

TELEPORT VIDEOCONFERENCING AND COMPUTER CENTER

by

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Design thesis

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in partial fulfillment of the requirements
for the degree of
Master of Architecture

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ABSTRACT

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(ABSTRACT)

The task of this thesis is the design of a facility that will accommodate both a large workforce in an office environment and a large accompaniment of machines. The entire complex, located in a remote area of a large rural university campus, must establish harmony between the various functional components of the Center.

ACKNOWLEDGMENTS

I would like to thank the National Aeronautics and Space Administration for enabling me to study for my degree without having to give up my job or even my biweekly paycheck. I would also like to thank those faculty members and fellow students who assisted me during my stay in Blacksburg.

INTRODUCTION



The site for this design is a plot of land adjacent to the existing satellite dish assembly on Virginia Tech's campus. This location will enable the proposed facility to serve as a symbolic entry into the Virginia Tech Campus.

My thesis goal is to utilize the siting of this project as an opportunity to establish several ordered relationships with respect to the University as a whole, the satellite dishes, and the Computing Center.

The relationships between the various functions of the Center will establish an order clearly defining the following:

- a) Spaces for people
- b) Spaces for machines
- c) Ancillary spaces / circulation

Appropriate emphasis on aspects important to the type of space in question will be incorporated to enhance the architecture of the Center. For example, the workspaces for people (offices, terminal rooms) will make maximum use of natural lighting (both direct and indirect) and incorporate a visual relationship with the outside landscaping. Machine spaces will be designed for flexibility and utility with respect to internal equipment, equipment expansion, and ancillary servicing.

Energy management of the Center will establish a relationship between solar energy and the heat output of the large mainframe computer to be housed in the Center. In short, the natural solar heat gain acting on the machine spaces will be minimized by the building envelope while the mechanical system will utilize the heat produced by the computer.

I believe that a perception of unity should be established between the Computing Center and the satellite dish array adjacent to the site; because these facilities are intended to be interconnected operationally, and are both in an isolated setting.

Such a continuity should be established in a manner harmonious with the natural contour configuration of the site. Form, geometry, and axially are the means by which this unity can exist.

The aesthetics of the Computing Center should be an honest reflection of the spirit of the facility, a consistent relationship between function and persona. I also feel that the building should not mask its structural system but rather should articulate it, and use the structure as another means of putting forth a design theme.

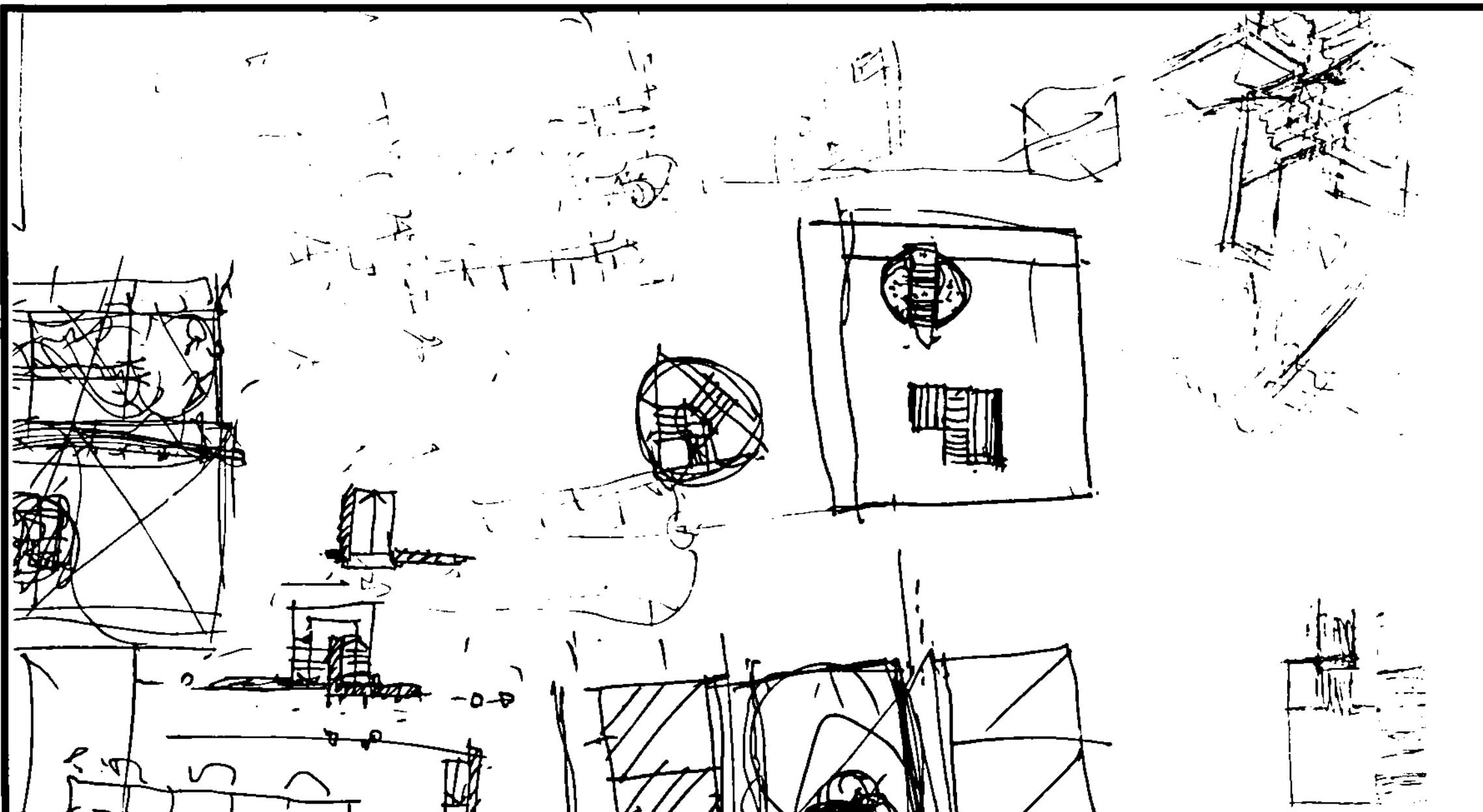
The creation of spaces for people and spaces for machines can be articulated through a variety of approaches. First, in terms of both horizontal and vertical proportions, as the human workspaces should exhibit human scale, while the machine spaces should reflect the larger utilitarian requirements of the machines. Second, the structural system utilized should manifest respectively the language of a human space and a machine space. Third, the exterior envelope should provide a means of expressing this design theme, with man made and assembled building materials (concrete masonry, etc.) for offices and more machined, precast, prefabricated components enclosing the machine spaces.

A harmonious juxtaposition is paramount to the development of any architectural design solution. The elements of machine space, people space, and support space provide an opportunity to develop a tripartite application of this ordering principle.

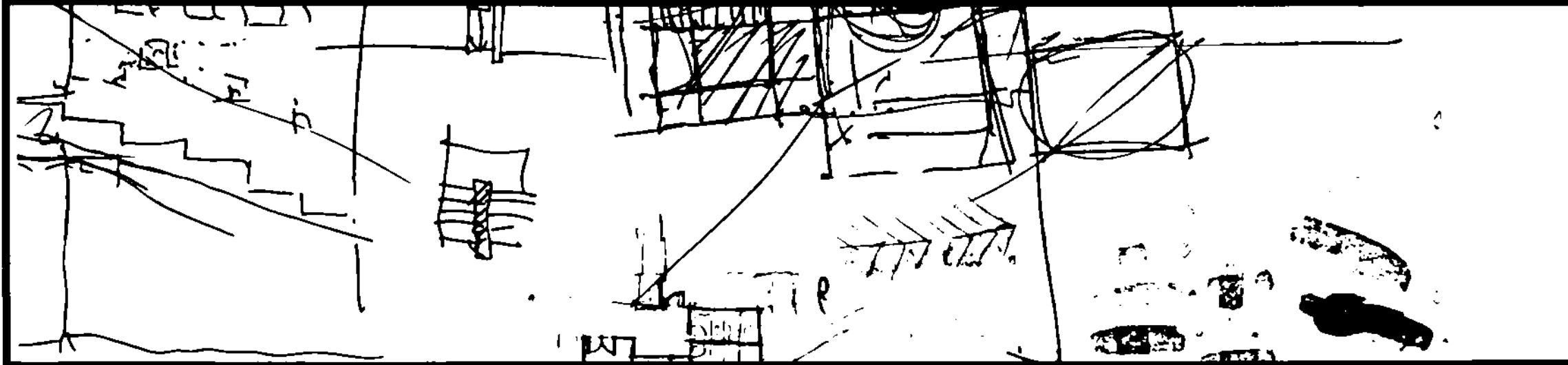
The perimeter corridors serving the office / terminal / library spaces will be buffers between the human environment and the exterior, as well as providing spatial demarcation from the machine areas. The location of the corridors will allow penetration through apertures to the outside, breaking the environmental sterility often associated with circulation space.

The windows from the office areas give a view of the landscaped plaza terraces. This creates a unifying co-existence between the enclosed spaces and the outside environment in a manner that will enhance the quality of the workspaces. Interior walls and openings will break monotony while simultaneously establishing visual continuity with the other spatial components of the complex.

The central spine of the Computing Center will be a processional elongated court. Light wells stretch along the length of this central pathway.

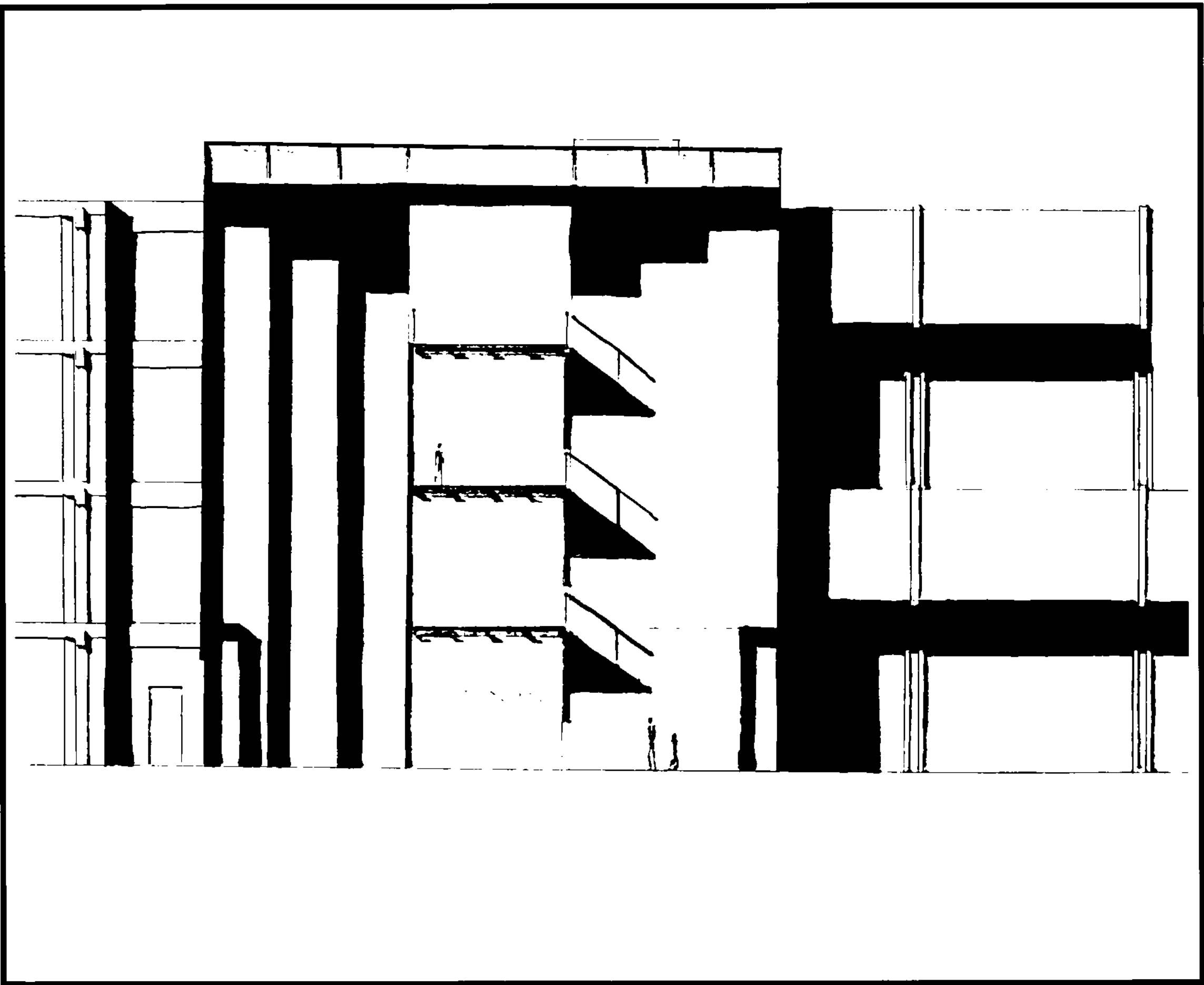


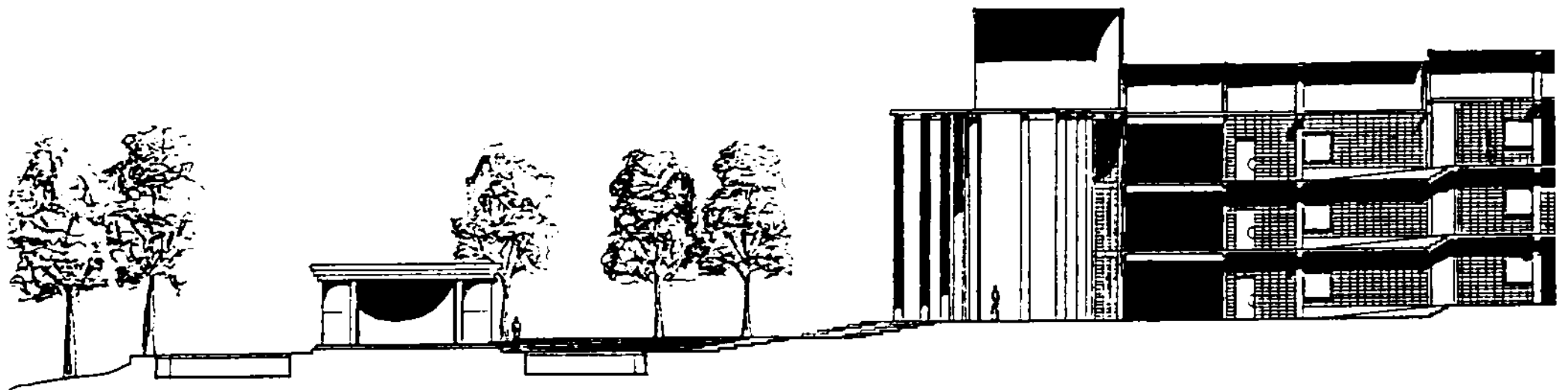
Preliminary Designs

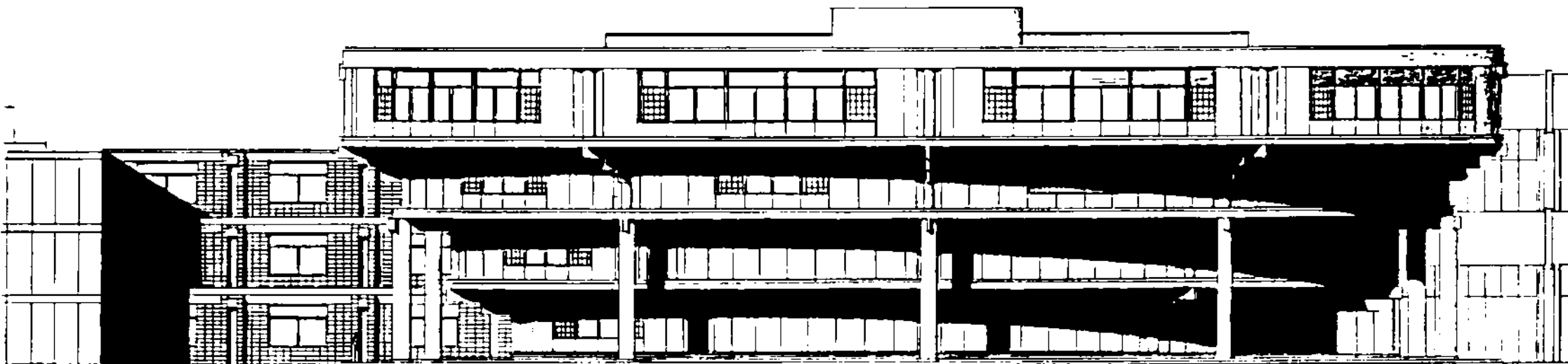


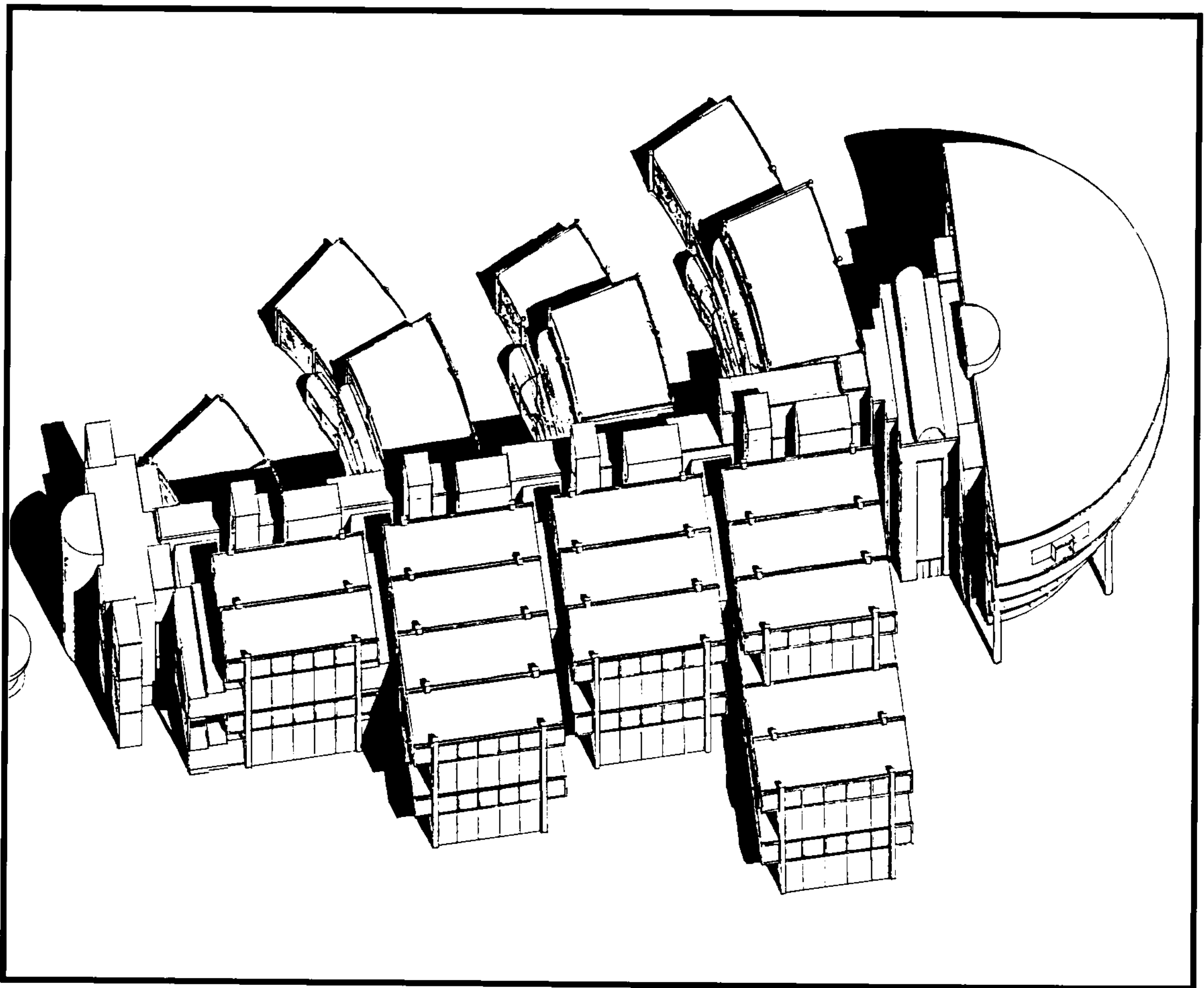


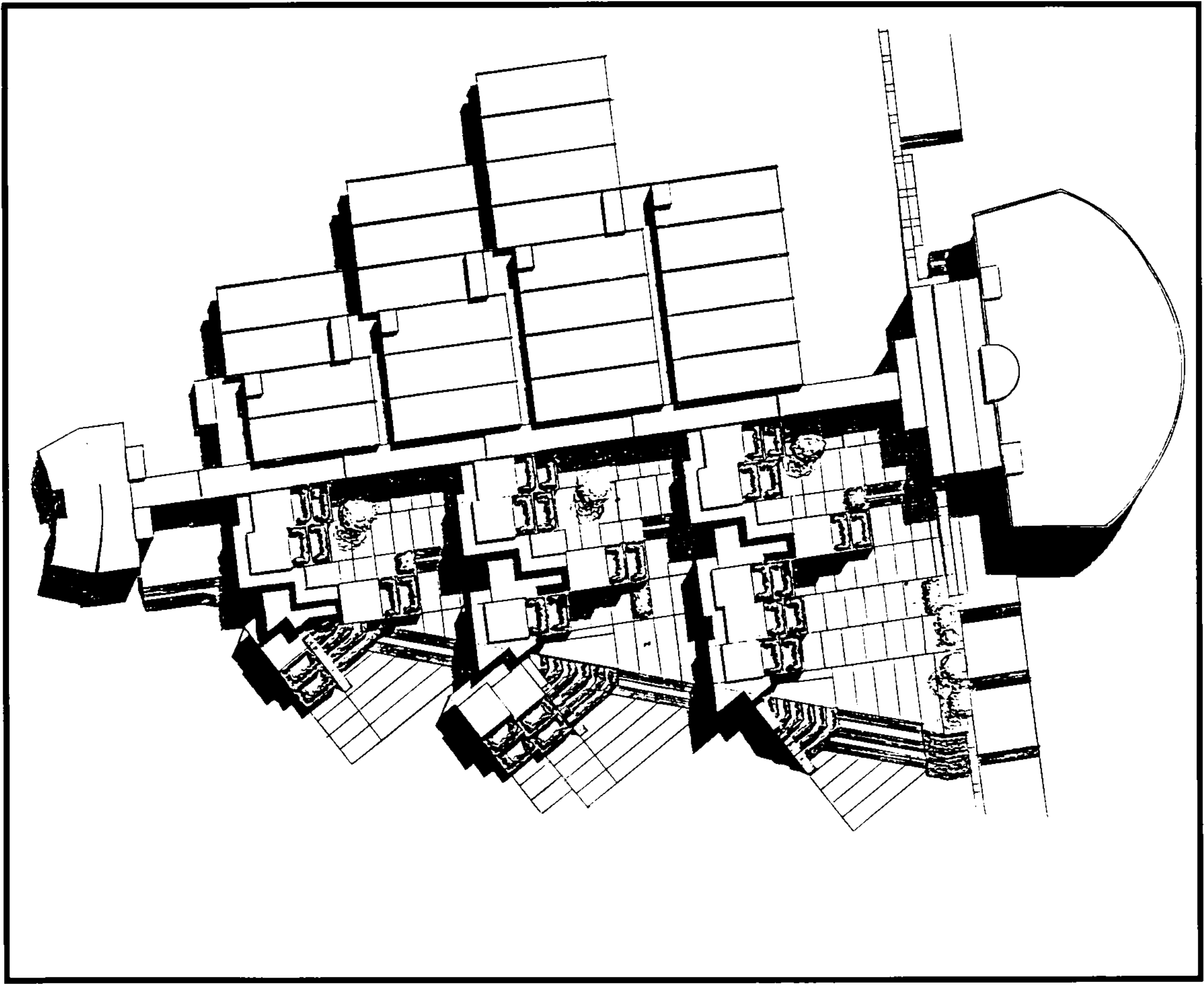


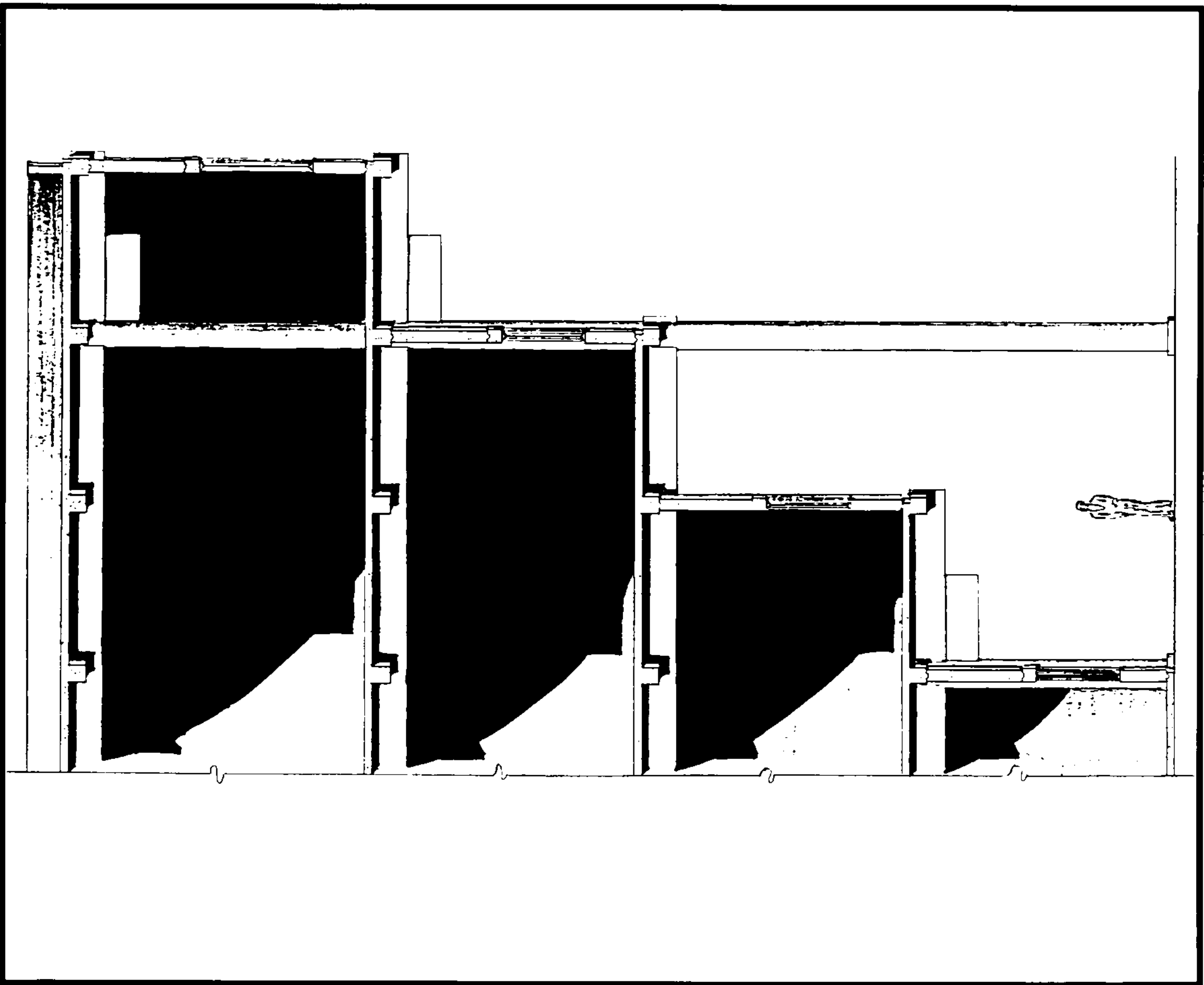


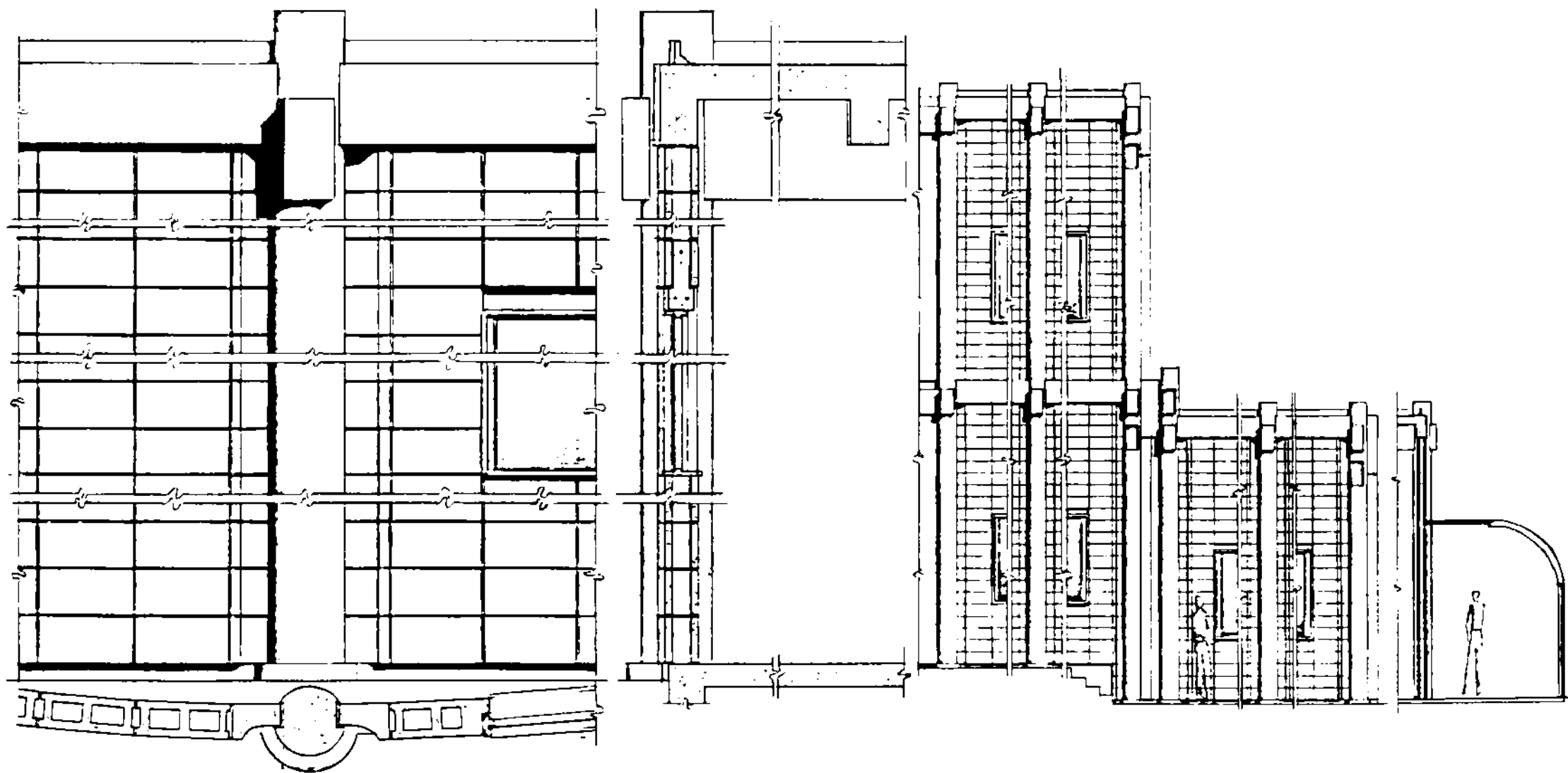




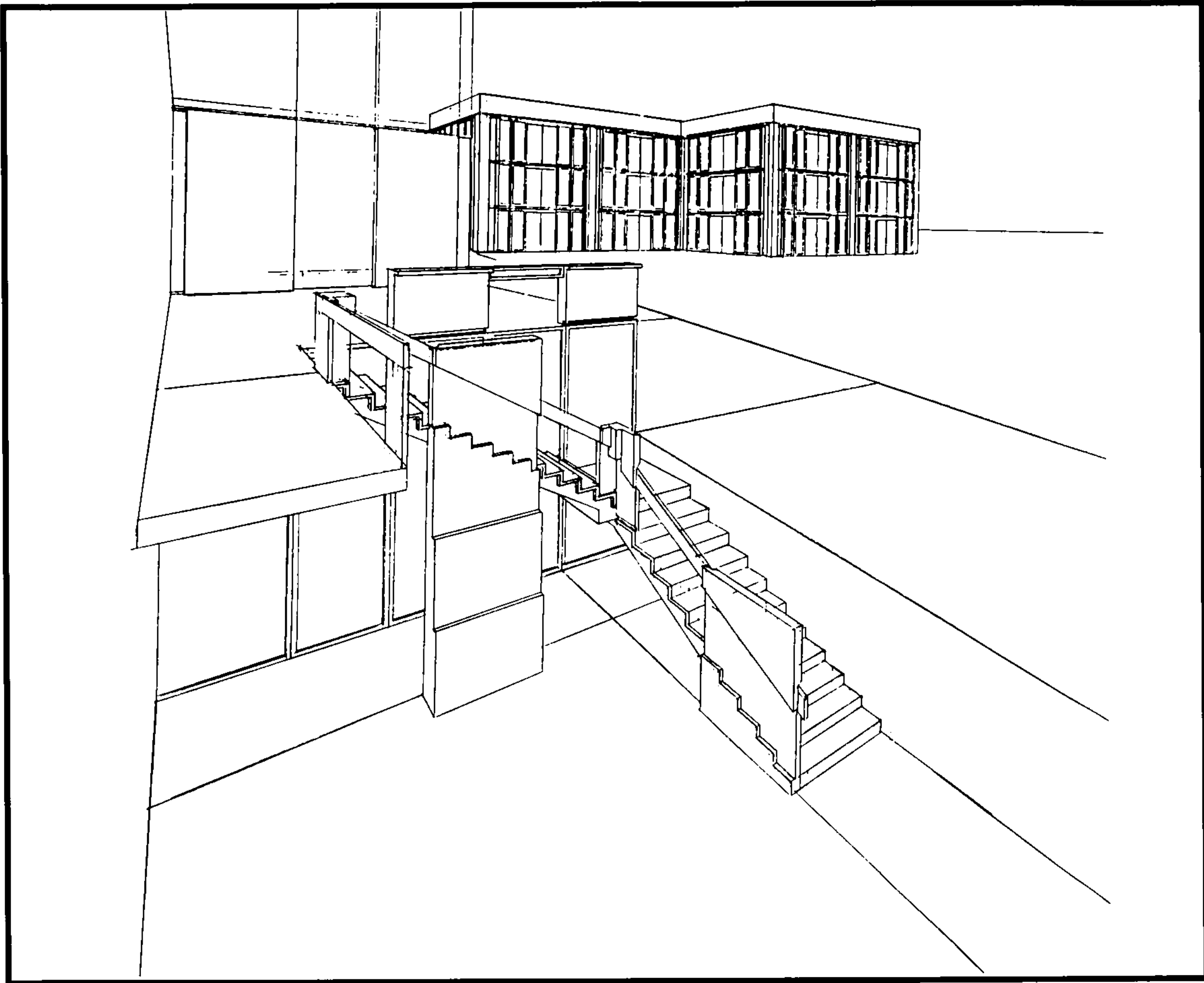


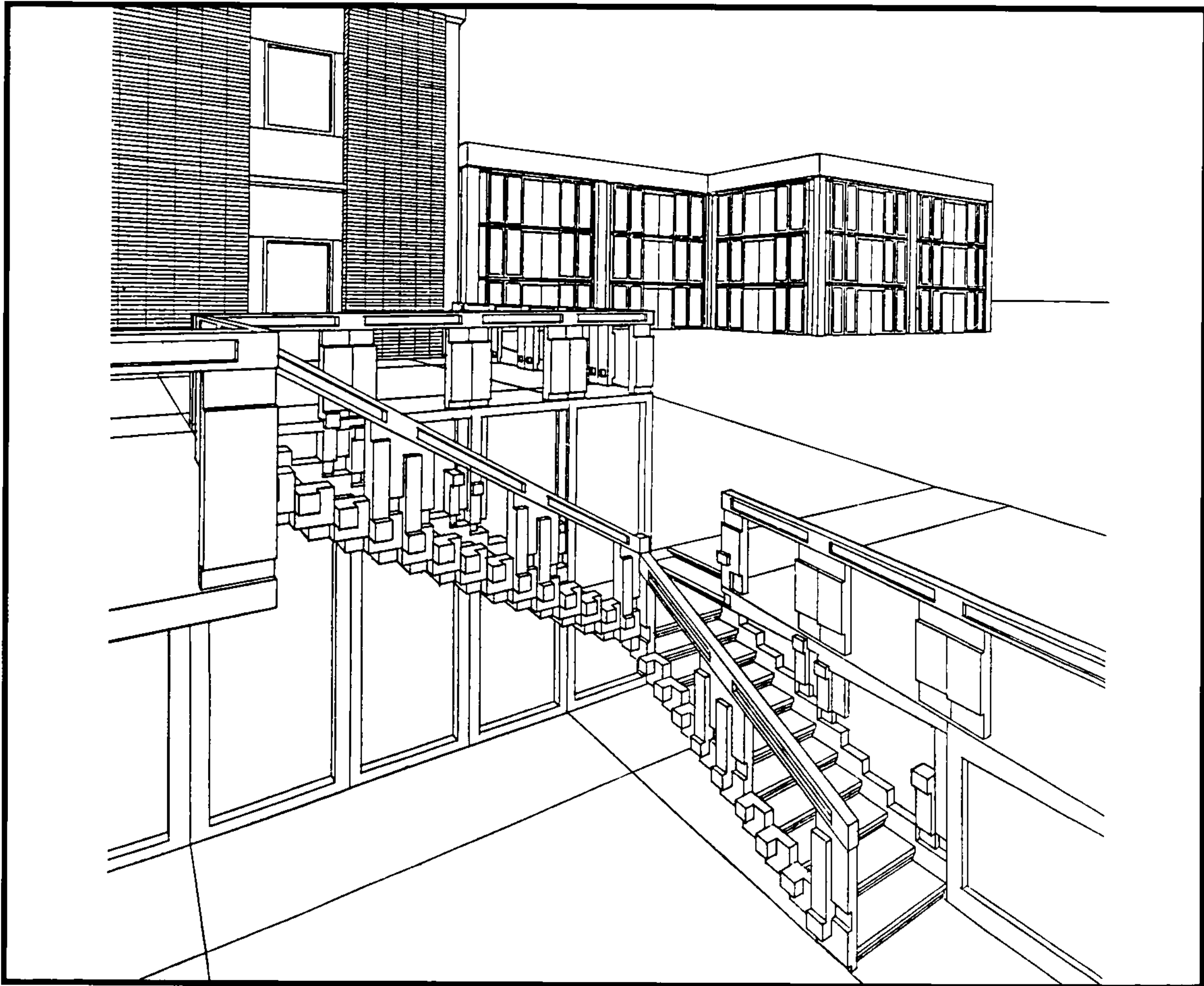


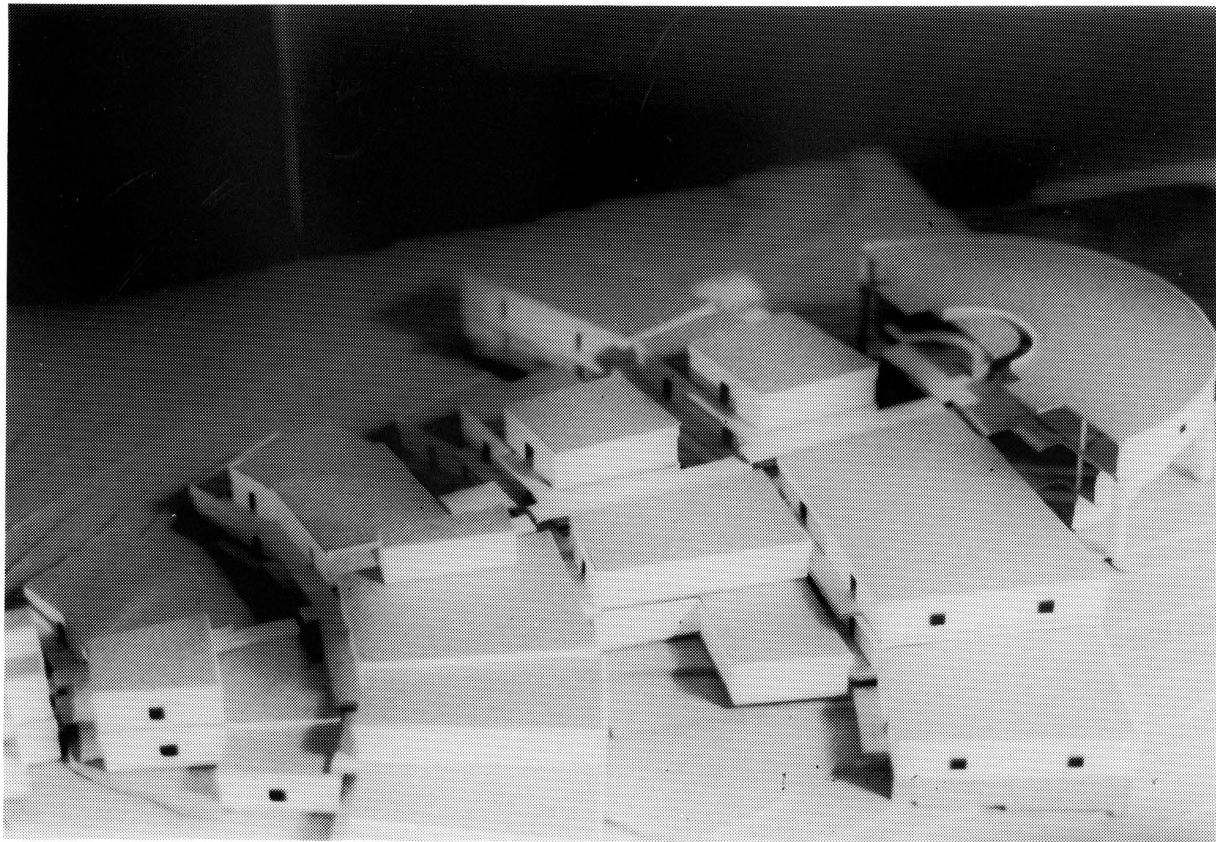
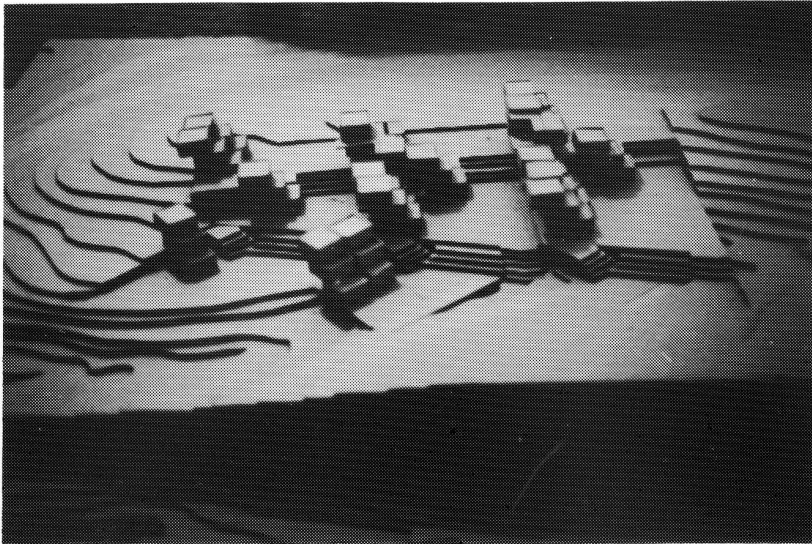




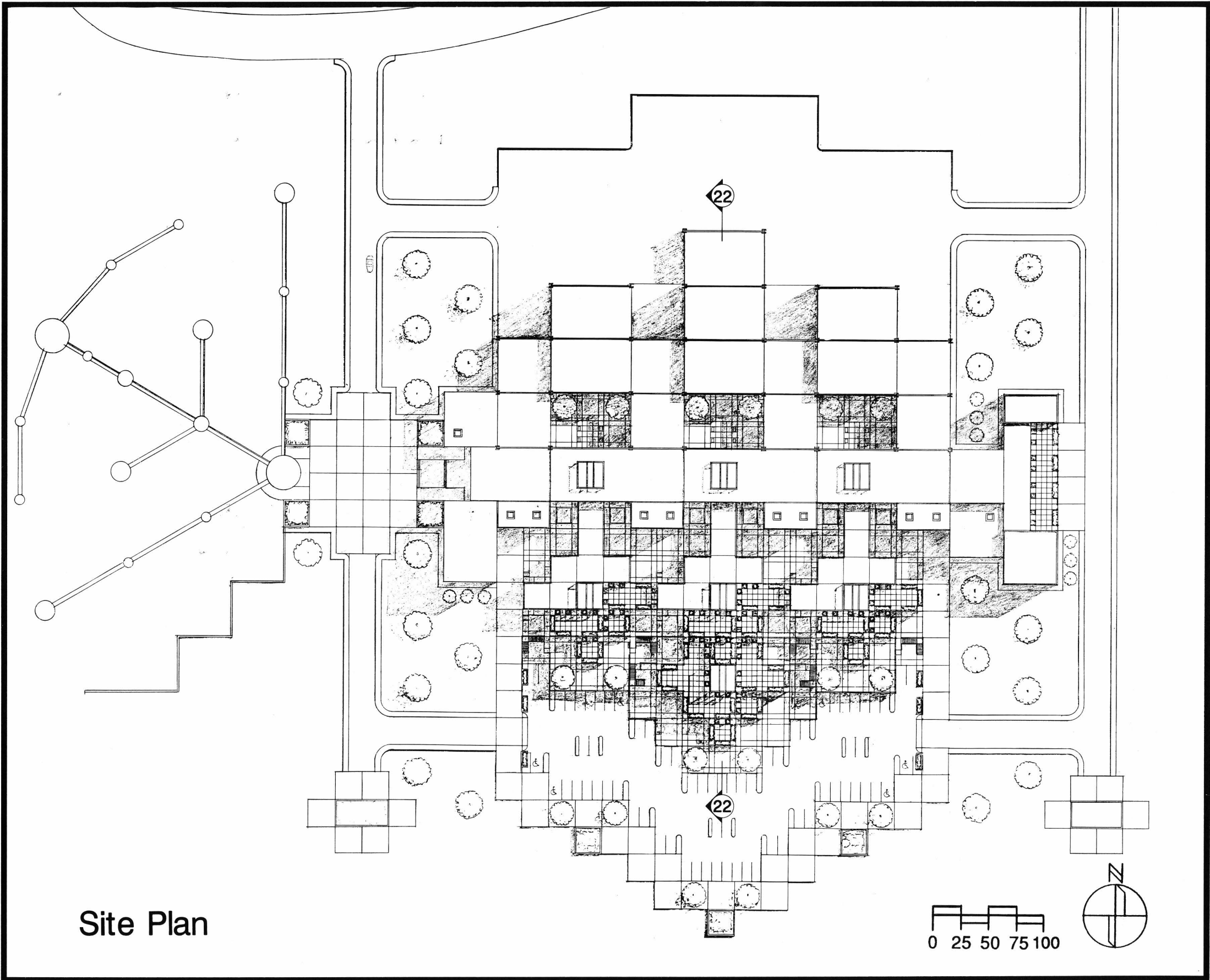




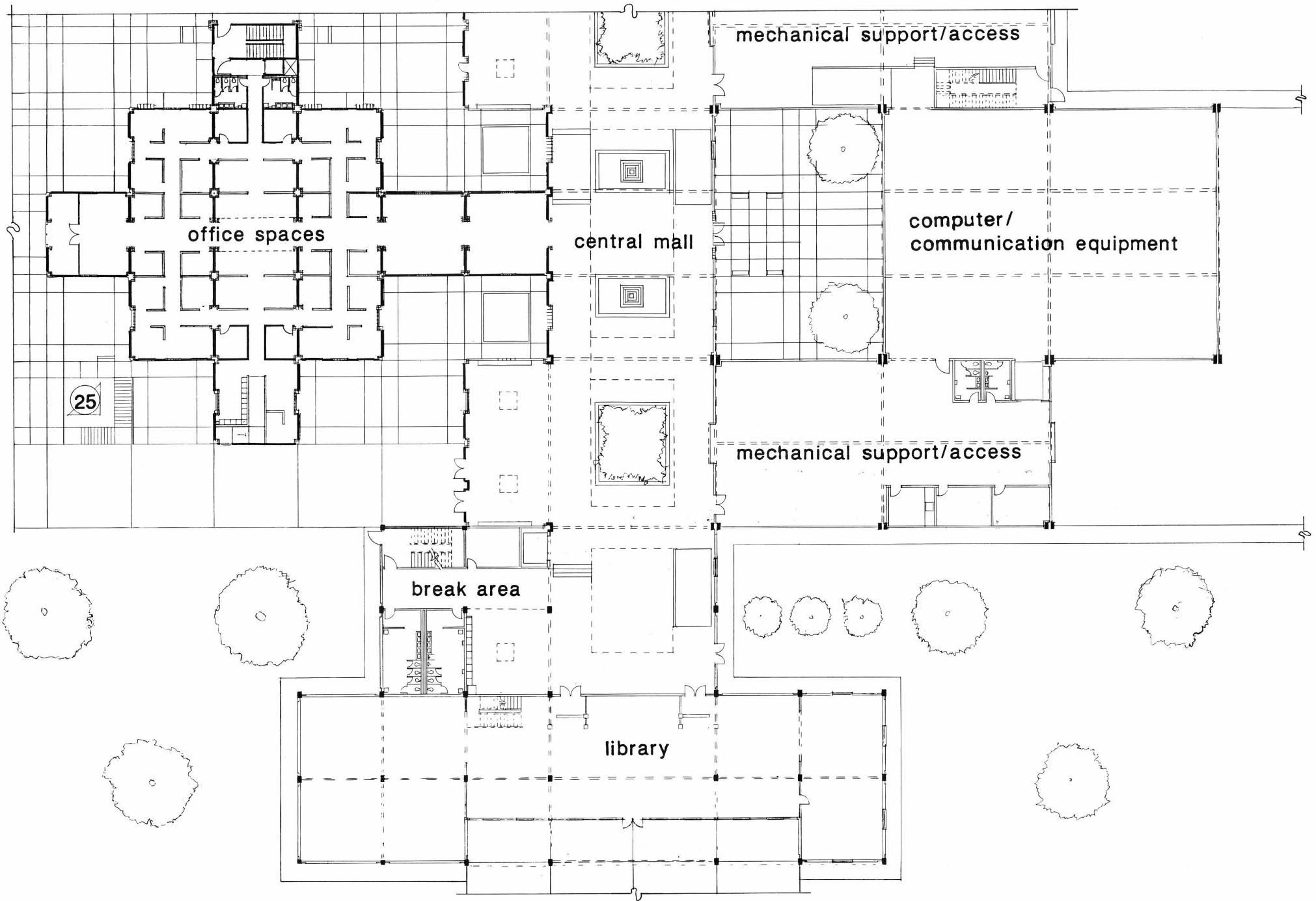




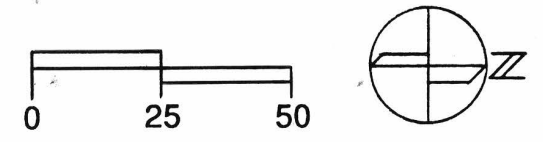
Final Design

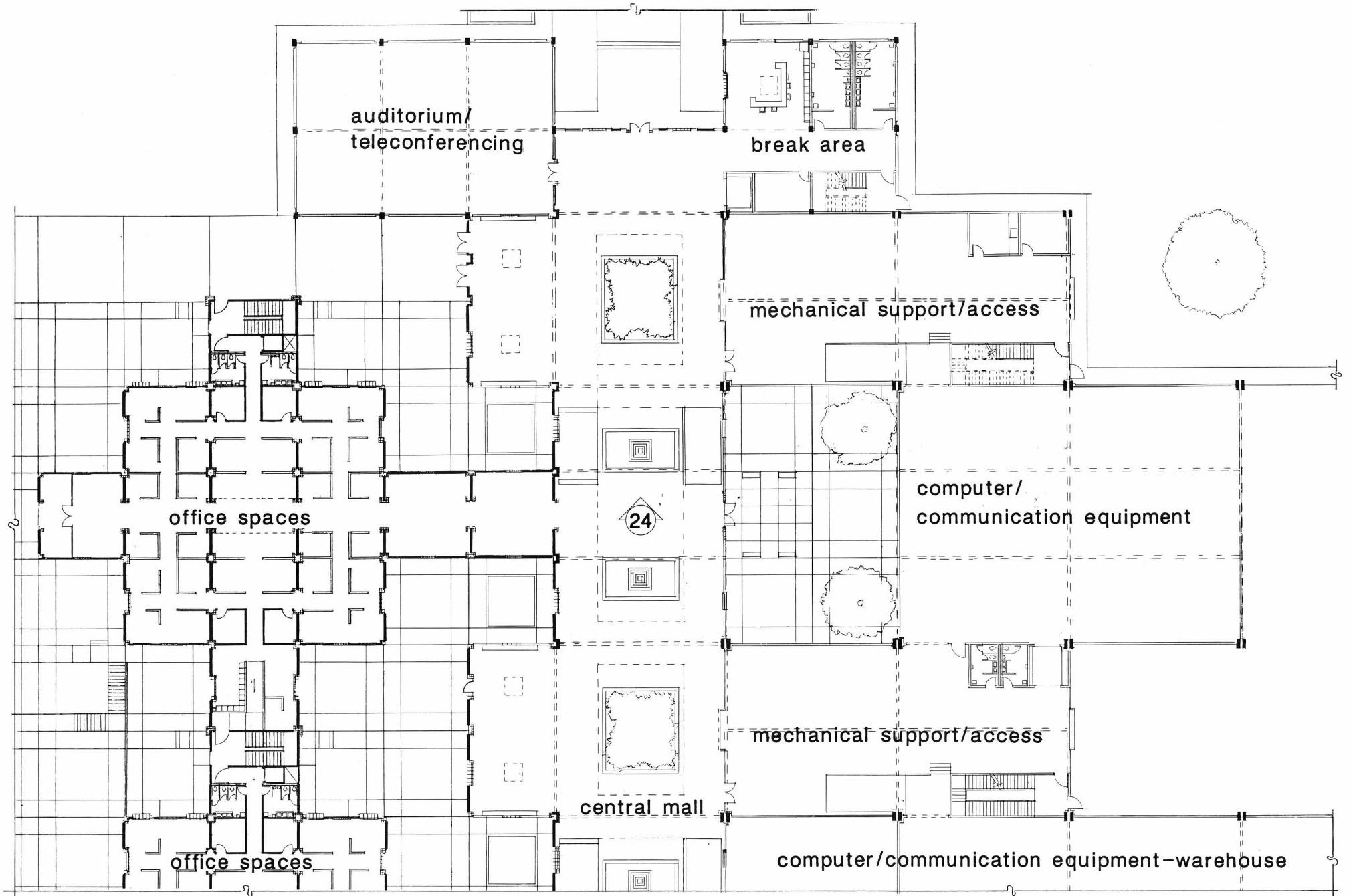


Site Plan

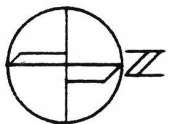
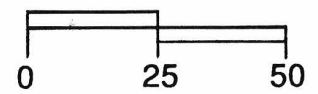


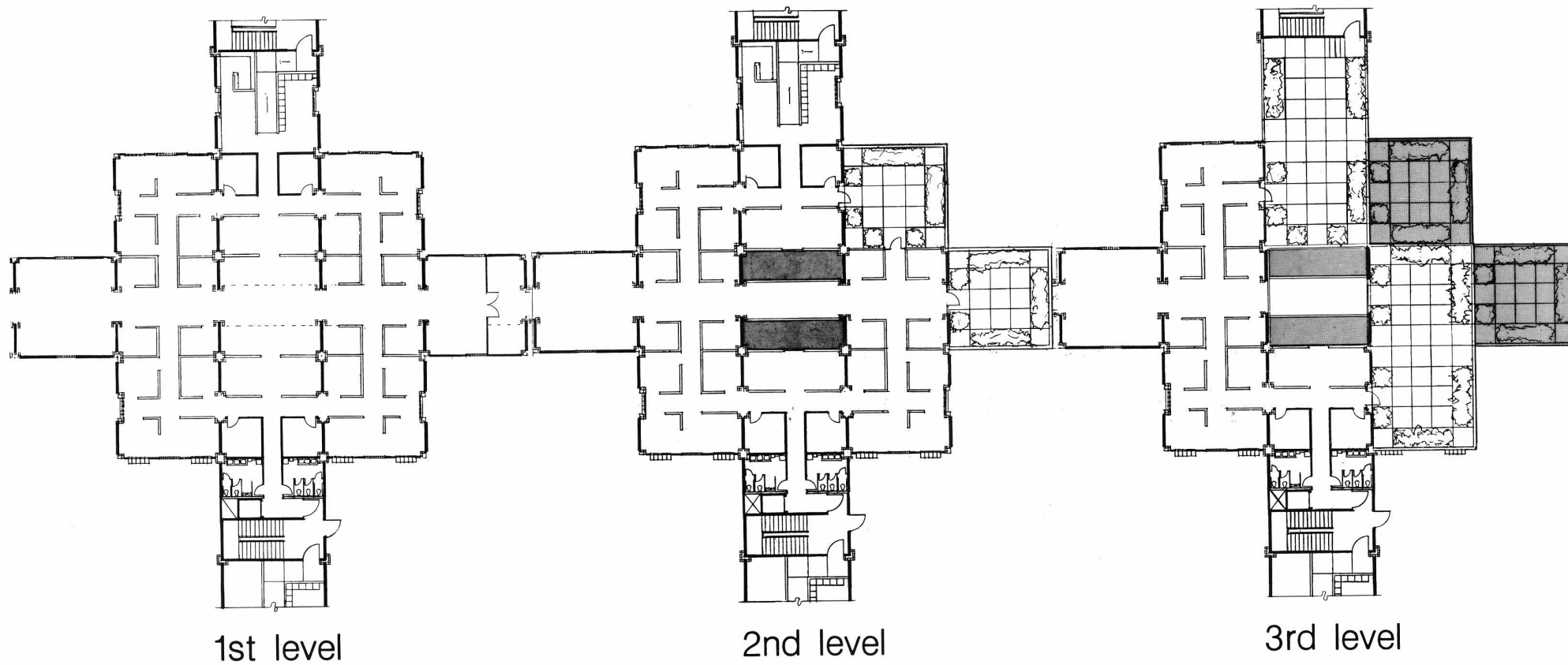
East Floor Plan



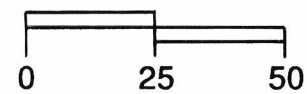


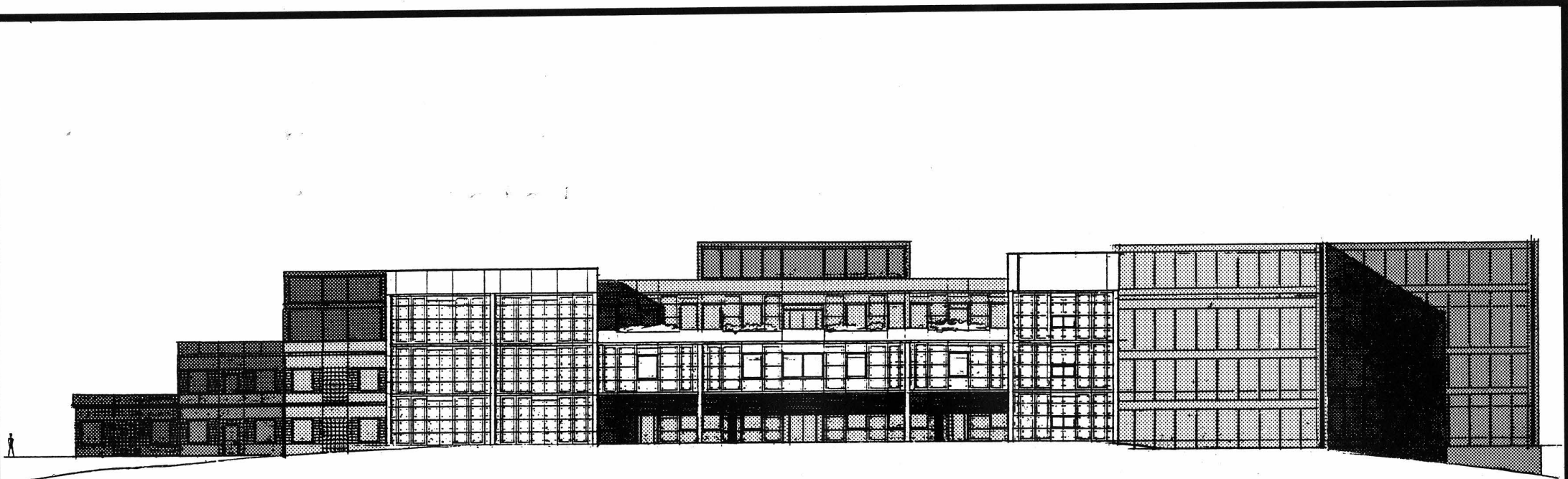
West Floor Plan





Typical Office Floor Plans



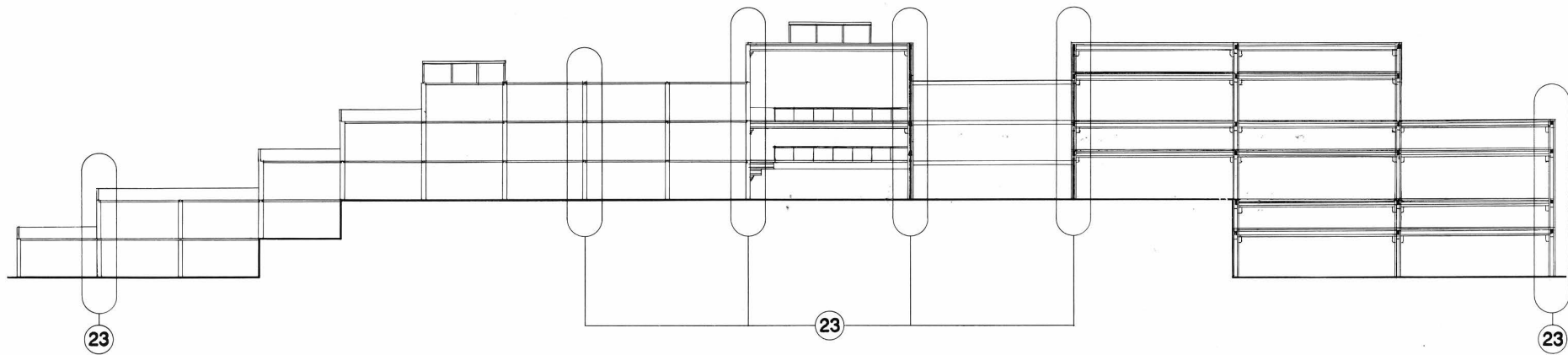


east

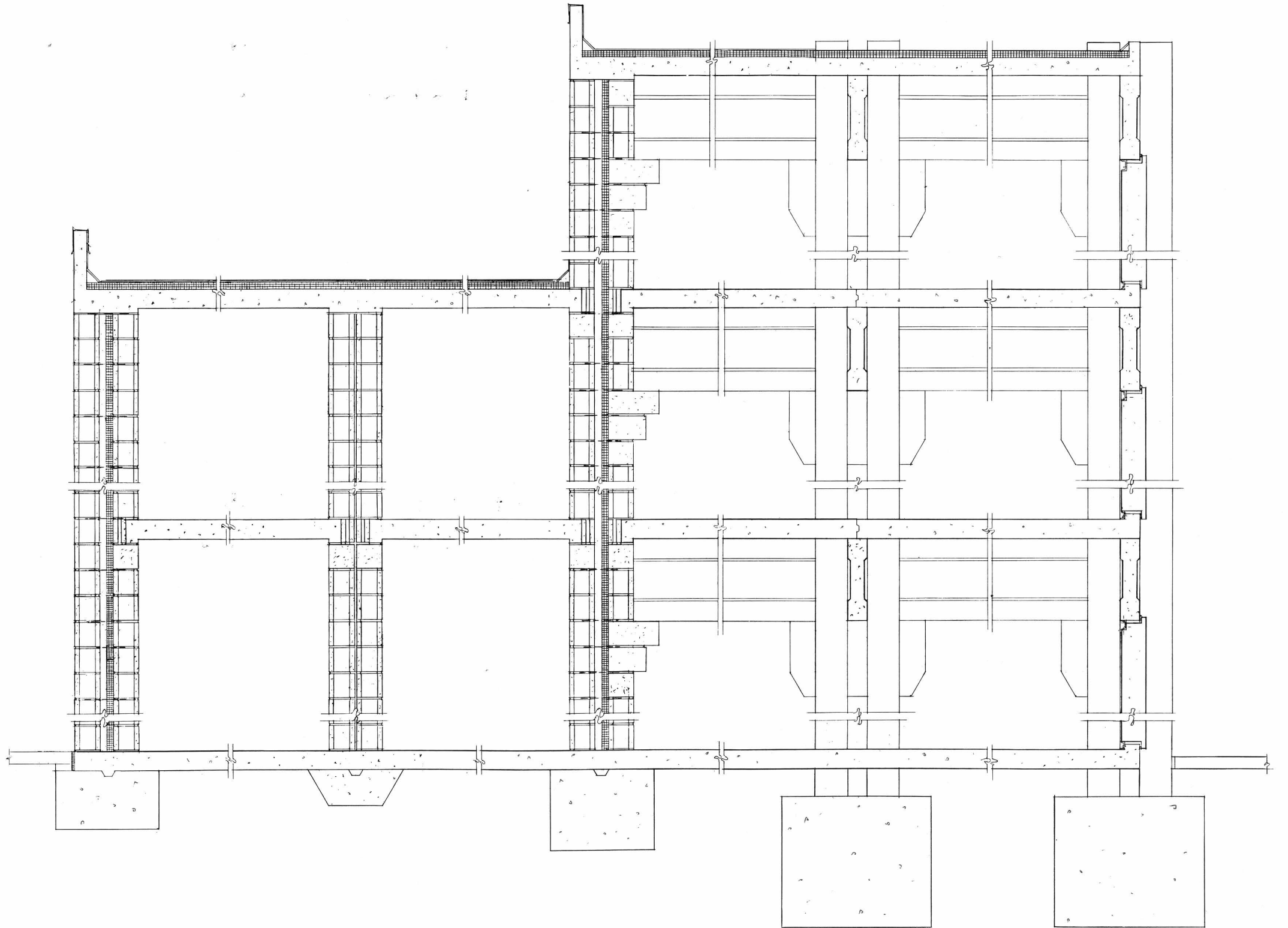


south

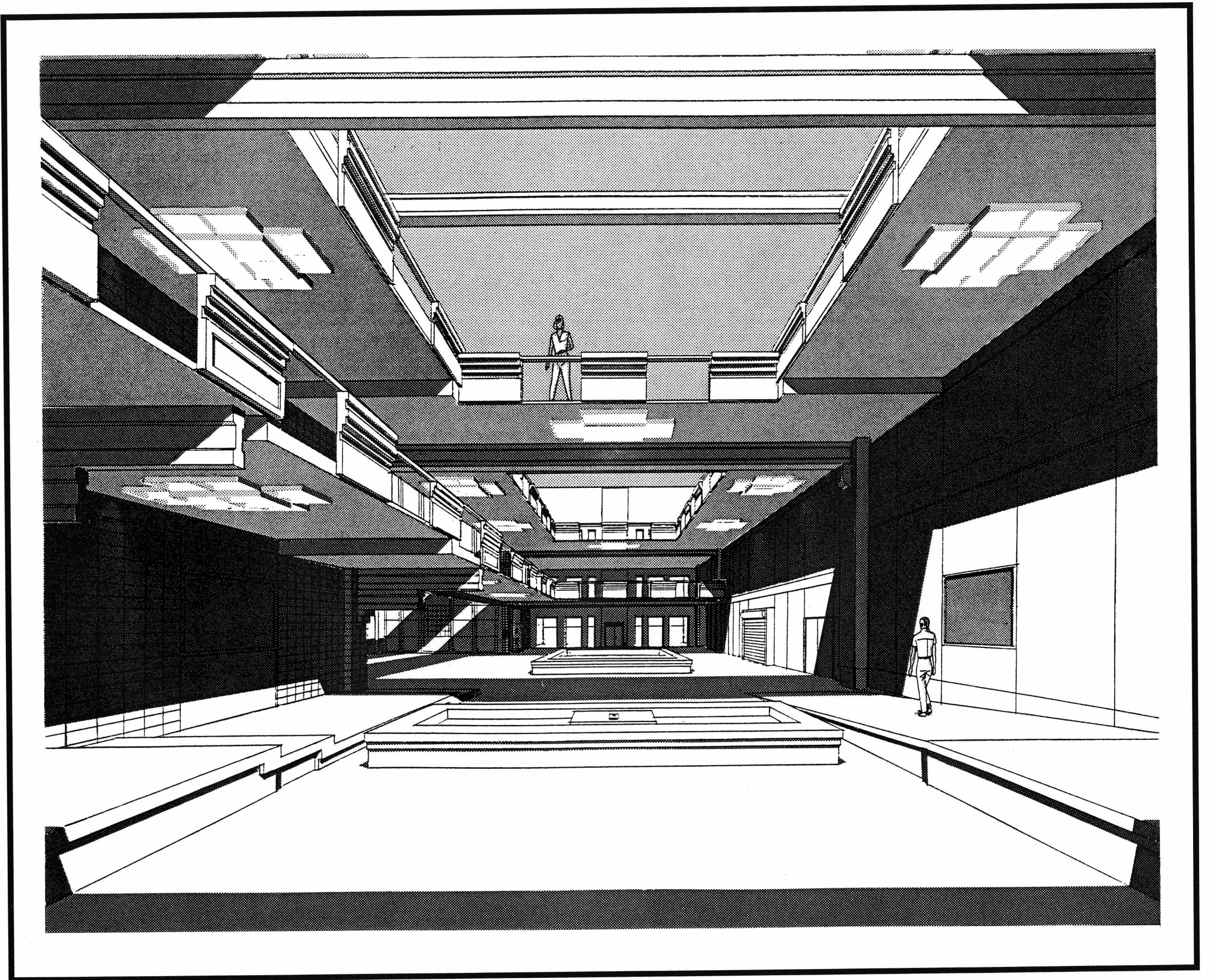
Elevations

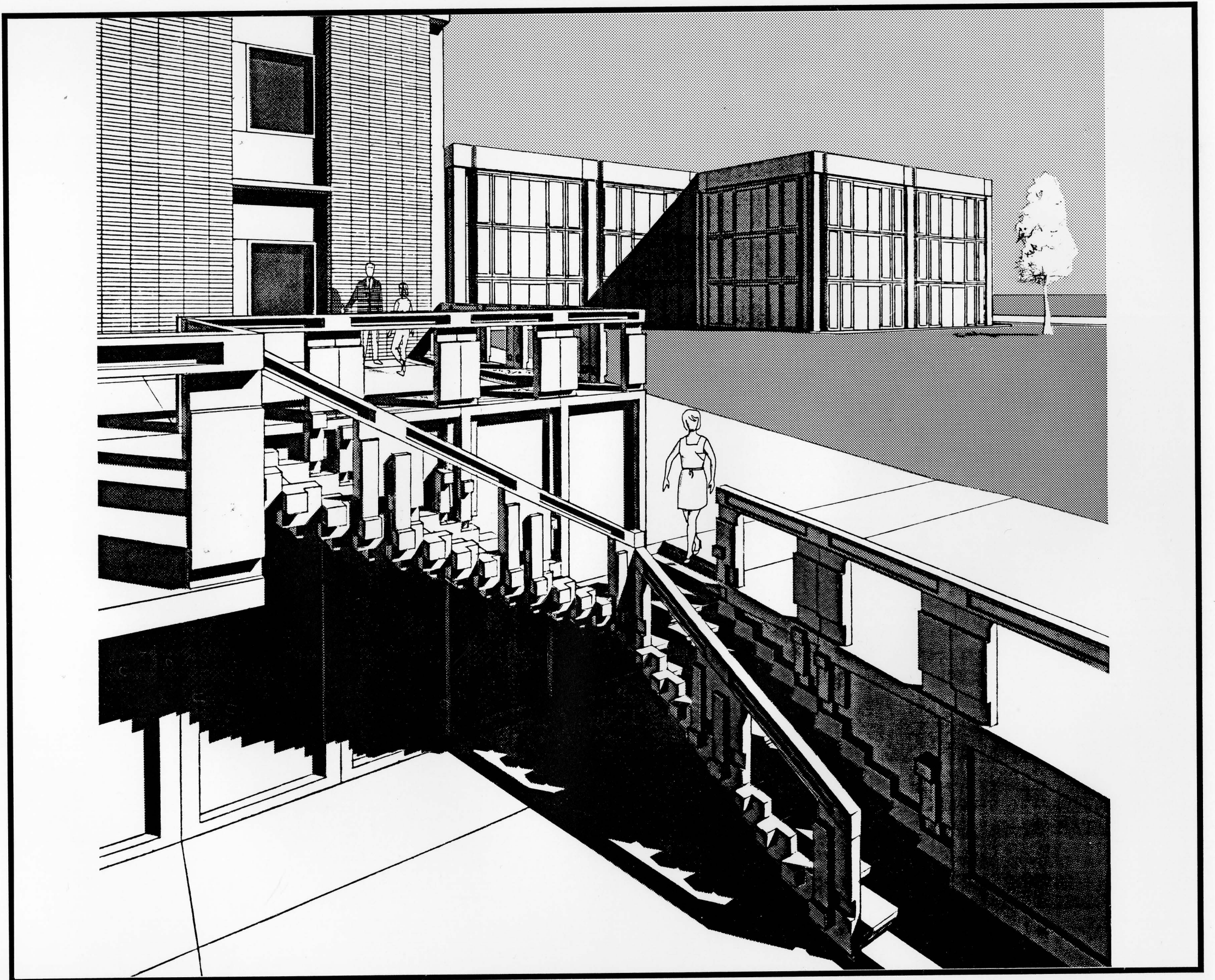


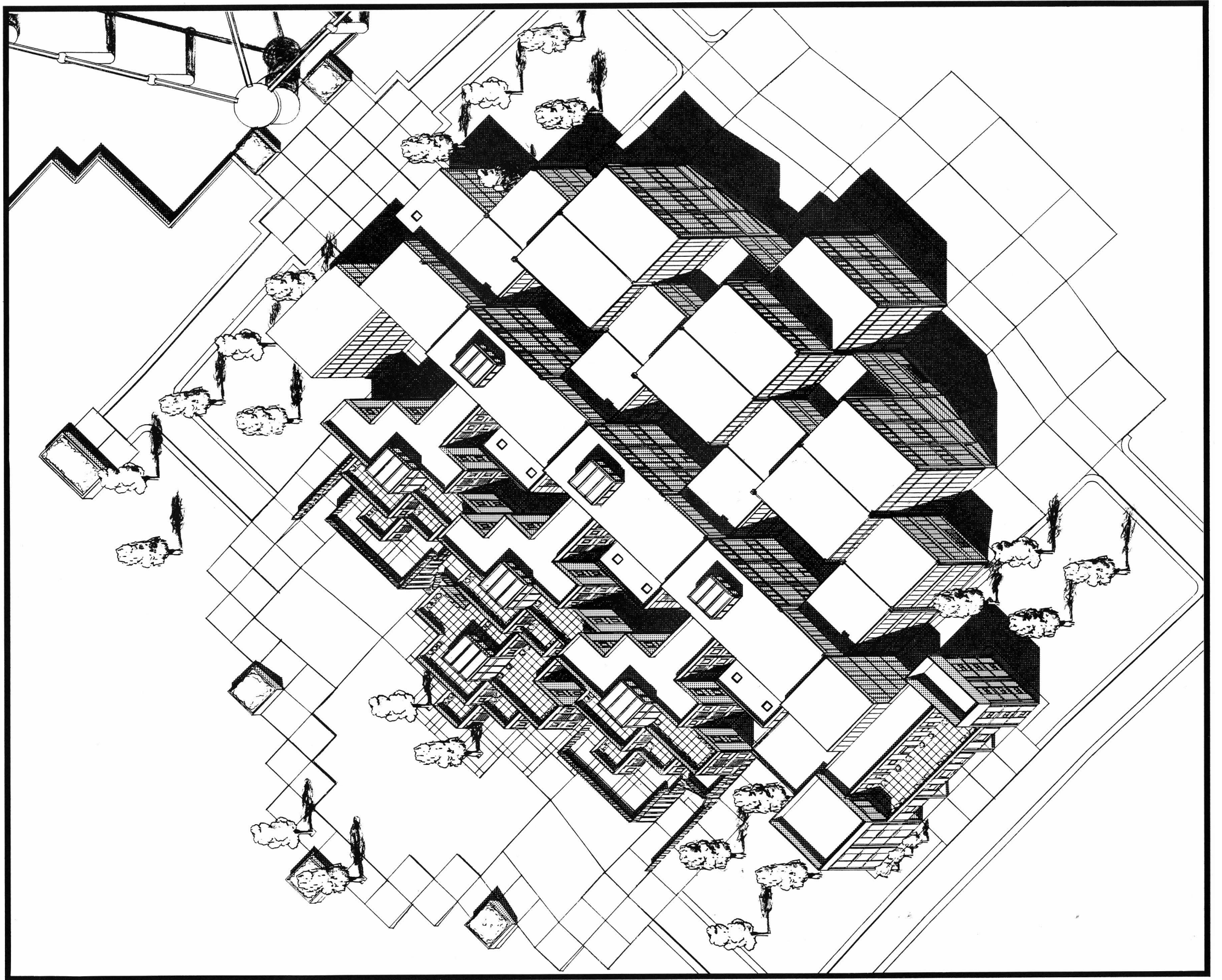
Transverse Section

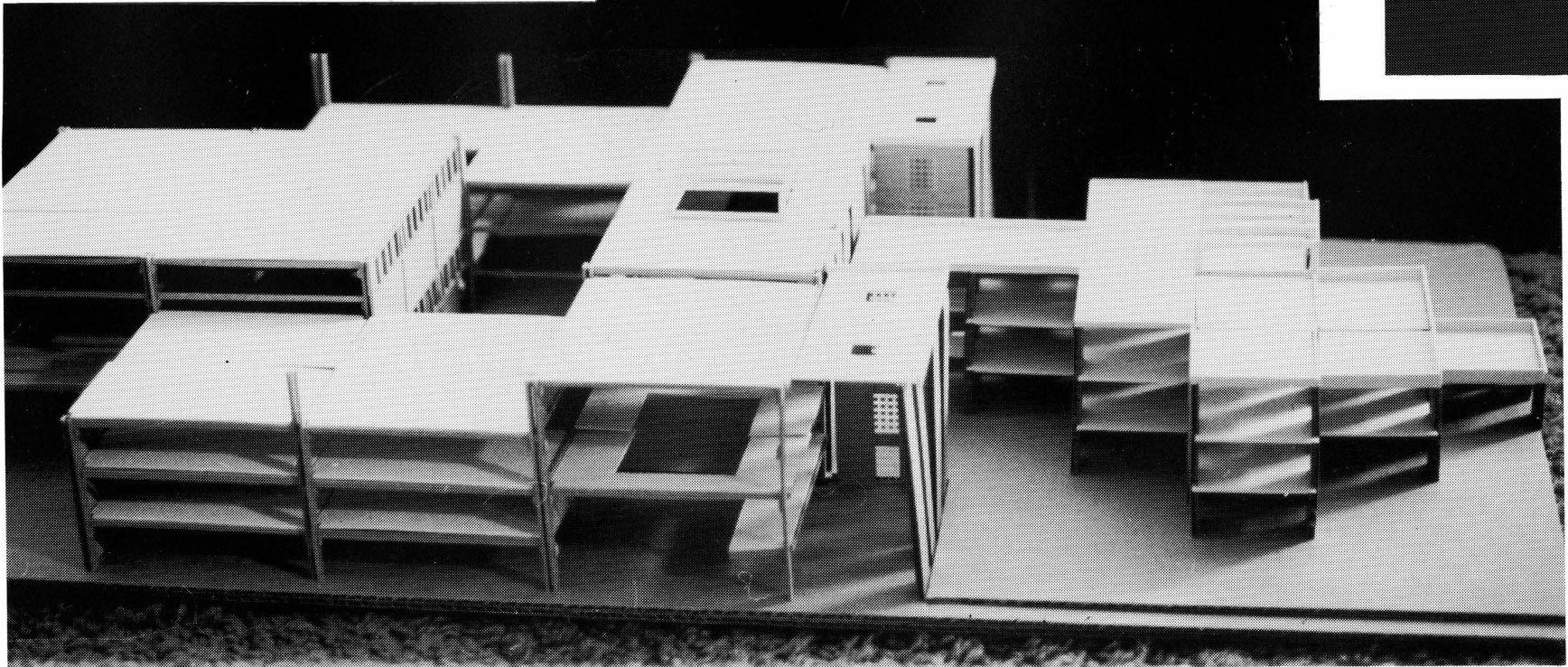
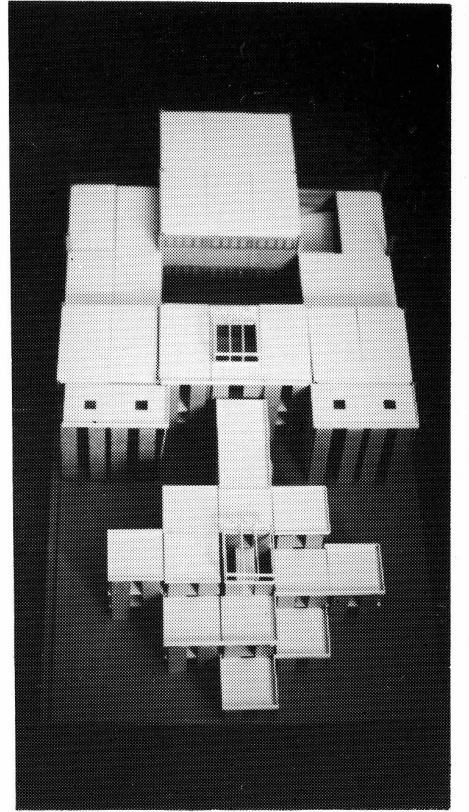
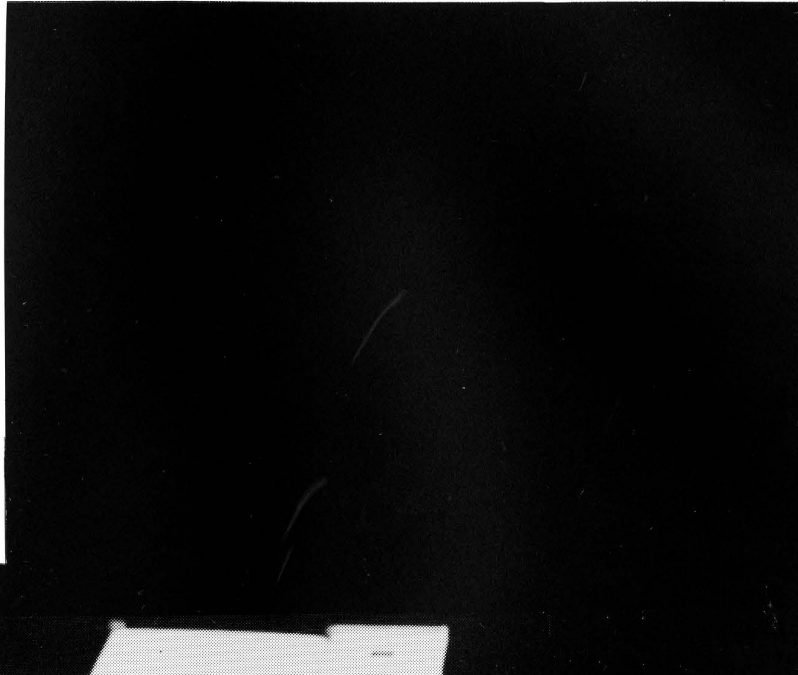
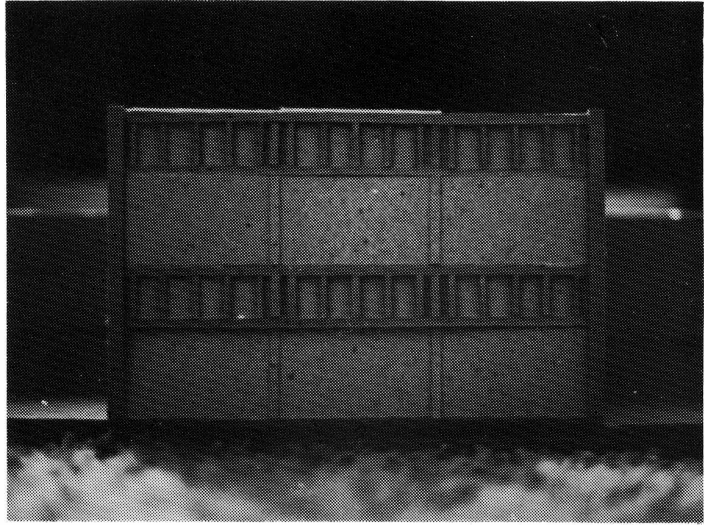


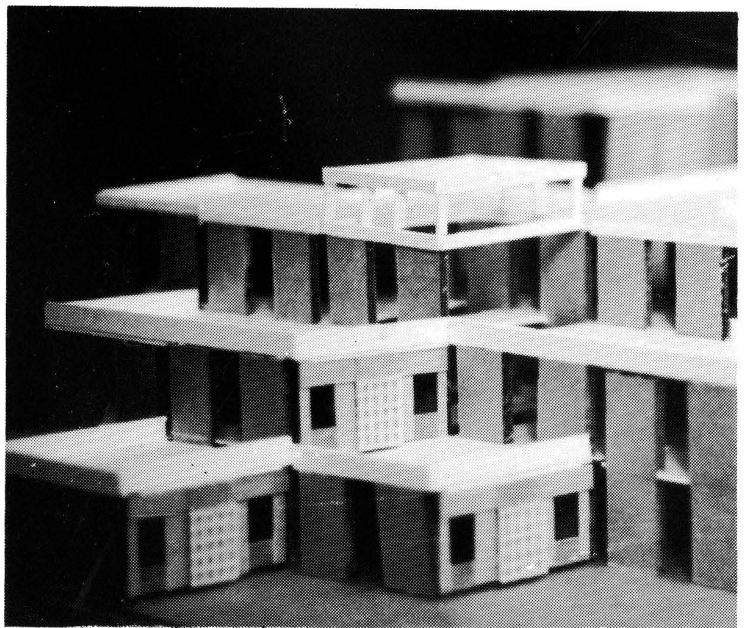
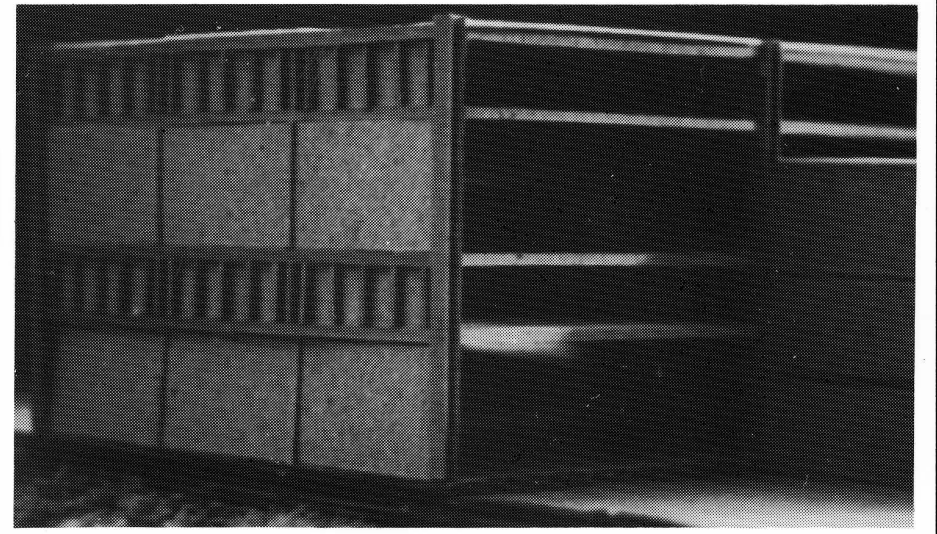
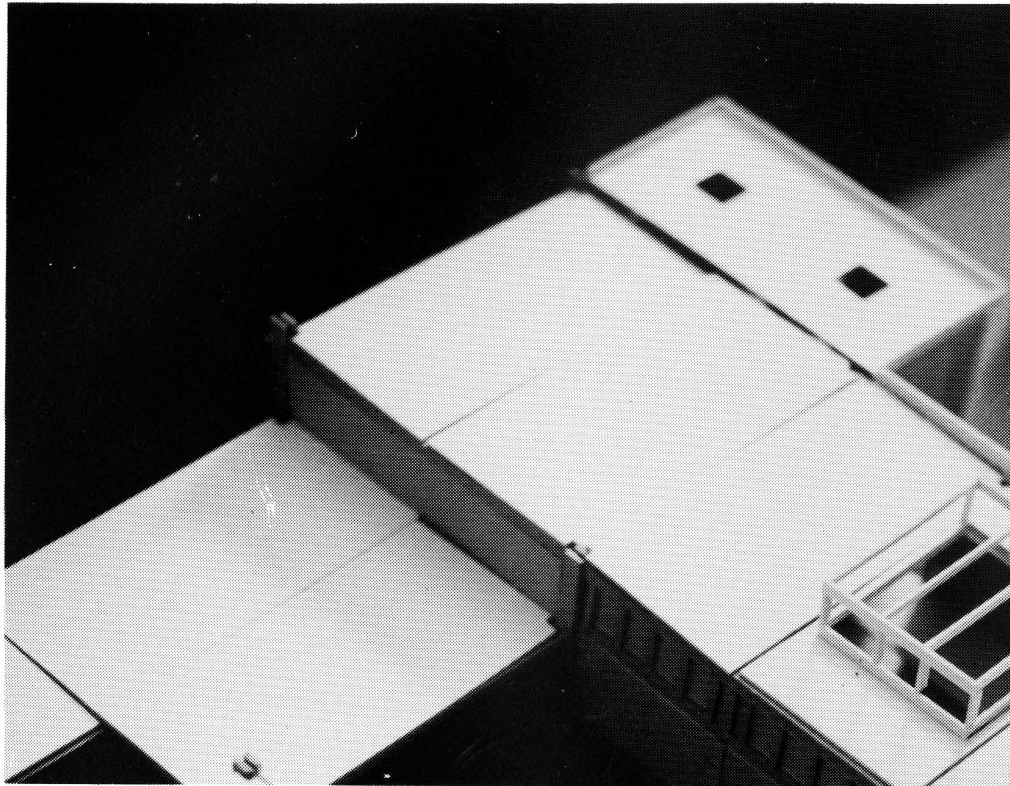
Wall Sections











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