

A MIDDLE INCOME HOUSING PROJECT

Submitted in partial fulfillment of  
the requirements for the degree of  
Master in Architecture  
Massachusetts Institute of Technology

William Yung-Kang Ku

23 Aug, 1954

Lawrence B. Anderson  
Professor of Architecture  
Head of the Department of Architecture

√



23 Aug, 1954

Cambridge, Massachusetts

Pietro Belluschi, Dean  
School of Architecture  
Massachusetts Institute of Technology

Dear Dean Belluschi:

As partial fulfillment of the requirements for the  
degree, Master of Architecture, I submit my thesis,  
"A Middle Income Housing Project".

Respectfully yours,

William Yung-Kang Ku

arch - 1000 2, 1954

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## ABSTRACT

Title "A Middle-Income Housing Project" being a thesis report for the degree of Master in Architecture from Massachusetts Institute of Technology.

One slum clearance project is planned in the city of St. Louis under the Urban Redevelopment section of the Public Housing Act of 1949, which helps to buy the blighted area for clearance and redevelopment by private investors. These apartments are contemplated for the people of the middle-income bracket. This project involves the demolishing of the existing decayed structures, and the design of a new group of dwellings for a better living condition on the fringes of the downtown district.

The thesis is an attempt to solve a particular problem from an architectural student's concept; the housing plan is not limited by arbitrary standards established by building codes, zoning regulations, housing authorities, F. H. A., mortgage insurance requirements, etc. It is an attempt to provide a high standard of living within realistic limits; physically and economically. Esthetic aspects with imaginative touches are shown in these high rise structures in order to bring beauty and life to this area. Economy is sought by adopting the skipped-floor plan. Simplicity in structure;

compact in plan, mark the main characteristics of these multistory buildings and bring further reduction in cost.

Only the efficiency, comfort and satisfaction of the dwellers is true measure of a good housing.

## INTRODUCTION

Although the housing problem is as old as the human race it may be said never to have existed until recent times. It was there but it was accepted as a matter of course and was treated fatalistically as inevitable. It was solved simply by being ignored. Within the last century this attitude has changed radically and the problem has been of such concern that it has been the subject of innumerable studies, reports, articles, and laws. It now presents itself as the problem of giving great numbers of people who wish to live in decent surroundings and to rear their children under proper conditions a fair opportunity of doing so.

As early as 1790 certain phases of the housing problem were a source of anxiety to a group of our statesmen, and in that year Jefferson advocated the erection of low houses in the interest of health conditions and of the reduction of fire hazards. Washington, in 1791, approved for the District of Columbia a regulation restricting the height of house walls to forty feet. However, in spite of these early manifestations of interest, it was not until the middle of the 19th century that public opinion in regard to housing began to take form. Since that time a variety of schemes have been suggested for the improvement of housing conditions and a number of these have been put into practice with varying degrees of success. Prior to

the World War I emphasis was placed upon the sanitary aspects of housing and numerous regulations were set up for control in this field. At the close of the War, interest shifted to a stimulation of building activity in order to meet a serious housing shortage with which all the major nations were faced. As this shortage was met the attention of housing reformers turned once more to the social and sanitary aspects of the problem. But with the outbreak of the World War II and the increasing demands for defense programs on materials, it became necessary to limit non-essential buildings. The end of the War brought farther and greater housing problems and attention had to be placed on producing a large quantity of housing for veterans. The shortage had been relieved but did not result in any important alleviation of slum conditions.

The present program under the housing act of 1949, which concerns itself primarily with slum clearance, and urban redevelopment, may be said to be predominantly the program of the Government in cooperation with local authorities. Private enterprise finds it impossible to provide dwellings for persons within the lowest income group and is making few efforts to operate even in the middle income group.

Money, beyond doubt, is the root of all evil in the

housing problem. Land costs are high, financing difficult, constructing costs have soared. All this combines to make rebuilding of the slums mainly a public rather than a private responsibility. At present it would be impossible to rebuild the whole area by public financing. What can be accomplished is major improvement on a large scale, with the hope and expectation that this will lead to further private improvement in the remainder of the area.

The present interest in the subject may be understood by a brief survey of slum conditions in any large city in this country. For example: More than a third of the city of St. Louis is blotted by areas of blight and of progressively worsening slums. St. Louis country suburbs are dotted with similar areas; the suburbs no longer are isolated from the unpleasant parts of the community. Fine homes and the county's miles of pleasant white-collar dwellings in numerous instances are within hailing distance, if not actual sight, of obsolete dwellings, overcrowded subdivisions or downright misery.

Thousand of families in St. Louis and environs exist miserably today in ramshackle heaps. Their hovels and nineteenth century warrens foster despair, discontent, crime, delinquency, disease. Self-respect and ambition are stifled in them. The whole metropolitan area is spotted shamefully by these decayed habitations. Housing here is a sordid story.

Slums, it has been shown repeatedly, are an excessive economic burden on St. Louis. They are a disproportionate drain on the city's finances for health service, fire protection, the control of crime and delinquency, and for other services. On the other hand, they are a poor source of tax revenue. Their demands add to the burden of private charity.

A basic cause of the development of slums and blighted areas has been the lack of openness, the poor environment and the endless monotony of straight streets and uniform houses. In modern large-scale housing it is possible to eliminate these handicaps by the creation of super-blocks, with houses covering only 15 to 20 per cent of the land. A higher standard of environment thus is created than is found anywhere else except in the most exclusive suburban areas. The abandonment of the individual lot as the unit for building in central-city areas, in favor of the super-block, opens new and well nigh unlimited opportunities for better housing and living conditions.

The super-block idea leads to the concept of the neighborhood residential unit. Reconstruction of slums should be undertaken only on the basis of this modern neighborhood plan.

The neighborhood consists essentially of a central school and a playground and a small park, around which are grouped the super-blocks of homes. Through traffic is

shunted to surrounding major streets. Commercial users - the stores and shops - are grouped in relatively small areas near the intersection of major streets.

Planning of a neighborhood should be the product of careful design, fully as much or more than the design of an individual home or building. The modern concept is that of a unified community built around a community center and a meeting place - with ample light, air, open space and greenery, and with opportunity for pleasant living in single-family homes, group houses, or apartments, free from the noise and disturbance created by haphazard land use.

In the rehabilitation of blighted areas, the principles of neighborhood planning should be applied also to the maximum possible extent, even though these large areas cannot be rebuilt at this time. The closing of minor streets to through traffic movement, adding of neighborhood parks and open recreation areas, and a general improvement of environmental conditions should bring about more stability, confidence and satisfaction in these areas.

Citizen organization by neighborhoods for protection and preservation of environment in rehabilitation areas and in newer residential districts is indispensable. It cannot be imposed on citizens and home owners by governmental programs. It must spring from the people themselves, for otherwise there can be no genuine interest, no enthusiasm,

and no effective achievement.

For the present and for some time to come, we must consider the provisions of adequate housing for all families as an objective to be attained only by the readjustment of many economic, legislative, technical and other factors. This will require much study, time and long-range planning.

"Housing" is today an important and controversial problem. The urban, apartment type remains an active field of design and one in which continually more architects find themselves involved. It is a fact that contemporary practices and solutions are largely determined by past experience, thus, by studying the progressive experiments of some of the great architects, one may more quickly arrive at a sound solution of his own. With this in view, the study of one type of urban apartment: high-rise with skipped-floor plan is presented in the following Chapter may not be amiss.

## A STUDY OF SKIP FLOOR APARTMENT BUILDINGS

Palace Gate - London - By Wells Coats

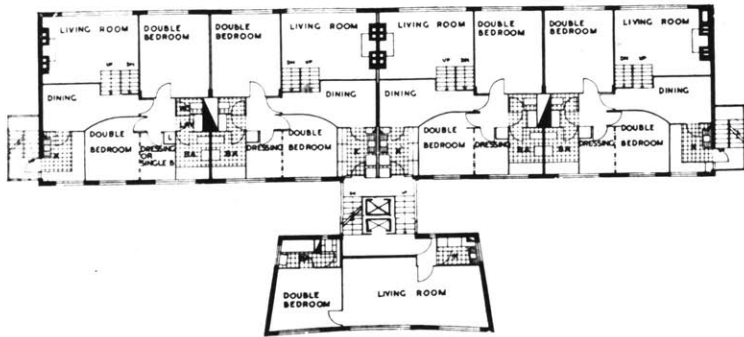
' "Three-dimensional" planning which yields extraordinary flexibility in interior layout and reduces elevator stops every third floor only, is a feature of this apartment building in Palace Gate, London.

The "three two" planning system consists of using one and one half story living rooms with single-story rooms elsewhere, so designed as to yield two interlocking but completely separate duplexes in each multiple of three floors. With entrances to the interlocking units at the middle of these three levels, circulation is simplified and the amount of public space reduced by approximately two thirds. The system has the further advantage of permitting a wide variety of accommodations - i. e. variation in both size and arrangement of rooms - without structural alterations.

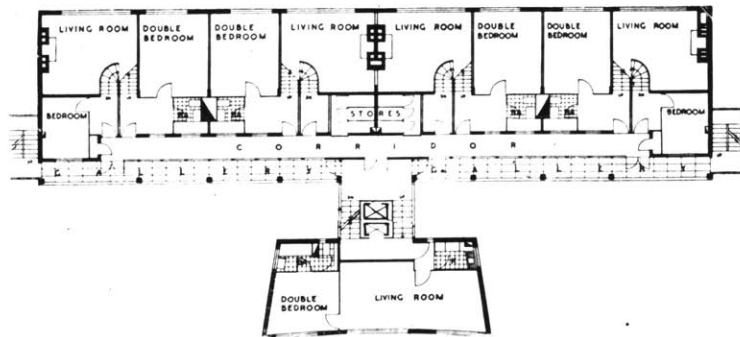
This was a reinforced concrete skeleton, employing the principle of continuous design, has an exterior wall system of precast concrete units, elaborate precautions against sound, and temperature transmission are included in both exterior walls and interior partitions. ' 1

<sup>1</sup> Arch. Record Nov. 1939

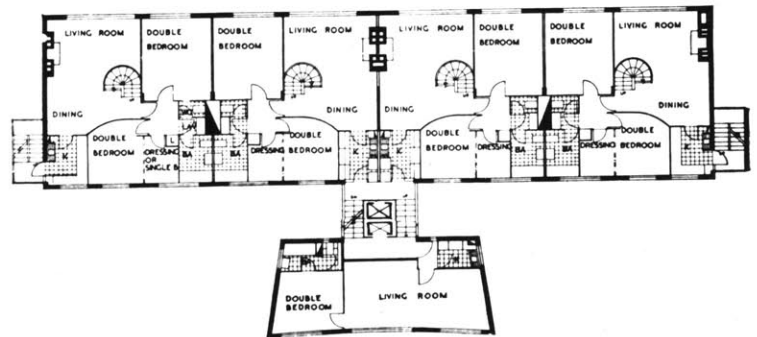
UPPER



MIDDLE



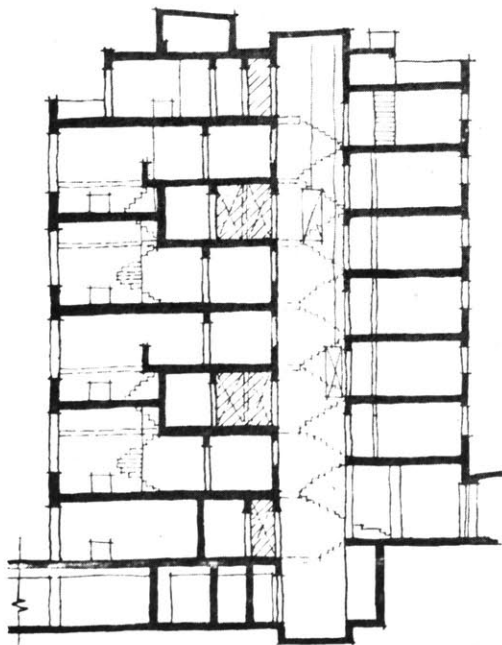
LOWER



UPPER

MIDDLE

LOWER



by WELLS COATES, at Palace Gate, London. Built in 1939

Marseilles Apartments - Marseilles, France - By Le Corbusier

' The first gleam of Le Corbusier's "radiant city" is now visible in Marseilles. The enormous apartment house frame is now complete, wherein 1,600 people in 337 units will test his formula for "vertical" living. Based to the planning of this great French theorist is the belief that people need small, bright, well-planned and equipped quarters for private use; large open spaces for recreation and play. The unique feature of the plan is that apartments run crosswise to the building instead of parallel, so that the larger units resemble brownstone houses, 66 ft. from front to back, stacked high.

Structurally, the building is a "bottle rack" - a ferro-concrete frame with regular rectangular slots into which 23 different types of apartments will be fitted. These individual units are prefabricated and installed with entirely dry construction methods. Their independence of the frame and each other ensures excellent acoustic insulation. Almost all apartments are duplex, arranged so that elevators stop only at every third floor. The living area of each is two stories high with a full-length balcony. Great window space, protected from excess sun and glare by a brise-soleil, allows light to reach far into dining areas and master bedrooms. Since each unit stretches entirely through the building (east to west)

the bedroom and living area at the other end is also bright and has its own balcony. At both sides there is the "sun, space and greenery" which is the promise of the "radiant city". Apartments, all multiples of the ones shown at the right, range from small units for "celibataires" to those for families with five children. The kitchens, located in the center, are ventilated mechanically - a fact about which the French are still wary.

In contrast to the compact individual units, community services will be lavish and varied, unequaled so far in any but luxury housing. The entire roof will be public territory, with a swimming pool, solarium and running track. The 17th floor will provide gymnasium, nursery and play areas. The seventh and eight floors (halfway up) will be given over to a shopping center, restaurant and clinic. Around the great rectangular slab on every side there will be a rolling park and a broad vista reaching to the mountains and sea.

Since the project is publicly financed by the Ministry of Reconstruction, every one in the area feels violently about it - pro and con. Some say gloomily that interiors will be dark, ventilation poor, cost too high. As to the first complaints, Le Corbusier has demonstrated to public officials that actuality proves them false. As to cost, although prices have tripled since the original

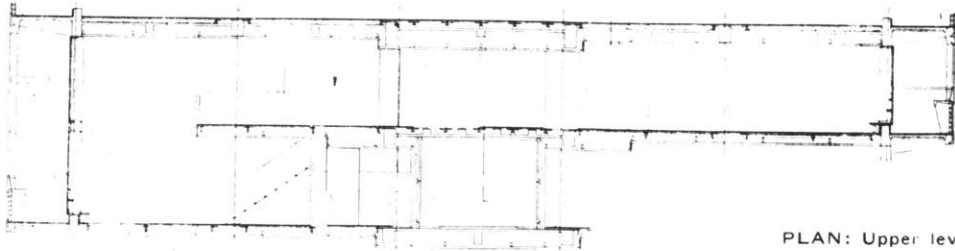
estimate of \$1 million, the expense will not be out of line with conventional construction. Moreover, Le Corbusier points out, he is providing for national and international use "a delicate prototype". A similar project for Nantes is already on his drawing boards - in cost and plan it will benefit from his Marseilles experience.<sup>2</sup>

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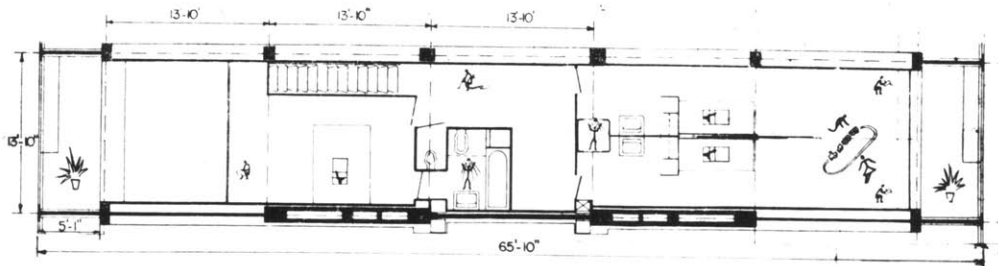
<sup>2</sup> Arch. Forum Jan. 1952



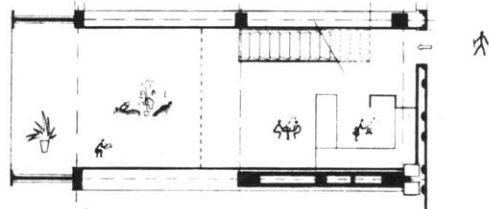
The "Modulor," Le Corbusier's system of building measurements based on the proportions of the human body (sketch left) is, the architect claims, essential to its esthetic integrity. A full-size, 6 ft. concrete relief of this figure marks the main entrance to the building. The duplex form of most apartments (see typical cross-section and floor lay-out below) gives a variety and airiness to units that might otherwise seem oppressive—all are limited to a 12 ft. width. The exterior pattern formed by the various apartments shows the kinship of Le Corbusier, architect, to Jeanneret, painter. This variety will be even more noticeable when the building is complete, since individual balconies will then be painted in an assortment of bright colors.



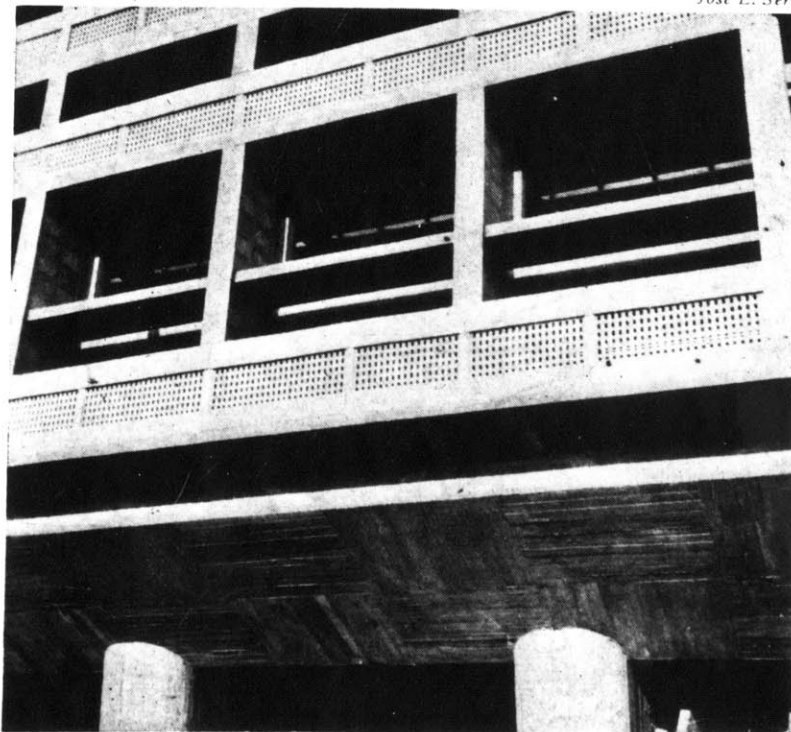
PLAN: Upper level



PLAN: Lower level



Jose L. Sert

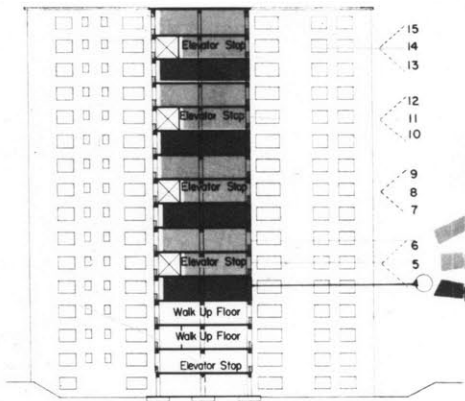
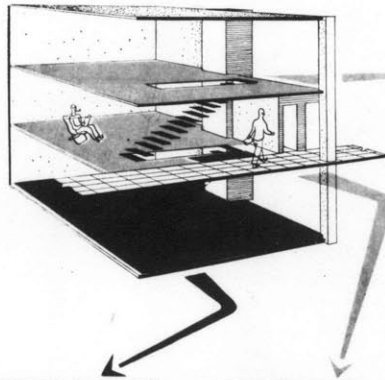


LOCATION: Marseilles, France  
LE CORBUSIER, Architect

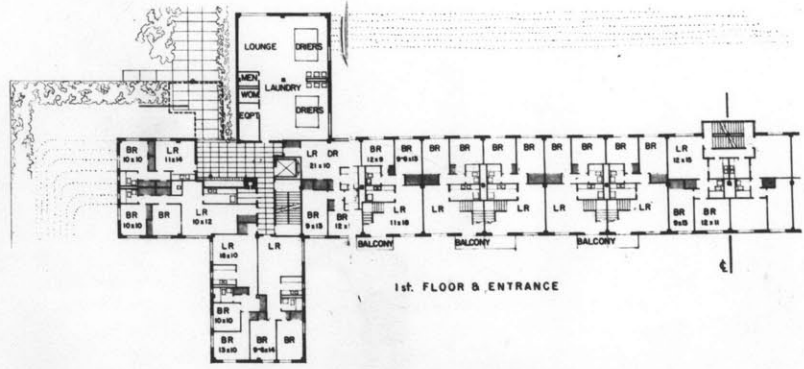
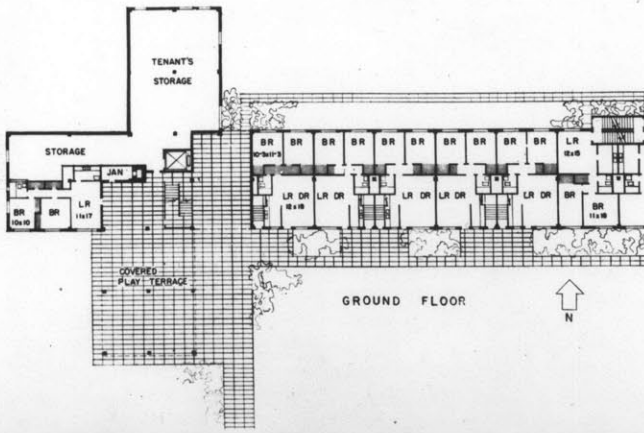
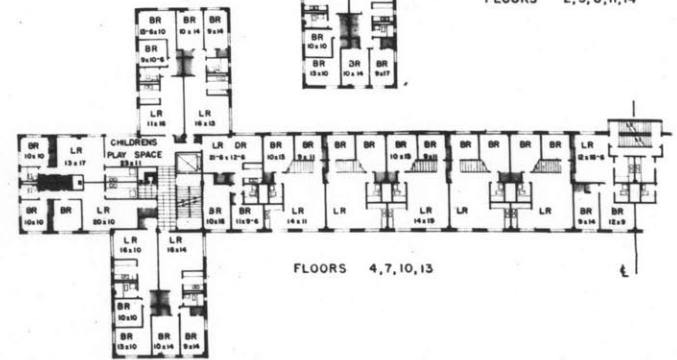
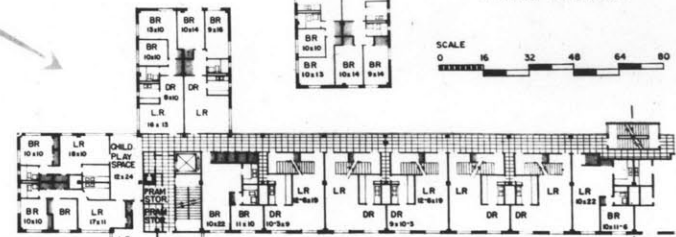
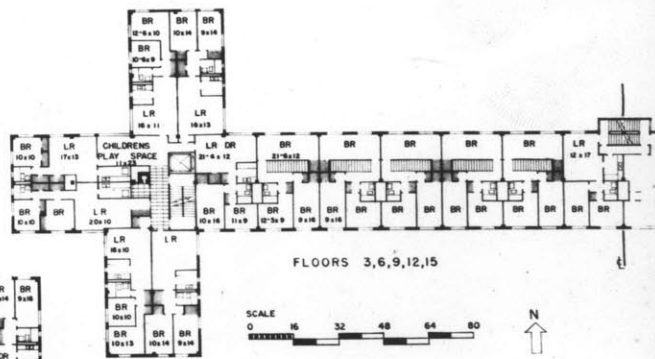
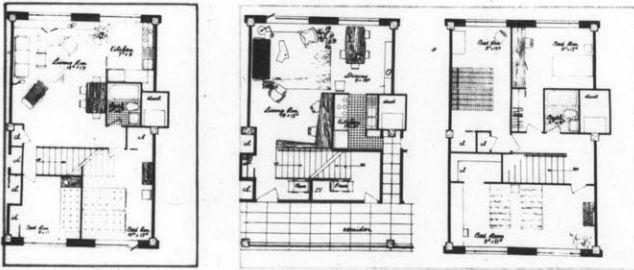
Michael Reese Hospital Apartment - Chicago - Michael  
Reese Planning Staff

Combining the best features of the cross and in-line plans with some innovations of their own, the designers of the 16 - floor apartment buildings for the Michael Reese housing project propose to hold construction and operating expenses to a minimum. Basis of the major economy is horizontal division of each 350 family building into three-story sections, only the central floors of which are served by elevators. From north-side corridors on these access floors, tenants will enter directly the living-dining level of six-room duplex apartments or walk down one flight to three and one-half room flats. Since the first two floors above and the one floor below the entrance level are also served by stairs, elevators will stop at only the fifth, eighth, eleventh and fourteenth floors. To offset the fact that each elevator will have to serve 491 residents, they will be large enough to accommodate 18 passengers and fast enough to make an average round trip in little more than two minutes. Advantages of the elevator system: reduction of initial costs (additional control and door equipment would cost about \$900 per stop), reduction of maintenance expenses (interior stairs will be tenant-maintained) and reduction of public hall space to 6 per cent of total floor area

(normal ratio: 10 per cent). In addition to its elevator economies, the design of these large (2,957,600 cu. ft.) buildings is commendable for the provision of interior play space on each floor and the cross ventilation enjoyed by each apartment. <sup>3</sup>



Section Through Center Block of 16 Fl. Building



MICHAEL REESE PLANNING STAFF:  
 REGINALD R. ISAACS, Director  
 JOHN T. BLACK, Associate Architect  
 MARTIN D. MEYERSON, Associate Planner  
 FRANK WEISE, Assistant Architect  
 ELEANOR E. TORELL, Sociologist

WALTER GROPIUS, Architectural Consultant  
 WALTER H. BLUCHER, Planning Consultant

Eastgate Apartment - By William Brown, Carl Koch, Robert Kennedy, Vernon DeMars, Ralph Rapson.

Eastgate exhibits a variety of apartment types produced by (a) a skip-floor scheme, with (b) two orientations. The main wing apartments result from side-corridor and apartments with south orientation; the "leg" apartments result from central corridor and east-west orientation. Six typical plans result, of which the above-the-corridor or below-the-corridor types are almost identical except as to stair landings. (Careful perusal of the general building plan will show additional variants produced by introduction of extra bedrooms and by special plans at the junction of the main wing with the east wing.)

Without exception, every living room was faced on a livable balcony (on the ground floor, this was replaced by a private garden terrace). Separated from the living room only by a floor-to-ceiling glass wall, the balcony really extends the apparent living room, shades the interior against the hot summer sun.

Living rooms were given their long dimensions along the exterior wall, giving pleasant exposure, good light inside; "sitting" areas are out of the traffic paths.

The sunny pleasant dining space is especially welcome compared to dark interior dining so often provided in

apartment plans where the dining area is an interior passage.

The lack of direct kitchen access from the entry has been criticized; but the architects felt it was definitely more important to supply the kitchen with a view and natural ventilation (the latter is required by Cambridge code) and to place the kitchen door in such a way as to create the pleasant dining area just mentioned. These doors are to be large, sliding ones; when they are open the kitchen space is felt as part of the open planning, and the window adds another glimpse of the river from parts of the living room.

Bedrooms were made generous in size, and so planned that beds need not face the windows or block access to wardrobes. These in turn were supplied with sliding doors, so that all the contents may be reached without the necessity of opening a closet door out into the room.

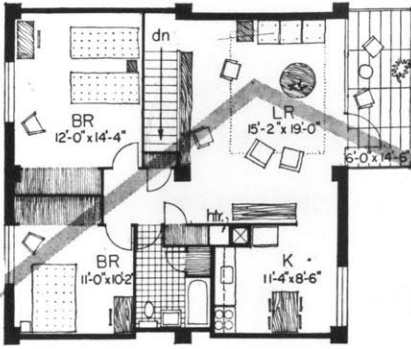
Storage was treated as a special problem. The aim was to give every apartment ample assigned storage space in addition to facilities for coats, linen, brooms and clothing. In the main wing the storage in vestibules is commendable, where occupants of apartments reached by stairs can leave heavier outdoor things; elsewhere, storage has been provided either in the apartment or at

concentrated locker areas.

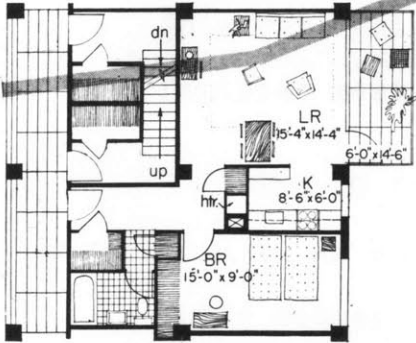
The apartment ratio is as follows:

29 - 3 Bedrooms - 11% - 145 rooms.  
100 - 2 Bedrooms - 41% - 432 rooms.  
95 - 1 Bedroom - 37% - 285 rooms.  
28 - Studio - 11% - 56 rooms.  
1 Penthouse apartment - 8 rooms.  
Total 261 apartments, 926 rooms. ' 4

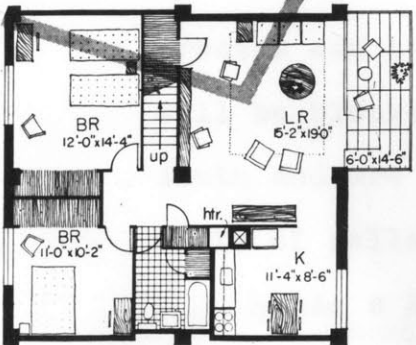
**These are main-stem apartments**



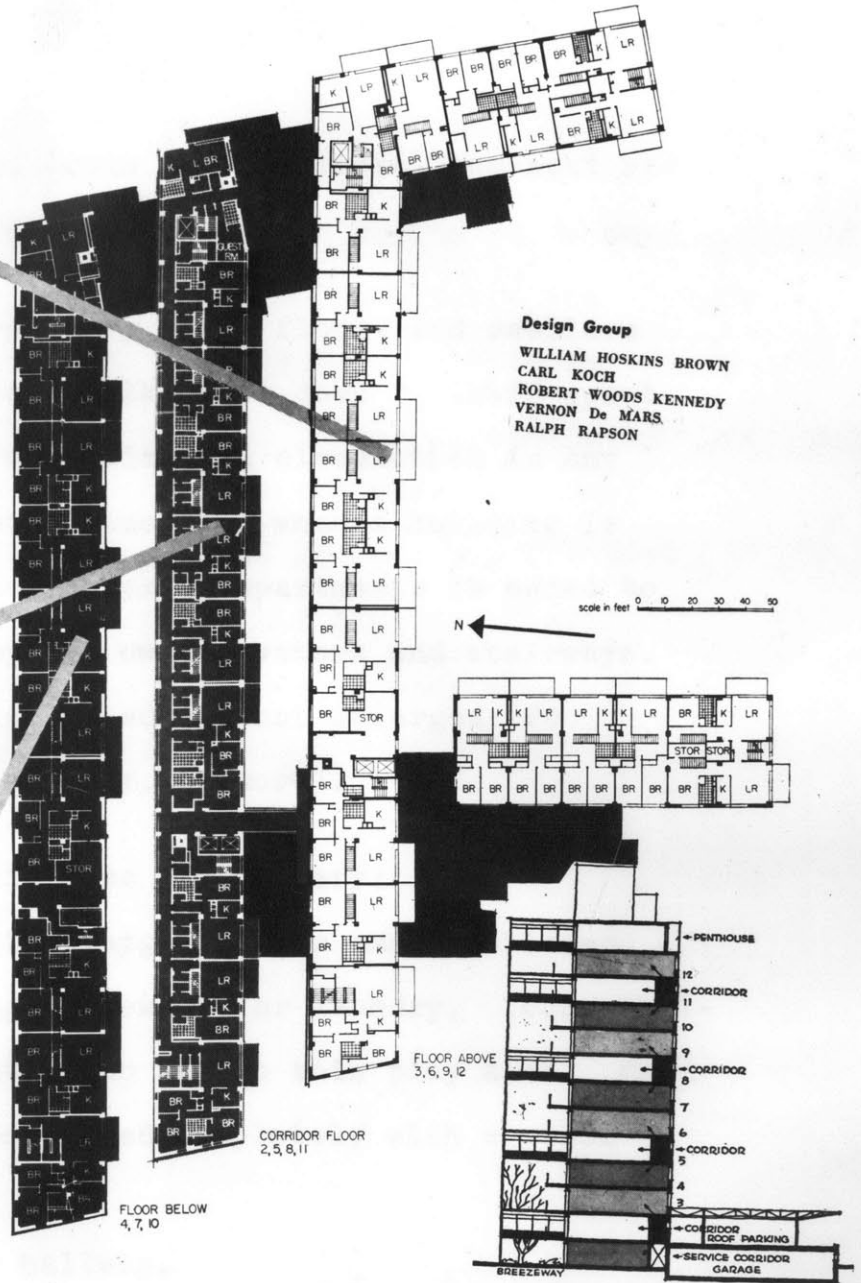
*This upper-floor apartment is an "A" unit (A for "above," and a blue door on the corridor suggesting "sky"). The stair landing location is slightly inconvenient.*



*This typical "C" unit (C for corridor, a yellow door) is a one-bedroom unit, yet it has better than the minimum of 24 sq. ft. storage space.*



*This "B" unit (B for "below" and a green door suggesting "grass") has a better stair landing than the "A's" but is otherwise the same.*



**Design Group**  
 WILLIAM HOSKINS BROWN  
 CARL KOCH  
 ROBERT WOODS KENNEDY  
 VERNON De MARS  
 RALPH RAPSON



Gallery Apartment - St. Louis - By Hellmuth, Yamasaki and  
Leinweber, Architectures

'The elevators stop every three floors and dwellers on the intervening levels walk up or down to their apartments. There is no true horizontal circulation in any but the shortest building; instead, when a building is to be increased, another stack of apartments is added to the length, serviced by its own elevators and stairways. This way, neighborhoods are added, not enlarged (20 families meet on each gallery, no more).

The 20 families will use the gallery:

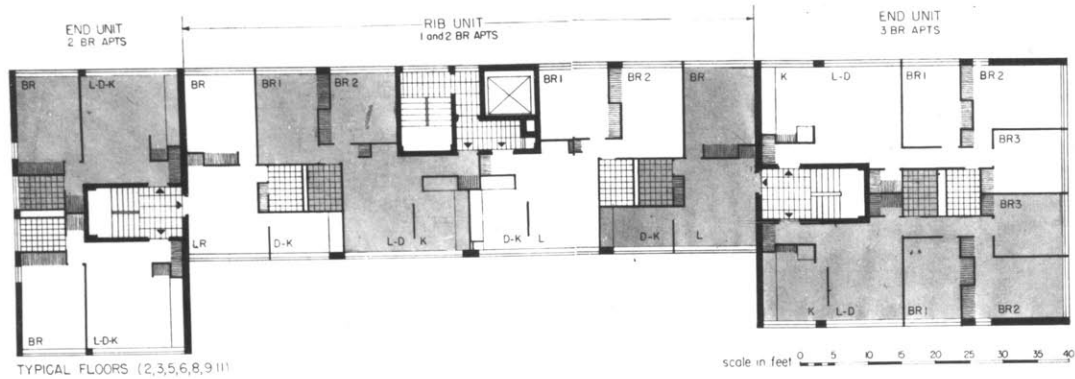
1. As a close, safe playground for small children while mothers are doing housework, or laundry. Young children need use no elevators to get to this play area. For safety, opening will be fenced completely with a steel weave.
2. As an open air hallway.
3. As a porch in spring, autumn and summer. Summer breezes can blow through the gallery, but winter winds will be blocked by movable shutters. Galleries face south and are assured summer shade and winter sun by the ratio of gallery depth to height.
4. As a laundry. A concessionaire will put a coin operated automatic washer and dryer on each gallery (there is space for two if necessary). Facilities also are

provided for tenants who wish to wash by hand or by their own washing machines, and there are two drying yards on each gallery. A decision from Washington allowed the architects to substitute this arrangement for kitchen laundry tubs.

5. As storage for such items as bicycles, washing machines, and tools. Each family is given a bin for such items in the central area just off the elevator (instead of in the far away basement - the bane of many an apartment dweller's existence).<sup>5</sup>

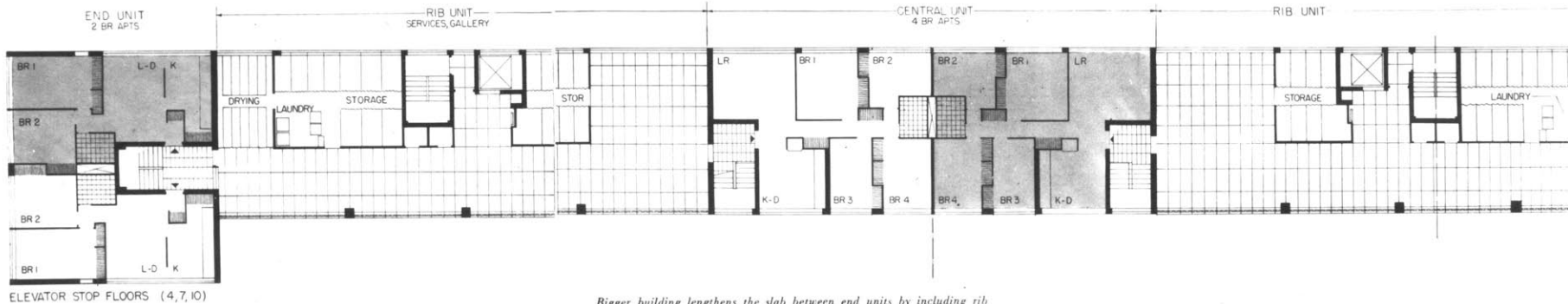
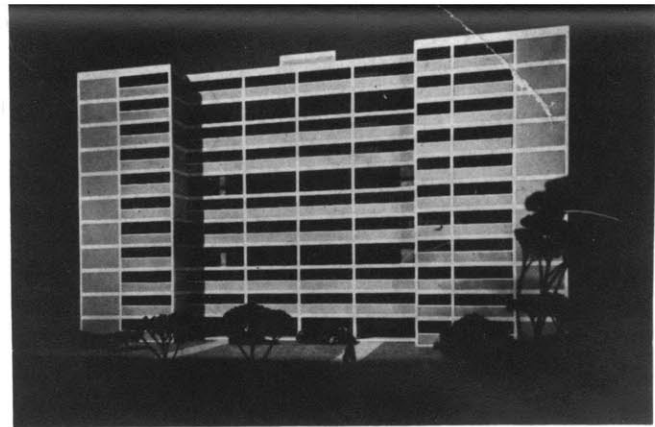
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<sup>5</sup> Arch. Forum Apr. 1951 P. 130-131



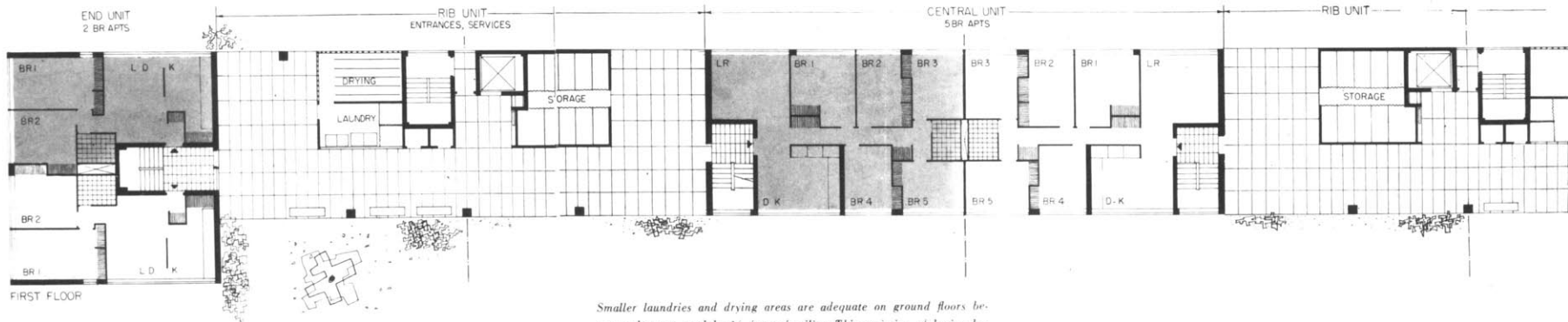
TYPICAL FLOORS (2,3,5,6,8,9 III)

Three variations of the plan used are shown on this page, including examples of each apartment layout, and floor plans of each typical floor level. (First floor, gallery floor, solid apartment floor.) Basic building (above) combines two end units with a rib unit containing elevators. In floor shown of this apartment, residents walk one flight up or down to gallery floor to get elevator. Note minimum space allotted to hallways.



ELEVATOR STOP FLOORS (4,7,10)

Bigger building lengthens the slab between end units by including rib units and a central section of larger apartments. After model was completed, architects changed plans to include a bedroom window shown only on plan in order to insure through ventilation. Plan runs off page to right, but would include rest of rib unit plus another end unit, terminating slab.



FIRST FLOOR

Smaller laundries and drying areas are adequate on ground floors because they are used by  $\frac{1}{3}$  fewer families. This variation of basic plan resembles one above, but central section is somewhat longer to include bigger apartments. As above, rib unit running off page to right would butt into end unit, terminating slab.

Gallery Apartment proposed by Hellmuth, Yamasaki and  
Leinweber, Architects.

'This gallery apartment was a study by the office of Hellmuth, Yamasaki and Leinweber.

The gallery appears on both sides of this building, alternating exposures, and something new has been added: In plan a room-sized terrace is notched off the gallery into the apartment wall for each family. Enclosed on three sides, this terrace is sheltered from winds; placed directly outside the kitchen window, it is an excellent supervised-play area for small children. Older children can take the elevator down to the park below, where playgrounds are insulated carefully from the street by parking areas. Another achievement of the site plan: no living room windows overlook parking lots.

Each apartment is a duplex. You enter through the terrace off the gallery, and arrive in a wide-windowed living room. Then in half the apartments you go up to bed; in the other half you go down to bed - this is the trick the architects used to make the slab two apartments thick, an economy, and yet retain through ventilation, a luxury. And the duplex arrangement also had the advantage of encouraging intramural privacy within the apartment by splitting the tooms with a concrete floor slab into living and sleeping divisions.

Other advantages planned into this advanced design:

1. Complete privacy from gallery traffic in all living and bedrooms (gallery schemes, from early Rotterdam to date, have had difficulty preserving this privacy in the second and third bedrooms).

2. Structural simplicity, by use of standard bays throughout (use of precast slabs is anticipated).

3. Combination bathroom and kitchen plumbing stacks, with four bathrooms connected to a single stack - a real plumbing economy.

A full flood of community living is in this imaginative design for a luxurious vertical neighborhood. All ground floor area is for use of all the tenants, including the enclosed first floor of the apartment units. In the plot for four of these apartment units, communal land is subtended into parks and play areas, and fenced by parking areas down the long sides of the rectangular plot. Short ends are fenced with tennis courts.

The architects of this apartment-type also gave deep and obvious attention to the more intimate undertow of family life, in addition to the community life of the ground level, and the intermediate porch life on the terraces adjoining the sidewalks in the sky. Within the apartments in this ingenious design the family can be along without being closed in; and even in the one-bedroom

apartments where is the duplex arrangement, quaranteeing further privacy. Three-bedroom and one-bedroom apartments are created simply by transferring proprietorship of one of the two bedrooms in the basic arrangement. ' 6

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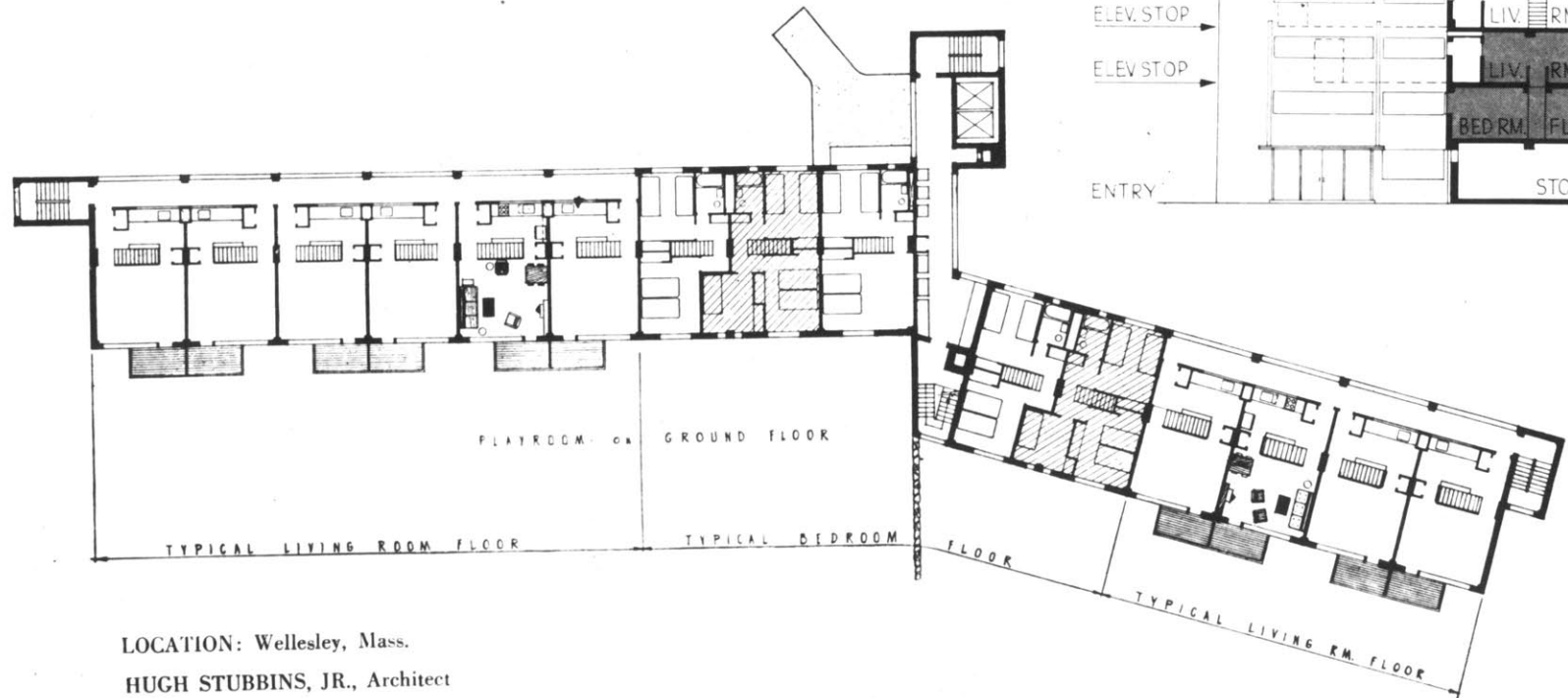
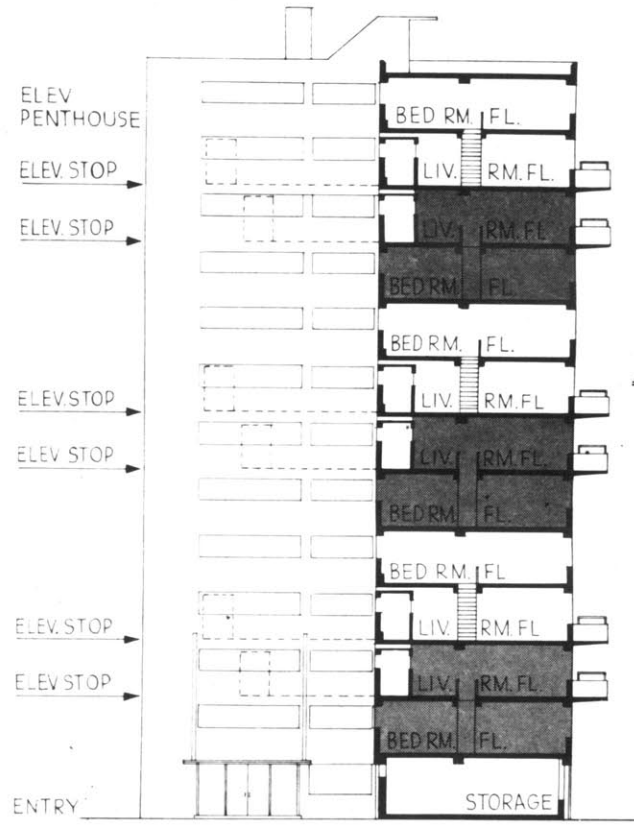
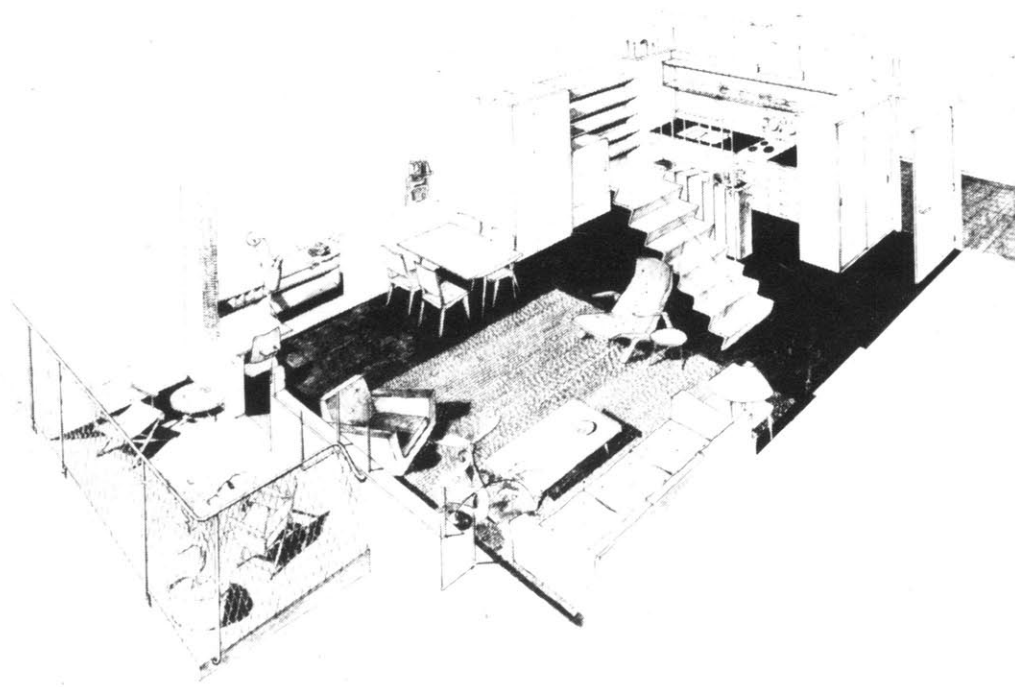
<sup>6</sup> Arch. Forum 1952 Jan.



Skip Level Apartment - By Hugh Stubbins Jr.

' This multi-story building was proposed to accommodate about 75 families on a site of five acres. However, despite its ten-story verticality, the building offers much the same kind of accommodations as are normally provided only in two-story, garden-type apartments. Each dwelling unit is a duplex apartment with living-dining area and kitchen on the lower floor and two or three bedrooms and a bathroom on the floor above.

Unusual in multi-story construction, this type of planning holds advantages for tenant and landlord alike. In addition to the psychological attractions of the duplex form (it is like a two-story house) the tenant enjoys the benefits of more open outdoor space (the building occupies only about 3 per cent of the site) which results from vertical construction. On the other hand, the owner's construction and operating costs are lowered through the reduced public corridor space and skip-level elevator service permitted by the duplex arrangement of the apartments. As shown in the accompanying photos, the public corridors occur only on alternate floors. For the 12-story design, originally proposed, construction costs were estimated at \$869,200 or \$10,865 per unit, \$2,173 per room. Rents were to average about \$56 per unit, excluding a state subsidy of about \$29 per unit. '7



LOCATION: Wellesley, Mass.  
 HUGH STUBBINS, JR., Architect

## High Paddington - By Sergei Kadleigh

' High Paddington is sited on the existing goods yard of Paddington Railway Station - a centre of communications and a key locality in the borough, consisting of some 18 acres between Westbourne Bridge and Bishops Road Bridge. Over this area it is proposed to build a small town of 8,000 or so inhabitants, with accepted standards of amenities and open spaces, including homes, gardens, a church, shops, schools, commerce and light industry, places of entertainment, recreation, sport and leisure.

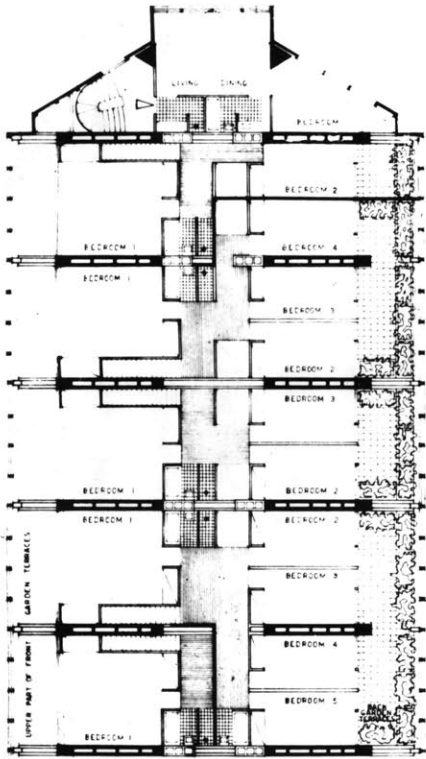
The design of dwelling was two story dwelling with back and front gardens, the room sizes conform to accepted standards and ample storage space is provided in each dwelling. Moreover these dwellings are planned with a flexibility to cater for any size required from two to six rooms, the gardens increasing proportionately.

A normal dwelling, say of four rooms, will have a front and back garden totalling some 325 square feet, which compares favorably with the proportion of garden to each habitable room in many esteemed terrace houses in London.

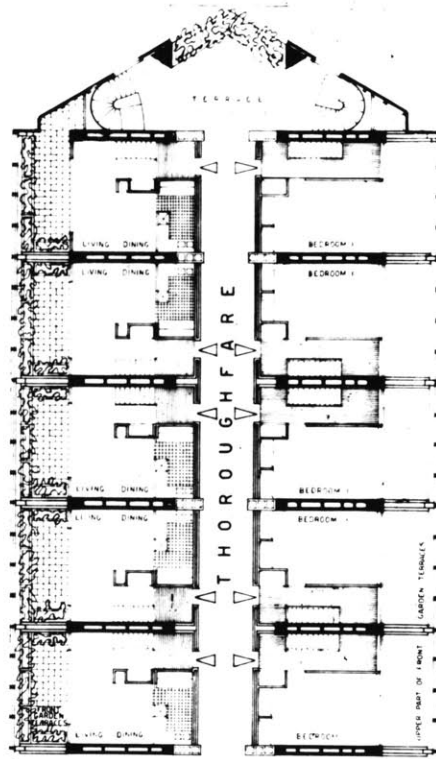
These gardens are, therefore, big enough for growing plants and even small trees and flowering shrubs; there are places where washing may be dried if required, prams

can be left in safety and people can sit above the city noise and enjoy a unique view over London. Further, they have the advantage of complete privacy, as they cannot be overlooked by neighbors. The gardens are sheltered from the wind and rough weather by an outer glazed skin which, although permitting the free passage of light and air, can be adjusted to exclude high winds. The home, standing back as it does from the outer skin of the building within its own garden, is protected by two walls from the rigors of the climate; this means a warm house in winter, economical to heat, and in summer a house cooled by a comforting breeze.

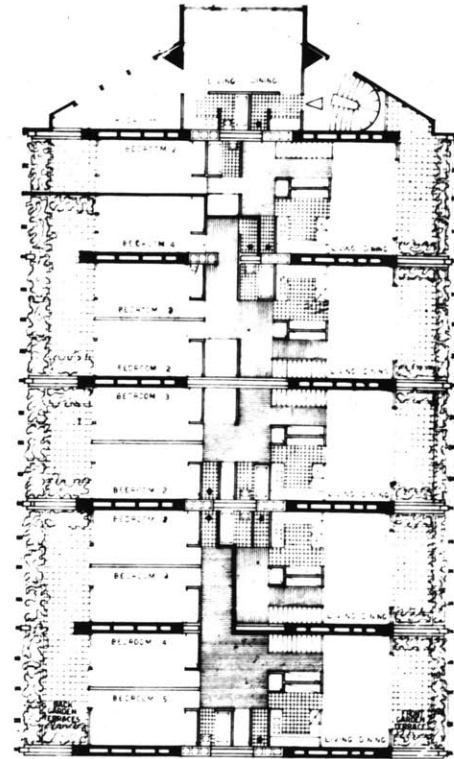
Access to the dwellings is by lift and horizontal thoroughfares. Each of these thoroughfares ends in an open garden terrace which forms the spacious landing for the system of escape stairs, allowing ample opportunity to rest when making use of the stairs and preventing the feeling of giddiness normally associated with climbing or descending many flights. The number of these thoroughfares is commensurate with the number of corridors in a normal ten-story block of flats. ' 8



UPPER FLOOR PLAN



MIDDLE FLOOR PLAN



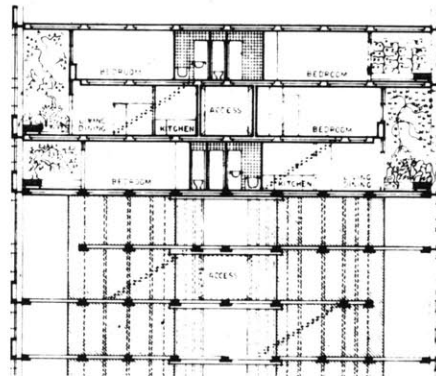
LOWER FLOOR PLAN

SHOWING LIVING ACCOMMODATION

- UPPER FLOOR
- MIDDLE FLOOR
- LOWER FLOOR

SHOWING STRUCTURE AND DUCTS

- UPPER FLOOR
- MIDDLE FLOOR
- LOWER FLOOR



SECTION

STANDARD 3 STOREY UNIT  
CONSISTING OF 2 SEPARATE  
HOMES AND GARDENS



**HIGH PADDINGTON**  
BY  
**S. KADLEIGH, A.R.I.B.A.**

*The dwellings, here shown in detail, are all two-storey. The plans cater for dwellings of from two to six rooms, with a front and back garden for everyone.*

## BACKGROUND MATERIAL

St. Louis, as used here, does not mean just the central city, tightly packed within a political boundary dating from the horsecar days of 1876. It means the metropolitan district, sprawled on both sides of the Mississippi, in two states and six counties - a conglomeration of mansions, hovels, cottages and apartments; of factories, stores, offices; of busy streets, wooded hills and rushing rivers; here of breath-taking beauty, there of appalling squalor, and all too much of the in-between quality of drabness.

It is in housing - that is, homes and their environment - that urgent problems of planning and development occur. Hardly a city, town or village throughout the metropolitan St. Louis district is untouched by slum or blight. Good housing is confined generally to rather constricted spots. All too much of the postwar private enterprise suburban housing of the last five years threatens to make new blight and slums. Shacks are turning pretty farms into blots on the landscape. St. Louis proper is not alone in the blight of bad housing. East St. Louis, Kinloch, Lemay, Brooklyn are among the neighbors with amazingly bad slums. In St. Louis, however, the greatest concentration is found. More than one-third of St. Louis has been declared officially by the City Plan Commission to consist of slums or blighted property. The slums are a massive collar of about five square miles inhabited prin-

cipally by Negroes, who form about a sixth of the population.

All this is not to contend that St. Louis, the central city and its environs, is generally bad. On the contrary, there are countless good things - pleasant living areas, modern factories, attractive stores, public improvements, a friendly people, a good symphony orchestra, active churches, Shaw's Garden, a well-planned art museum, notable medicine, an outstanding zoo, the leading outdoor theater, fortunate geographical and economic location, two large universities, a climate not nearly as bad as many of the natives like to paint it. St. Louis has some advantages over many other large cities of the nation. But it is not building on these advantages and creating more.

In the city of St. Louis the number of new dwellings in the five-year period was only 5175, a figure which, of course, does not even keep pace with normal deterioration.. Much of this construction has been in bright new apartments, flats and houses of more or less modernistic design in the southwestern quadrant of the city, a lesser part in the northwestern.

Meanwhile, booming St. Louis county's figure for new dwelling units, largely single houses, has been 21,201. Nearly half of these are in the unincorporative section, which in general is farthest out. Of the postwar homes in the county towns, three-quarters are concentrated in

eight suburbs, which together have half as many more new homes than the city of St. Louis.

Money is not a problem in public housing. The St. Louis Housing Authority is able to borrow its entire capital at modest interest rates, under the federal guarantee of the 1949 act. That is not actually a subsidy. The federal government is prepared to provide a subsidy for low-rent housing, by making up annual operating deficits if and when they occur. So far, St. Louis has not needed this, although it is likely it may need limited help in the future.

Although the authority's public housing is tax exempt, it pays service fees in lieu of taxes by contract with the city. So far, on existing enterprises, these fees have been bigger each year than the taxes that would have been collected on the slum property formerly occupying the sites. That level may eventually decline, but the city will be saved part of the costs of the slums and there is always the likelihood that tax value of private property will be enhanced, as a result of good housing.

The government has earmarked \$5,196,000 for an outright grant to St. Louis for slum clearance, a sum which could be increased eventually. Under this plan, which is a new advance in rehabilitating American cities, St. Louis, through the Housing Authority or a possible new agency, would buy slum area.

The City Plan Commission has defined obsolete areas for reconstruction and blighted areas requiring rehabilitation. Separate and distinct measures are necessary for these two types of areas. Within the next five years St. Louis has the prospect of obtaining 12,000 low-rent public housing dwelling units and 10,000 middle-rent urban redevelopment units. These will make possible an important transformation in the obsolete slum areas, in which 46,000 families are now living.

To rehabilitate blighted districts and to help stabilize areas not yet blighted, the city recently adopted two measures of basic significance - the new zoning code and the minimum housing standards ordinance. These should forestall the development of new slums and promote the maintenance of sound conditions and sound values in all residence areas, unless lax enforcement or abortive amendments are permitted to destroy their effectiveness.

Five thousand middle-income dwellings on the fringes of the downtown district are contemplated by commercial and financial interests. Late Mayor Joseph M. Darst's new Committee on Urban Redevelopment, composed of twenty influential men, first planned to launch this activity.

Whole-hearted support is being given the entire movement by the city administration. Federal housing officials, who must pass on the city's plan, have been keenly interested in them, especially because they are on a scale

big enough to be significant and because they are founded on good planning and sound ideas of urban rehabilitation. Interested persons hope that such a plan will mean not only the destruction of St. Louis' slums and the erection of decent and sanitary dwellings but also a means of bringing about the restoration of land values and of checking the present disastrous migration from the city to the country.

The first slum clearance project for the middle-income families is planned under the Urban Redevelopment Section of the Public Housing Act of 1949. The twenty members of the Urban Redevelopment Corporation have raised two million dollars for the first part of the project - with this equity they should be able to raise \$8 million more through an F. H. A. insured mortgage from a private investor. This is the project I propose for my thesis.

## The Thesis Problem

### The Site:

The site chosen for this project was a 19.21 acres in the middle of the city of Saint Louis, Missouri. The overall site was bounded by Olive Street Fourteenth Street, Market Street and Eighteenth Street. The area between Market Street and Chestnut Street retained as a part of city park. The Market Street and Olive Street are major traffic streets in the city and Fourteenth Street, Fifteenth Street, Sixteenth Street, Seventeenth Street, Eighteenth Street, Chestnut Street and Pine Street are minor streets for crossing traffic only. The project proposed to demolish all the existing structures except two old churches, Centenary Methodist Church at the corner of Fifteenth and Olive Streets and the other church is St. John's Cathedral at the corner of Fifteenth and Chestnut Streets.

The Data:

The following data was proposed by the Urban Development Committee in June, 1951.

1. Street

At the present time five streets pass through the project. Three of these; the Fifteenth Street, Seventeenth street and Chestnut Street are to be retained as through traffic streets. The others: Pine Street and Sixteenth Street are to be closed using as a part of the project.

2. Density (Base on 19.21 acres)

a. Population density.....142 persons/acre.

b. Dwelling units..... 70 per / acre.

The apartment count is as follows:

o/o	Apartments	Units	D/U	Persons
20	Studio	270	1	270
20	Efficiency	270	1.5	405
40	1 Bedroom	540	2	1080
20	2 Bedrooms	270	3.5	945

3. Parking

Adequate parking for approximately 70% of the residential families. Parking is to be in garages and not in lots or along project streets.

4. Miscellaneous.

a. A playground and nursery school for the preschool

age children.

A community center, a small shopping center, maintenance offices and a restaurant are included in this project.

School, powerplant, church, play-field, recreation area for teen-agers and adults are not included in this project.

## V. The Solution:

In planning of the site, a sense of unity of the project has been sought. The first step is to decide the building type for this urban housing. The high-rise type is adopted in order to lease as much ground area as possible. The project consists of three buildings. Two of the buildings, twenty-four stories high, provide the one bedroom, two bedrooms and efficiency type apartments. The other building which is fifteen stories high, contains only studio type apartments. A play ground, a nursery school and two existing churches are all included in the project.

In the corner of Chestnut and sixteen streets two buildings tied together partially with a one-story structure. Within this area a restaurant, a small shopping center, maintenance offices, community area are planned.

Only one garage is planned in this project, which is located at corner of Sixteen and Olive streets. It is six-story high and provides for 950 cars.

The skip-stop plan is adopted in the two twenty-four stories high building design. This plan provides one common corridor in every three stories. It reduces the area to five per cent of the floor area ( normal ratio ten per cent). It also cuts the cost of elevators, and reduces maintenance of public areas. Obviously economy in overall plan is gained.

The elevator stops are schemed for every third floor. The tenants of the floor above or below these elevator stop leveles walk either up or down one flight. The laundries and mechanical rooms are placed in the stories above or below of the elevator stop lobby floors.

Each dwelling unit has been arrange so as to provide a minimun of circulation and yet a maximum of privacy in the unit. No apartment will be facing each other or facing access.

All dwelling units have exposure on both sides, direct sunlight can reach to every living area and every apartment at least has one view extending beyond adjacent buildings.

Through ventiltation was assured for all apartments by the absence of using corridor on two floors out of the three. Exterior bath are used in thesea apartments so ventilation duct work are eliminate in all bathrooms.

By using the equal bay system in the building plan and the flat slab system in the structure design, the mechanical cores adjoin the two apartments directly on both sides to facilitate making of connections, any horizontal runs will eliminate.

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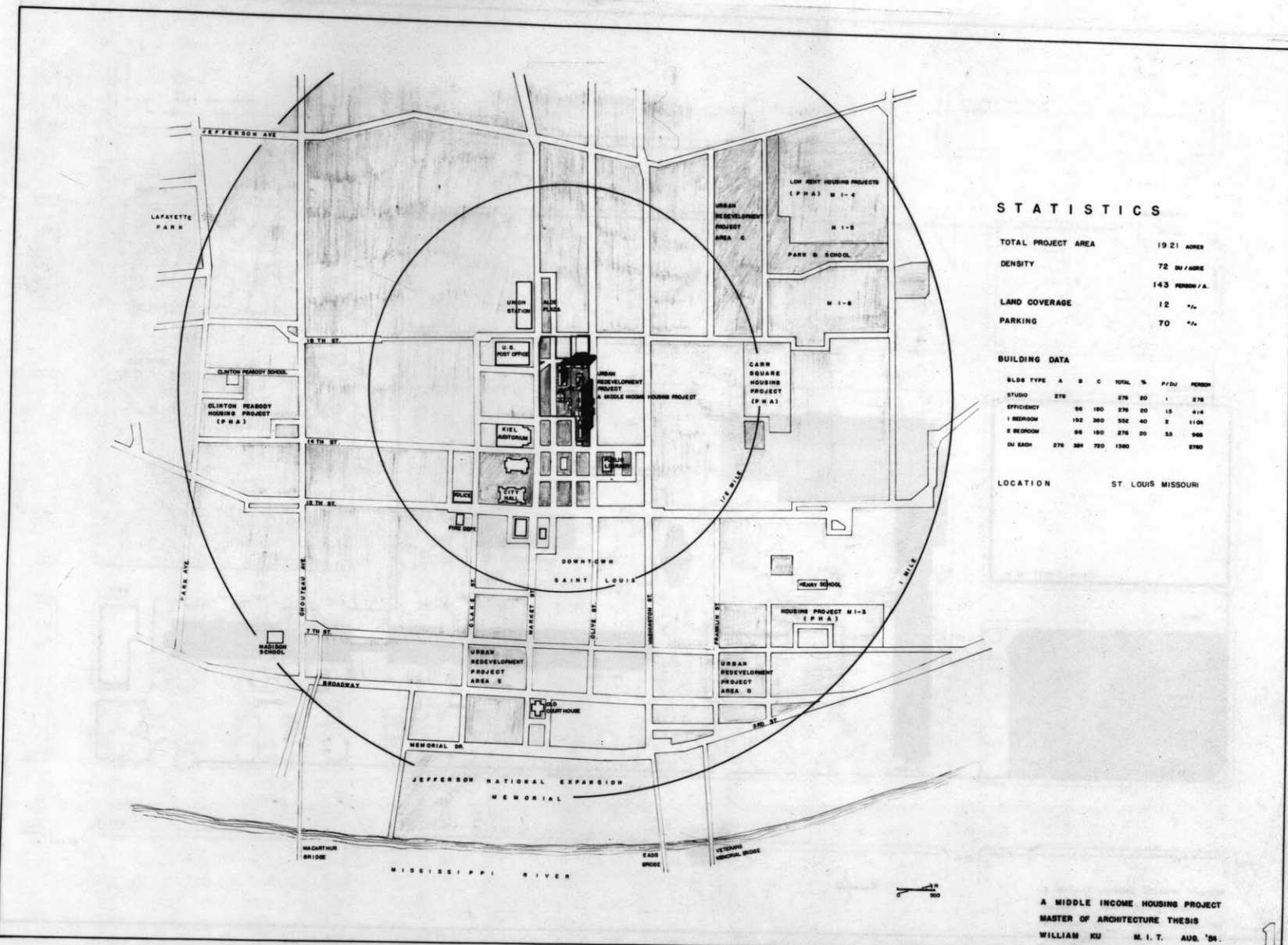
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**STATISTICS**

TOTAL PROJECT AREA 19.21 ACRES  
 DENSITY 72 DU/ACRE  
 143 PERSON/A.  
 LAND COVERAGE 12 %  
 PARKING 70 %

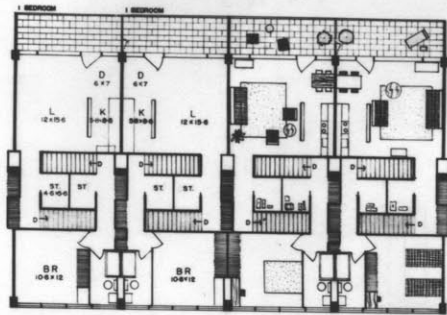
**BUILDING DATA**

BLDG TYPE	A	B	C	TOTAL	%	P/DU	PERSON
STUDIO	276			276	20	1	276
EFFICIENCY	96	150	276	40	15	414	
1 BEDROOM	192	360	552	40	2	1104	
2 BEDROOM	96	180	276	20	3.5	546	
DU EACH	276	360	720	1380		2760	

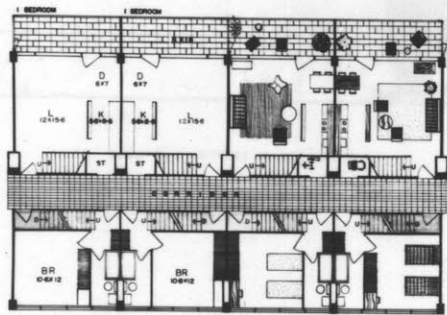
LOCATION ST. LOUIS MISSOURI

A MIDDLE INCOME HOUSING PROJECT  
 MASTER OF ARCHITECTURE THESIS  
 WILLIAM KU M. I. T. AUG. '66.

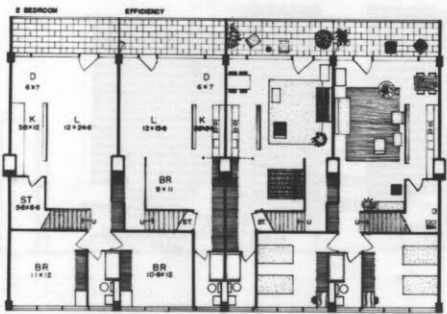




FLOOR ABOVE

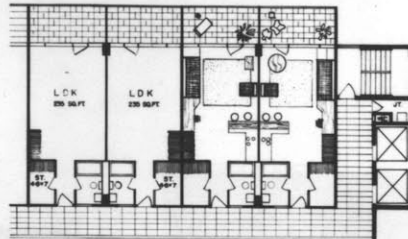


CORRIDOR FLOOR



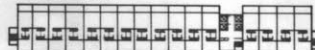
FLOOR BELOW

TYPICAL PLANS FOR BLDG (B & C) 1/8" = 1'-0"



TYPICAL STUDIO TYPE APARTMENT PLAN 1/8" = 1'-0"

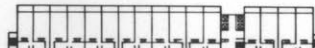
BLDG (B)



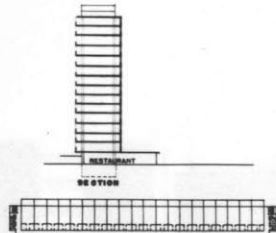
FLOOR ABOVE



CORRIDOR FLOOR

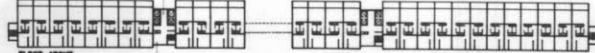


FLOOR BELOW

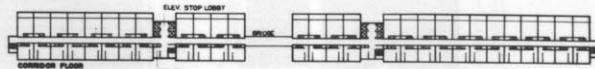


BLDG (A) 1:100

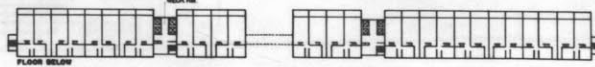
BLDG (C)



FLOOR ABOVE



CORRIDOR FLOOR

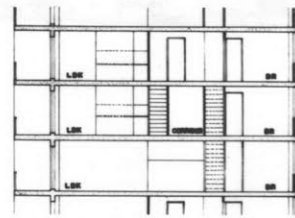


FLOOR BELOW

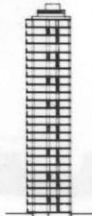


GROUND FLOOR

BUILDING PLANS 1:100

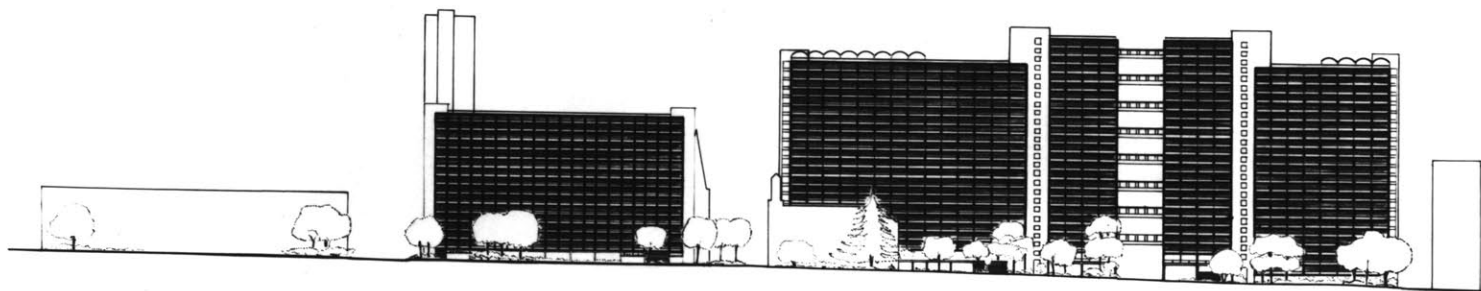


SECTION (BLDG B, C) 1/8" = 1'-0"

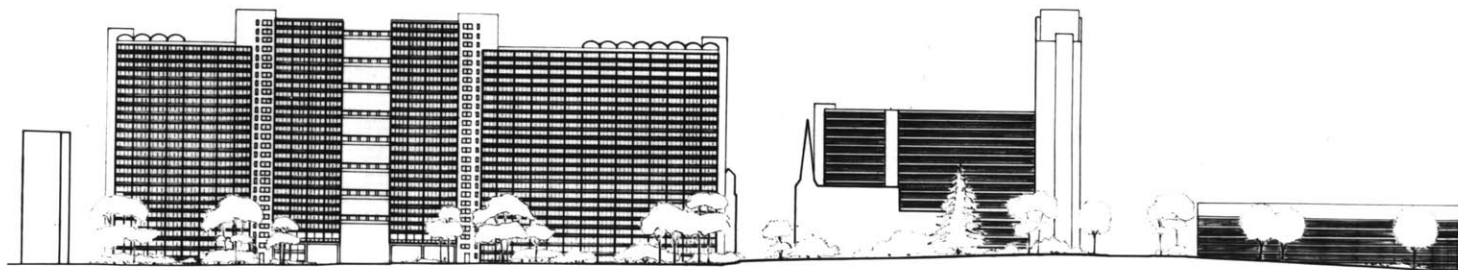


BLDG C, D SECTION

A MIDDLE INCOME HOUSING PROJECT  
 MASTER OF ARCHITECTURE THESIS  
 WILLIAM KU M. I. T. AUG. '54.



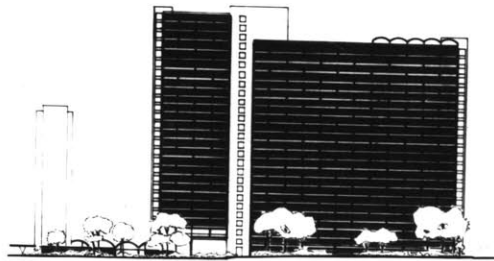
CHESTNUT STREET ELEVATIONS



OLIVE STREET ELEVATIONS SCALE 1/80

A MIDDLE INCOME HOUSING PROJECT  
MASTER OF ARCHITECTURE THESIS  
WILLIAM KU M. I. T. AUG. '54.

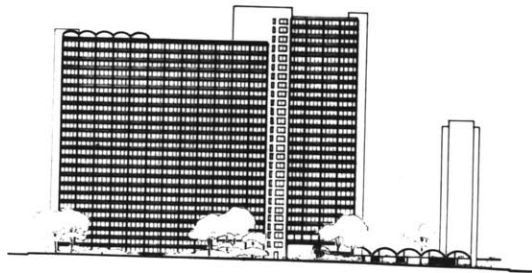




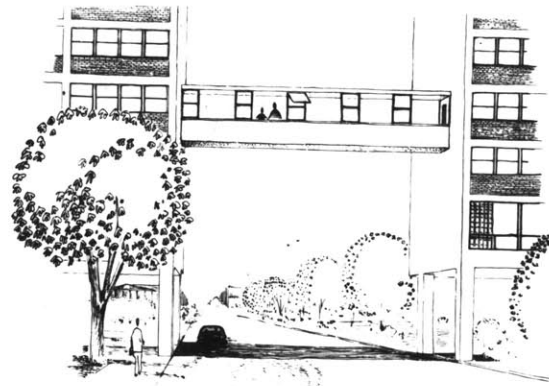
16 TH STREET ELEVATIONS



LOOKING THROUGH BALCONY



17 TH STREET ELEVATIONS SCALE 1/80



LOOKING TOWARD 15 TH STREET

A MIDDLE INCOME HOUSING PROJECT  
 MASTER OF ARCHITECTURE THESIS  
 WILLIAM KU M. I. T. AUG. '54.

25