EXPLORATION: URBAN THREE DIMENSIONAL REAL ESTATE

by

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Signature of Author _____

Certified by _____

Thesis Supervisor

Accepted by _____

Chairman, Departmental
Committe on Graduate Students

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May 12, 1972

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Faustine

...The shameless nameless love that makes
Hell's iron gin
Shut on you like a trap that breaks
The soul, Faustine.

And when your veins were void and dead,
What ghosts unclean
Swarmed round the straitened barren bed
That hid Faustine?

What sterile growths of sexless root
Or epicene?
What flower of kisses without fruit
Of love, Faustine?

What adders came to shed their coats?
What coiled obscene
Small serpents with soft stretching throats
Caressed Faustine?

But the time came of famished hours,
Maimed loves and mean,
This ghastly thin-faced time of ours,
To spoil Faustine.

You seem a thing that hinges hold,
A love-machine
With clockwork joints of supple gold
No more, Faustine...

Swinburne

To My Mother

Acknowledgements

I wish to thank my thesis advisor, Professor Maurice Smith, for his assistance in this project, and Professor Waclaw Zalewski for his helpful suggestions.

Special thanks go to Sylvia Fung Landy for typing.

Exploration: Urban Three Dimensional Real Estate

Joseph P. Schippert

Submitted to the Department of Architecture on 12 May 1972 in partial fulfillment of the requirements for the degree of Master of Architecture.

This project is a suggestion for making the city more liveable. The goal of the project is a three dimensional organization of built form which is to be added several levels above an existing urban environment. More specifically, the organization of built terrain provides a set of building references that allows and encourages a wide range of choices and decisions to be made about the environment at the local level. The natural terrain is the primary reference for all building directly on the land. By analogy, the large scale built terrain is the primary reference for employing a variety of building methods to define human activity space above an existing urban landscape.

Thesis Supervisor: Maurice Smith

Title: Professor of Architecture

BACKGROUND

The major characteristics of building up and over a built urban area can be grouped into three general categories. Hard boundaries do not separate these characteristics but they tend to focus into families of effects. They are, first, the effects of building for human use at an absolute vertical dimension above grade that destroys direct physical contact with the ground and ground level life. Second, the effects of juxtaposing a projected physical situation above a functioning urban area. Third, the effects of accepting the city as it now exists as a living, growing organism that both resembles and contrasts with the natural landscape. These three characteristics are seen as both opportunities to be exploited and constraints to be observed.

The most obvious positive result of severing continuous access to the ground is the elevated urbanite's reprieve from the more obnoxious aspects of the automobile. The relief from undiffused automobile generated poisons is symptomatic but substantial. The elevated pedestrian environment is liberated from the system of organization based on a compromise of pedestrian and vehicular valves without requiring an immediate shift in general vehicular movement patterns. A three dimensional distribution of semi-public spaces built for human use, related in a variety of ways to each other and to more private and more public spaces, provides an alternative to pedestrian use of the ground without destroying the value of what exists.

A second result of leaving the ground is the freedom to organize urban dwelling settlements volumetrically instead of linearly. A system of air rights including the functional, structural, cultural and legal requirements of proposed volumetric zones would replace the rigid code based on the 20 by 100 foot parcel serviced by the all-purpose street. Instead of minimum square footage requirements that sanction the closest packing arrangements that are incapable of responding to the unpredictable growth patterns of a city, a comprehensive set of agreements would be based on the fact that the human is a fully spatial being. As such, the anticipated limits of his need to grow and change in the highly socialized atmosphere of the city would be generated by a careful analysis of his requirements in three dimensional terms.

A third result of vertical separation from the ground is that the ground itself becomes less of a commodity. By allowing the option of building habitable space which is not necessarily a uniform growth from the ground up, decisions about the use of the urban ground surface have achieved an additional degree of freedom. Build on it, leave it alone, return it to its natural state, or form it in whatever way is most appropriate for human use. That land is a commodity for the parasitic real estate broker to transfer from bank account to bank account is monstrous. Expanding the relationships between ground and built form to include the maximum number of possibilities is an attack on the monster.

The second major group of implications of building above an urban use area deal with the relationships between the projected physical organization and the existing urban development. A large body of work has already been projected to utilize the space over and under different types of use terrain. Yona Friedman's spatial village has been projected over large areas of cities as diverse in character as Paris and Tunis; over the freeways of Los Angeles; and as a bridge between continents across the straights of Gibraltar. The metabolists have Tokyo floating out over Tokyo Bay towards the rising sun. Paul Maymont has hidden a douze (12) kilometer strip of Paris underneath the Seine. An adequate treatment of any one proposal is beyond the scope of this project. However, the diverse work has in common the attribute of proposing a scale of development that would require an enormous initial investment of physical resources before any return in terms of useable environment would be realized.

It is apparent that urban residential districts--mixed, juxtaposed, and overlapped with existing industrial, commercial, educational and transportation use areas would add new meaning to all those areas in terms of reducing the formal separation between the dwelling and the work space. The alienation of a large number of American workers from their work is to some extent expressed physically by the radical separation

of dwelling and living space from working space. While it is not clear how the complex problem of mass alienation would be affected by a closer physical organization of living and working space, investigation in this direction is suggested.

The third group of issues implied by adding built form above a developed urban area refer to the question of the scale of the projected addition, and the formal implications of the urban landscape as a whole upon the actual physical definition of the built addition.

The scale of this project derives from converging factors setting rough upper and lower boundaries. The row house, taken as architypal Boston area housing, defines an approximate lower figure for scale. The long dimension of a Back Bay lot, approximately 100 feet, is accepted as a figure for horizontal span that would allow deployment of vertical members at intervals that would allow a maximum continuity in the existing residential urban neighborhood. The architypal row house again served as an approximate basis for dwelling density. An extravagant figure of one hundred dwelling units to the acre for a continuous wall of 20 foot wide four story walk-ups, 3 bedrooms to the unit , is reached by considering only the land of the building lots themselves. One hundred units to the acre is beyond the highest density to be realized in walk-up housing in the Boston area, but this figure is an accept-

able approximate goal, since both the built organization above the row house wall and the row housing itself rely on the same street system for vehicular servicing. The upper limit on the scale of this project is on the order of one city block. This figure is an extension of the existing subdivision of the city into the context of the projected three dimensional built addition.

The city block scale has two advantages. First, it suggests comparisons between the existing and the projected. Second, it is small enough that it avoids the problems of delayed environmental return incurred by the city scaled projects mentioned above.

The final point to be made concerns the city as a landscape. The single most important natural building reference available in the city is the sun. Poetically and practically, the sun is the link between the most absurd urban condition and the natural life of the organic.

WORK

The main emphasis throughout this project has been on physical organization rather than on social organization. A complete proposal would fully examine all aspects of the projected environment -- physical and non-physical. The working principle throughout this project has always been that activity and use derive from form.

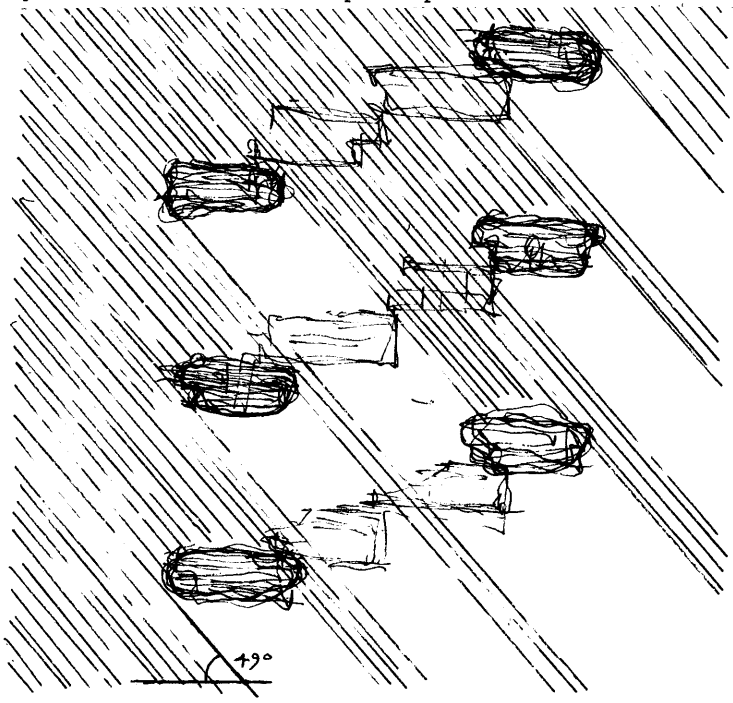
Although the general goals for this work have remained constant, the experimental nature of this project has meant that , at any stage, work on one aspect of a problem has necessarily been at the expense of effort that could have been spent on a wide range of other aspects. The entire body of work should be viewed as a progression of alternatives, the later work being, hopefully, preferable to, but not exclusive of the earlier.

The drawings are the end product of continuous effort directed at the complex set of issues sketched in the preceeding portion of this paper. Therefore, the drawings must speak for themselves. The following is a brief guide to the drawings.

The first part of the work is the development on what is basically a large post and beam framework. The components are shown in figures 1-5. Figure 6 shows a pedestrian superhighway. Figures 7 through 10 shows the partial definition of a spatial field using a

lightweight lineal framework system. Figure 11 shows the first test of the system on a hypothetical site.

A volumetric zone of 60 feet by 100 feet by 50 feet is defined by the large scale post and beam framework. Each zone supports somewhere around 15,000 sq. feet of enclosed space. The advantages of the general scheme at this stage centered around the large amount of continuously available sunlit open space in the built environment.



SECTION TO THE WEST

SOLAR ALTITUDE AT BOSTON'S LATITUDE IS 49° AT NOON, 21 MARCH AND 21 SEPTEMBER

In figure 12, the building zone tends to be less fixed to the morphology of the tilted ring. Figure 13 is the testing of the building methods on a hypothetical site.

Figures 14, 15, and 16 are the result of effort to include spaces of a more public scale to the projection. The space truss is used for its habitable dimensions and its fitness to accommodate a variety of projected concentrated loads. The philosophy behind its use is not related to any theory of filling space with structure, but rather to using space and structure in accord with human needs. These public spaces form a use connection between selected ground areas and the projected residential territory.

Figures 17 through 20 are an attempt to organize habitable space, structure, mechanized transport, and enclosure in a volumetric zone related to a habitable three dimensional vertical definition.

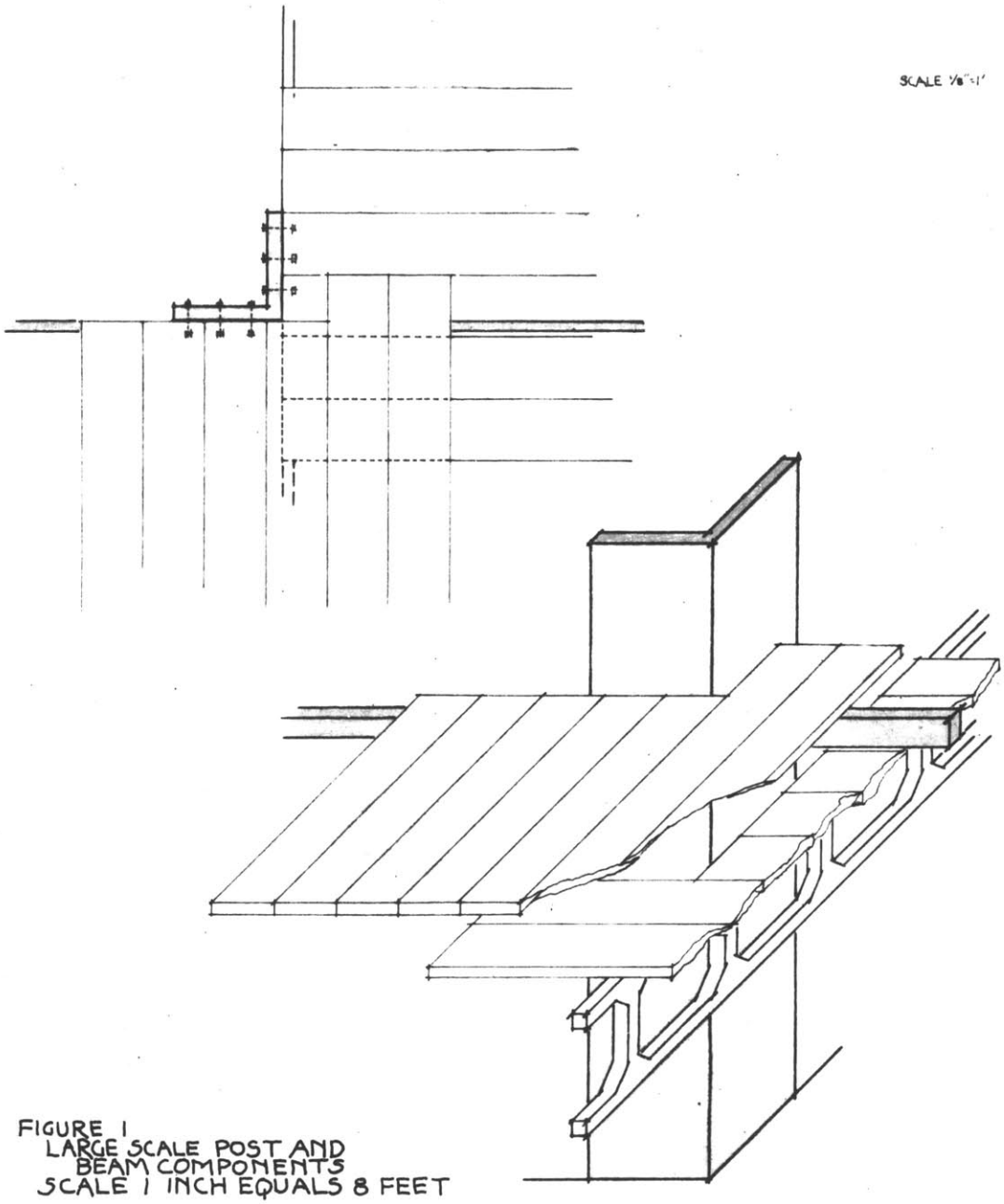


FIGURE 1
LARGE SCALE POST AND
BEAM COMPONENTS
SCALE 1 INCH EQUALS 8 FEET

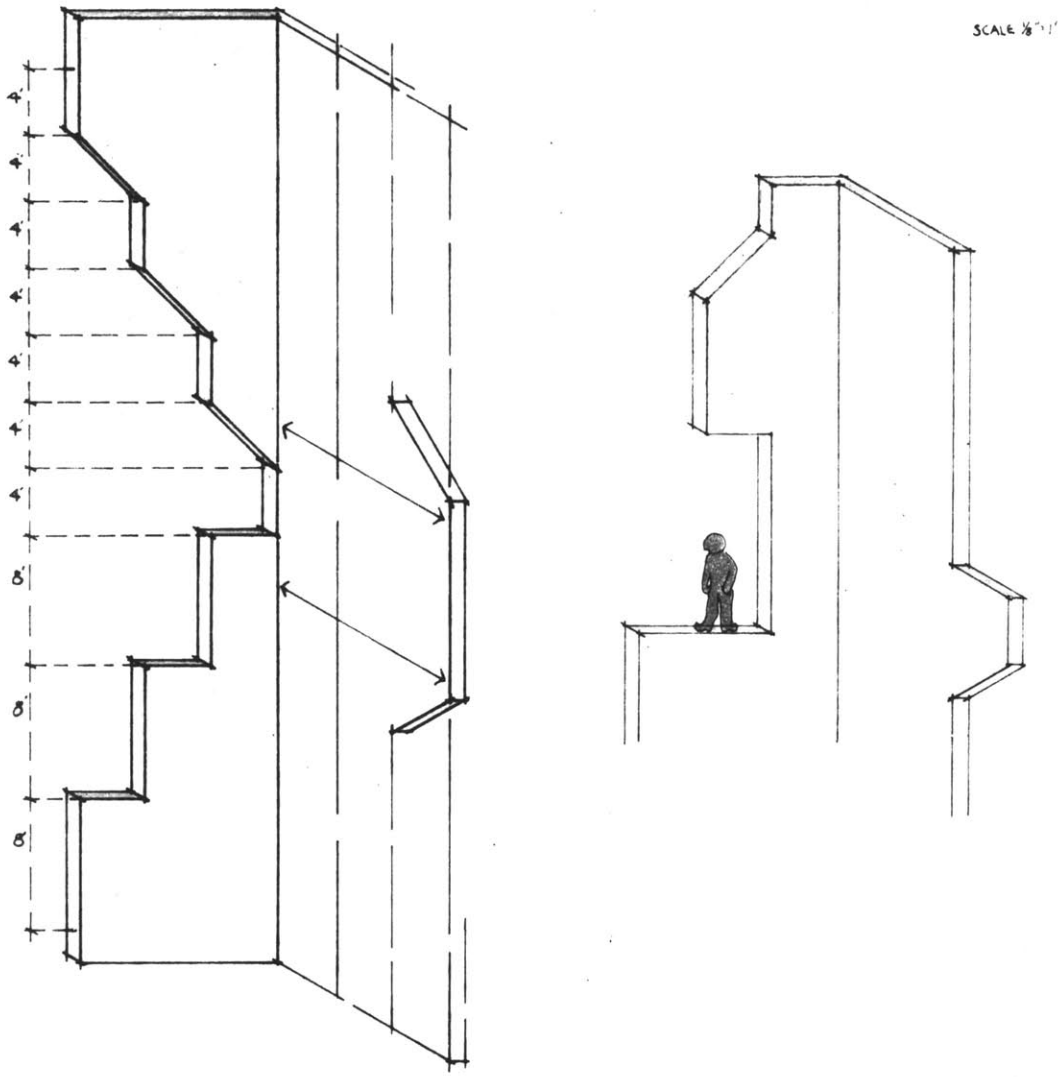


FIGURE 2
DEVELOPMENT OF VERTICAL MEMBER
SCALE 1 INCH EQUALS 8 FEET

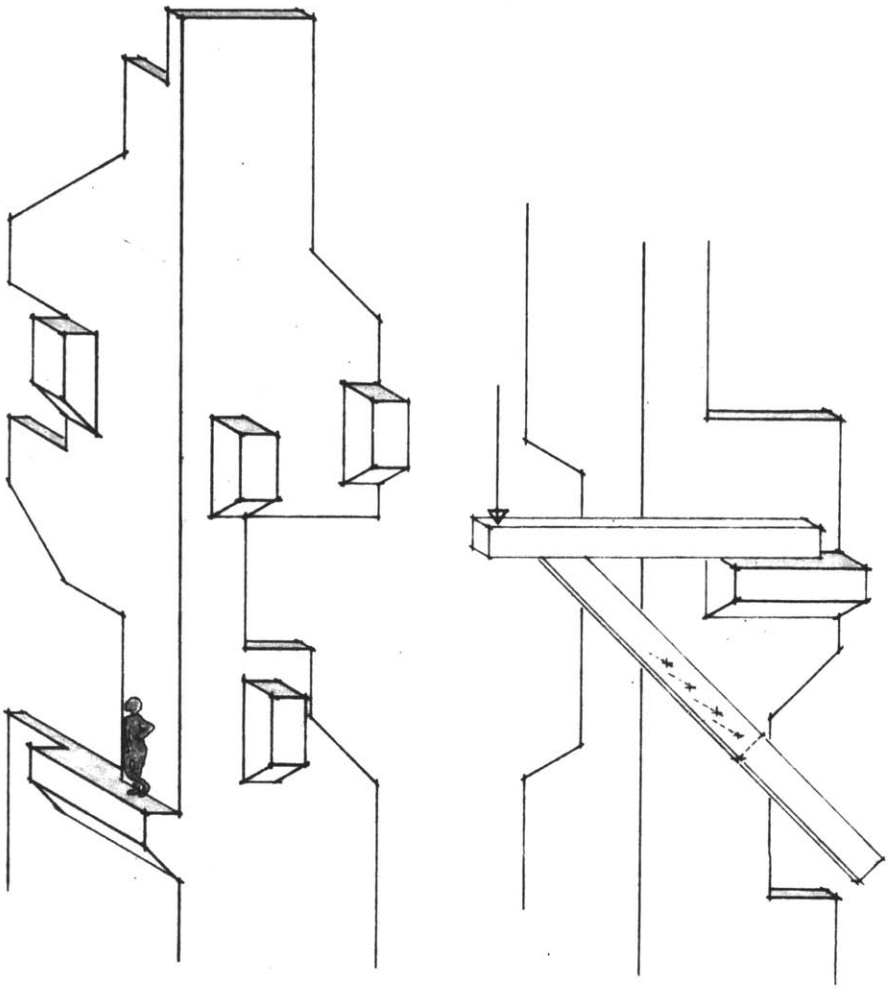


FIGURE 3
DEVELOPMENT OF VERTICAL MEMBER
SCALE 1 INCH EQUALS 8 FEET

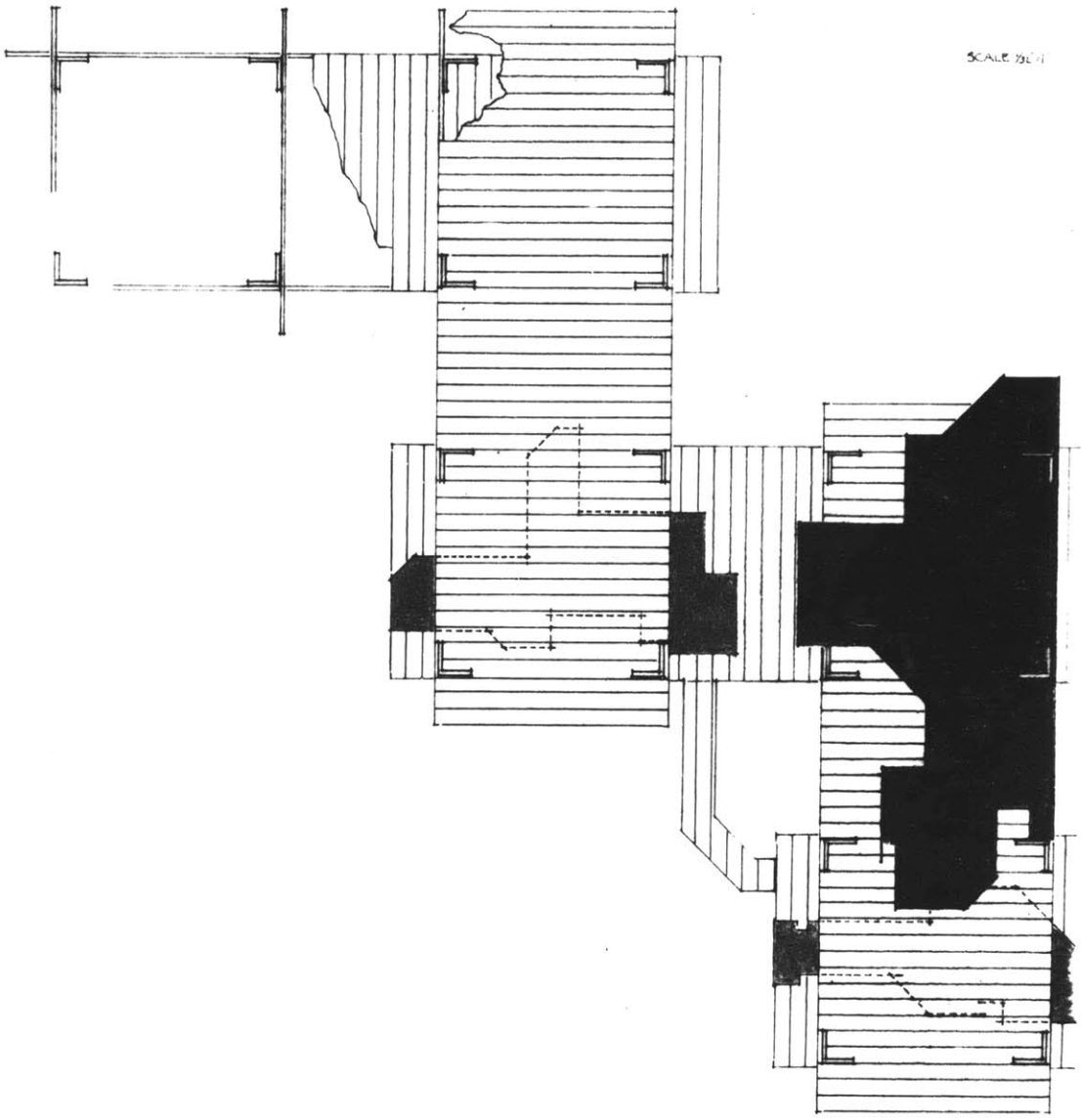


FIGURE 4
DEPLOYMENT OF BAYS
SCALE 1 INCH EQUALS 32 FEET

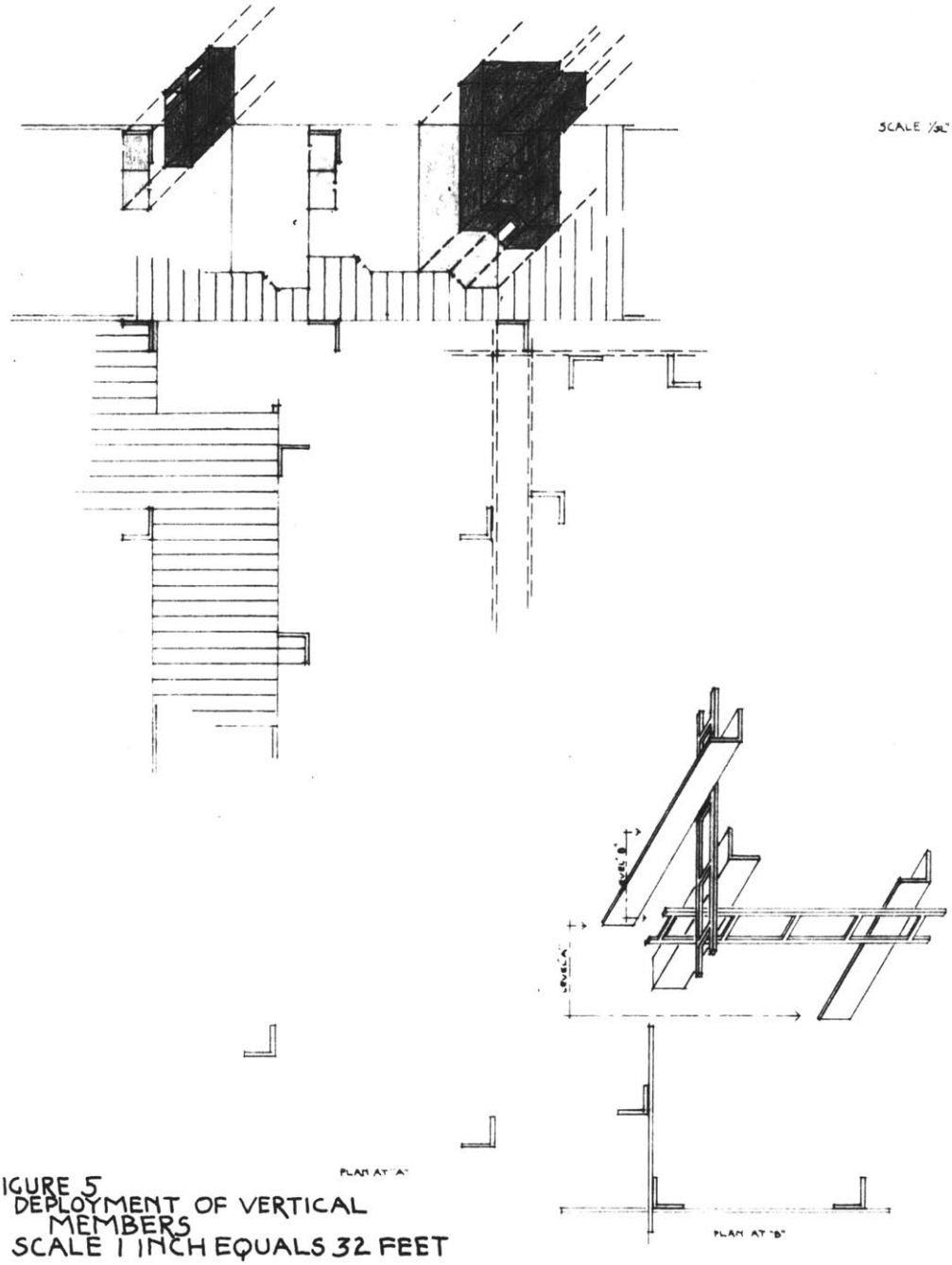


FIGURE 5
DEPLOYMENT OF VERTICAL MEMBERS
SCALE 1 INCH EQUALS 32 FEET

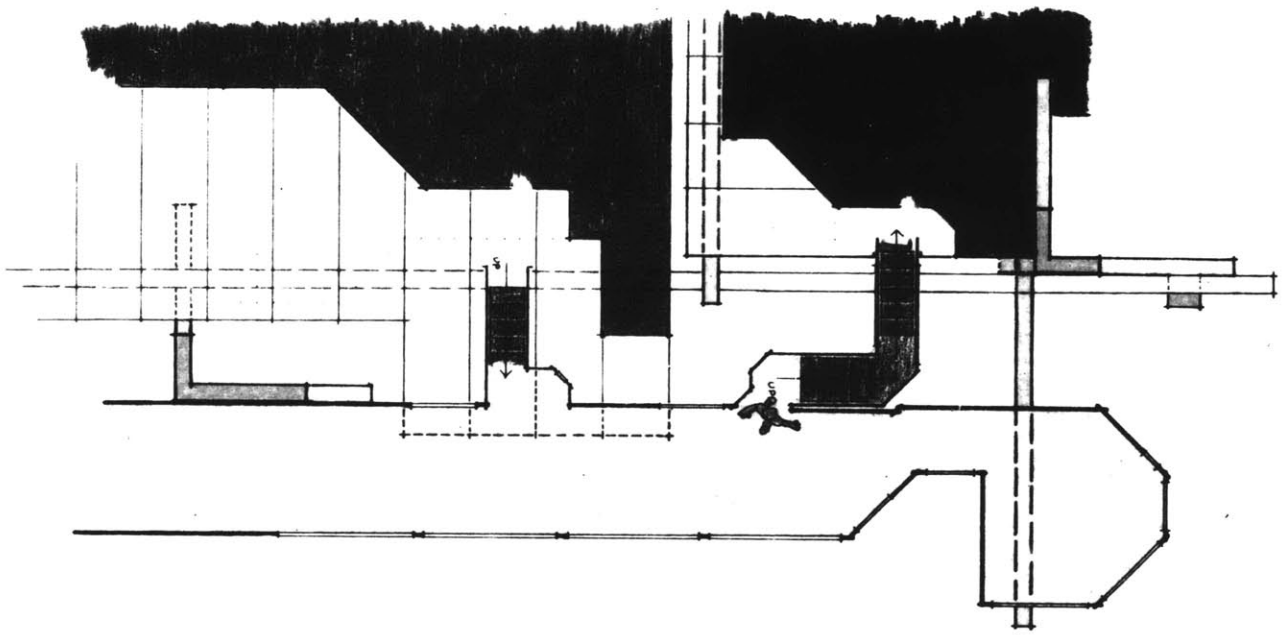


FIGURE 6
LONG SPAN HORIZONTAL MEMBER
SCALE 1 INCH EQUALS 8 FEET

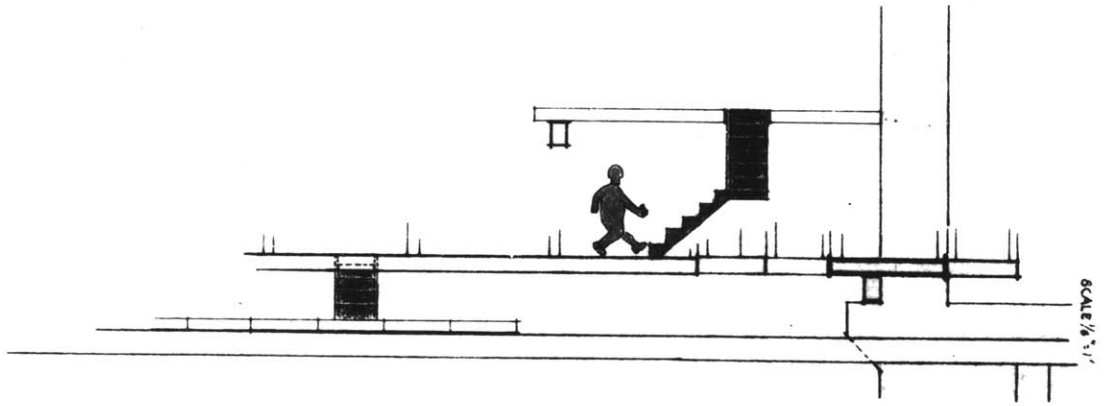


FIGURE 7
PARTIAL VIEW
SCALE 1 INCH EQUALS 8 FEET

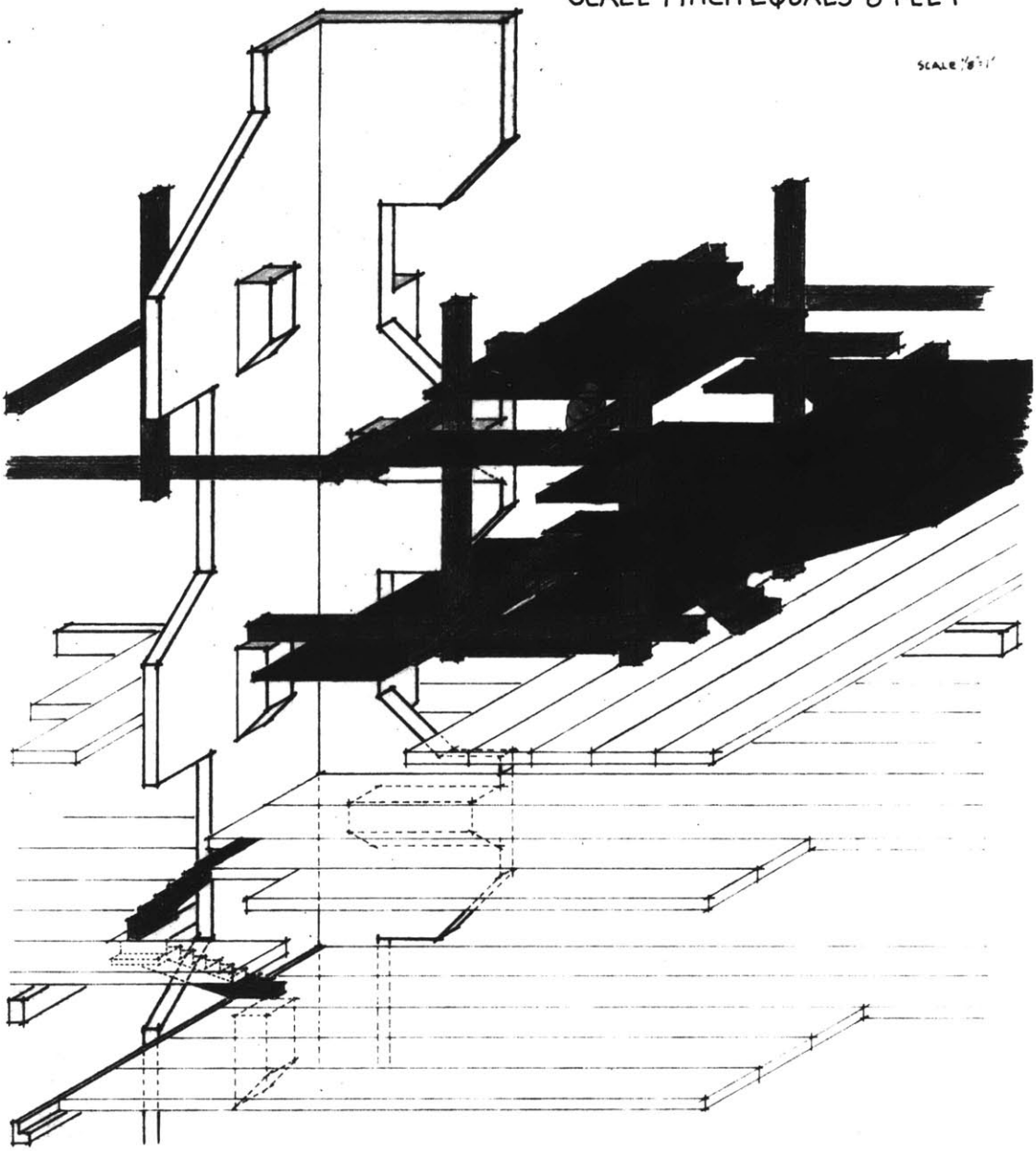


FIGURE 8
PARTIAL DEFINITION OF USE-SPACE
SCALE 1 INCH EQUALS 16 FEET

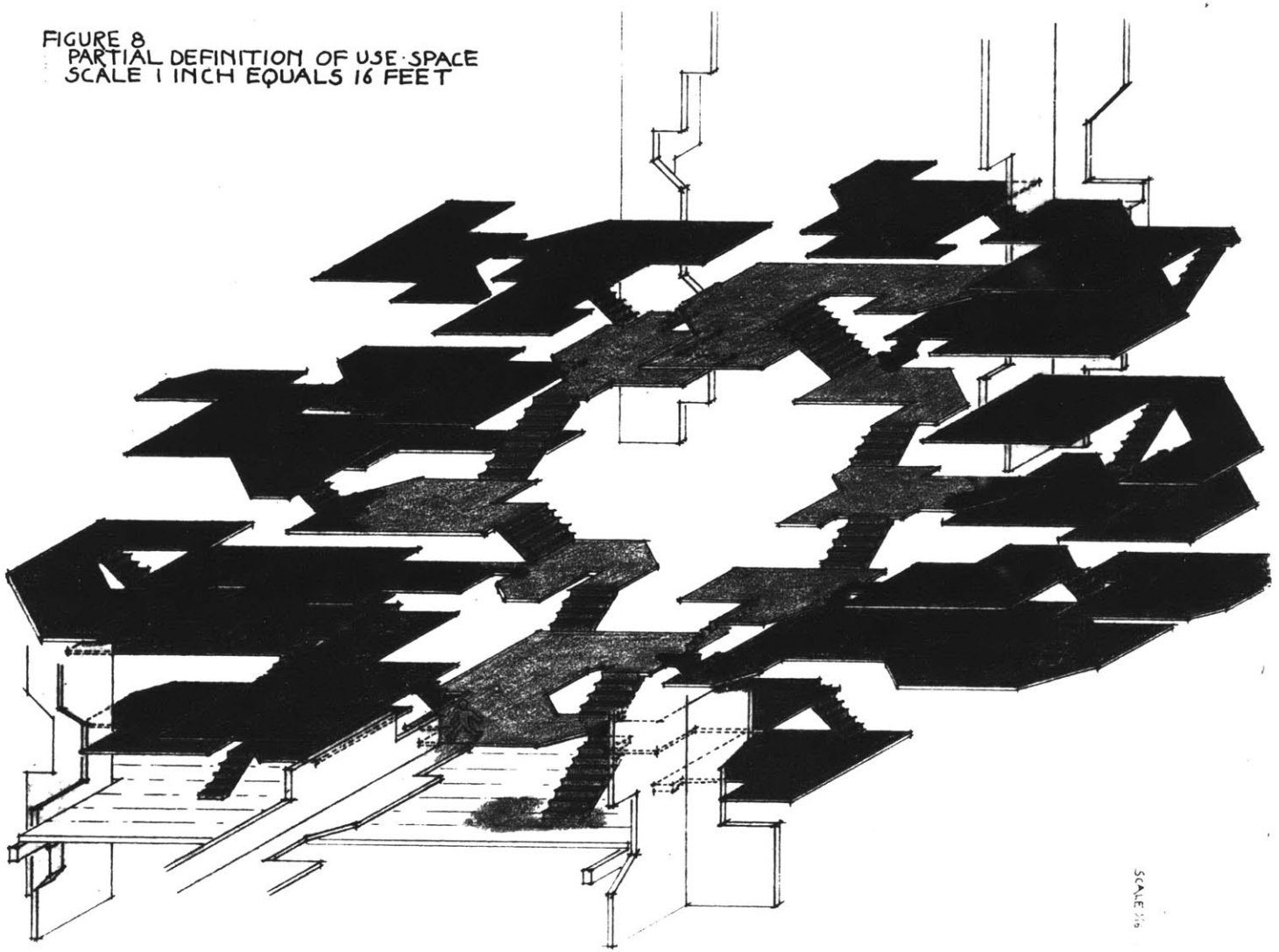
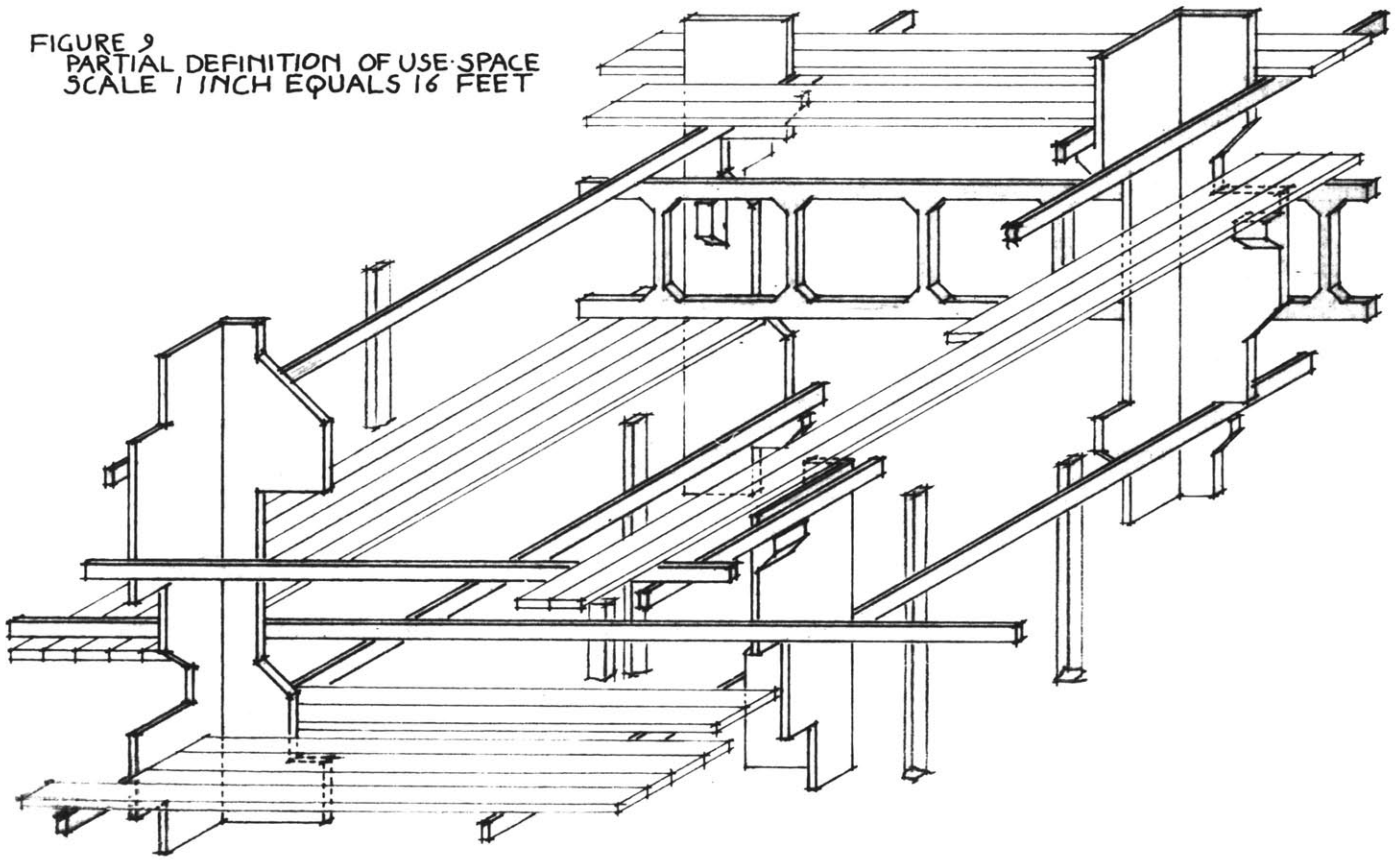


FIGURE 9
PARTIAL DEFINITION OF USE SPACE
SCALE 1 INCH EQUALS 16 FEET



SCALE 1/16"=1'

FIGURE 10
PARTIAL DEFINITION OF USE-SPACE
SCALE 1 INCH EQUALS 16 FEET

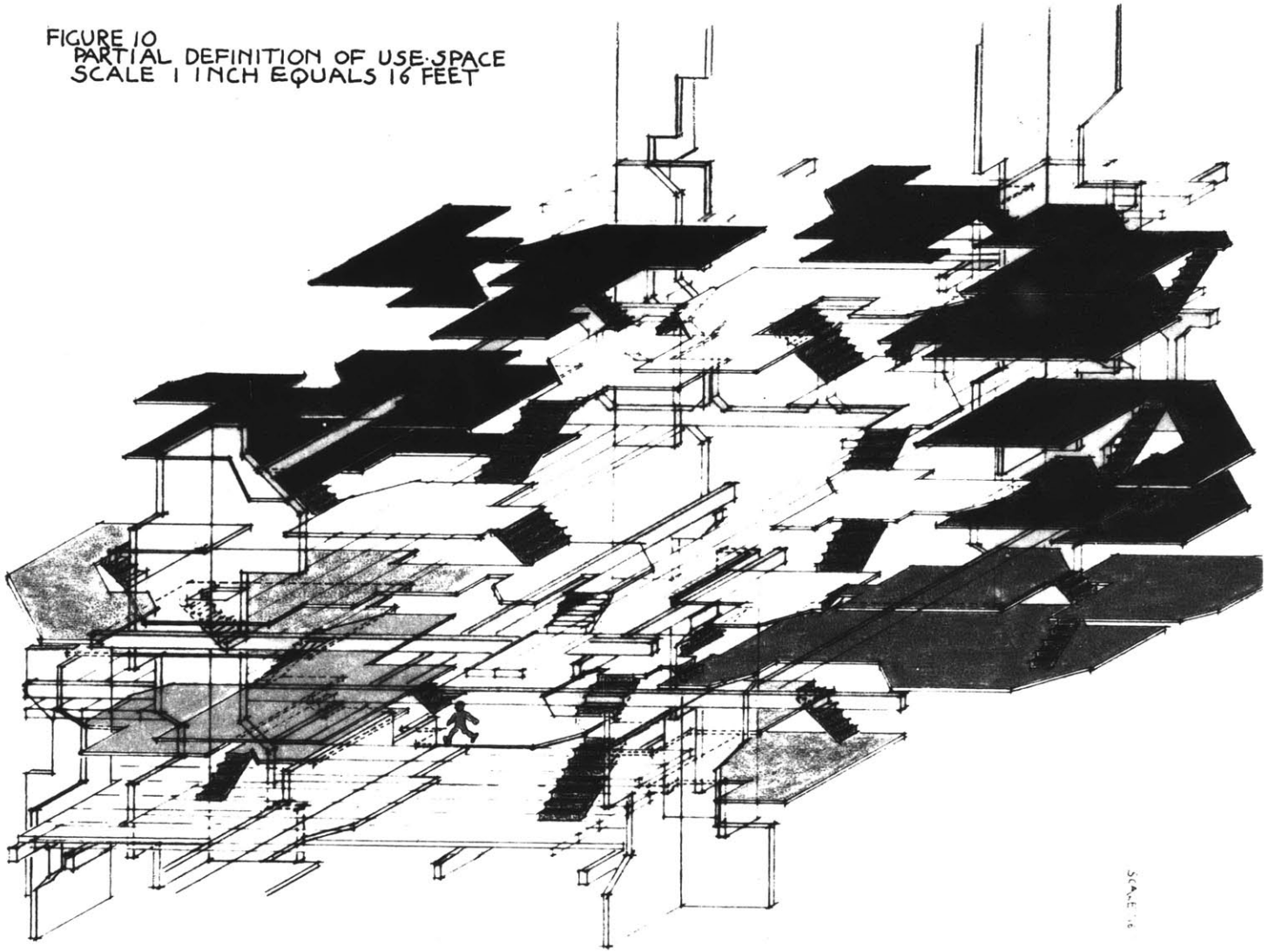
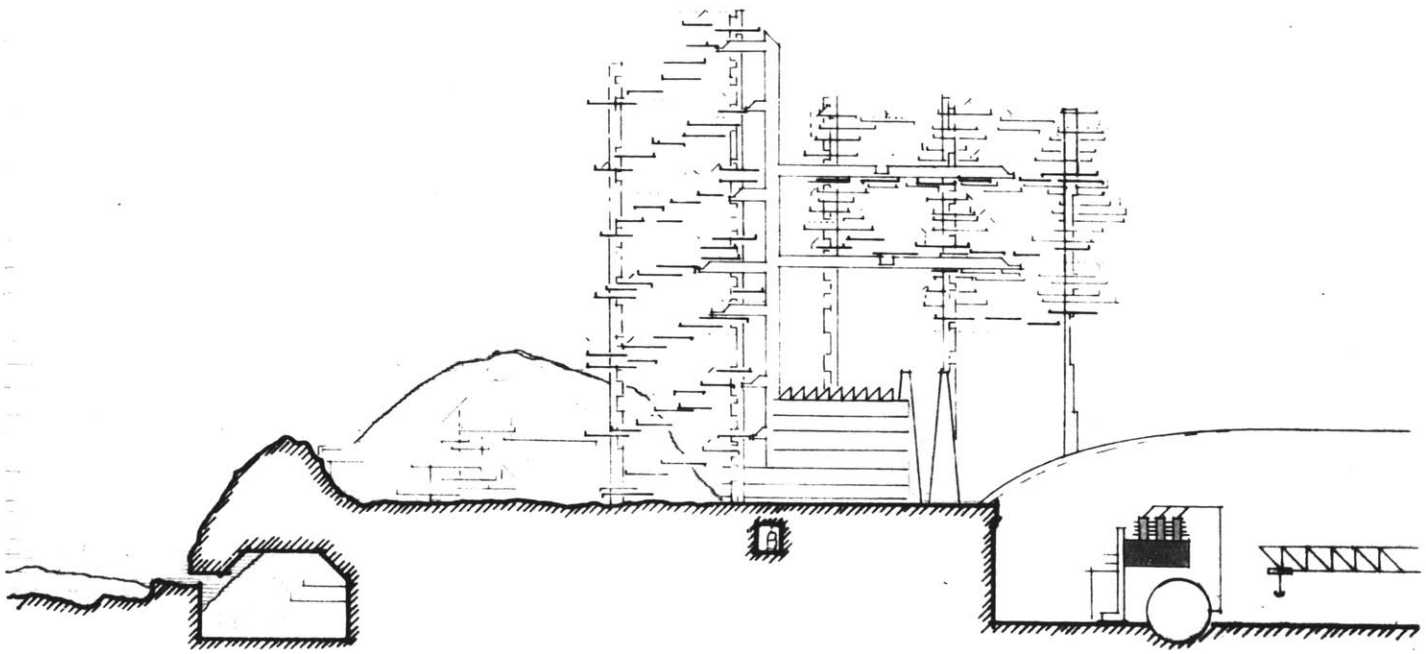


FIGURE 11
SECTION
SCALE 1 INCH EQUALS 100 FEET



SCALE 1/100 APPROX

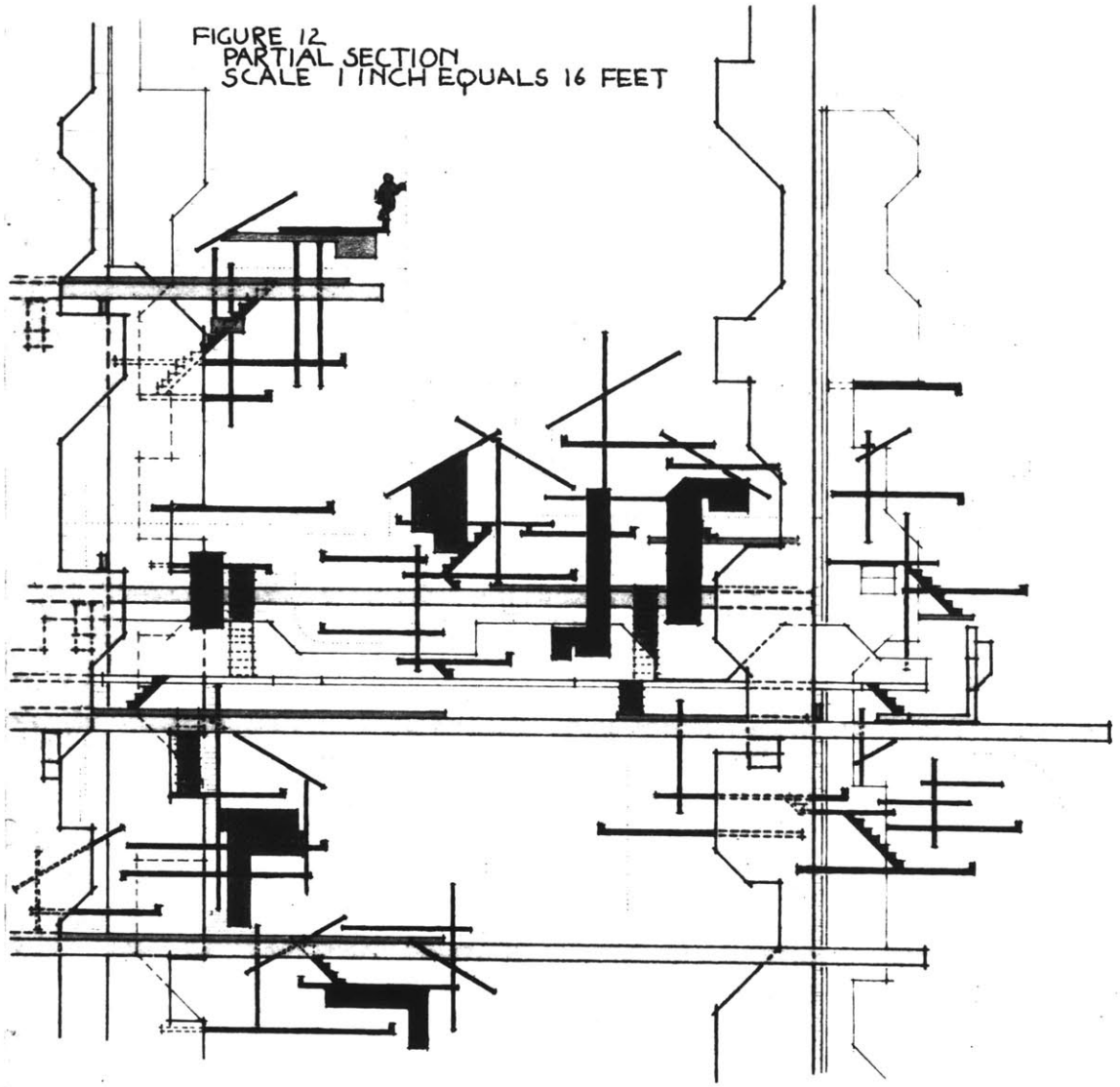
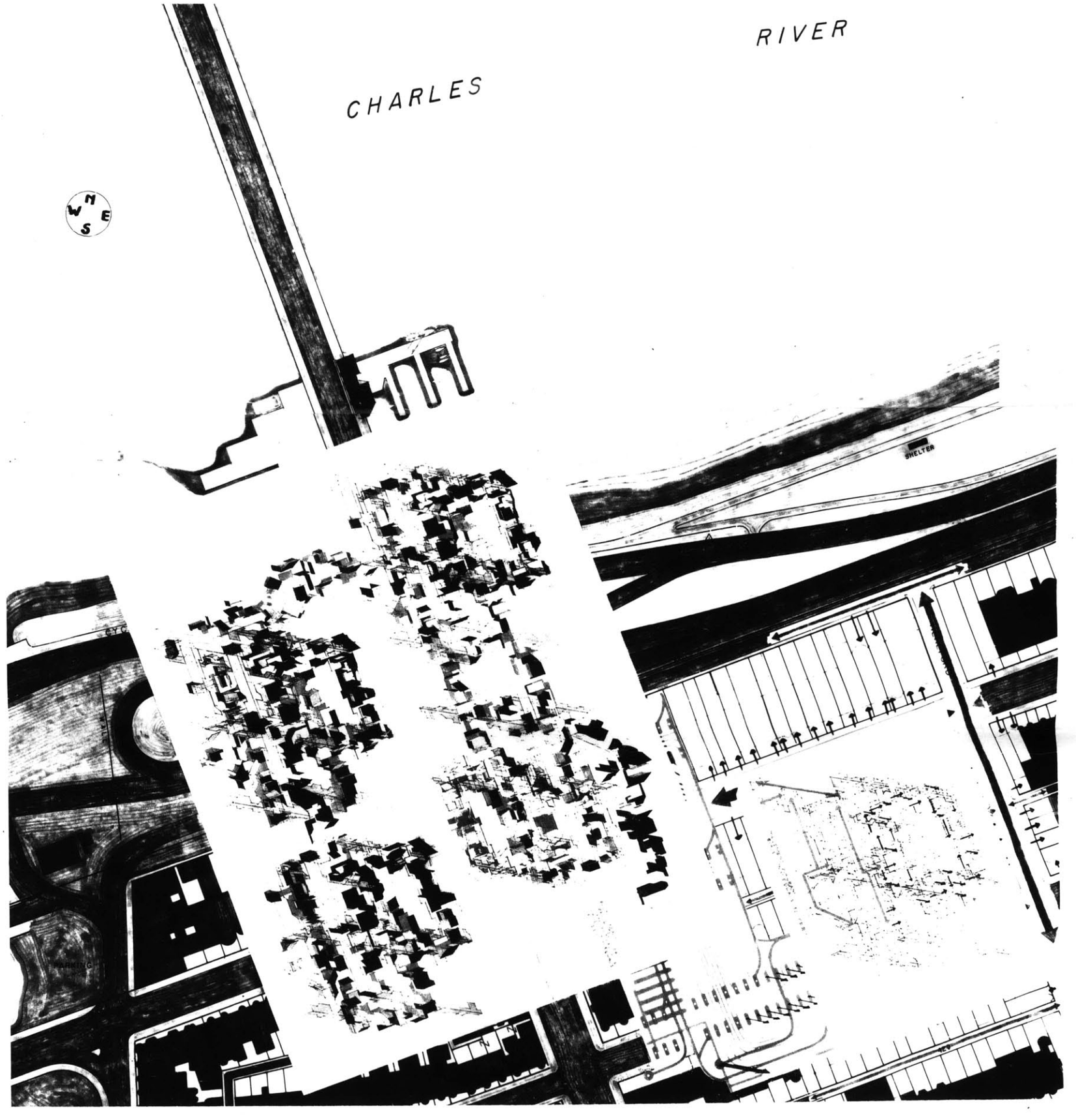


FIGURE 12
PARTIAL SECTION
SCALE 1 INCH EQUALS 16 FEET



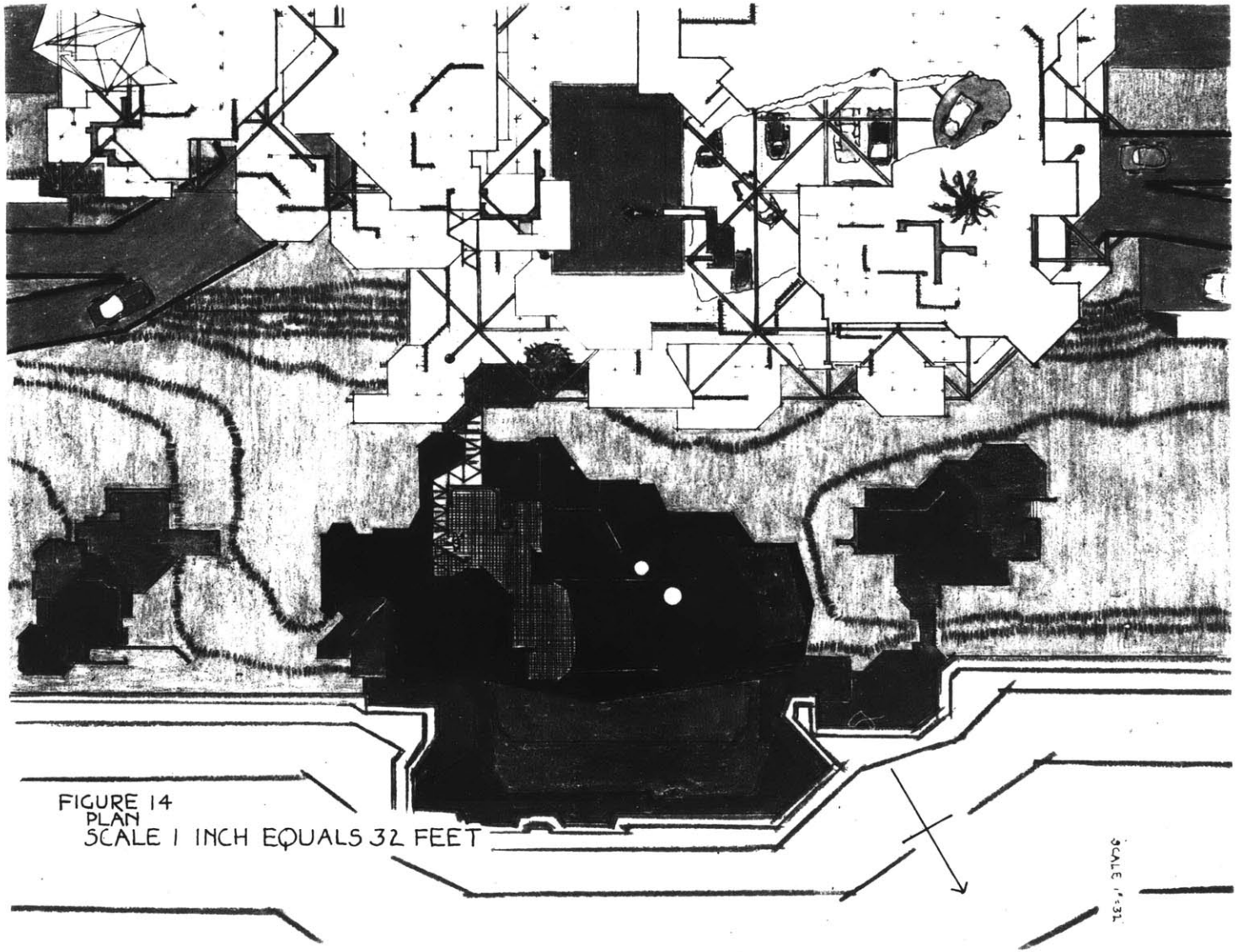


FIGURE 14
PLAN
SCALE 1 INCH EQUALS 32 FEET

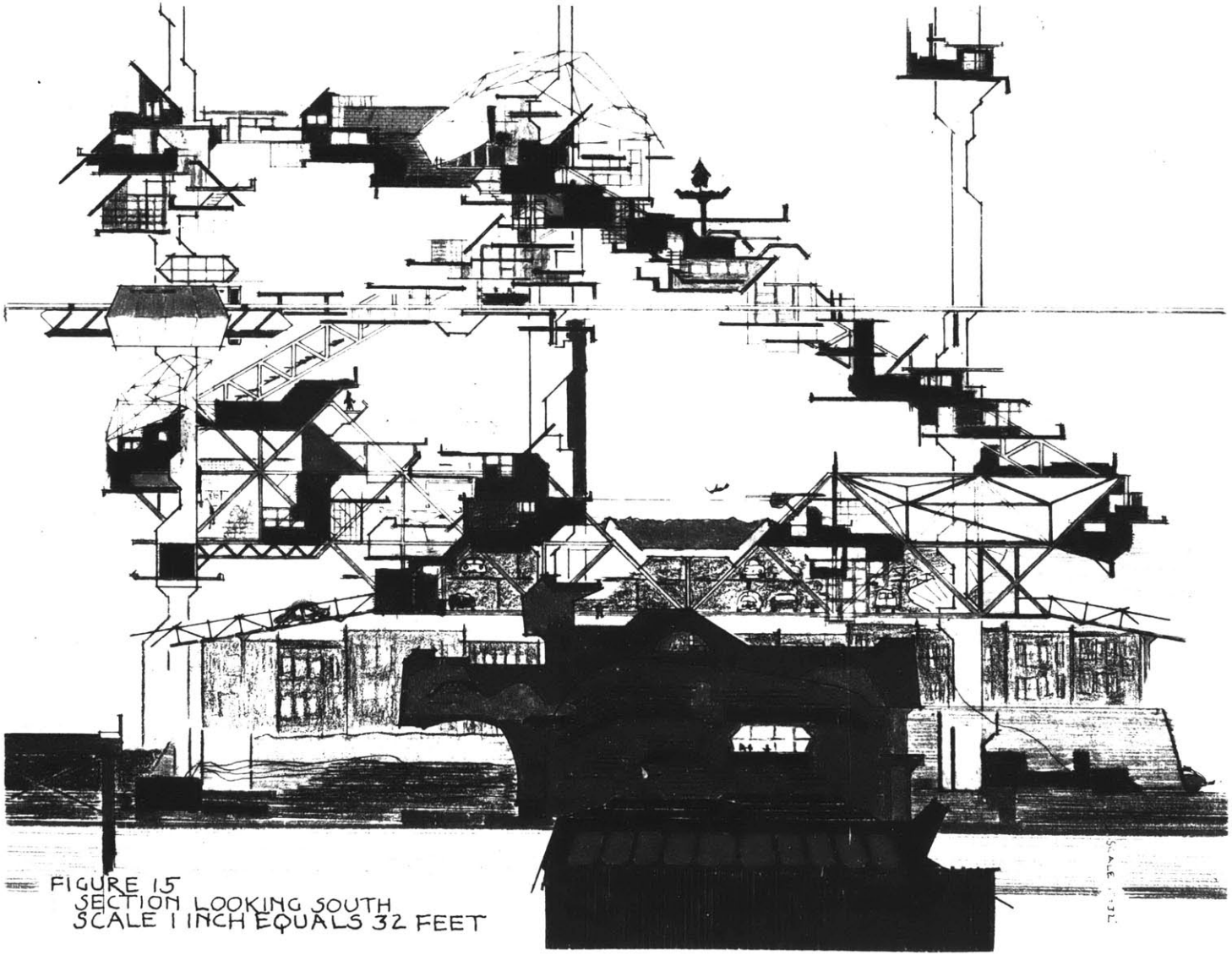
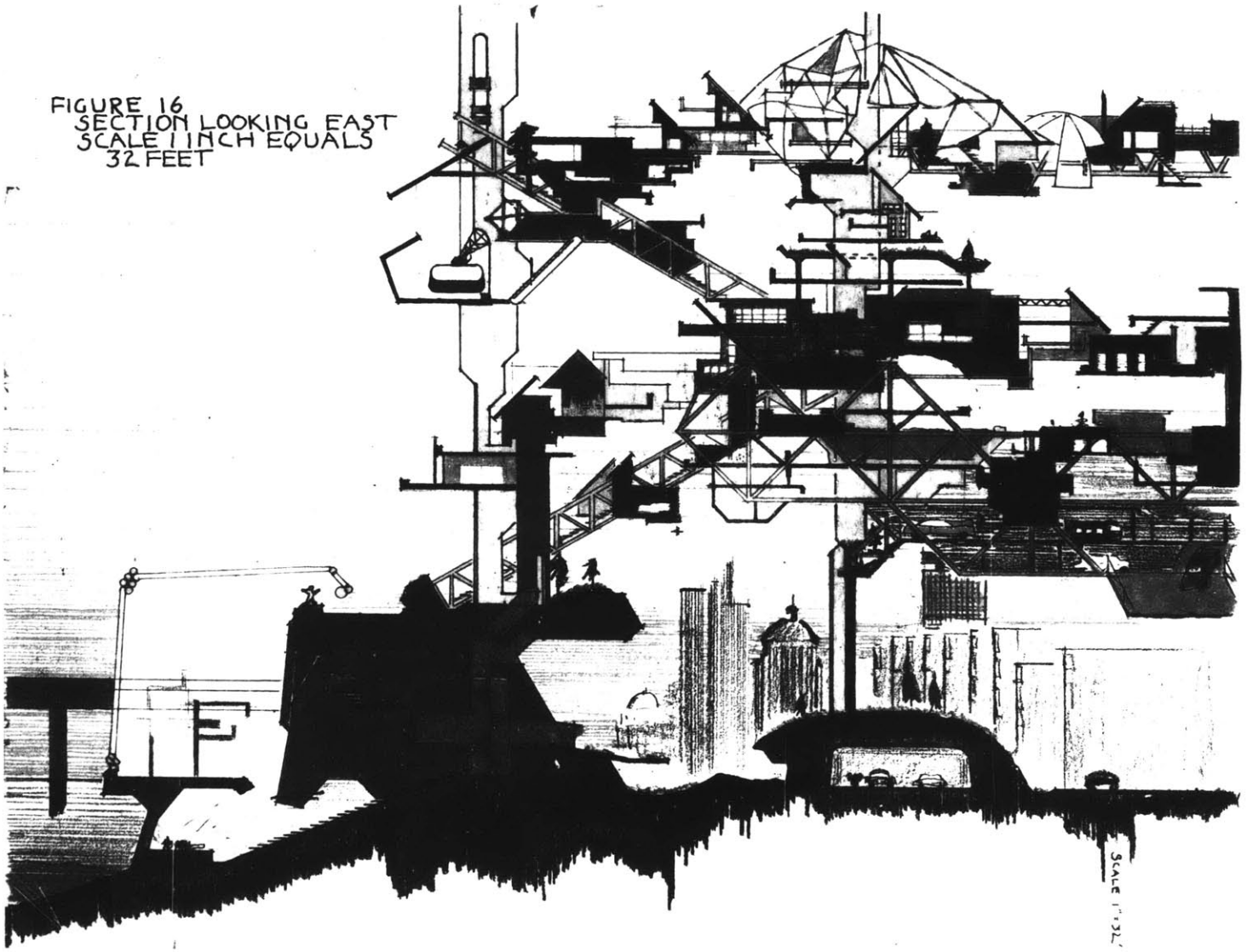


FIGURE 15
SECTION LOOKING SOUTH
SCALE 1 INCH EQUALS 32 FEET

FIGURE 16
SECTION LOOKING EAST
SCALE 1 INCH EQUALS
32 FEET



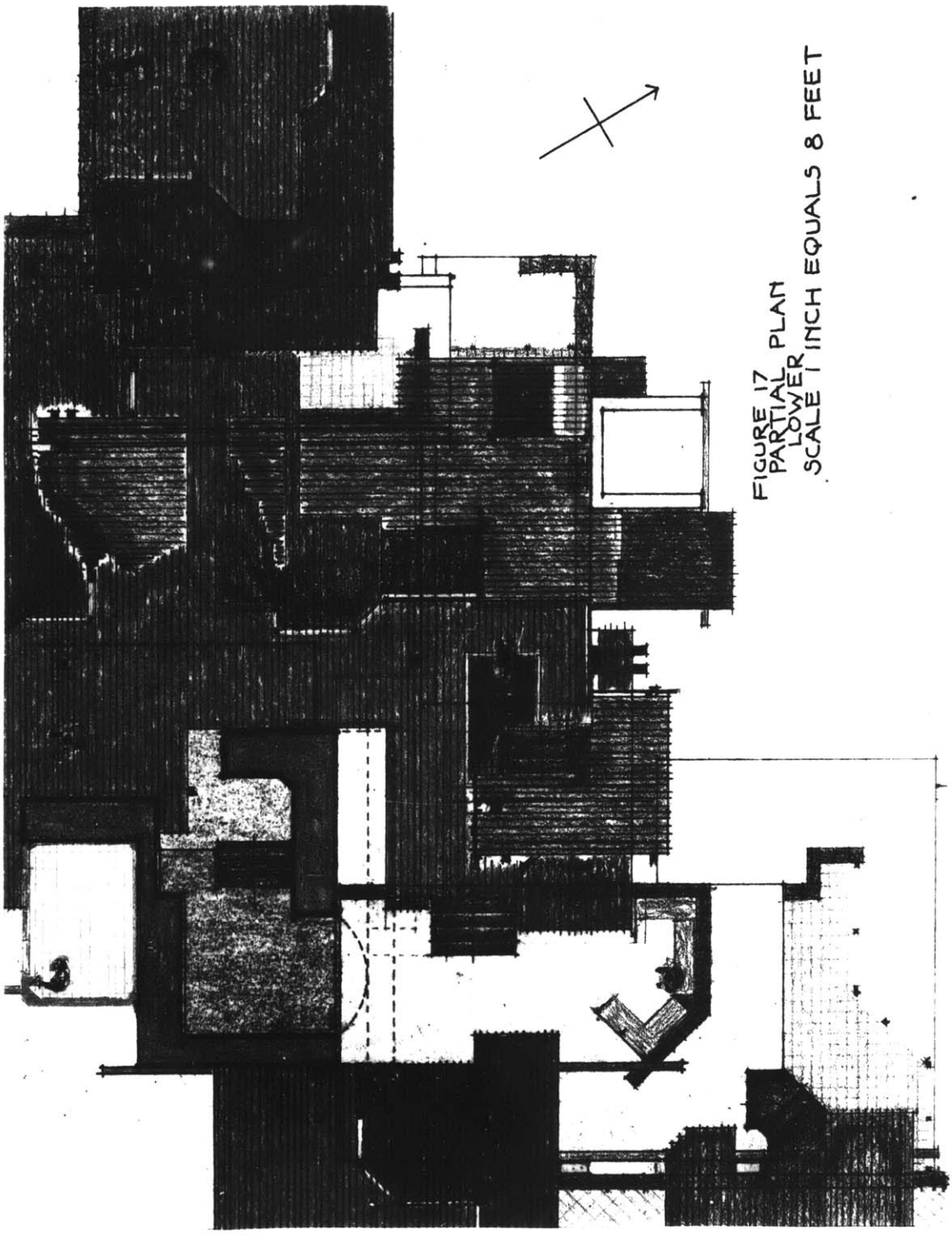


FIGURE 17
PARTIAL PLAN
LOWER
SCALE 1 INCH EQUALS 8 FEET

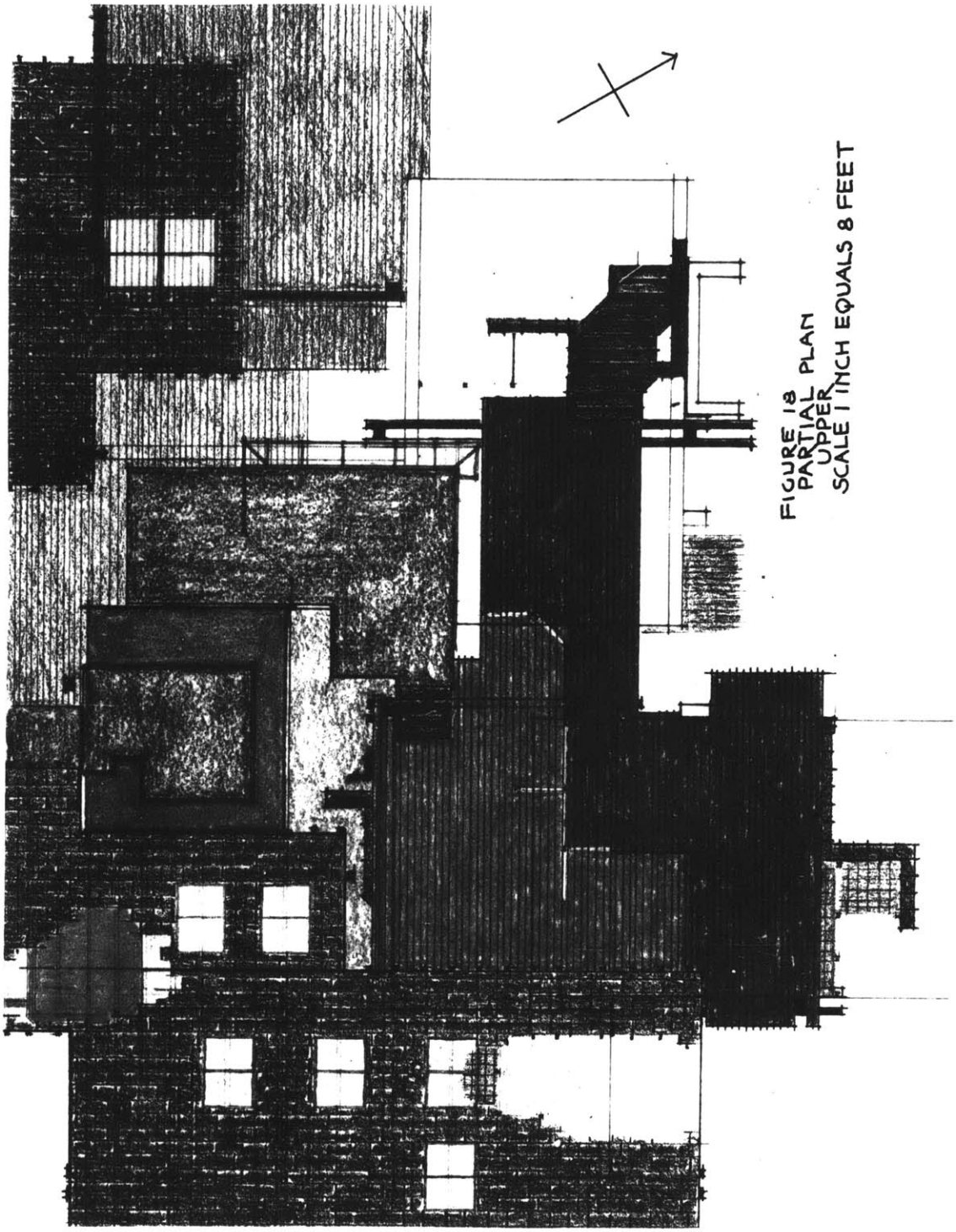


FIGURE 18
PARTIAL PLAN
UPPER
SCALE 1 INCH EQUALS 8 FEET

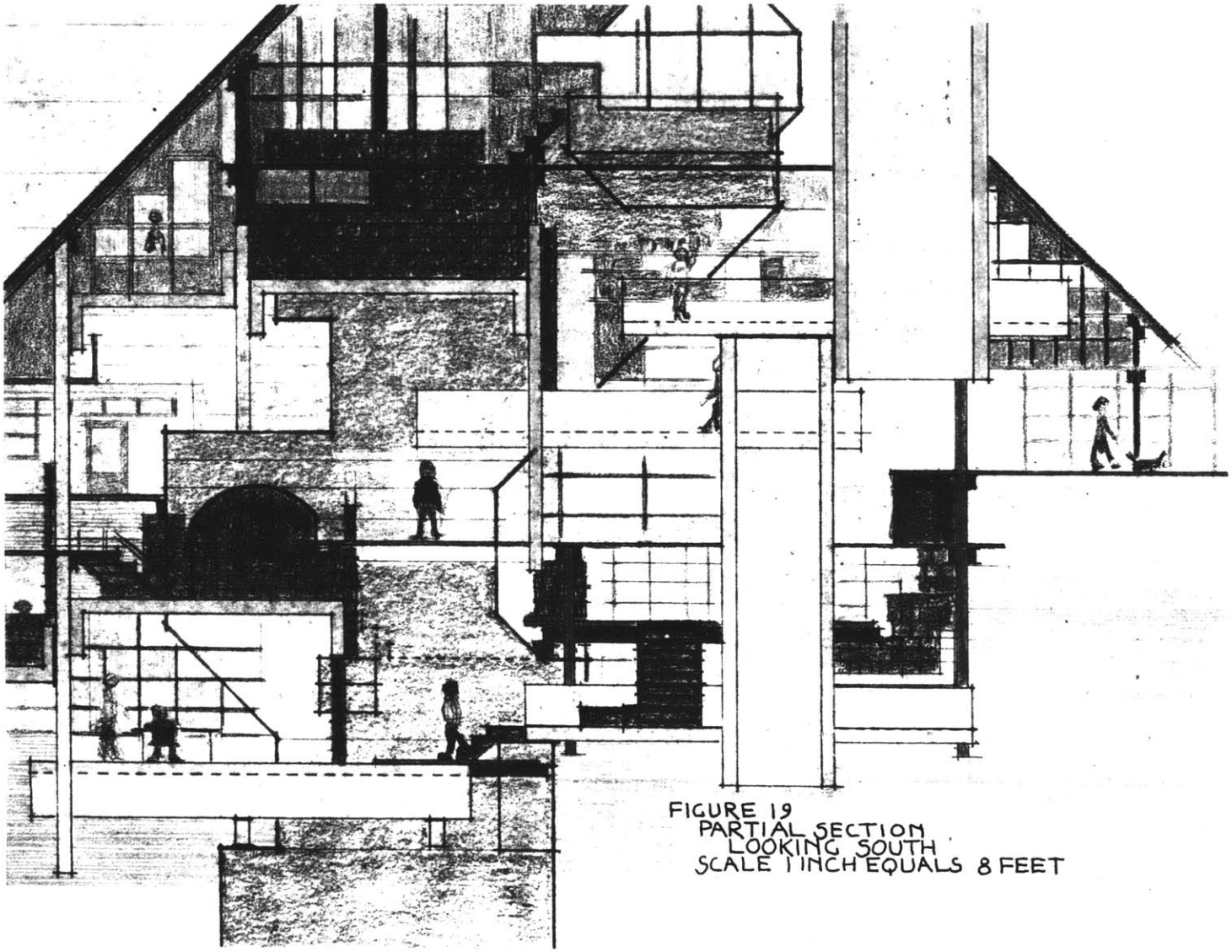


FIGURE 19
PARTIAL SECTION
LOOKING SOUTH
SCALE 1 INCH EQUALS 8 FEET

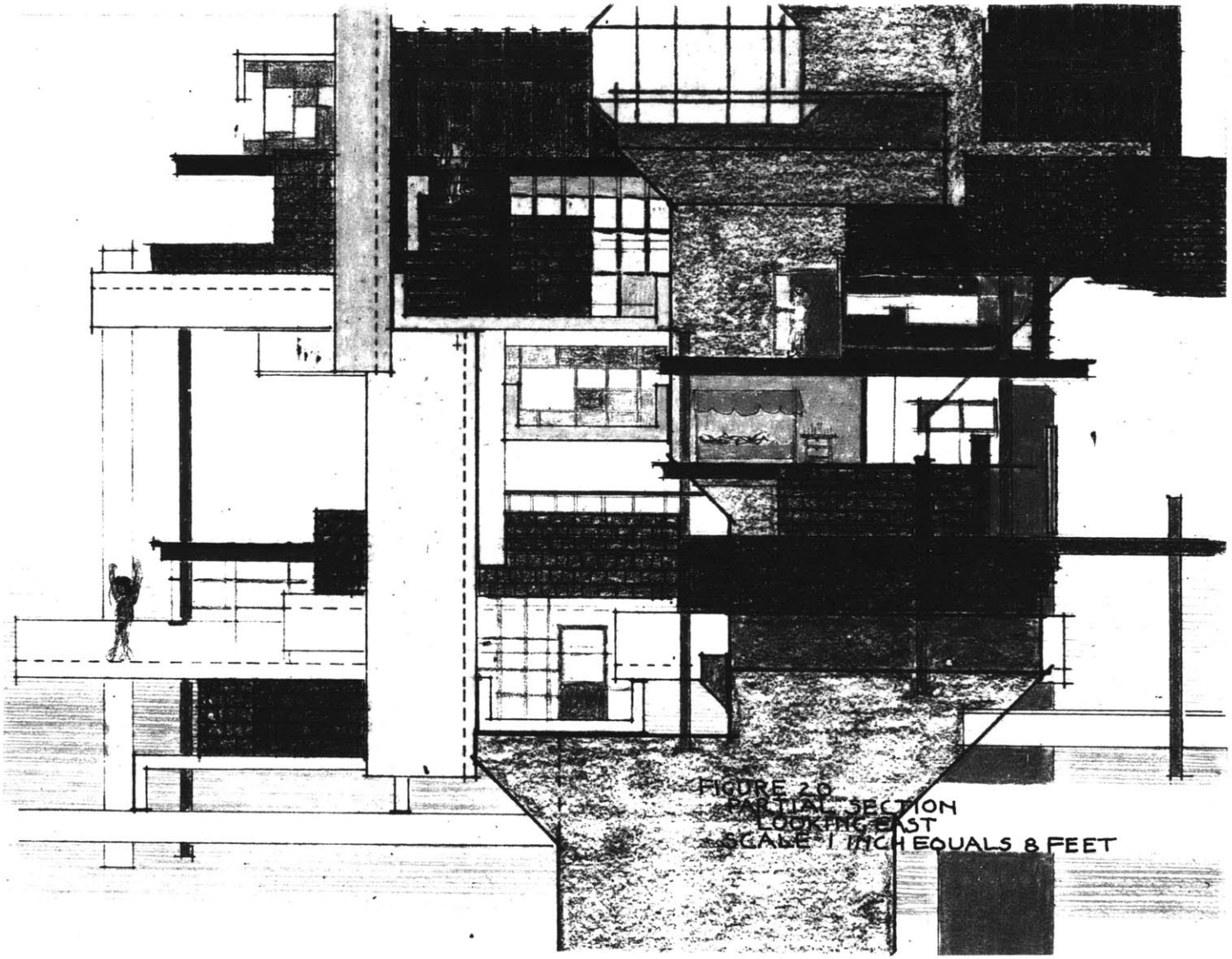


FIGURE 20
PARTIAL SECTION
LOOKING EAST
SCALE: 1 INCH EQUALS 8 FEET