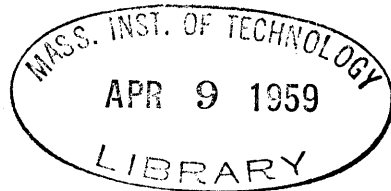


A SMALL COOPERATIVE APARTMENT BUILDING
FOR GERMANTOWN, PENNSYLVANIA



A report submitted as partial requirement for the
Degree of Master in Architecture from the Massachusetts
Institute of Technology within the School of Architecture
and Planning in the Department of Architecture.

August 11, 1958

Dean of the School of Architecture and Planning
Pietro Belluschi

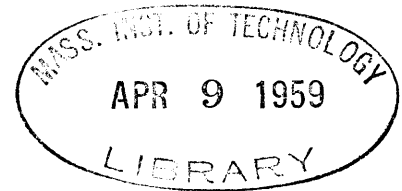
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Submitted by

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ABSTRACT

A SMALL COOPERATIVE APARTMENT BUILDING
FOR GERMANTOWN, PENNSYLVANIA



SUBMITTED BY CHESTER L. SPRAGUE FOR THE DEGREE OF MASTER IN
ARCHITECTURE AUGUST 11, 1958

A cooperative apartment building is one in which the tenants buy a percentage of the equity of the building and pay a monthly maintenance charge. There are several economic and social advantages to this system as compared with the usual methods of renting apartments. The size of cooperative projects and the impetus for building them are varied.

The location of the site for the subject of this thesis is Germantown, Pennsylvania. The town has a building tradition of fine private residences interspersed with some tall apartment towers. It is located near to the center of Philadelphia and has fine community facilities available.

The clients of the project are a group of wealthy people who want spatially interesting apartments which are closely fitted to their individual needs. Each apartment requires special amenities and consideration.

The cooperative is to provide seventeen apartments of roughly 2,300 square feet each and group facilities which include service and parking areas, and swimming pool.

The solution is based upon the desire to acknowledge the individuality of each tenant in the initial stages of design and to express the variations of the apartments in the completed building.

August 11, 1958

Boston, Massachusetts

Dean Pietro Belluschi
School of Architecture and Planning
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Cambridge 38, Massachusetts

Dear Sir:

As partial requirement for the Degree of Master in
Architecture, I submit my thesis, "A Small Cooperative
Apartment Building for Germantown, Pennsylvania".

Respectfully submitted,

Chester L. Sprague

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PART I

GENERAL DISCUSSION OF THE CHARACTERISTICS OF
COOPERATIVE HOUSING

A housing association is regarded as cooperative if (1) the initiative for the project comes from within the group to be housed, (2) the project is a nonprofit enterprise, (3) the policies of the organization are determined and controlled by the members.¹ There are also cooperative-like organizations formed by real-estate firms as business ventures for the firms. In these cases the apartments are sold to the individual buyers. The buyers pay, as part of the purchase price of the dwellings, a fee to the realtor. The fee includes the profit to the realtor for his organization and development of the cooperative. The buyers may later function as an association to operate the property, (thereby assuming the qualities of a true cooperative), or the realtor may provide the management at a further profit to himself.

In a true cooperative the entire property including all the dwelling units and the community facilities continue to be owned by the association. The members of the association become the owners and the tenants of the property.

¹Housing Cooperatives, (Bureau of Labor Statistics, Washington, 1951), p. 1.

The individual member holds stock in the organization. The value of this stock is equal to the value of the dwelling unit occupied by the member. However, the tenant owner does not receive title to the dwelling. He receives instead a lease or is given the right of perpetual use.

It can be seen from the above that a cooperative housing project is one in which ownership and occupancy go hand in hand. The ownership of a portion of the building equity entitles the tenant-owner to a lease on an apartment. Furthermore, the monthly charges for this apartment are based only on the costs of operation of the building. In such a project, the equity - i.e. the total cost of the building minus the mortgage - is divided among the various apartments in relation to their relative value. Therefore, one hundred per cent of the ownership of the building is allocated to the various dwelling units. Ownership is entirely in the hands of those who have leases and occupy the apartments. Their rent is more often called a maintenance charge. It includes the costs of repairs, upkeep, employees' wages, supplies, heat, taxes, needed reserves, and the interest and amortization of the mortgage.

One of the basic advantages of the cooperative housing, as it has existed to date, results from the economic organization of the enterprise. There is no need for the building to produce a profit for the landlord. In this way rents are reduced to a true "economic rent" a rent merely

sufficient to operate the property and to pay off any debts against it. This minimum cost-of-operation rental is perhaps the greatest single advantage of cooperative ownership. The cost of operation in a cooperative building is inevitably lower than the minimum cost for a comparable rented apartment since not only the profit to the landlord is eliminated but also costs of redecorating the apartments after each change in tenancy are either reduced or eliminated. They are reduced because changes in tenancy are less frequent if the tenants are owners and not merely renters. The costs are eliminated completely in many cooperatives by requiring all tenant-owners to do their own decorating. Some cooperatives also require the individual tenant-owner to provide his own kitchen equipment, window shades, or any other part of the apartment that can be considered not a part of the permanent facilities or structure and, therefore, subject to individual taste and fancy. The policy in these cooperatives is to share the costs of all those things provided by the project which are truly shared on an equal basis. Included (in addition to the building and financing of the project) are maintenance of the lobby and the grounds, garbage collection, cleaning of the halls and elevators, replacing worn out or defective parts to the permanent equipment of the apartment - locks, door knobs, window latches, etc. All other repairs or replacements are done by the tenant who wants

them.

At the same time that the landlord's profit is eliminated, his response to the fluctuations in supply and demand for apartments is also eliminated. Therefore, the charges remain, not only low, but dependably stable over long periods of time. Also, the apartment owners are not faced with periodic renewal of short-term leases which may expire at times unfavorable to negotiation. Tenant-owners retain the control (although not individually) of the standards of maintenance and upkeep. This usually would be controlled by the landlord. Operation of property often is entrusted to a qualified managing agent which ensures operation on a high level and prevents unwanted curtailment of services, deterioration of the property, or detrimental change in the character of the building. This managing agent is selected by and is responsible to the cooperative's board of directors. The board of directors is selected by the tenant-owners. Also the tenant-owners retain control over the selection of neighbors of suitable character, financial integrity, and social standards through the right to have all purchasers approved by the directors.

There is one other advantage to cooperative ownership which is of particular importance to this thesis. The pooling of the resources and energies of a number of persons can make possible the existence of the cooperative building on land that would not be made available to the

individual members of the group. Were an independent person to attempt to acquire the land for a single-family residence, he might find the land to be too expensive. The cost of improving the land may prove to be too much. He might simply find the land to be unsuitable because of the size, use, or character of the surrounding buildings. Yet this may be in spite of the site's possessing other very desirable qualities. It may border on parks or open greenery. It may have easy access to adequate and varied recreation opportunities and to schools, churches, and cultural institutions. It may be within walking distance of ample shopping facilities. It may be well related to good transportation. Admittedly, there are but few areas in our large cities that possess all these qualities. Because of this scarcity, it may take the resources of a cooperative association and the scale of a cooperative project to make a site in these areas available as residential land, without waiting for a private investor to develop the land. The apartment dweller, in a cooperative, however, still has the freedom of choice and action (within his own apartment) that is usually associated with the ownership of a private house on private land.

There are, unfortunately, also some limitations experienced by the cooperative owner that are not experienced by the owner of private property. The cooperative owner cannot pay his share of the mortgage at will. The mortgage is

applied to the entire apartment project. It is amortized over a number of years. It is not practical for one owner to pay off his portion while his neighbor continues the usual monthly payments. An individual tenant-owner cannot change the standards of operation of the property to meet his own tastes or needs. He must submit to the rule of the majority of the other owners. Therefore, he individually cannot make decisions concerning the reduction of the operating budget, the adding of janitor services, or the redeco-rating, replacing, repairing, or removing of any common facilities of the cooperative. In addition, he cannot sell his apartment at will as he could a privately owned house. The wishes of his neighbors must be considered, therefore he must obtain a compatible replacement. However, this limitation is also considered one of the strongest advantages of cooperative ownership, for the neighbor must also find a buyer for his apartment who is suitable to all the owners.

Because of these many, various advantages and disadvantages, a great variety of prospective home-owners are attracted to cooperatives. The resultant organizations differ widely in size, income and interests of members and internal structure.

Some cooperatives are formed to give the barest minimum housing at the lowest possible price, for the economic advantages mentioned previously. There are "self-help"

organizations in which the members contribute their own time to clearing land and to building in an effort to bring down the construction costs as well as rental costs. Some of these projects provide dwellings that are available for as little as \$1,500 equity and \$30 for the monthly maintenance costs.² One small group has carried the cooperative effort far beyond merely providing the minimum housing accommodations at the lowest cost. The group has collected some of its resources into a common food fund. The food is bought at reduced prices and each family draws what it needs. By placing the houses to the front of the building site, the cooperative was able to use the remaining land to maintain a cow and chickens and other farming activities. This farm provided full-time seasonal work for two of the members.³

Sharply contrasted to the latter group are those groups which are formed to provide expensive and spacious apartments on costly land. These wealthy people who form cooperatives for this reason are largely interested in providing themselves with unique and exclusive amenities on ideally located sites. These groups are interested in the more luxurious advantages mentioned previously. They often wish to be near to the center of the city but also to have on-site garage and recreational facilities, fine views, and

²Charles Abrams, Building Economics, a series of lectures given at Massachusetts Institute of Technology, 1958.

³Housing Cooperatives, op. cit., p. 60.

proximity to the best shopping, entertainment, and park areas. They wish their apartments to contain special features which cannot be found in rental apartments. These special features can include fire-places, balconies, studios, solariums, green houses, even pipe organs.⁴ The cost of providing these amenities can amount to \$75,000 in equity per apartment and \$600 in monthly maintenance charges.⁵

The sizes of cooperatives have as wide a range of variety as do the impulses which start them and the incomes of the people who support them. In a study made by the Bureau of Labor Statistics, it was found that the total costs of cooperative housing ventures range from \$25,000 for a small self-help project to over \$5,000,000 for large apartment buildings.⁶ The number of units per project ranged from 4 to 1650.⁷ The following is a specific example giving the size and costs of a familiar apartment project. The building is located at 860 Lake Shore Drive, Chicago. It was designed by Ludwig Mies van der Rohe. There are two buildings of twenty-six stories each. The buildings were designed to contain 192 one-bedroom apartments, 96 three-bedroom apartments, and a garage for 116 cars. The total

⁴J. R. McGonagle, Apartment House Rental, Investment and Management, (New York, 1937), p. 369.

⁵Abrams, op. cit.

⁶Housing Cooperatives, op cit., p. 29.

⁷Ibid., p. 23.

cost was \$5,600,000. The contribution cost for a three-bedroom unit of approximately 1,350 square feet was roughly \$26,000. In 1954, the average equity for the same apartment was approximately \$13,000 and monthly charges were \$200.⁸

The above mentioned cooperative is also an example of the kind of project that is organized by a real-estate firm or investor as a business venture. It thus has the disadvantage of a higher initial cost because of the fees of the developer which are above the usual cooperative expenses. It also has another and more serious disadvantage for high cost apartments. The problem arises because it is customary for the building and the apartments to be designed before the developing organization attempts to attract the tenant-owners who will occupy the building. The reason for this problem may also be traced to the size of the project. It is ordinarily not reasonable to expect 288 families to commit themselves to a cooperative venture if no plans are proposed or if no organizing body exists prior to the formation of the cooperative. In most cases the building must be designed to allow the prospective occupant to see what he can get for his money before he joins the cooperative.

The experience of the organizer of 860 Lake Shore

⁸Robert H. McCormick, Jr., "Glass Towers for Co-ops", Cooperative Apartments: Their Organization and Profitable Operation, (Chicago, 1955), p. 55.

Drive has shown that those who join a high cost cooperative require that their apartments be closely adapted to their individual needs. Mr. Robert H. McCormick, Jr., the managing agent of 860 Lake Shore Drive summarized these problems (from the manager's point of view) in an article in a publication of the Institute of Real Estate Management.

Although the buildings were designed with only two types of three and a half room apartments and one type of six-room unit, it developed in the end that there were few, if any, completely typical units, each one being tailor-made. Change orders continued to come in, in some cases even after occupancy. These were a constant source of difficulty and irritation between owners and contractors, with the development group in the center. Changes were extremely expensive but even so could not possibly compensate for the time, effort and detail entailed. ⁹

It would seem, therefore, that the original cost of \$13,000 for a six-room apartment was, for most occupants, merely the beginning. The cost to the tenant rose considerably in order to make the apartments more closely approach the individual requirements of the tenant-owners. Thus the serious problem of large cooperatives organized by a developing agency rests upon the fact that the needs of the individual apartment owner cannot be precisely determined before the design of his apartment. The occupant must either adapt his manner of living to the facilities provided or go to the trouble and expense of adapting the apartment to his

⁹Cooperative Apartments: Their Organization and Profitable Operation, op., cit., p. 59.

needs. The above problem could be overcome by consideration of the fact that the needs of individual tenants differ, coupled with attention to these needs in the initial stages of design.

PART II

DISCUSSION OF A SMALL COOPERATIVE APARTMENT BUILDING FOR GERMANTOWN, PENNSYLVANIA

A - The location: the characteristics and advantages of Germantown.

The organizers of this small cooperative,¹⁰ like many persons living in large urban areas, have decided that the move to the distant suburbs to build a home on more or less open land is a mistake. They feel that commuting to the city is intolerably time consuming. The community facilities and shopping precincts are either inadequate or so widely scattered that the families must spend additional intolerable hours transporting to and from shopping centers, schools, friends. The anticipated peace of the suburban life has been replaced by the hectic requirements - the crowding and the hurrying - of the avenues of mass transportation. In addition, it is costing more and more in taxes to provide the community facilities and the roads to connect them. Peace is not found, nor money saved.

But to move back to the still crowded and dirty city is not always the answer, although Mr. William H. Whyte Jr.

¹⁰A friend of the author, Mr. Steven Lichenstein of Philadelphia, and a small group of his business associates and friends are interested in a cooperative housing effort similar to the one discussed in this report. The author has assumed this small group to be the clients for this thesis project.

has indicated that many families are doing just that.¹¹
 The old and wealthy suburbs near to the center of the urban area are attractive areas for those who can afford to live there. The towns provide well-preserved open areas, parks, and greenery, plus respected and prosperous citizenry, and generous public facilities and transportations.

Germantown, Pennsylvania, is one of these old suburbs. Specifically, it is an old colonial town that quickly became a suburb as Philadelphia grew to include Germantown in its expanding body. It is now within the city limits of Philadelphia.

Mr. Henry Churchill made a study of Germantown for the Philadelphia City Planning Commission in 1956. The following statements about the characteristics of the area are quoted from the report of that study.¹²

The population of Germantown is 65,871 or about 32 people per gross residential acre and about 12 dwelling units per acre. The average density of the census tracts nearest to the location of the site of the subject of this thesis is 4 to 6 dwelling units per acre. The areas are still mostly occupied by large houses on large lots, interspersed with small apartments buildings and large apartment towers. 14

¹¹William H. Whyte, Jr., "Are Cities Un-American", Fortune, (Sept. 1957), p. 124.

¹²Henry S. Churchill, Germantown: A Planning Study, (Philadelphia City Planning Commission, Philadelphia, February 6, 1956).

¹³Estimates of Population and Dwelling Units in Philadelphia 1955, (Philadelphia 1955) pages 11 - 12.

Historically speaking, Germantown was settled by business men and craftsmen of non-English descent about 1691. Up to 1763 the town was predominantly German in population, language and culture. After this, the English began coming in, principally from Philadelphia, to take up summer residence there. Germantown's normal existence was interrupted momentarily by the American Revolution. It was the scene of the battle of Germantown in 1777, which, while not an actual military victory, was nonetheless a decisive moral one. Though not disrupted too much by the actual fighting, Germantown nevertheless was faced with the disorder an occupying army invariably creates.

After this Germantown lapsed back to its routine life until 1793 when havoc was created by the infiltration of hordes of Philadelphians fleeing from the yellow-fever ridden city. Once the fever was over, many Philadelphians took up permanent residence there, and from then on Germantown grew without being troubled by other than normal occurrences. 15

The land of Germantown is rolling, generally rising sharply from the bed of Wissahickon Creek to Wissahickon Avenue and tapering off to a gentle rise to the east. Mostly well shaded by trees and combining the development of many cultures, Germantown provides an exceedingly attractive residential location, being located five miles from the center of the city, a travel distance of about fifteen minutes by train and twenty minutes by automobile. All these advantages account in no small degree for the stability and variety of this area. 16

Residences are the major land consumer in Germantown.

They constitute roughly 55% of the total land area. There is hardly any vacant land left in Germantown except for some small tracts of one acre or less scattered throughout the area. 17

¹⁴Churchill, op. cit., p. 1.

¹⁵Ibid., p. 2.

¹⁶Ibid., p. 2.

¹⁷Ibid., p. 8.

Seventy-three per cent of Germantown's housing was built by 1919 and only 4% has been built since 1940.¹⁸ This lack of construction is in part due to a lack of available land. The dates of building can partially explain the general openness of much of Germantown's residential areas. Most of it was built in the days when people could still build large houses on large lots.

Germantown has many advantages with regard to its housing situation. First, it has a low vacancy rate (about two per cent of total available dwelling units). This trend can be expected to continue since the area is a desirable location relative to the center of the city. Second, Germantown provides generally good residential location by its relatively open feeling and low land coverage. Third, there is an unusual amount of pride and interest in the community; the inhabitants, business and industrial interests all want to retain and improve their community.

19

The town is well served by the commuter trains of the Pennsylvania Railroad. There are five stations convenient to all parts of the town. The town is "well situated" with regard to major trafficways - Lincoln Drive, a major connection to Philadelphia goes through the area; Chew, Chelton and Germantown Avenues and Washington and Walnut Lanes all serve as major feeder streets. Eventually, the Roosevelt Boulevard - Schuylkill connection will be built, cutting through the far corner of the area with interchanges

¹⁸Churchill, op. cit., p. 12.

¹⁹Ibid., p. 23

at Wissahickon Avenue and Roberts road."²⁰ The location of the commuter station, the major traffic ways and bus lines are shown in the topographical map included in the graphic presentation of this thesis.

Easily accessible to the residential sections are branches of all chain stores, markets, hardware and dry goods stores. There are also numerous speciality shops which cater to the wealthy inhabitants. The banking, entertainment, cultural and religious facilities are among the best in the Philadelphia area - as one would expect in a town which for generations has been the home of many of Philadelphia's most prosperous families. In nearby sections of the town are homes of people who work as household servants for the well-to-do. The location of the shopping areas, institutions and residential areas are shown on the general land use map included in the graphic presentation.

Mr. Churchill summarizes the advantages of Germantown when he writes, "all the necessary community facilities are here, and the atmosphere is decidedly more desirable than that of the new sub-division. Germantown is an area that city planners strive for and which is hard to achieve, for the development has been spread over many years."²¹

²⁰Churchill, op. cit., p. 3.

²¹Ibid, p. 14.

Not only does Germantown have a long history as a residential town, but it also, since the 1920's, has had a tradition of rather tall apartment buildings. Today there are twenty-two of these. They are from eight to sixteen stories high. Many of these buildings are placed in park-like settings with generous greenery surrounding the apartments. This has helped to maintain the open residential quality of the town. Photographs of some of these buildings are shown on the following pages.

There also exists a cooperative housing project in the neighboring town of Chestnut Hills. The project was recently built on what had formerly been a private estate. At the moment there are 104 dwellings arranged in two-storied buildings of from two to twelve apartments each. Two tall apartment buildings of ten to fifteen stories are planned for addition in the near future.²²

²²This information was given to the author in a conversation with Mr. Oskar Stonorov, the architect of the Chestnut Hills project.

A - Views of
Germantown from a
16th. floor window



1 - looking south



2 - looking west



B - Apartment buil-
dings in Germantown

1 - On Hortter Street
near Wissahickon
Avenue.



2



3



4

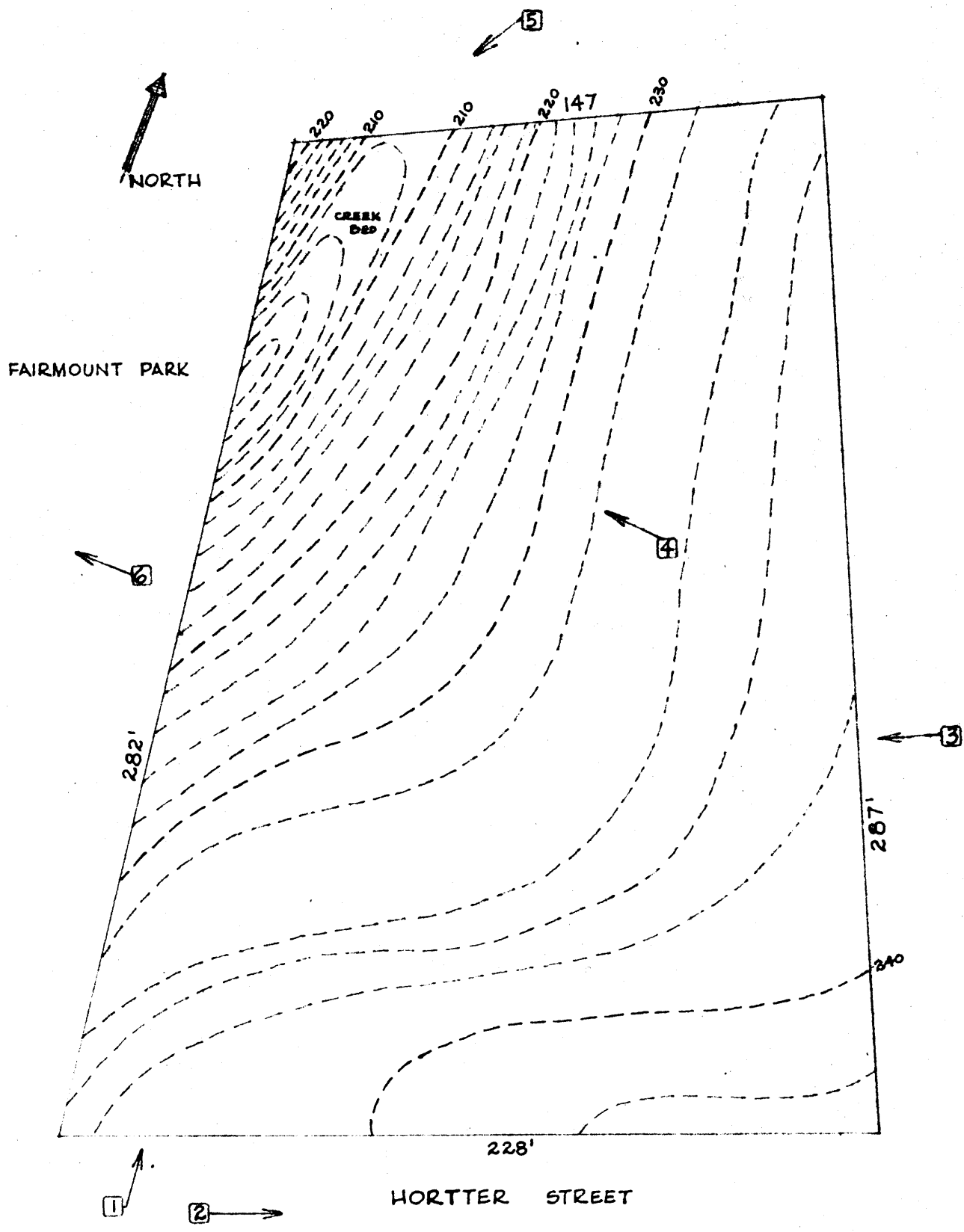
B. The Site: Its dimensions, elevations and relationship to surroundings.

The site is located on Hortter Street six hundred feet south of the intersection of Hortter Street and Wissahickon Avenue. It is bounded on the east by Hortter Street, on the south by Fairmount Park, and on the north and west by privately owned residential land. Its dimensions and elevations are shown on the accompanying drawing. It is generously covered with large trees and shrubs of the kind shown in the accompanying photographs.

The site is three blocks from the nearest commuter station, one block from the nearest bus line, one block from Wissahickon Avenue, a major traffic way, and four to seven blocks from the heart of the Germantown shopping area. The location of the site and its relationship to community facilities are shown on the map of Germantown included in the graphic presentation.

The location of the site is quite free of distracting noises - Hortter Street is little traveled; Fairmount Park and the adjoining residential land provides quiet and wooded surroundings.

The building proper must be set back a minimum of 35 feet from the boundary of Hortter Street and 15 feet from all other boundaries. The site was formerly part of a large estate. The land is now being subdivided and sold.



AREA 52,325 SQUARE FEET

CONTOUR INTERVAL 2 FEET

SCALE 1" = 400'

C - Views of the building site. The views are taken in the direction of the arrows shown on the drawing of the site.



VIEW 1



VIEW 2



VIEW 3



VIEW 4



VIEW 5



VIEW 6

C. The Clients: The nature of the group and its attitude towards cooperative living.

The group of potential tenant-owners who are interested in building the cooperative apartment building which is the subject of this thesis are successful business and professional people whose incomes range from twenty to forty thousand dollars a year. They like the natural and man-made beauties of Germantown and appreciate its nearness to downtown Philadelphia. They find a significant portion of their friends living within a few miles of the proposed building site. Their chief reasons for forming a cooperative are to build in an established and fully settled community, near to their friends and to the city center, and to provide themselves with amenities and facilities that are not available in the usual rental apartment.

The clients consider that the undesirable features of most rental apartments are numerous. The city apartment house generally cannot provide adequate parking for both tenants and their guests. Open green play space is not available on the site. The clients feel that an apartment building

located in a town with low land coverage should provide both of the above.

There are also space deficiencies with the usual apartment. There is very often too little storage space and the rooms themselves are, in many instances, too small to allow for ease of movement and of true feeling of spaciousness.

Perhaps the most compelling problem, however, in all apartments is their lack of privacy, their lack of a certain feeling of uniqueness and their lack of a sense of spatial freedom. The many apartments are ranged along a common corridor, each facing the same view. The neighboring apartments, above and below and to each side, impinge upon the individual apartment by denying it the view just around the corner and by surrounding it between a floor and ceiling which never vary to give a feeling of expansion and freedom. The clients feel that their apartments should provide privacy and spatial freedom. The type of apartment that would suit most of the clients best would be a penthouse, which often provides an open view as well as a variety of heights of space and a sense of exclusiveness.

Even the penthouse, however, has deficiencies when compared with a custom built home for the obvious reason of being "ready made". Both the husbands and wives of some of the client families have careers demanding their presence in

downtown Philadelphia. These people do not have abundant leisure time. Therefore they want an apartment close to the city center, that is, an apartment as closely adapted to their needs as possible so that they can fully enjoy what spare time they have. Most of them entertain groups of business associates and friends frequently and desire larger living spaces than are commonly available in apartments. Being among the more affluent members of an affluent society they feel that they can afford to have precisely what they want in their homes. They have much the same attitude toward the apartment they will occupy in this project as they would have toward a private house on private land.

The clients do not want private houses, however, for reasons other than distance from the center. They like apartments because of the elevated and panoramic views and because of the services and convenience. Although they enjoy living amongst lawns and terraces, shrubs and trees, they do not want the responsibility of caring for them and in general do not like to be responsible for the upkeep of a private residence.

The members have organized their cooperative to permit the full consideration of their apartment requirements from the very beginning of the designing process. They of course realize that in a multistoried building with certain common facilities, there cannot be complete freedom of design for

each apartment. (Indeed, complete freedom of design rarely exists, and is perhaps not a desirable thing, even in the individual house). But they do want to retain as much of their own peculiar characteristics as possible; they want their building to be a collective habitat for individuals.

The group feels that the optimum size of their project should be between 15 and 20 dwellings in order to provide maximum freedom and privacy for the individual members and to have the resources to acquire the land and facilities they desire.

D. The Building Requirements

In general, the requirements are to provide 17 dwellings for the members of the cooperative, parking space for automobiles and community facilities.

1. Dwelling Units

(a) General Space Requirements

The areas of the dwelling units average 2,300 square feet per apartment. The space needs vary from one apartment to the next but they all are roughly 2,300 square feet. The space must admit to a variety of uses. The cooperative organization wishes to take the requirements of each tenant into consideration in the initial stages of design. This is possible since the group is small.

There are two basic groups whose nature dictates the general use to which their allotted space will be put. Couples with growing children feel that a family space is generally mandatory, as well as from two to four bedrooms, two or three bathrooms and living, dining, and kitchen spaces. They also may require a study, and or balcony and some other special features. Couples (or single persons) with no children or with children who are grown require two or three bedrooms and a possible study, two or three bathrooms and a balcony, living dining, kitchen, entry space and possibly also some special feature. The sizes of all these spaces uses will vary

with the individual, although size requirements for kitchen and entry remain rather constant. Most apartments must have balconies although their uses may vary and all must have at least one fireplace. Most will be air conditioned. The "atmosphere" of each apartment, as determined by its spatial interrelations will vary with the tenant-owner. The following lists the requirements of each apartment:

1. - A couple with four young children want distinct separation of adults' and children's facilities. There must be 5 bedrooms, 1 bathroom for the master bedroom and a compartmented bathroom arrangement for the children. The wife wishes to be able to supervise the children's playroom from the kitchen, and to have facilities for family eating in the playroom. Large living room, and dining area are also required.

2. - The apartment is to be shared by three adults - a man, his wife, and the wife's mother. The mother requires a private bedroom, bathroom and sitting room, which may occasionally be used as a guest room. Master bedroom and bathroom are required. The couple entertain extensively and want a large living, dining space, and balcony for cooking outside. There must be storage for barbeque equipment and wicker outdoor furniture off the balcony. High fidelity recording equipment must be accessible from living space and from balcony. A guest lavatory is required.

3. - A couple with two children want distinct separation of adult and children's facilities. Master bedroom and bathroom are required, and two children's bedrooms adjacent to a bathroom and a room which will be their study and will be used for guests. There must be a pass through from kitchen to dining area, a playroom which can be supervised from the kitchen. This playroom should have a sunny balcony. The large living room should have a balcony.

4. - A couple with a maid who lives with them. The wife is interested in "gourmet" cooking and spends much of her time in the kitchen. A large kitchen with a cooking fireplace, breakfast nook and serving pantry are required. There must be a diningroom for large dinner parties. A bar is required to serve both dining and living rooms. There must be a rather secluded area off the living space for watching T.V. There must be a large balcony, large master bedroom, bath and wardrobe, maid's room and bath, and a guest lavatory.

5. - The apartment is to be occupied by a couple with two children (teen-aged). A room off the kitchen to serve as a family eating room and the children's living ~~sunny~~ room is required. This must have a sunny exposure. There must be two children's bedrooms with two beds in each room, and a master bedroom. Compartmental bathroom facilities will serve all bedrooms and guests. The wife paints and wants a high studio

space with north light and walls on which to hang her paintings. This room should be adjacent to the adult living space, which should be large and have a small balcony. The studio will be frequented when guests are present. There must be a dining area.

6. - The apartment is to be occupied by a couple with three children who do not want a distinct separation between areas for adults and children. They do not like airconditioning and want a balcony which can be screened and, when open in summer, will make the community sections of the apartment one large room. There must be three bedrooms accessible to a bath, a master bedroom and bath, and a dining room which must have display facilities for the wife's china collection.

II. - The apartment is to be occupied by a couple living alone who have frequent overnight guests and require a permanent guest room. The husband does work and sometimes sees business associates at home and wants a study adjacent to the master bedroom for this purpose. He wants a balcony off this study to facilitate working outdoors on weekends. One compartmental bathroom is required. They want a formal entertaining space with a large balcony and a pass through from kitchen to dining space.

8. - The apartment is to be occupied by a couple with two children who have many active hobbies. A large space off the kitchen is required for family eating, relaxing and working at hobbies. The large children's bedrooms must be provided with access to a compartmental bathroom arrangement which will also serve for guests. Separation of the facilities of adults and children is required. Master bedroom and bath, living, and dining space are required. They do not require a balcony since they spend summer^s away.

9. - The apartment is to be occupied by an informal couple with no children. They want a maximum of openness and inter-connection between the various non-private portions of their apartment. The wife wants to be able to take part in the social activities in the living areas while working in the kitchen. The spaces to be provided are a master bedroom, one bath, a study (which can be used as a guest room), a cooking area closely related to the living area, a work space for sewing, laundry, household repairs, and a small loom, and a balcony opening off the living area.

10. - The apartment is to be occupied by a couple with 2 teenage children. The family is closely-knit. The members often participate in each other's social life. They want the social area of the apartment to accomodate a variety of

activities at one time but also to be closely interconnected by grouping around a balcony. Two children's bedrooms must be adjacent to a room which will serve as a children's study and guest room all accesible to one bathroom. Master bedroom and bathroom, dining and kitchen are required.

7. - The apartment is to be occupied by a couple with one child who collect paintings and manuscripts and want an exhibition space related to the formal entertaining area, a dining room and library. A sleeping and a play room space is required for the child who will be cared for by a day nurse. These will have access to a bathroom (which will also serve for guests) and a sunny balcony. The kitchen must provide counter eating space. Master bedroom and bath must have a private sunny balcony.

12. - Two sisters share the apartment and also share a great interest in horticulture. They want a great many plants indoors as part of their living space, space for gardening tools and a small balcony for outdoor plants. The kitchen and dining space should open off the main living space. Two large bedrooms with large baths and wardrobe spaces are required. A shaded and secluded balcony relating to the bedrooms is required.

13. - The apartment is to be occupied by a couple and a maid who lives with them. They want large living and dining spaces and a large balcony. The spaces will include a master bedroom - study suite with a balcony and a bath. The study may occasionally be used by an overnight guest. There must be a maid's room and bath and a laundry located near the kitchen.

14. - The apartment is to be occupied by a couple with an adult son. The son must have his own facilities for entertaining small groups of friends as well as for sleeping. He therefore requires a bedroom and small living room with a bathroom accesible to both, and a small balcony. The couple require a master bedroom and bath, a guest lavatory and a kitchen and dining space. A bar must serve the large living room.

15. - The apartment is to be occupied by a couple with no children. Both are professional people with separate careers. The man is an accomplished amateur violinist. The main living space should be able to accomodate frequent and informal chamber music recitals which are given by the husband and his musician friends. The husband and wife want seperate bedrooms with a shared bathroom, a guest room, and a maid's room. The wife needs a balcony off her bedroom on which she can take her early morning sunbaths and raise a few summer plants.

16. - A couple with three children will occupy this apartment. The facilities for the children must be separate from the parent's facilities. Two daughters will share a bedroom. A son will have a room to himself. Both rooms will be served by a compartmental bathroom. They must be adjacent to a playroom, and closely related to the kitchen. The playroom should have a small balcony. The parents require a master bedroom and bath. A bar must serve with both dining and living spaces.

Penthouse. - A sculptor and his wife will occupy this apartment. They demand a panoramic view and the seclusion of living at the top. The sculptor's studio must have easy access to the service elevator for moving supplies and his finished work. The couple lives informally, they require a bedroom and bath, and a kitchen-dining-living space.

(b) Functional Requirements applying to all apartments;

There must be a service and a passenger elevator serving each apartment. Traffic from these two elevators must not cross.

Each apartment must have access to two separated emergency stairways.

Each apartment must be completely private from the standpoint of sound and sight. Long public corridors are not acceptable, nor is the sharing of one landing by several apartments.

Balconies are to be large enough to be truly usable, and may not be open to stares from neighboring apartments.

2. The Community Facilities

(a) Requirements in conjunction with dwelling units

Lobby space from which elevators and stairways are accessible. There must be facilities for sorting mail and mail pickup in this space. Cover for entrance from automobiles must be provided in conjunction with the lobby.

Community laundry facilities consisting of a room with four washer, four dryers, ironing facilities, and a small drying room. All these facilities should require no more than 500 square feet of area.

Provision for the storage of the building supplies and for the trunks and luggage of the tenants approximately 800 square feet.

Service entrance to the building to accomodate delivery trucks, garbage removal, etc. The service entrance must have access to the service elevator and stairway.

A small apartment of approximately 750 square feet for a janitor-caretaker. This will include kitchen and bathroom facilities, one bedroom and a living-dining area.

Mechanical and heating equipment space approximately 700 square feet.

(b) Site Requirements

Parking under cover for 24 tenant cars.

Parking for guest cars

Service entrance for the dwelling units

A swimming pool of approximately 1,000 square feet with diving facilities. Adjacent to the pool there must be two dressing and shower rooms with toilet facilities, a small bar, kitchen and shelter for entertaining, and a pump house. These covered areas should total approximately 600 square feet.

The pool facilities will serve for the members of the cooperative and their guests. It must be shielded from the view of neighboring property.

Small children's playground

Terraces and gardens. The site should be developed in a manner which will maintain the residential seclusion typical of the Germantown area.

PART III

THE SOLUTION

A building must always adapt itself to the needs of the people within it. The people should never find it necessary to adapt to the building. A democratic society with great technological facility should use that facility in establishing the individual^{by allowing} him the natural and easy expression of what is in himself and in his way of living.

Collective housing has not yet honored this problem as at times private houses have done. The collective aspects (the so-called imperatives of structure, construction, and mechanical equipment) are caused to override the separate units. (As if our much-lauded technology does not exist to prevent just that.) The "hard facts" of the business world have neither the time nor the inclination to care, so the individual is submerged in his statistical similarities to others.

This thesis attempts to correct this failure in collective housing and to show that the word "collective" does not necessarily mean uniform. This building is an attempt to exploit and to establish the uniqueness of the tenants for architectural purposes, to combine into a unity the individual variations of the apartment, and to

demonstrate the optimum relationship between the collective and the individual.

The collective aspects - structure, building materials, vertical ducts and plumbing, elevators and emergency stairways - have been grouped and isolated in two vertical shafts which support the 17 floors of the apartments. The apartment space is thereby left relatively free for the variations according to the needs of the occupants.

The details of the solution are shown in the graphic presentation of this thesis.

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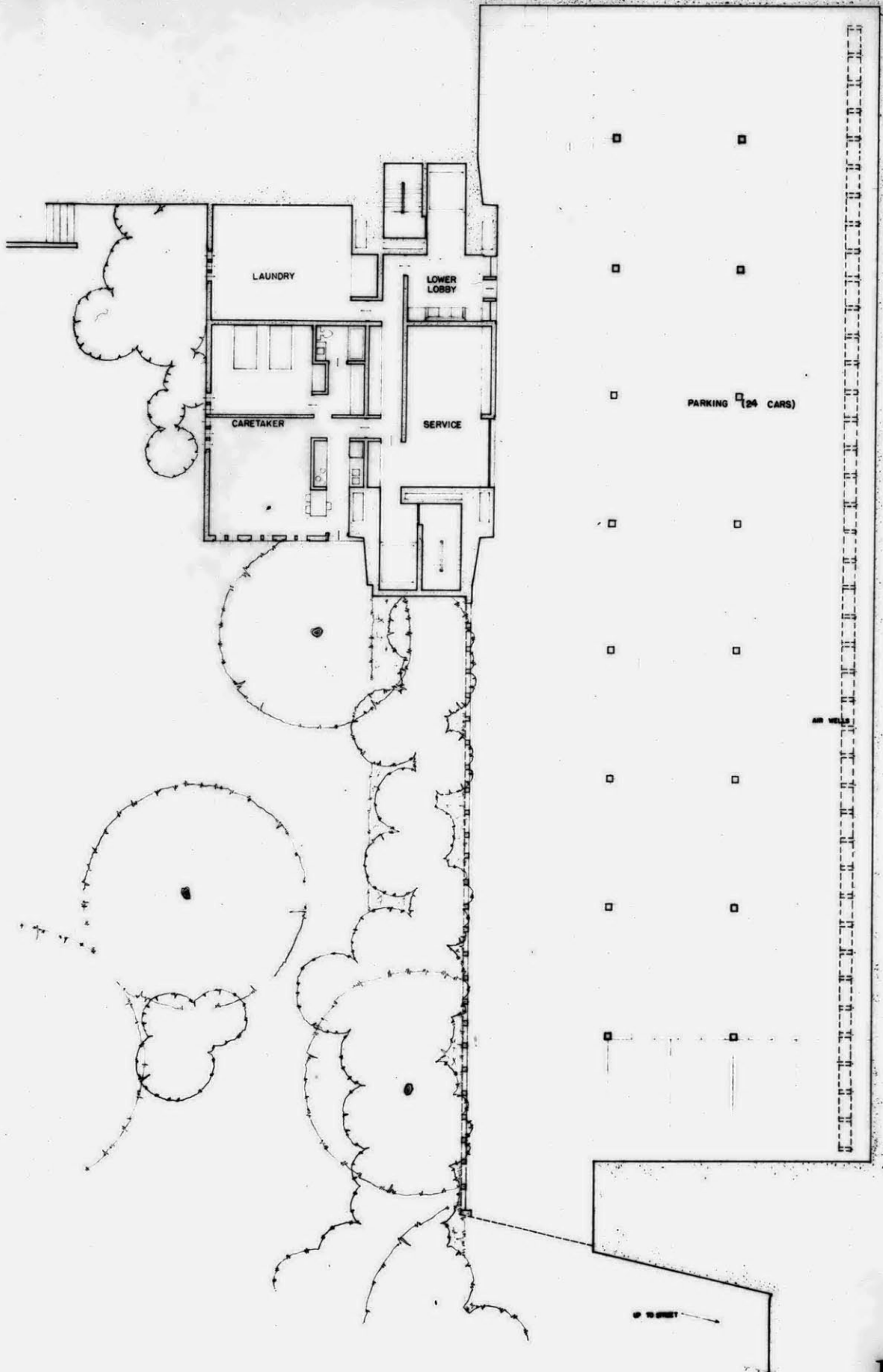
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SWIMMING POOL

CHILDREN'S PLAYGROUND

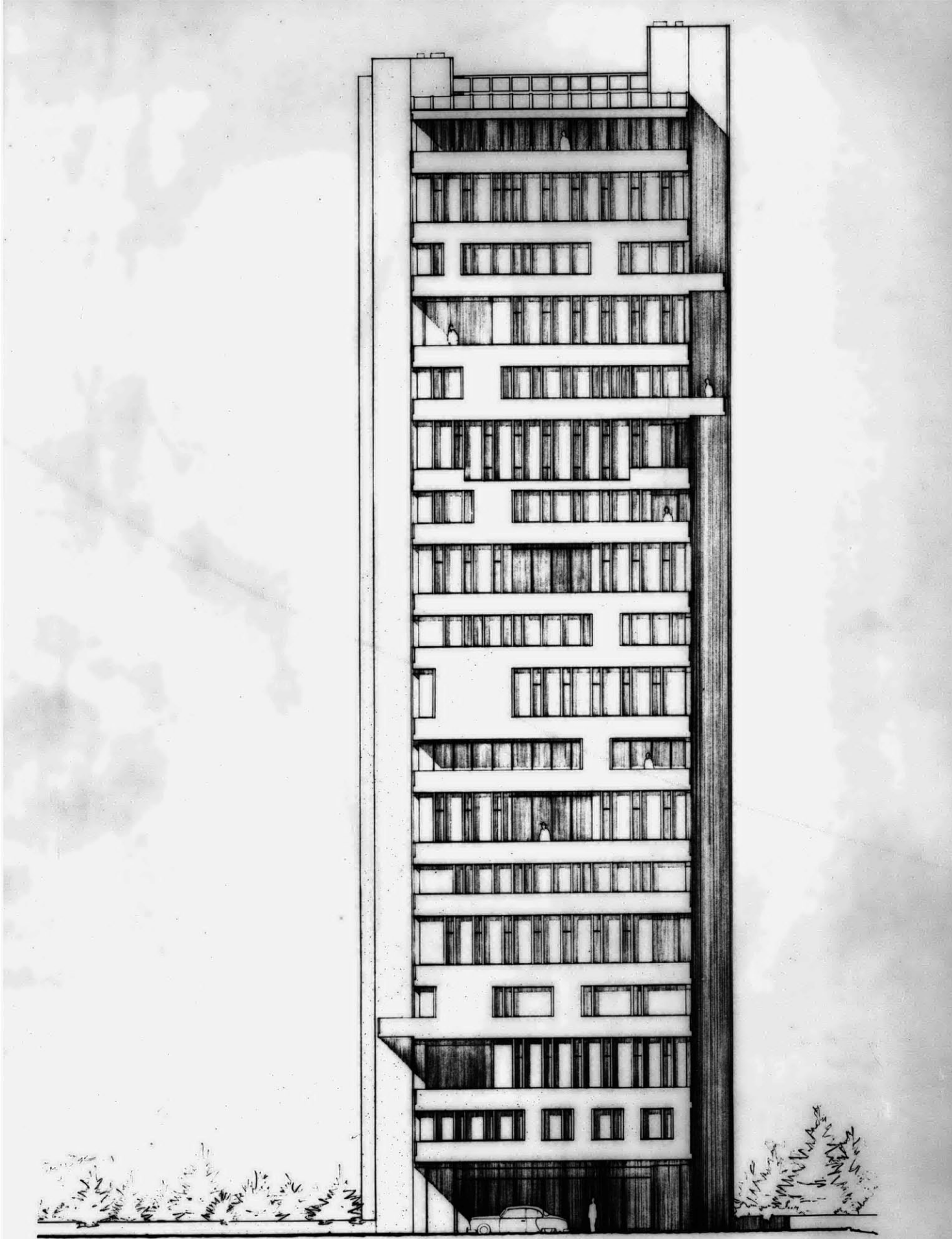
LOBBY

MORTIER STREET

FAIRMOUNT PARK

NORTH

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