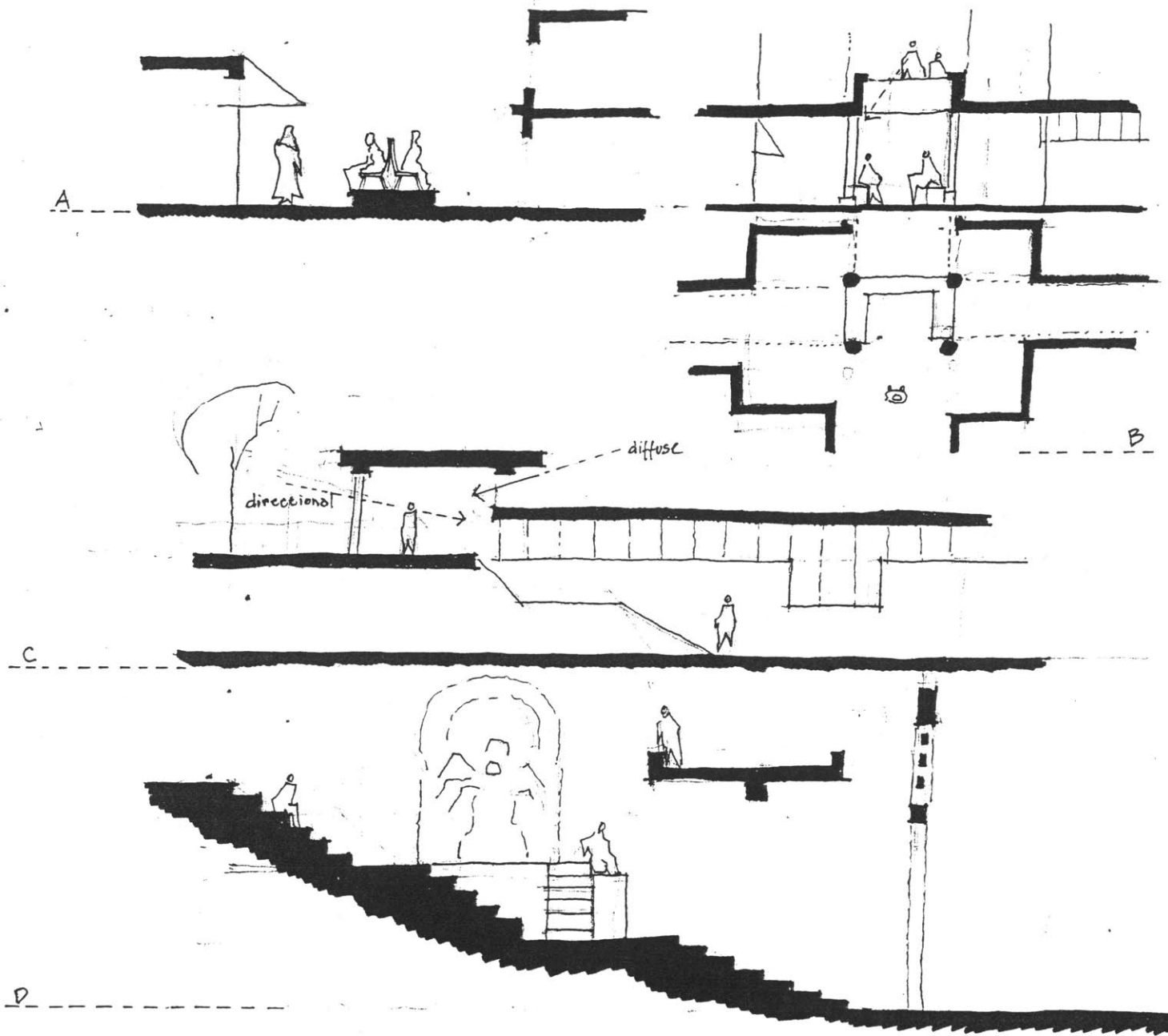


Fig. 46h. Drawings: criteria for design.

#### IVC. Organizing the site

Any new additions to the old market would add an extra burden onto the existing organizational system. Presently, a node in the central arcade acts as an organizing center by serving as a fixed reference point in an otherwise linear access system. It is also a meeting place.

In the analysis presented earlier, nodes emerged as important public places within the street system.

In reorganizing the site to accommodate a new addition, it was clear that nodes were needed to provide centres and create small 'stops' within the access system.

Three alternatives were explored in diagram form, first creating a scenario, and then diagramming the nodes that organized that scenario:

A. Many centres: The existing market fabric replicated throughout the site to create a number of centres. The limitations of this scenario was that each center had equal weight, none of them able to organize the site as a whole.

B. Edge organization: To contain a main public spine between the existing market and a series of new additions. Too linear a scheme, lacking the ability to organize the entire site. Effectively created two parallel arcades without any relation.

C. Introducing a change in direction: The new additions were set at a different angle from existing buildings, creating a new cross direction across the site. Space created between old and new geometries could serve as 'slack' space for informal activities. This was the strategy adopted.

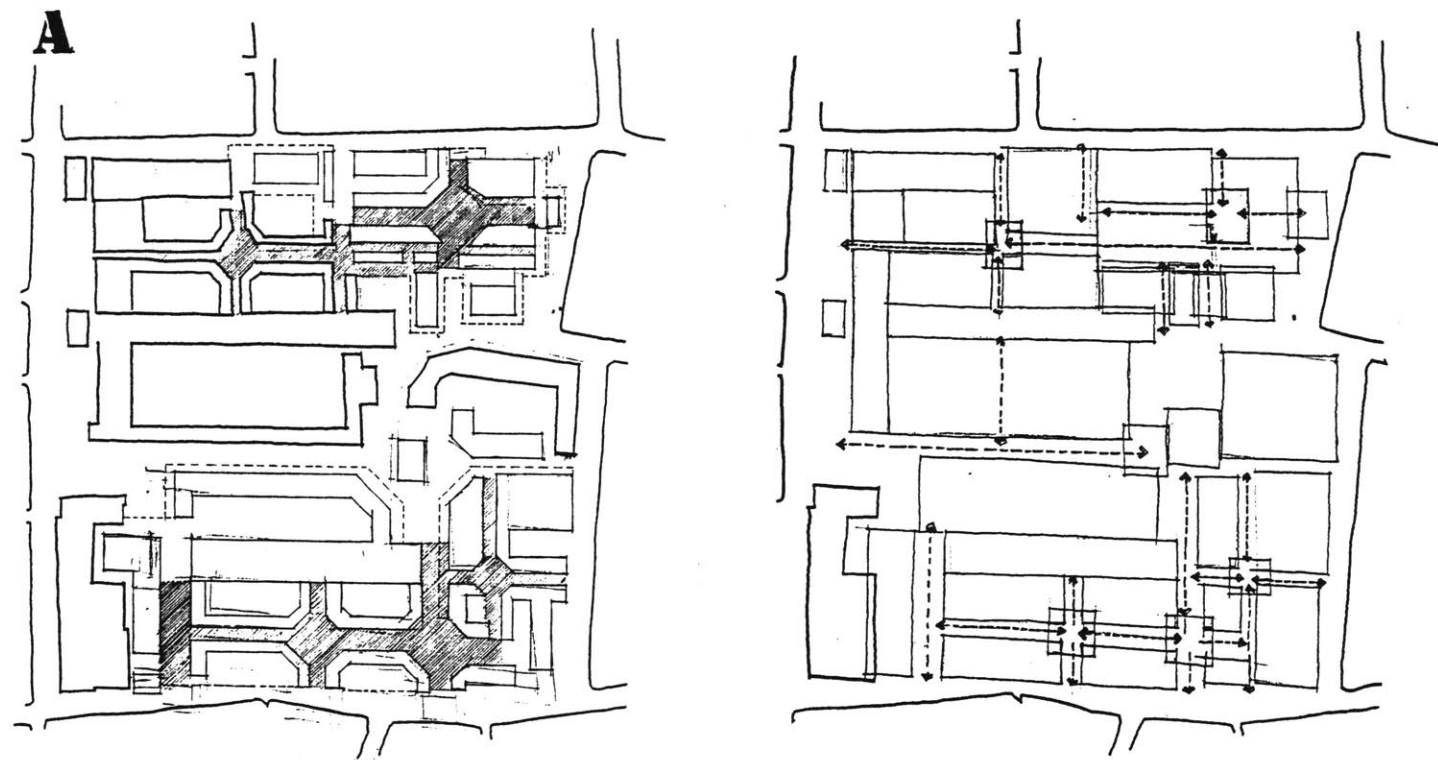


Fig. 47. Alternative site organization: many centers.

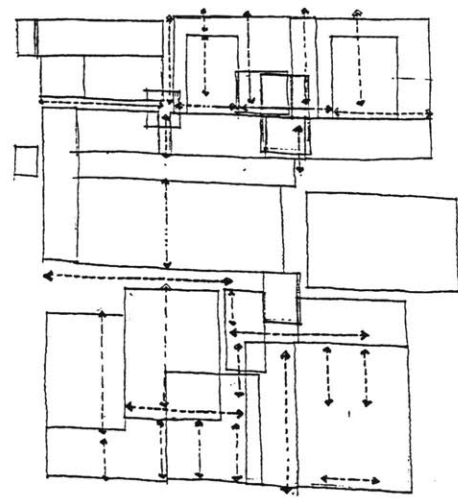
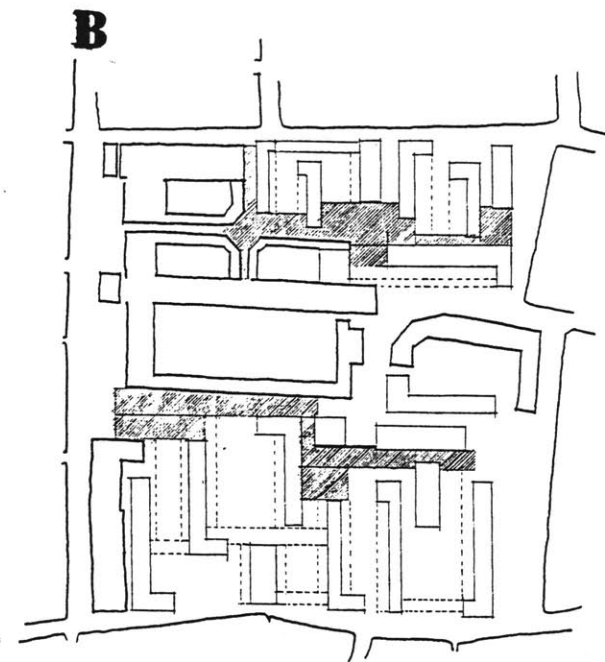


Fig. 48. Alternative site organization: edge control.

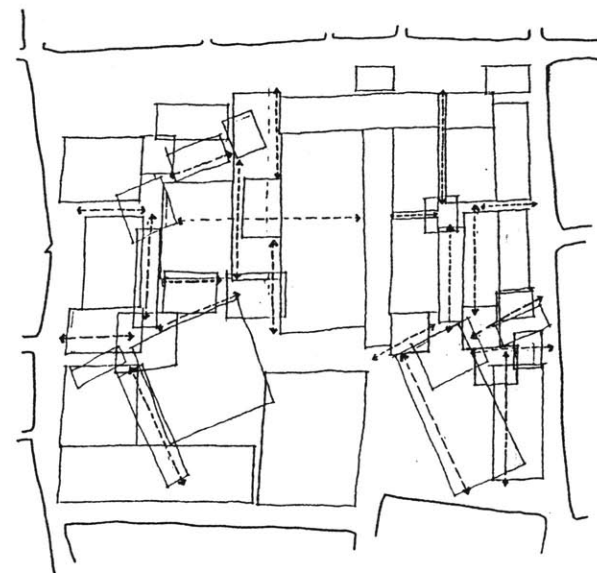
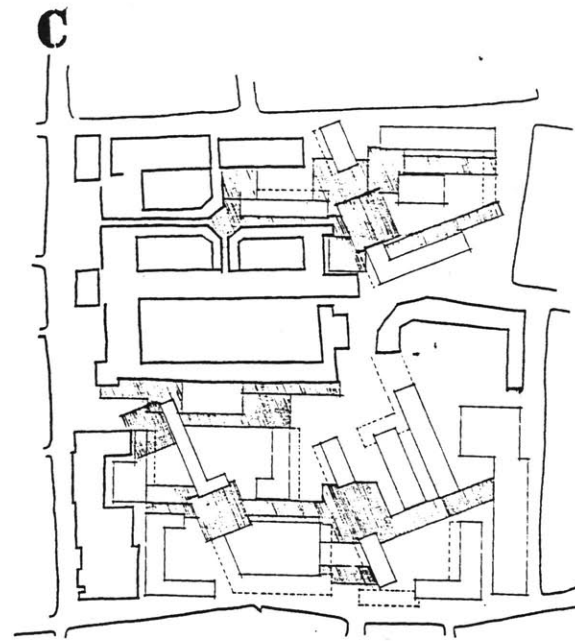


Fig. 49. Alternative site organization: introducing the new direction.



#### IVD. A design vocabulary

As established by the design criteria, the addition had to serve several groups of users: the middle and upper class, who would prefer an airconditioned 'mall' environment, small shop-stalls serving all classes of people, areas for open air food markets and access through the site for vendors, peddlars, beggars.

The design solution for the building was to create different environments, linked by access:

- Arcade: an element running throughout the building on two levels. Containing small shop stalls. Accessible by stairways.

Lit from above.

- Mall: on street side of building, containing larger shops and able to be airconditioned. Accessible by elevator and escalator. The mall environment crosses through arcade in a series of concrete channels, creating an exchange between the two worlds.

- 'Slack space': created between the alignment of the addition and the old market. Designed as landscape, and with small temporary structures for selling food.

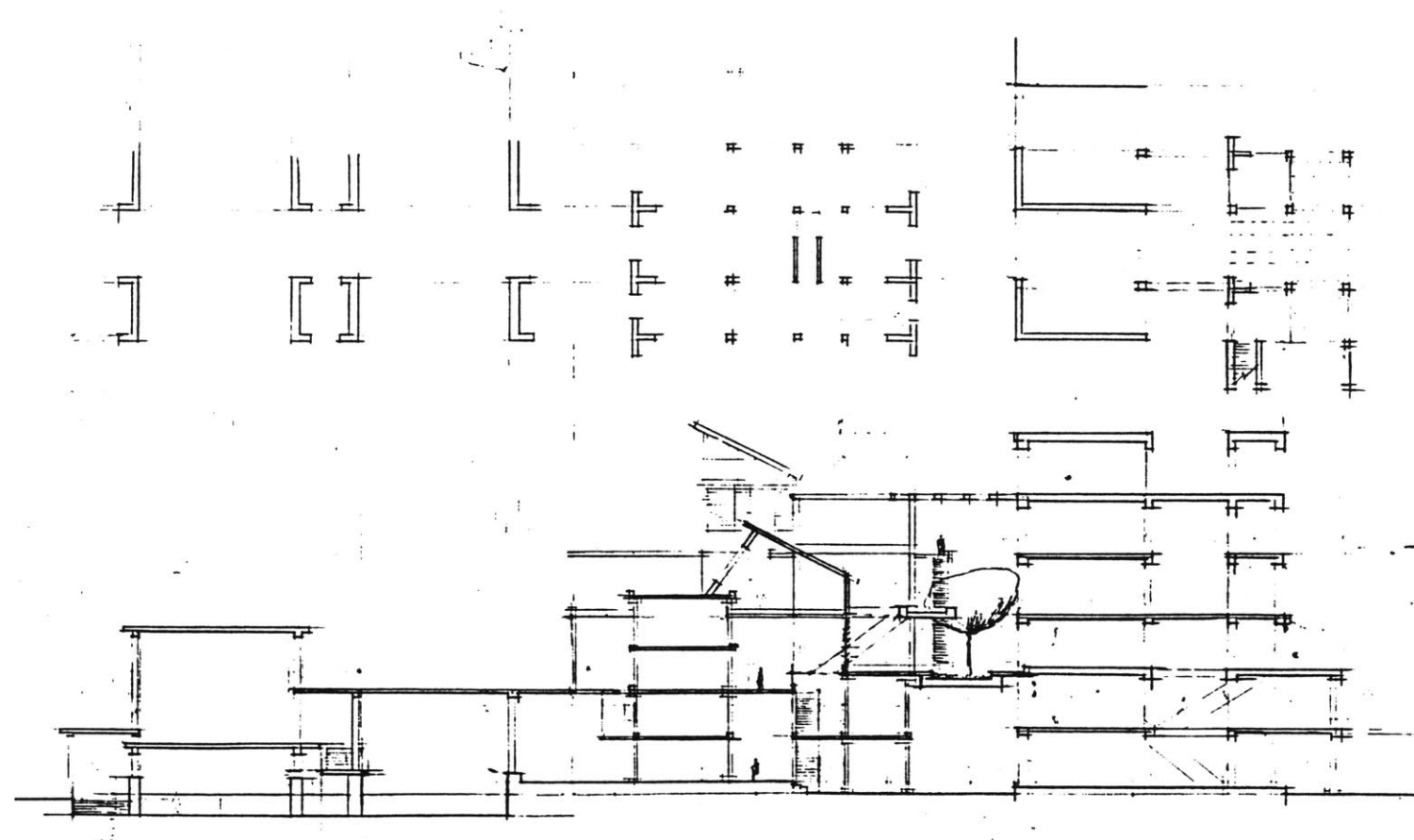


Fig. 50. Experimental section showing informal market space, arcade, and mall.

-Pavillion: pavillions paced along publicly accessible path stretching through the market complex.

The pavillion, as used in traditional Indian architecture is a semi-independent form: linked by its structural members to the open-air arcade, yet maintaining an independent use.

The pavillion is a form undefined by use: its use is variable, depending on the needs of the user: as shelter, play-space, impromptu stall.

By remaining minimal, and associated with the access system, the pavillion form can escape privatization.

An attempt was made to design the pavillion so that part of the access to the second story ran along the pavillion.

As a minimally defined space placed close to the main route of movement, the pavillion was intended to be used by various groups of people, throughout the day.

Pavillion: public territory to be used through temporary occupations

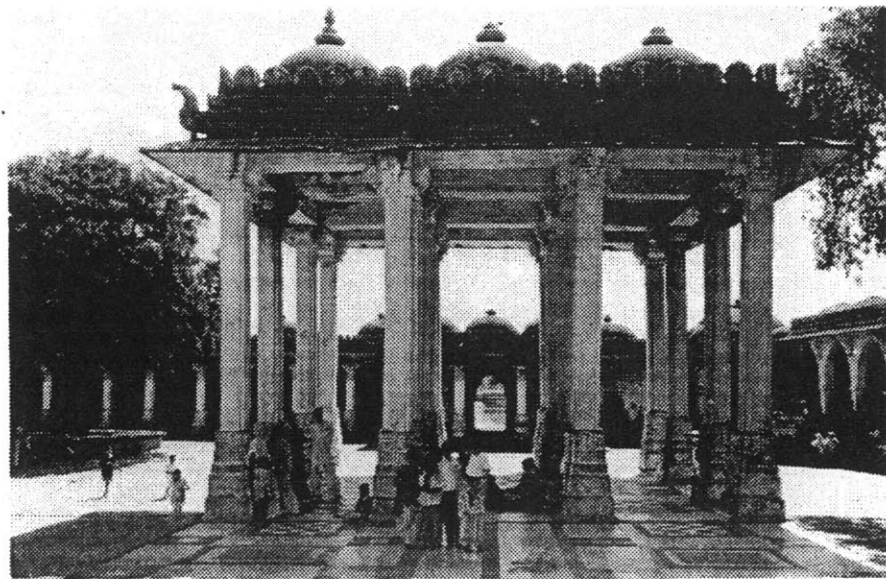


Fig. 51. Pavillion at Sarkhej.

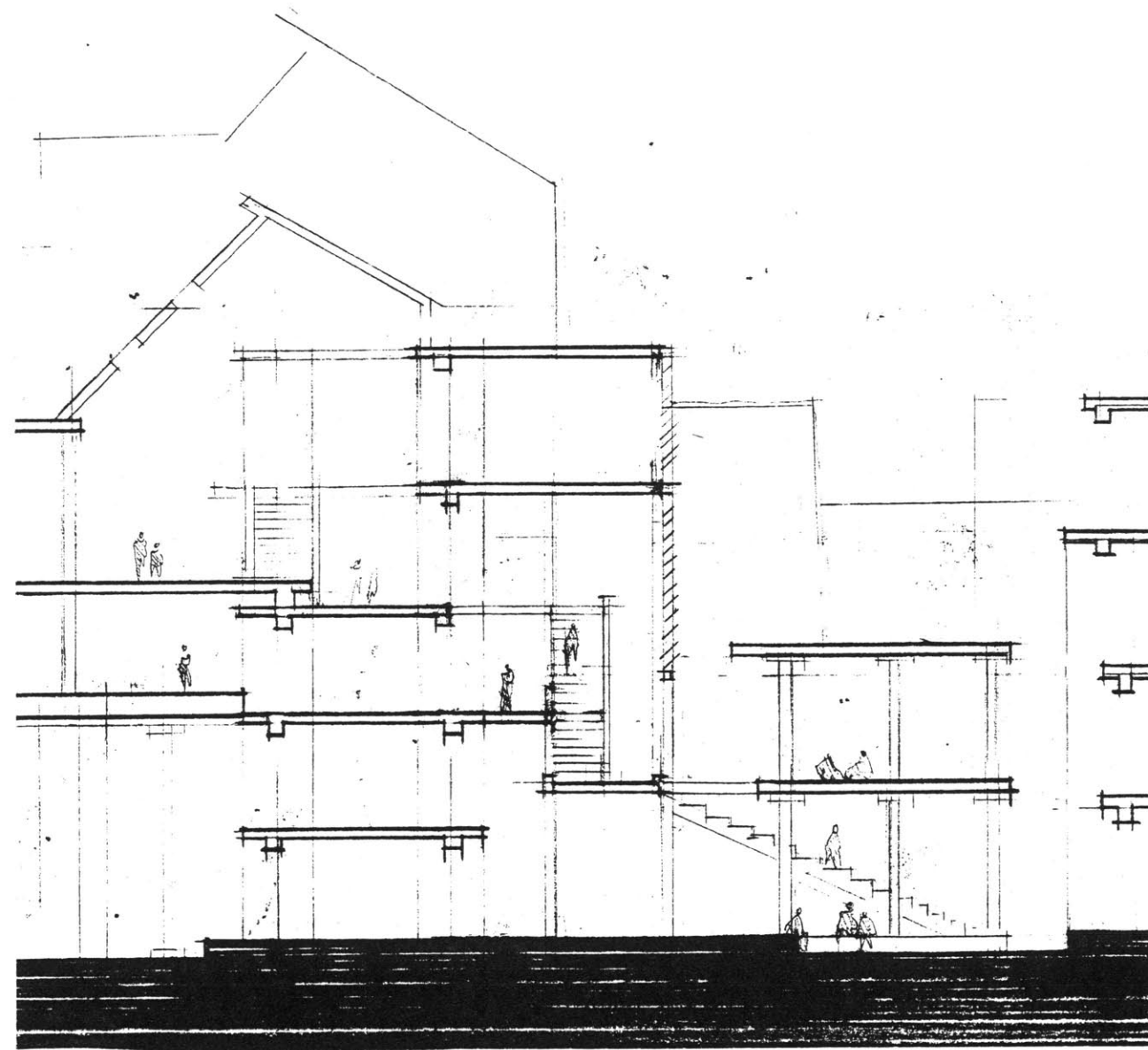


Fig. 52. Experimental section: pavillion as part of access.

#### IV E. Structural system

The structural system of the market complex involved three main components:

- Heavy concrete frame in the form of structurally self-stable 'T' columns and beams. This allowed a variable deployment. Employed mainly in the mall area, and rising up to 6 floors high.

- Channels: concrete beams resting on top of 'T' columns, spanning across arcade area. These serve to create access between adjacent mall areas. The dimension of the channels allows people to move within them; when needed, concrete joists can span between two channels, creating a territory for shops

- Closure: In the mall world, the weather closure is taken to be a louvered screen at the face of the building. Glass closure can then be set back into the recesses of the building; allowing for both shaded verandah areas and for airconditioning.

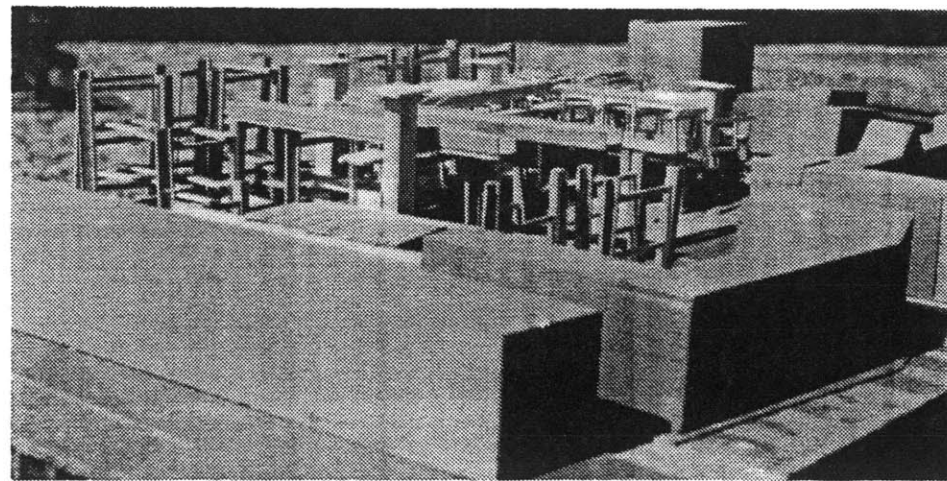


Fig. 53. Photograph: model showing structure: frame and channels.

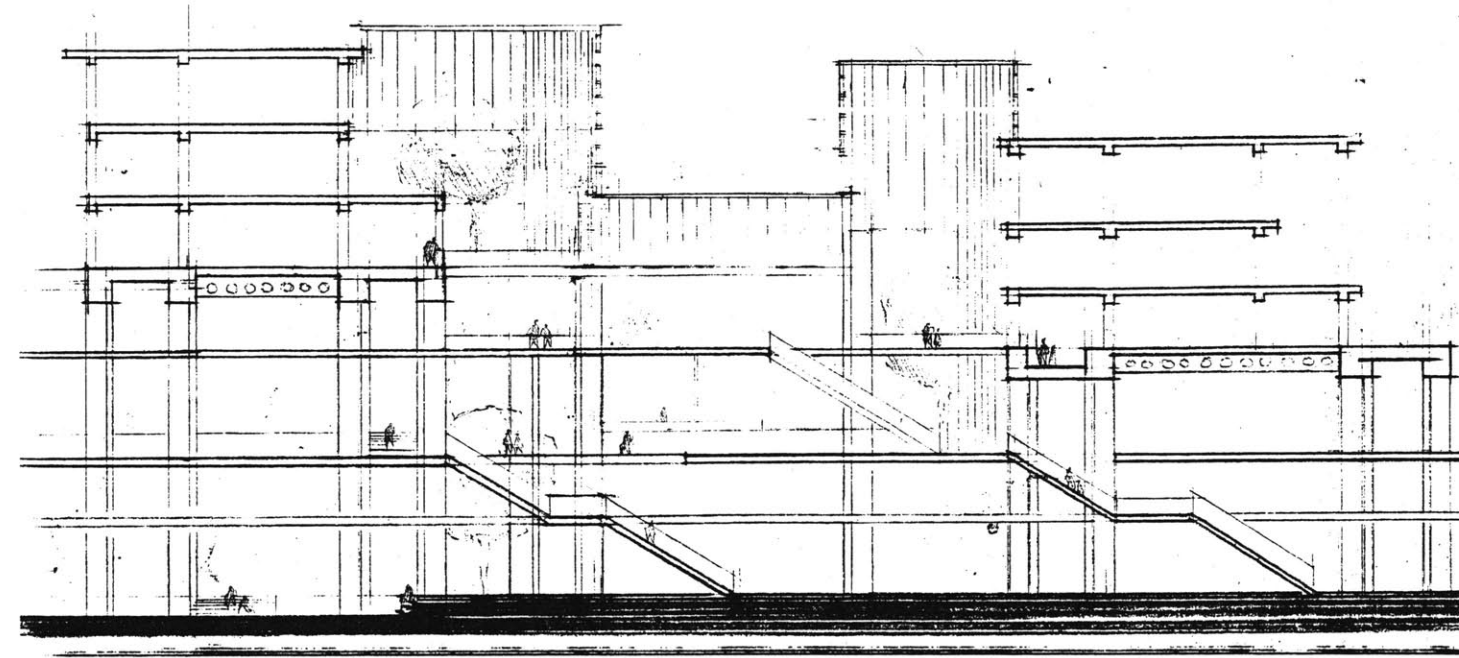


Fig. 54. Longitudinal section: channel system crossing arcade.

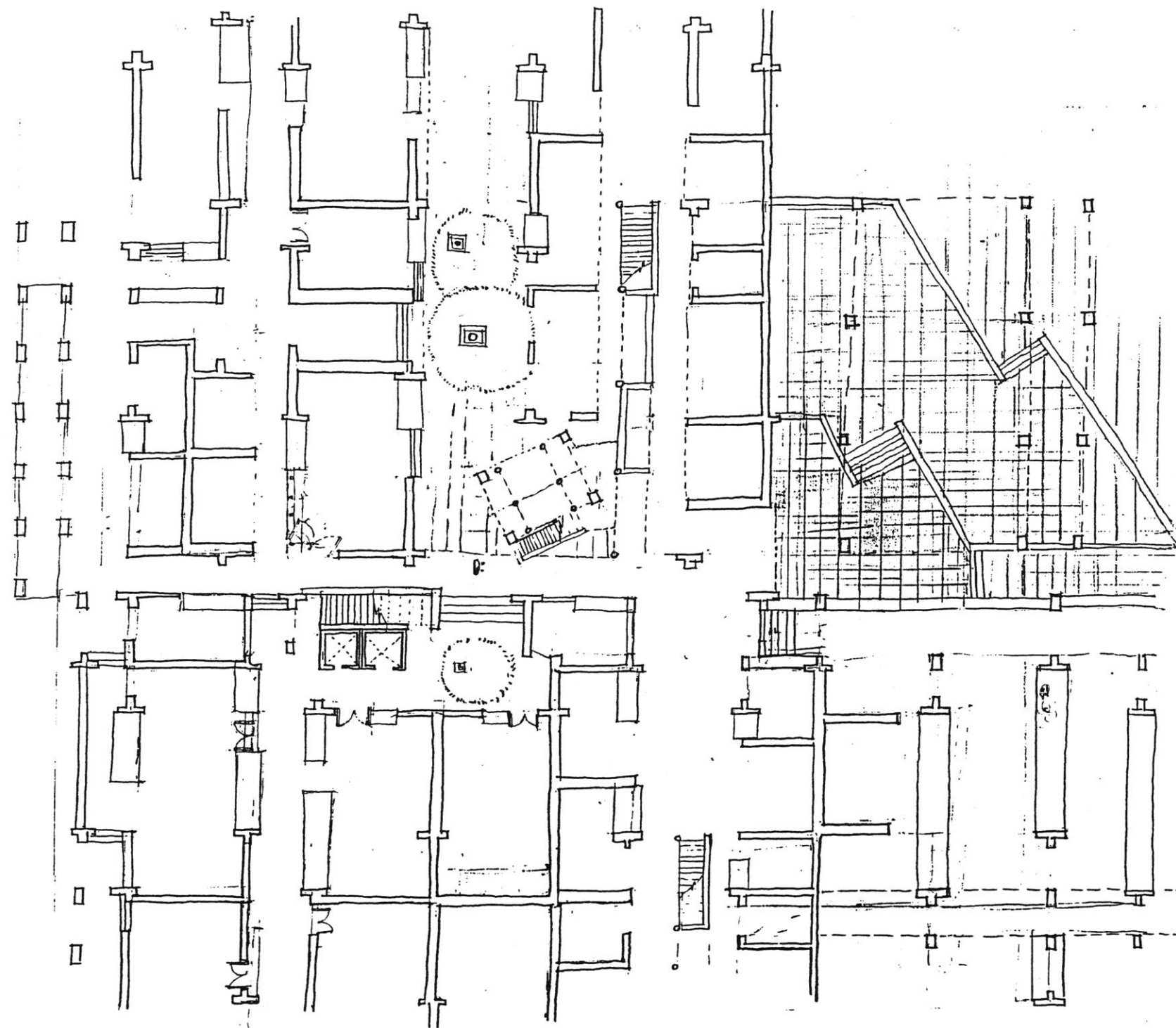


Fig. 55. Partial plan: mall, arcade, and informal market space.



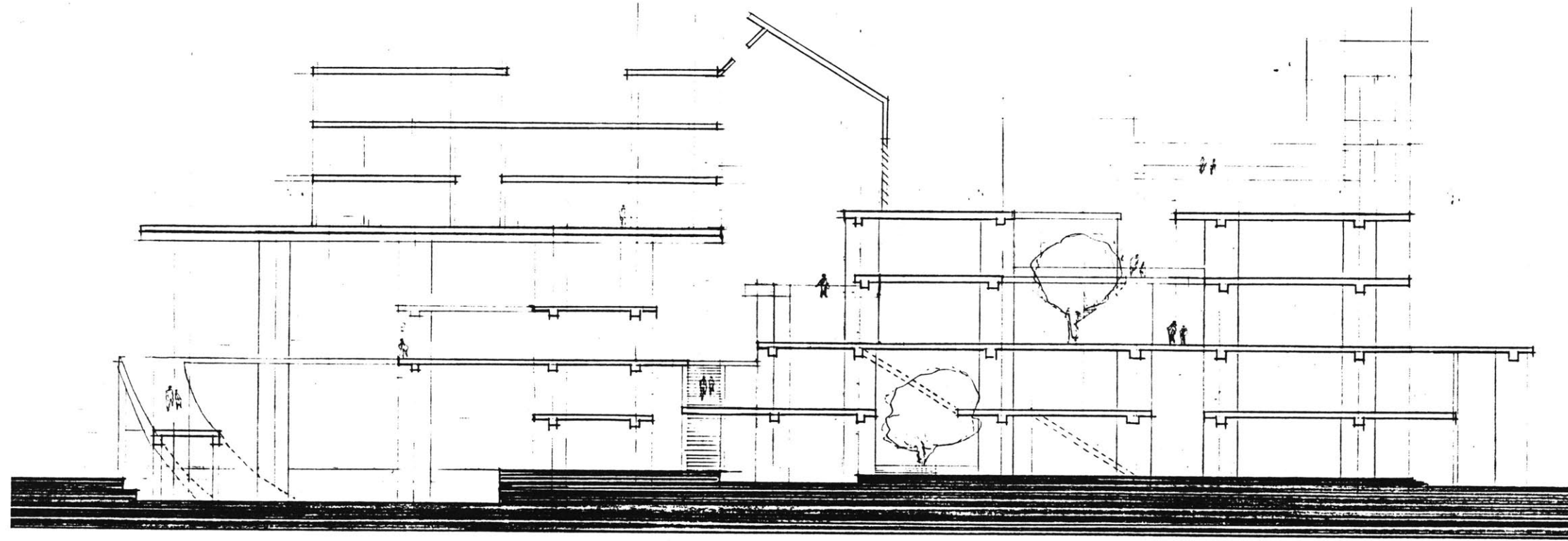


Fig. 56. Experimental section: transverse through arcade.



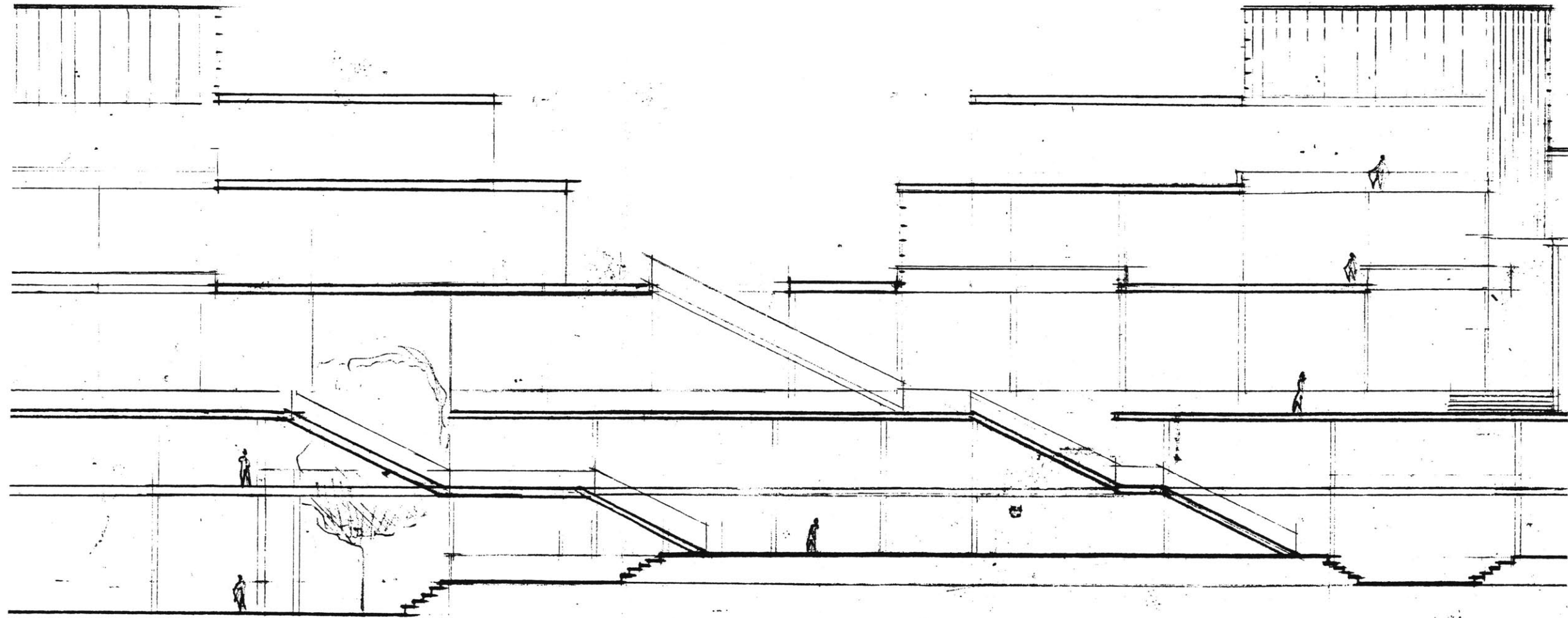


Fig. 57. Experimental section: longitudinal through arcade.

## V. Final design

The final design focusses on the design of one new addition at the East part of the site. At the size of the site, the two new additions are angled to create a new **pathway** through the site that collects feeder roads from North and South. **A new center for the site becomes a node along this pathway.**

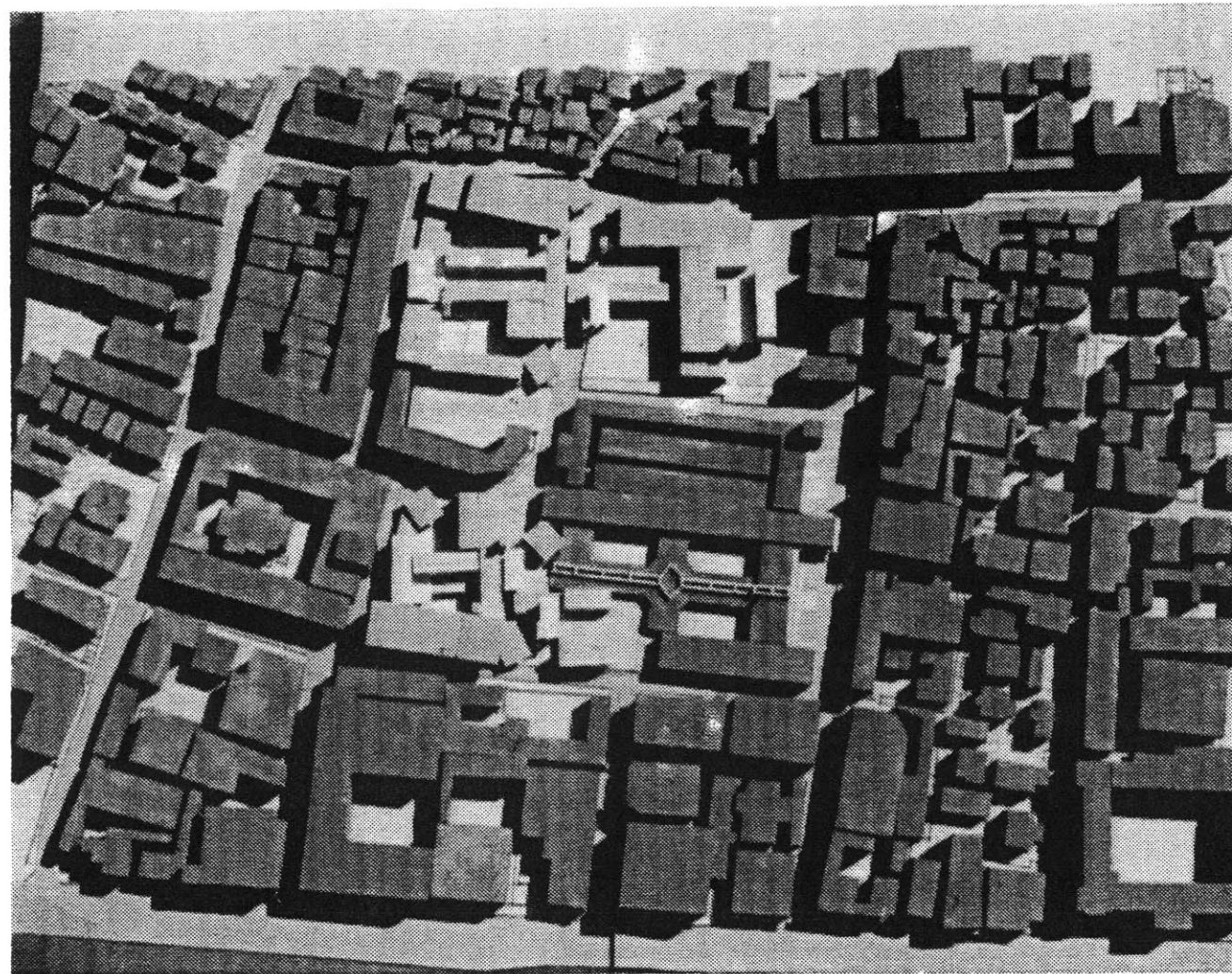
The pathway connects the two new additions, and a series of **pavillions of two different sizes are located along the path.** The pathway moves through the new additions and is treated as a public way.

**From the pathway, a series of accesses ascend into the new building.** The mall is entered from elevators located within glassed-in areas along the path. A public stair to the second level runs from the path and up to the second level of the arcade.

**Between the arcade and the mall are two courtyards** that ascend upwards at different levels, letting air down to the lower arcade. The stairways from the lower arcade to the upper levels runs along the edges of the two courtyards: one moves upwards into the light.

**At the interior edge of of the building are areas, paved and with temporary structures, for informal markets.** The change in geometries of parts of the building creates two courtyards- one interior and used by the mall, the other exterior and semi-public.

**Anybody may pass throught the building along the public path and use the pavillions at the edge.** The arcade also serves as a public way,



at the size of the building, but access to it is restricted: it is not imagined that beggars or pedlars would enter the arcade. **The mall world would have restricted entry,** with lobbies to be passed through. **The edges of the building can accomodate a variety of uses, from peddlars to informal vendors.**

*Fig. 58. Final design: site model showing additions and pavillions.*



Fig. 59. Final design: detail of site model.

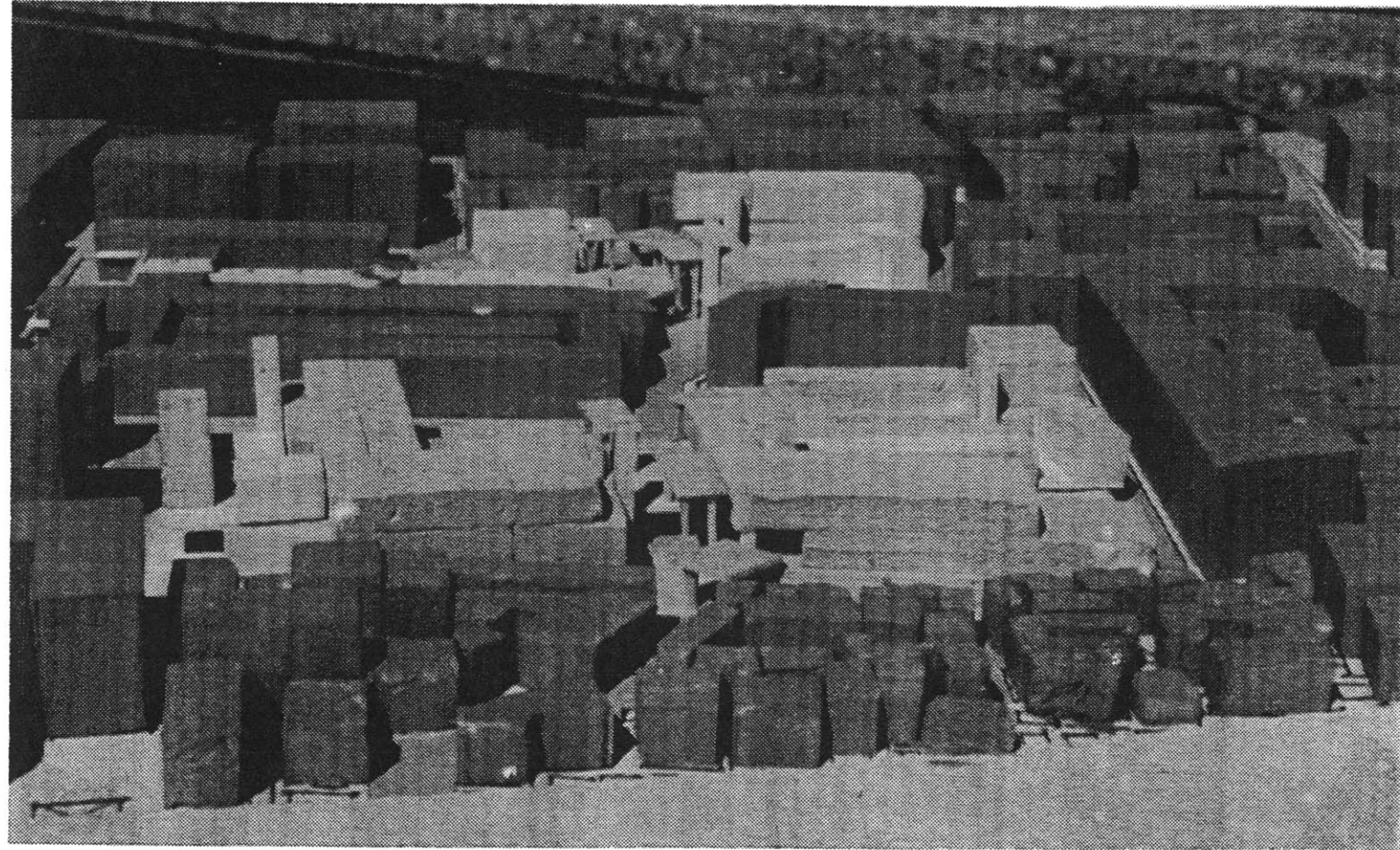
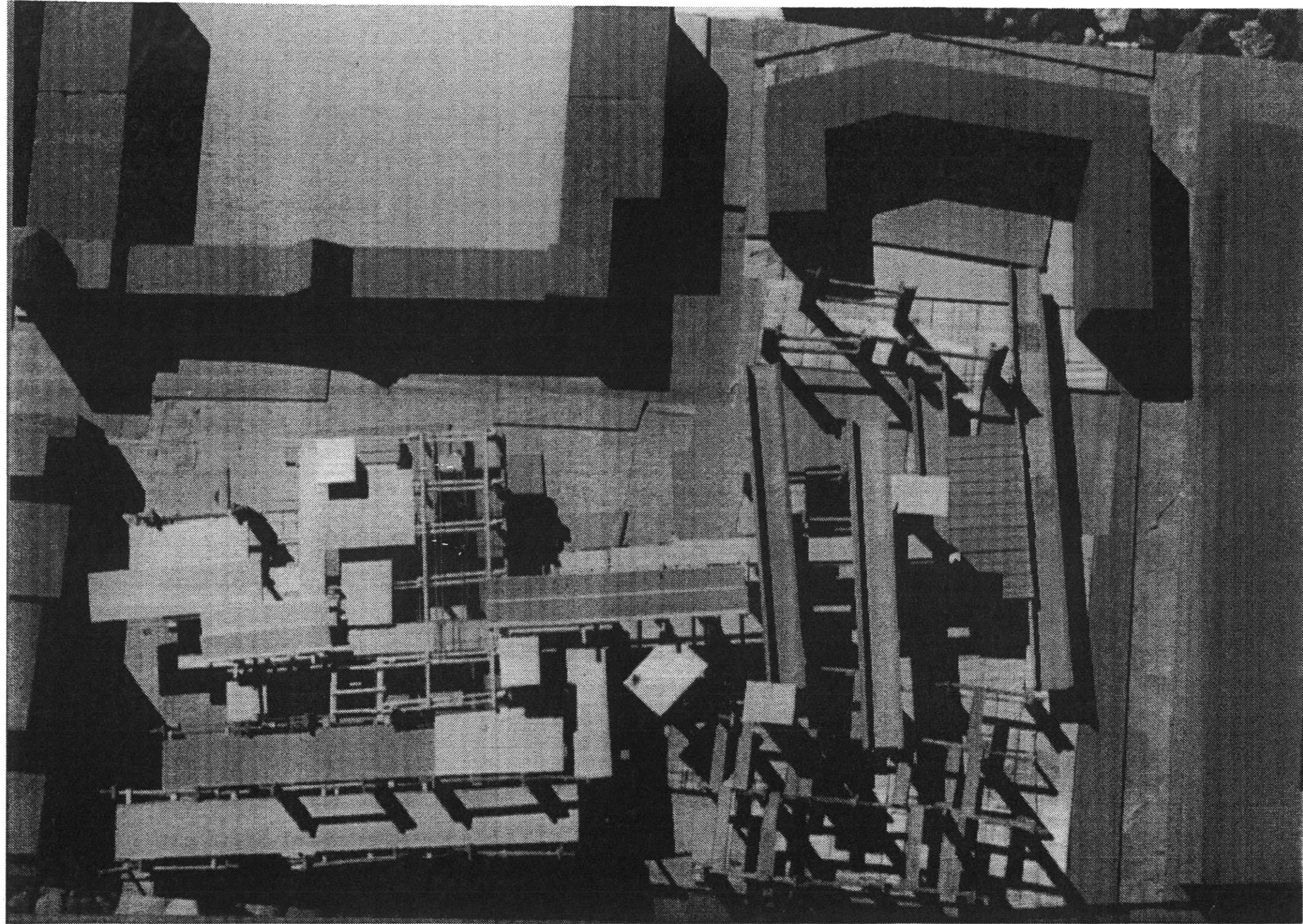
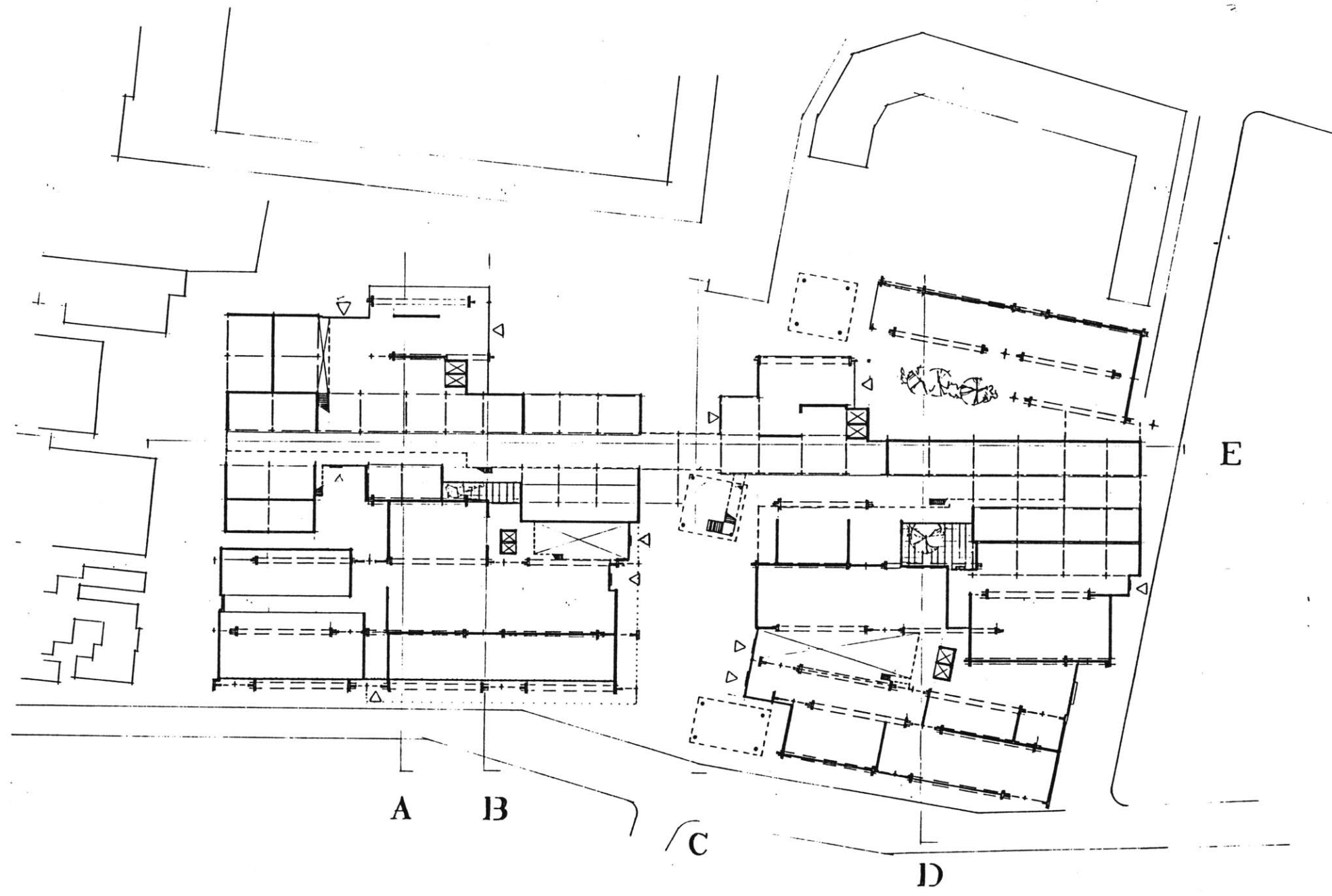


Fig. 60. Final design: diagram of site organization.



*Fig. 61. Final model: showing structure, arcade, mall, and slack space.*



(1/4" = 1'-0")

**PLAN**  
 1 INCH = 30 FEET



Fig. 62. Final design: first floor plan.



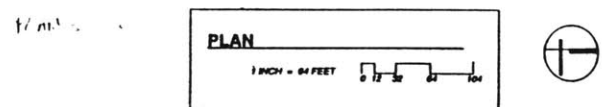
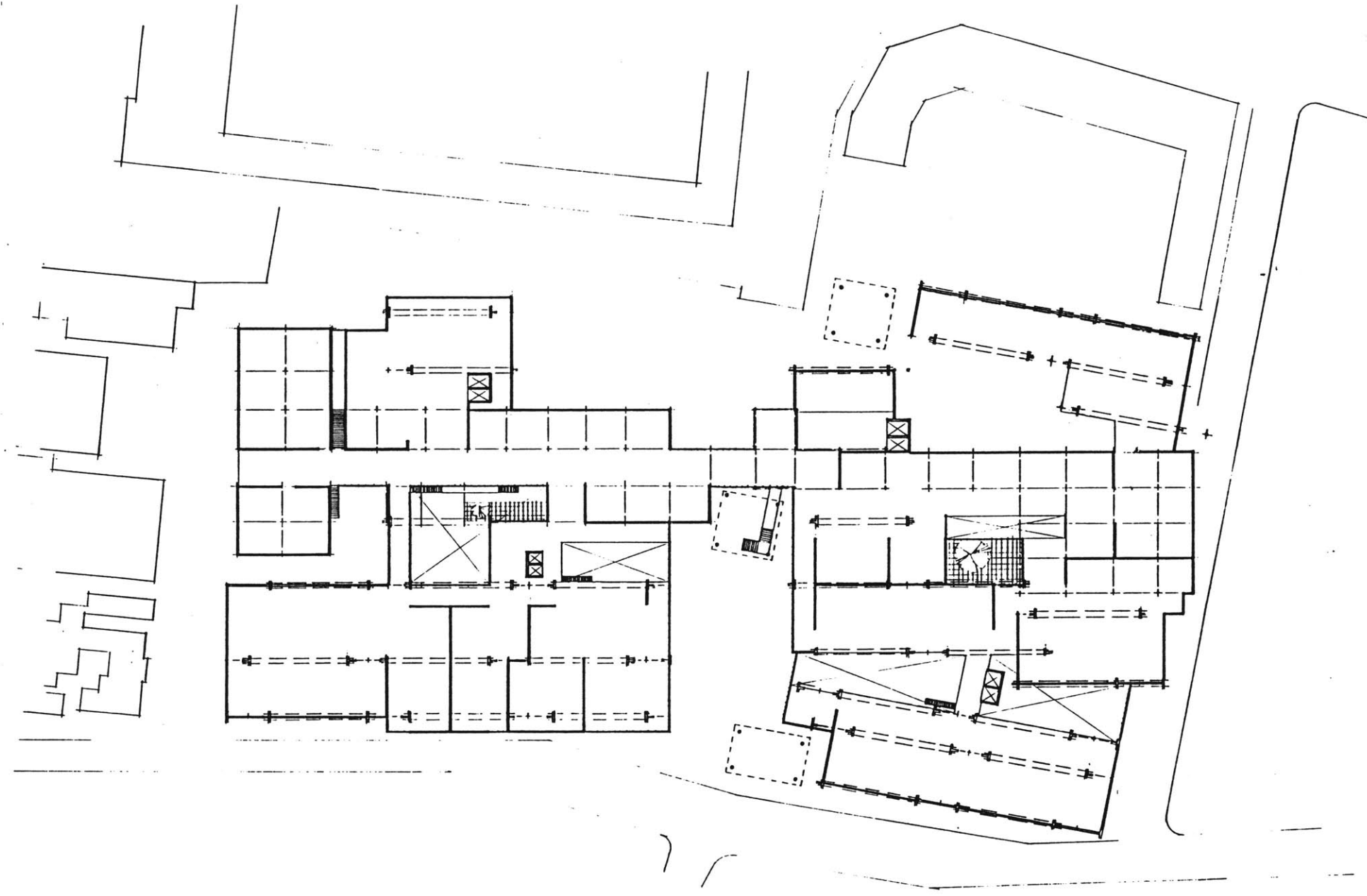


Fig. 63. Final design: second floor plan.



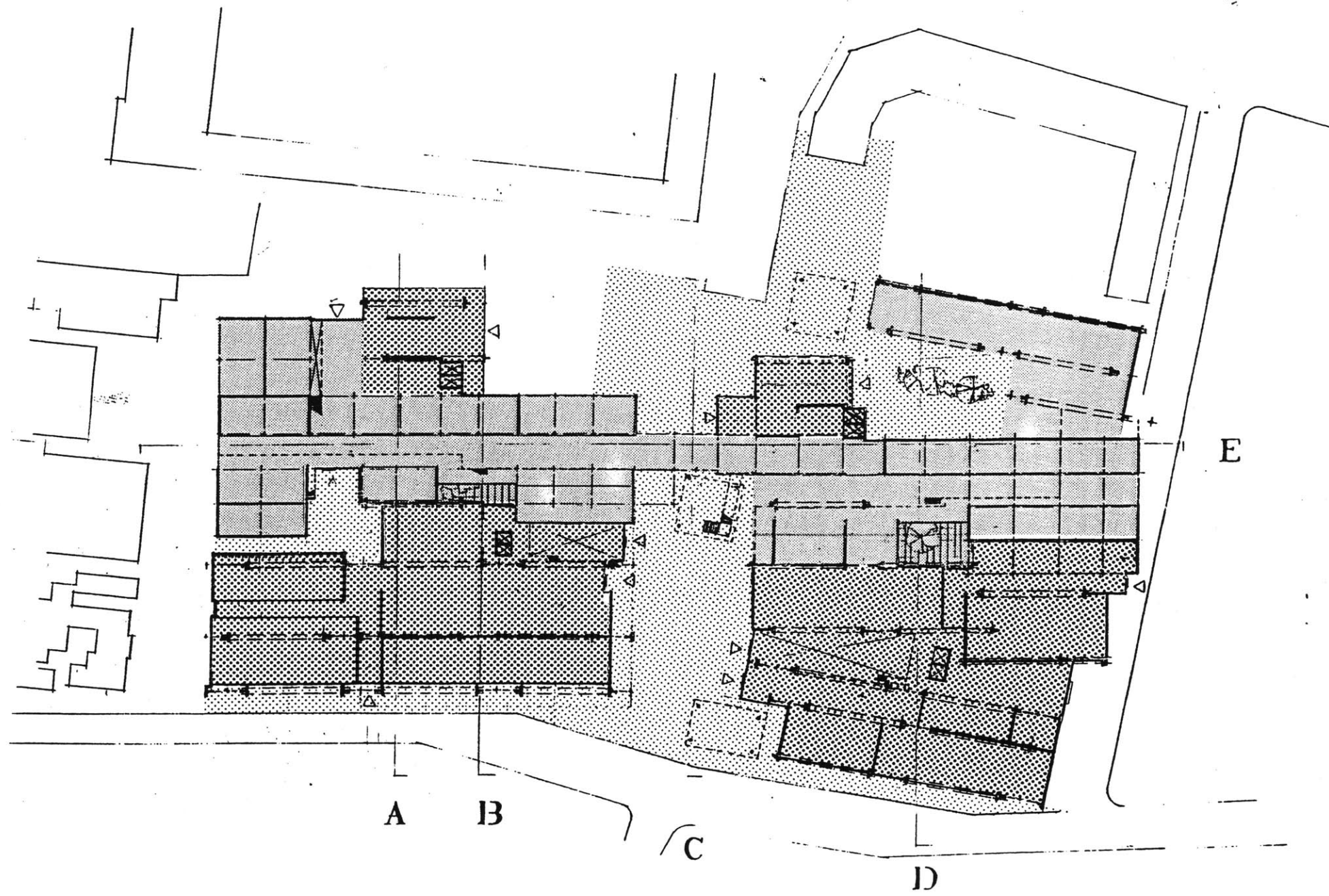


Fig. 64. Final design: diagram of access at ground floor.

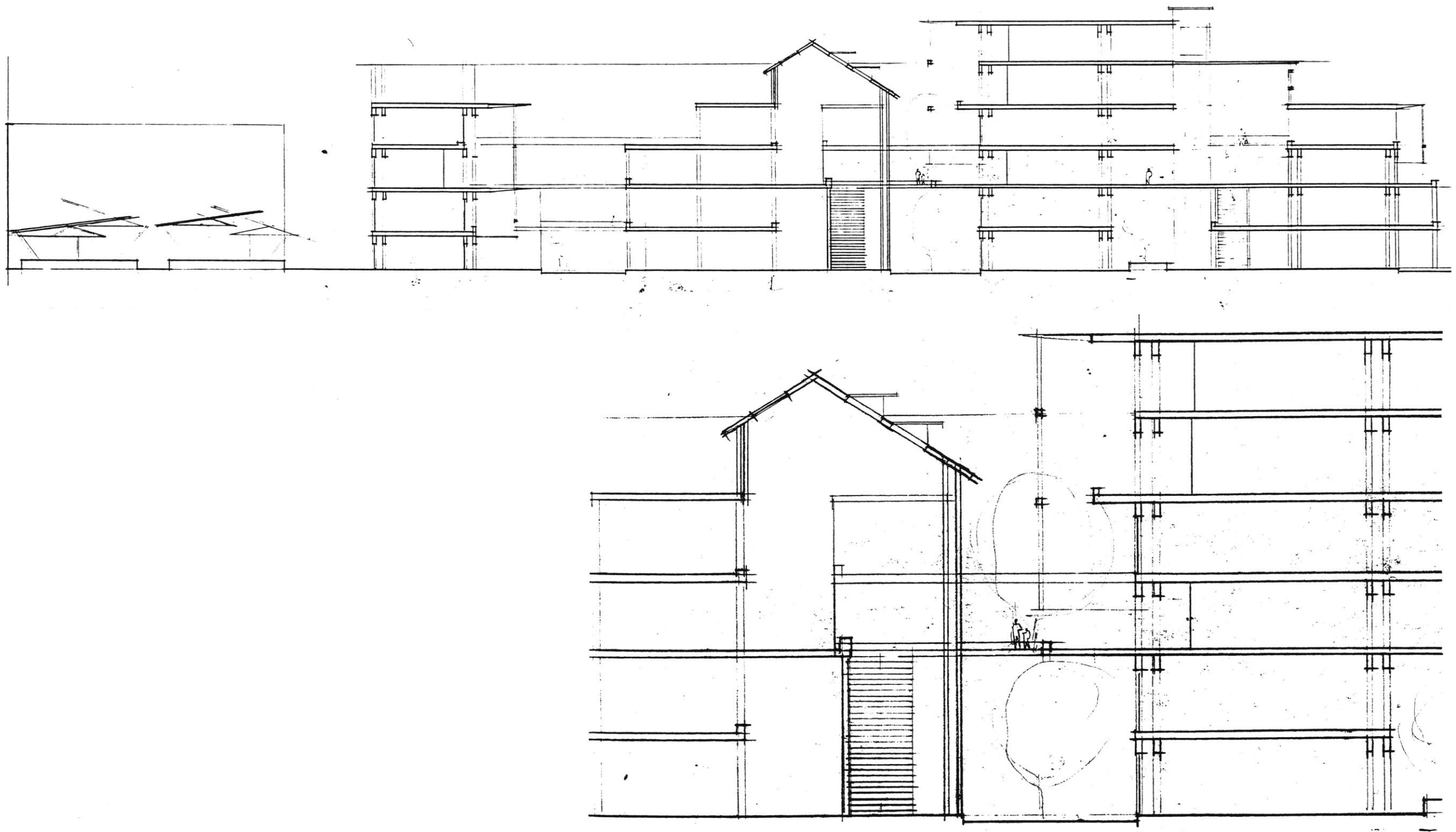


Fig. 65. Final design: transverse section through arcade and interior court.



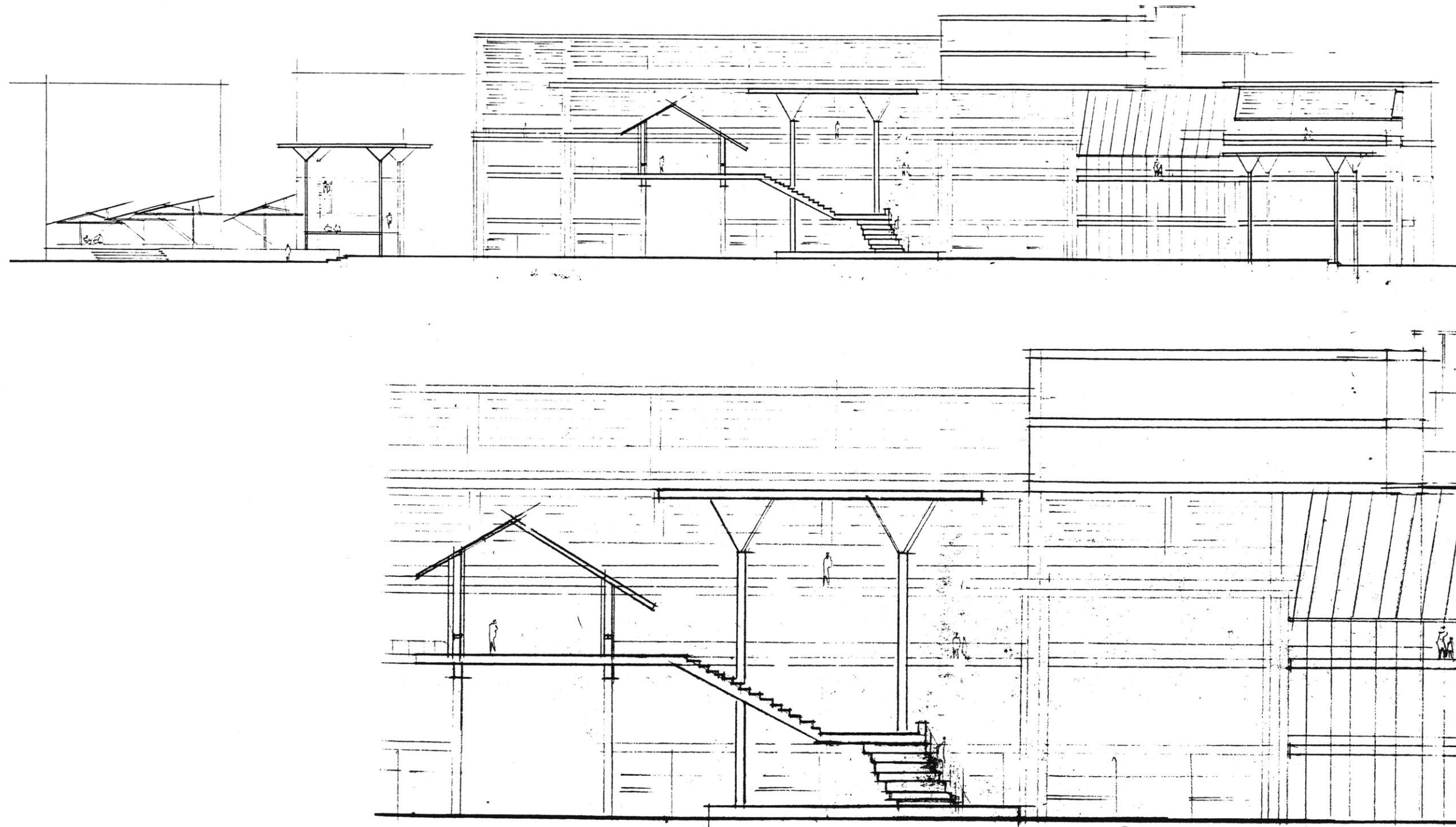


Fig. 66. Final design: transverse section showing entrance.

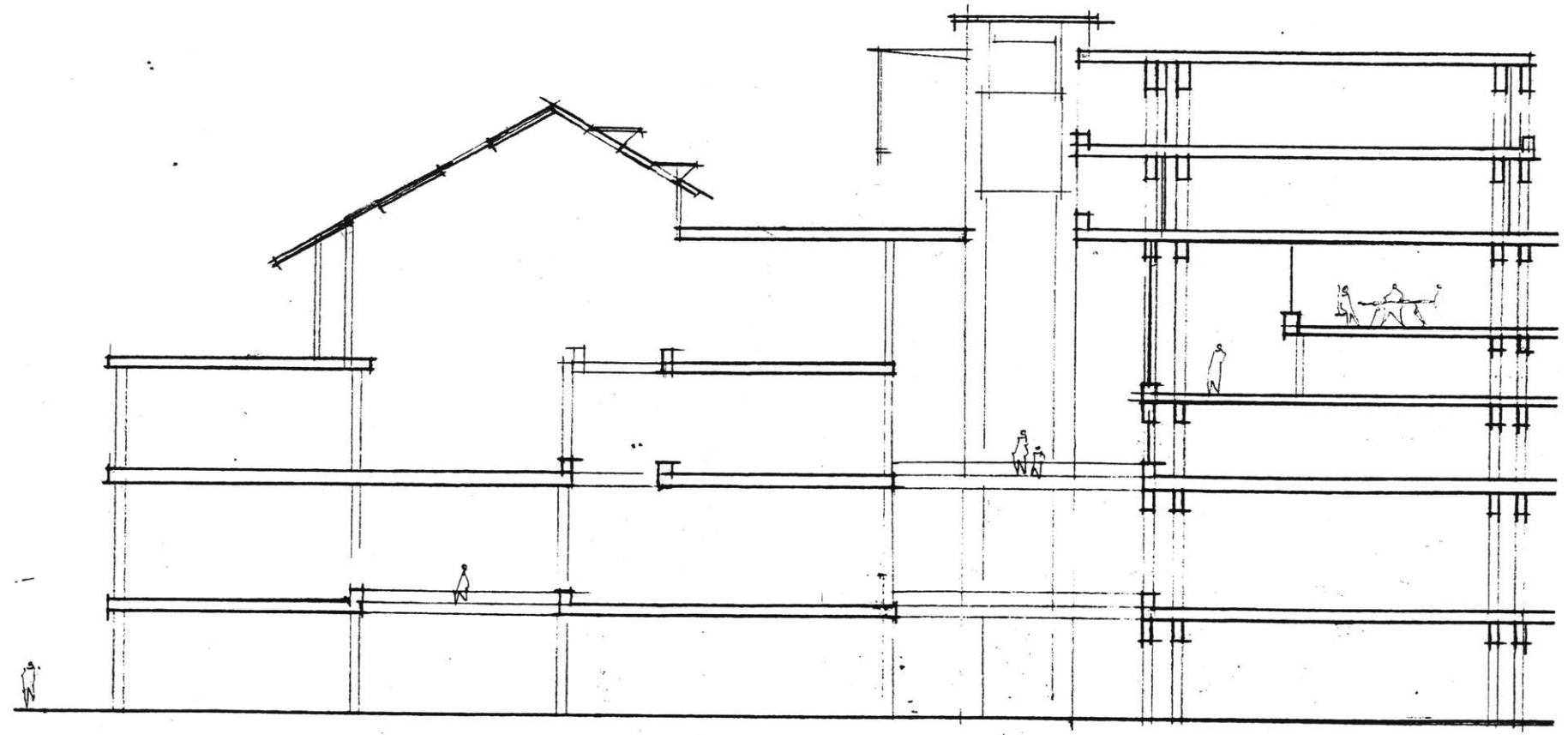
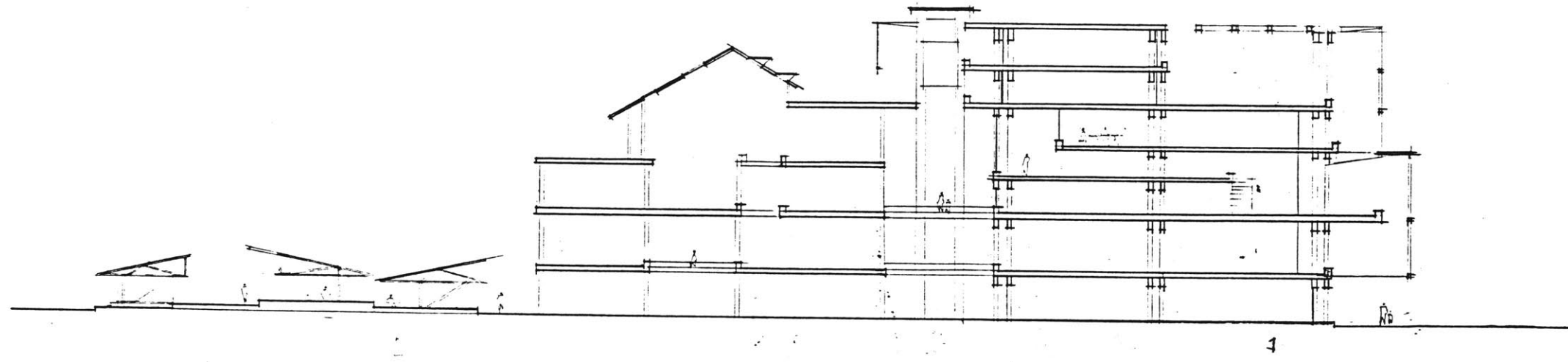


Fig. 67. Final design: transverse section showing arcade, and mall

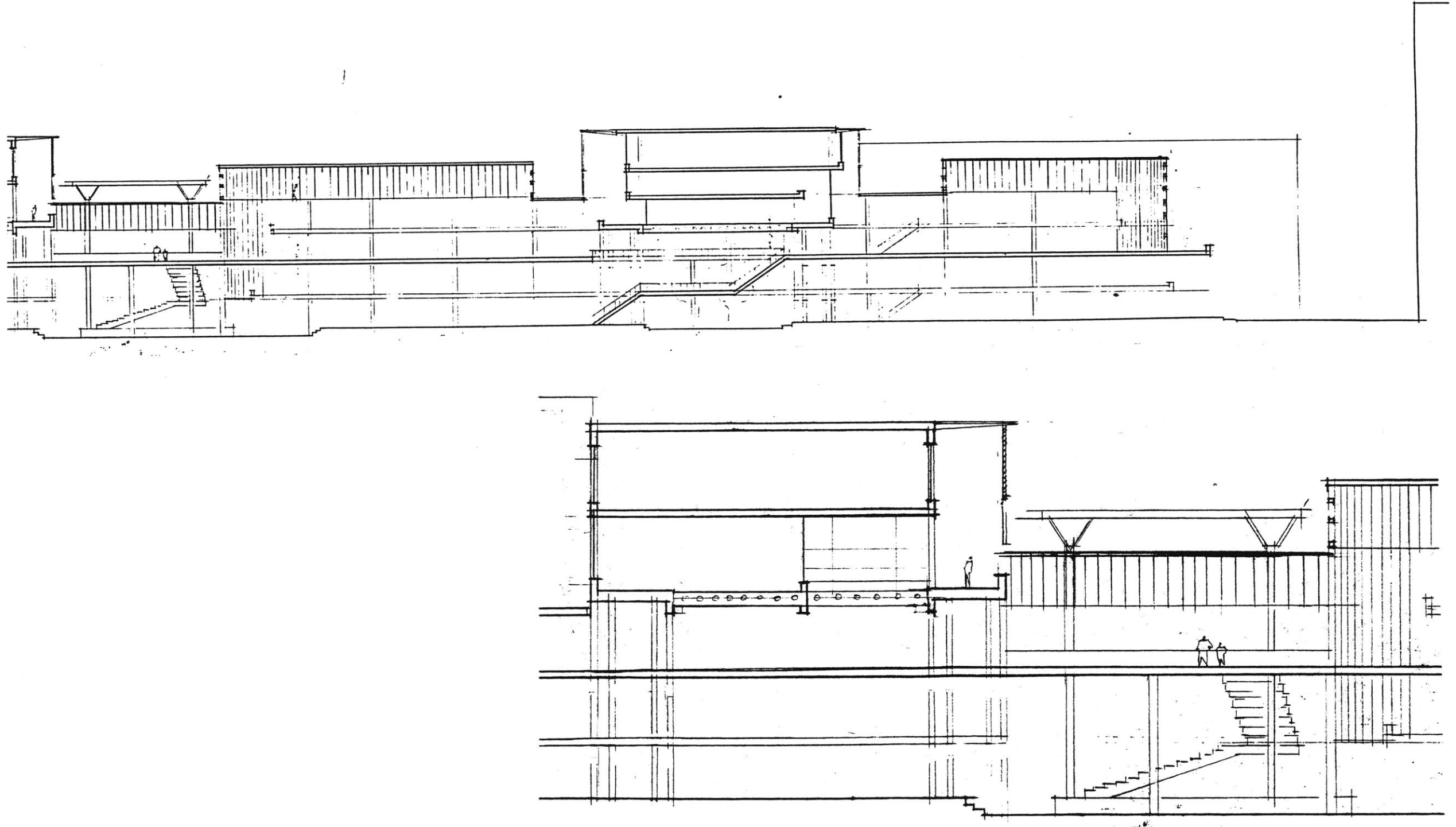
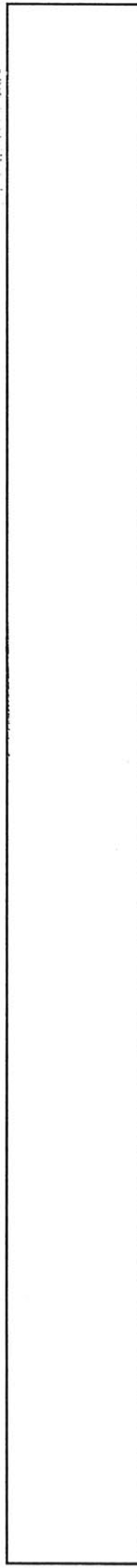


Fig. 68. Final design: longitudinal section through arcade.



## V. CONCLUSION

The thesis started out with a few questions about my city, Calcutta. Casually made, these questions were reinforced by memories and associations stretching back to childhood: memories of exciting outings to the New Market, or looking for second-hand books in the arcades along Chowringhee.

What made these places social condensers, the few parts of the city where middle class people would rub shoulders with beggars and peddlars?

To answer these questions, I have gathered some observations and arrived at a few tentative conclusions.

The bulk of this thesis was devoted to trying to think through a mesh of issues- linking architectural formation to social formation. What emerged was an understanding of the 'publicness' of a place in terms of access. Basically understood, how the built environment signals who is allowed to go where.

Especially in the Indian context, the design of access (as distinct from circulation, or accessibility) allows for real public place. This fact has been understood and incorporated into the work of many Team Ten architects. In India, the focus has been on developing an "Indian" architecture. In doing so, the past heritage of traditional buildings has been much abused. Instead of mere imagery from old palaces and temples, the thesis proposes that we take from the past a deeper understanding of how the built environment is structured.

The site chosen for the thesis was because of a love for the much maligned, much abused legacy of colonialism: its civic architecture. Many of the functioning public places in Indian cities are of the colonial times. Markets, arcades, promenades, maidans, having shed their exclusive regulations, are real public meeting grounds.

Much recent construction is that of the 'compound', locating supposedly public amenities such as shopping centers within guarded precincts. The small civil gestures of architecture- a bench to sit on, a place to rest, opportunities to mingle with different kinds of people- are not even considered, even as the class and income gap continues to widen.

Commerce has always been a generator of exchange, and will continue to be so. Unlike the west, the 'small-scale' will always be with us in India- the peddler and street vendor will not disappear, even as consumerism continues. It is when all these people are incorporated into the design thinking of architects that real public place can be constructed.

The links that the thesis investigates- between a culture, and its built environment- are far from clear-cut. Their incorporation into design requires understandings, both of how people use space, and of the design process itself. In both these areas of the thesis there are large gaps. Yet, it is hoped that the right questions have been asked, and an avenue of investigation opened, one that might last many years.

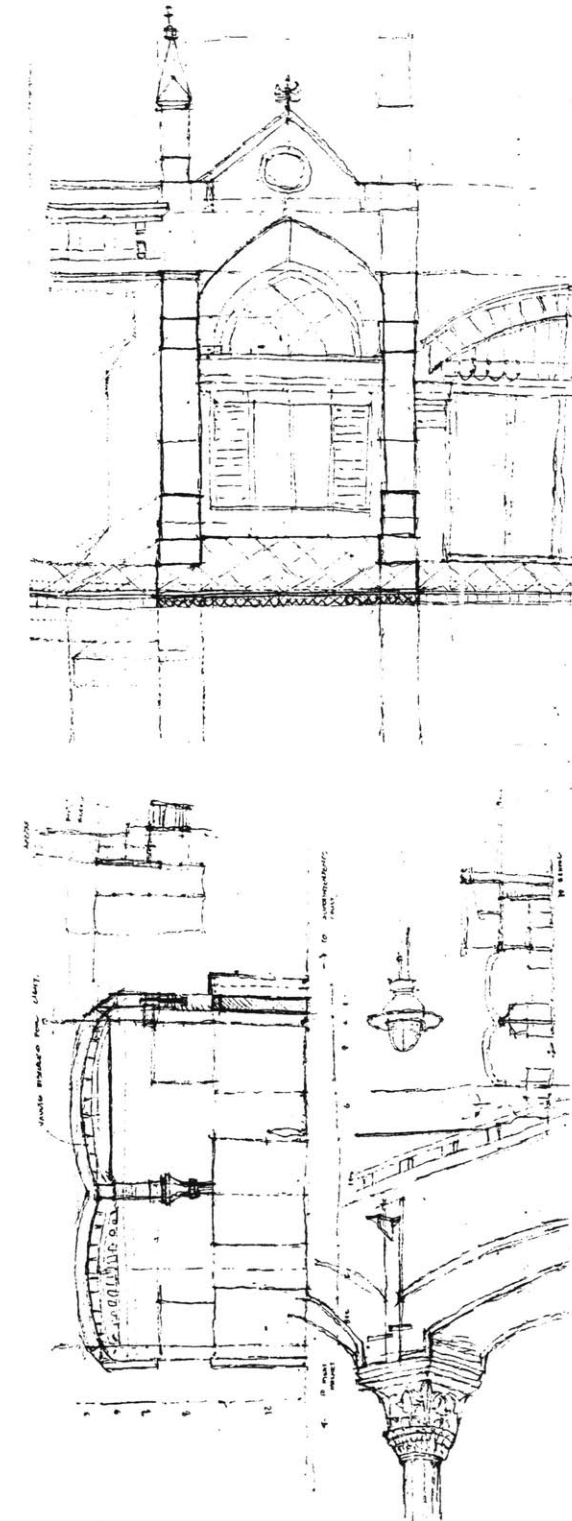


Fig. 69. Sketches of New Market.

## VI. END NOTES

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- <sup>2</sup> Bandopadhyay, A., "The Markets of Calcutta", in Gupta, B., & Chaliha, J., Eds., *Calcutta: The Living City*, Calcutta, 1987, p.117
- <sup>3</sup> Sack, Robert, *Human Territoriality: It's Theory and History*, Cambridge, 1986, dustjacket
- <sup>4</sup> Evenson, Norma, *The Indian Metropolis: A View Towards the West*, New Haven, 1989, p.122
- <sup>5</sup> *Ibid.*, p.124
- <sup>6</sup> Cotton, p.282-3
- <sup>7</sup> Evenson, p.20
- <sup>8</sup> Evenson, p.60
- <sup>9</sup> *Calcutta Corporation Handbook*, Calcutta, 1989-90
- <sup>10</sup> Evenson, p.125
- <sup>11</sup> Gupta, B., & Chaliha, J., Eds., *Calcutta: The Living City*, Calcutta, 1987, p.113-4
- <sup>12</sup> Cotton, H.E.A., *Calcutta: Old and New*, Calcutta, 1909, p.121
- <sup>13</sup> Barry, John, *Calcutta Illustrated*, Calcutta, 1950, p.71
- <sup>14</sup> Suraiya, Jug, *Rickshaw Ragtime: Calcutta Remembered*, Calcutta, 1993, p.83
- <sup>15</sup> *Websters Collegiate Dictionary*, New York, 1989
- <sup>16</sup> Sack, Robert David, *Human Territoriality: It's Theory and History*, Cambridge, 1986
- <sup>17</sup> Sack, p.19
- <sup>18</sup> *Ibid.*, p.21
- <sup>19</sup> *Ibid.*, p. 26
- <sup>20</sup> *Ibid.*, p.23
- <sup>21</sup> *Ibid.*, p.46
- <sup>22</sup> *Ibid.*, p.37
- <sup>23</sup> Hertzberger, Hermann, *Lessons for Students in Architecture*, Rotterdam, 1991, p.192
- <sup>24</sup> *Ibid.*, "Building Order", p.126
- <sup>25</sup> *Ibid.*, "Form as an Instrument", p.171
- <sup>26</sup> *Ibid.*, "Private claims on public space", p.40
- <sup>27</sup> *Ibid.*
- <sup>28</sup> *Ibid.*, "Public Works Concept", p.47
- <sup>29</sup> Hertzberger, Hermann, *Lessons for Students in Architecture*, Rotterdam, 1991, p.196
- <sup>30</sup> Steirlin, Henry, Ed., *Islamic India*, Lausanne, 1973, p.134

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All images by author unless otherwise noted

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