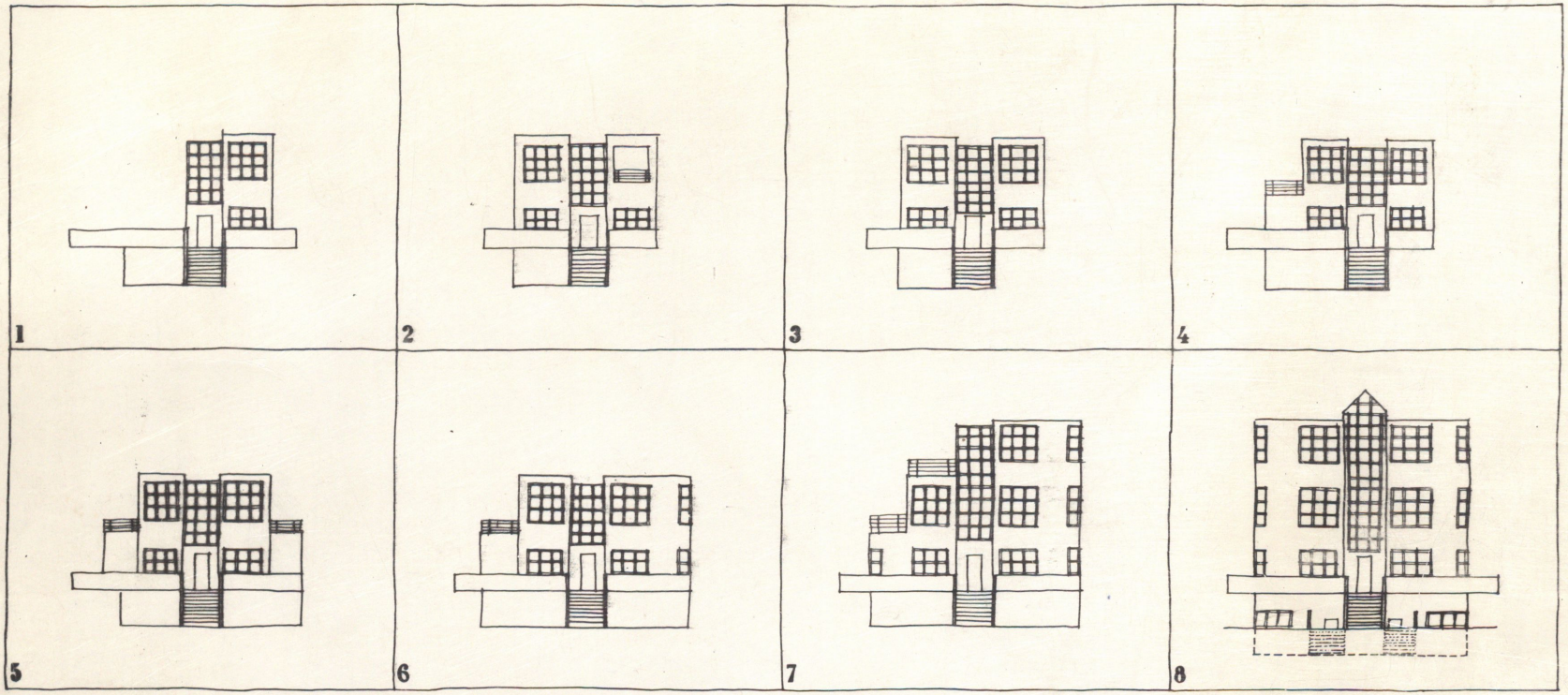
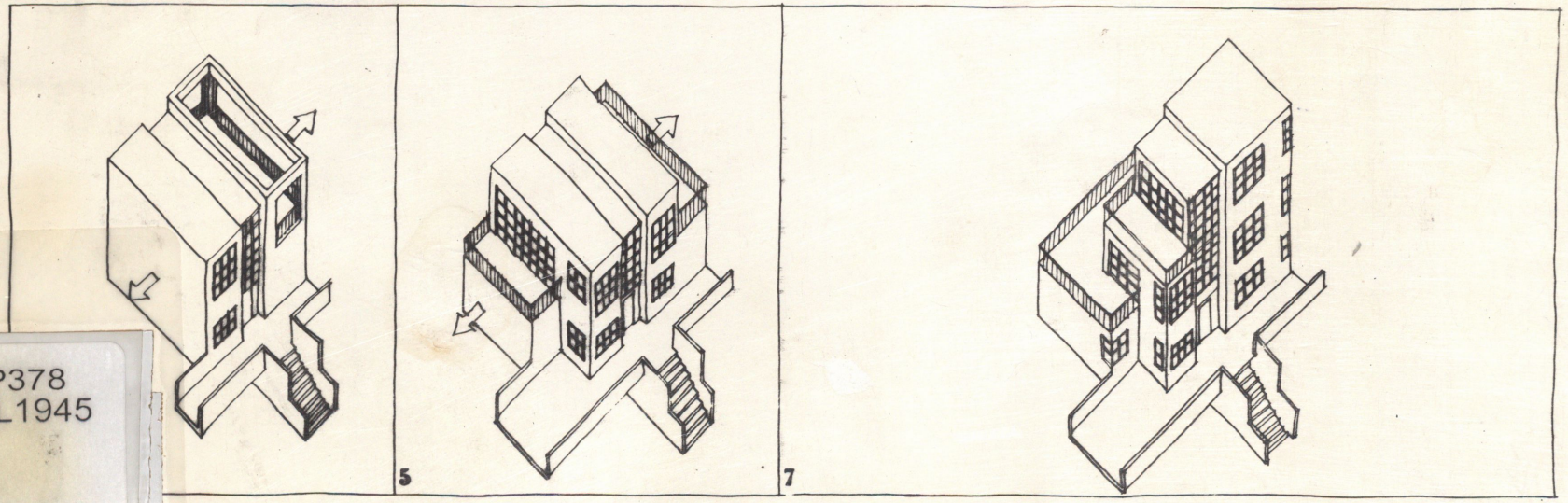


IDENTITY AND COLLECTIVITY IN SOCIAL HOUSING:
A TYPOLOGICAL INVESTIGATION



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IDENTITY AND COLLECTIVITY IN SOCIAL HOUSING: A TYPOLOGICAL INVESTIGATION

by

BRADLEY M. LAMOUREUX

An undergraduate thesis submitted in partial fulfillment of the requirements for the degree

of

Bachelor of Architecture

Approved by:

David Matthews, Thesis Advisor

Robert Utzinger, Director

MONTANA STATE UNIVERSITY
Bozeman, Montana

August, 1983

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Architecture in and of itself has no intrinsic value--it is at best a hypothesis. As a process, architecture seeks to resolve the forces of human needs and aesthetic creation relative to a context of application. In this way architecture may evolve as an intrinsic part of the surrounding landscape (both physical and social). The appropriateness of an architectural idea is an ongoing challenge to meet those forces and a sense of belong in time and place.

Inspired from a lecture by Jessec Koe at Montana State University - May, 1983.

"In order for a building to elevate itself to be considered architecture, it must illustrate the forces which caused it to take shape."

Quote from a lecture on Danish planning by Jorgen Peter Hansen, Copenhagen - October, 1980.

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1.0 INTRODUCTION

My interest in social housing stems from a semester of study at the University of Copenhagen, Denmark in 1980. During this time, emphasis was placed on gaining insight into social housing, relative to the Danish cultural context. This was accomplished through seminars and regular lectures on Danish architecture and planning, conducted by practicing architects and planners through the University. Complementing the theoretical background, field study was frequently arranged and a design problem was assigned to address, a site in Copenhagen for large scale social housing.

2.0 THESIS STATEMENT

The purpose of this thesis is to study social housing as an alternative to "mass housing".

The nature of the study is two fold:

1. to investigate the appropriateness of implementing Danish social housing ideas to the Canadian context by comparatively examining case studies of both Canadian and Danish origin.

2. to examine social housing as a process of physical and social concerns.

2.1 CONCERNS

1. social housing is a commonly used term for public housing in Canada, where in fact I believe this to be a misnomer and is largely representative of mass housing.

2. social housing as a design process needs to respond to social needs, to resolve the forces of human needs and aesthetic creation relative to a context of application.

3. as a personal concern in architecture, the creation of spaces and forms should aim to heighten the experience of living by imparting some aesthetic experience to the users.

2.2 SOCIAL HOUSING AS AN ALTERNATIVE TO MASS HOUSING

Housing (Defn.) - Webster's Dictionary

"Act of sheltering or providing houses as for a group of people or a community."

This definition implies that there exists the providers and consumers of houses. A further implication is that the dweller is passive because dwelling is often a temporary condition and that the unit is provided hence the dweller must adapt.

Mass Housing - Given the above definition, Mass Housing adds that quantity is a concern and possibly a primary concern.

Considering the historical continuum, new materials and developing technological means have permitted a significant improvement in the physical comfort of architecture in the last century. This has coincided with rapid industrialization in the Western Nations. While the post war years created the need to house the masses and the available technology provided the means, the results were often mundane or disastrous. Part of the reason for this is attributed to economic concerns and class biases or negative forces in the shaping of mass housing.

As an example, one may consider the destruction of Priutt-dgoe, a mass housing project in St. Louis considered unfit for human habitation. As Oscar Newman demonstrates in his book Defensible Space, Pruitt-dgoe solved dwelling size and adjacent ammenity considerations, but failed to address the needs of the user group.[1]

Mass housing has accomplished the mergence of technology and expedient, efficient construction means, thus solving the quantitative problems of

housing in this century, but many mass housing solutions have merely served to create physical conflicts between people and their built environment.

The following list represents some problems associated with Mass Housing, based on Canadian case studies. I have been particular to address those issues which may create physical and/or aesthetic conflicts with the users. In many instances, I believe these conflicts have arisen from a design process largely ignoring user needs. I acknowledge that many of these conflicts stem from cultural phenomena and therefore to some would not represent problems at all, however, the purpose of exposing them is to identify a situation from which alternative housing form may evolve to represent a different attitude.

1. limited selection of unit types, units not flexible to change, repetition of one or two unit types limits potential richness of user variety.

2. lack of shared space (where desired).

3. subsidization of units - inflexible to income changes - does not support permanence.

4. lack of private outdoor space.

5. anonymously defined public outdoor space, with questionable public merit.

6. unsuccessful mixing of residential and commercial or office space.

Social (Defn.) - Webster's Dictionary

"of or having to do with human beings living together as a group in a situation requiring that they have dealings with one another as social consciousness."

This definition reminds us that to be social [a social being] is to exist collectively for interaction.

Social Housing

With the more recent behavioral concerns in architecture, social issues have emerged in housing manifest in a greater concern for comfort. In some instances the users have emerged as an integral role in the design process.

Danish Social Housing

What I observed in Denmark was an emphasis on architectural competitions as a means of generating the best available housing ideas. The implementation of competition ideas occurs through non-profit housing organizations, which serve as an administrative link between financial support groups, potential user groups and the architect. It is not uncommon to find architects and future residents working together to accomplish appropriate site planning and housing forms. This overriding concern for developing a cohesive relationship between the social and physical environments is strongly related to the Danes current emphasis on social housing as a process, rather than a project.

> "Architecture as an art has not only been the task of beautifying our surroundings, but also of humanizing them in all areas. Thus, the task of the architect has increasingly become to formulate the needs of the human being in terms of the physical environment."[2]

Thus, the inherent quality of Danish social housing emminates not only from beauty in form but from an initial concern for the users.

Danish social housing is as a process, a radically different approach to housing than what is normally the case in Canada.

Social Housing - (working definition)

"collective living" - implying that people or groups of people are sharing a similar living condition yet maintaining individual or group autonomy.

As a definitional contrast to Mass Housing, Social Housing transcends the mere quantitative problems of dwelling. For this thesis, the architecture of social housing will be aimed at an expression of user groups needs for identity and collectivity, and towards spatial and aesthetic discovery in housing form.

identity - privacy, individuality, light and air.

collectivity - shared ammenities such as entry, open space, recreation, parking, etc. that structure social interaction possibilities.

The following list represents positive attributes of Danish <u>social housing</u> taken from the case studies: It is hoped that many of these issues will serve as guidelines in the design decision process towards the creation of appropriate, alternative social housing form for the Canadian context.

identity

1. variety of dwelling units, and flexibility where appropriate. (Example - Danish housing units oriented to families often allowed for demountable partitions or doors to control horizontal expansion and division (i.e. a one and a two bedroom unit side by side could be realized separately or as a possible 3 bedroom unit.)

2. subsidizing the occupants - adjusting payments with earnings to eventual ownership, encouraging permanence.

collectivity

1. integration of various age groups for a rich social environment.

2. collective ammenities for families - kindergarden, daycare, cleaning, co-op restaurant, other collective ammenities - clubs, bars, social rooms.

3. outdoor activity spaces available and visible to residents.

4. concern for transitions between public and private realms (semi-public or semi-private - ex. courtyards, alcoves at entries).

5. inspired pedestrian activities within site (textural variety, play spaces, paths).

aesthetic

1. varied and interesting forms and materials - of interest to residents and passerbys.

2. clear vehicular separation from pedestrian activities.

3. full utilization of site - as a part of the total living environment.

3.0 SCENARIO

3.1 CLIENT

The C.M.H.C. (Canada Mortgage and Housing Corporation), is a non-profit housing organization and a crown corporation to the Government of Canada. It has been hypothetically assigned as the client in this problem for several reasons:

1. its main concern is for the qualitative improvement of housing in Canada.

2. it is instrumental in the continued support for housing research in Canada.

3. it will provide the necessary funding and support for the implementation of experimental social housing in Canada.

The C.M.H.C. has recognized the importance of looking to sources outside Canada for housing ideas, thus, its interest in Denmark as a model worthy of study. The C.M.H.C. fully supports this study as an investigation into adapting appropriate Danish social housing ideas to the Canadian context. Due to the experimental nature of the study and the uncertainty of the architectural expression that will result, the C.M.H.C. has determined its primary concern to be in spatial and aesthetic discovery, towards improving the quality of social housing in Canada. As a secondary concern the study will address three user group interests, and as well should work within a particular Canadian-city context. This implies that social housing cannot be considered in isolation from other components of city life, therefore, an appropriate "fit" is necessary. While political and economic issues are acknowledged as powerful forces shaping our present housing condition, in this study they will not be concerns.

3.2 SETTING

Edmonton is an example of a prosperous Canadian city with a rapidly transforming urban centre, and increasing demands for new housing to meet the needs of a growing population. (See appendix) The following is a brief sketch of Edmonton's evolution:

1. 1904 - incorporated as a city with a population of 3,000.

2. 1914 - population grew to 72,000 with the expectation of the expanding railway network in Canada.

3. 1947 - discovery of oil in Leduc, just south of the city, along with the discovery of natural gas and increasing mining activity. Population increases rapidly at a rate of 5.8% per year until 1961.

4. 1970's - city continues to expand physically with the Downtown becoming more specialized for office/commercial use.

5. due to the availability of extensive storage space outside Edmonton's core, the existing Warehouse District begins a slow transformation.

In summary, as the city grew, the Downtown became largely dominated by office/commercial uses. This specialization has strengthened the role of the City at the regional, provincial and national levels at the expense of a less diverse and active downtown, which is largely deserted after working hours. Source: R. L. Wilkin Architects/ Planners, Downtown Housing Study - April 1979.[3]

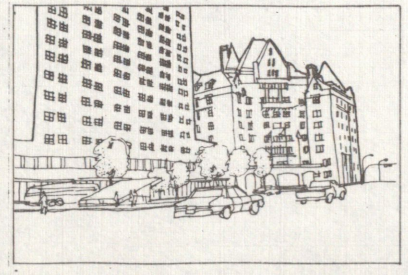
The C.M.H.C. in cooperation with the City of Edmonton have discussed the possibility for a social housing typology to be located in Edmonton's city centre region based on the following reasoning:

1. downtown housing could effectively create a diverse mix of activities and provide a market for social, cultural and recreational activities. This would be seen as an attempt to counteract the homogeneous office and commercial development currently dominating downtown growth.

2. continued growth of office and commercial activities in the city centre is straining the existing transportation system. Housing downtown, locates more people closer to transportation and work ammenities.

3. The appropriations of mixing commercial and/or office functions with social housing should be studied to address the applicability of a wider range of site possibilities.

For purpose of this study, the C.M.H.C. and the city of Edmonton have agreed to remain totally flexible in the present city zoning and bylaw regulations, to support the free development of architectural ideas towards an experimental proposal.



4.0 GOALS AND OBJECTIVES

As a generally accepted axiom, man's behavior is influenced by the built environment which he/she inhabits. The extent of this influence is a debatable issue. The behavioral scientist usually questions how the built environment affects the human condition. More often than not this type of discussion is considered a matter of fact although inevitably after the fact has been established. While such scientification of behavior can be a useful tool in architectural design, a concern for design process is more interested in the cause and the effects of human need in the built environment. Therefore, to interject human concerns into the design process as much as possible without sacrificing the potential of architecture to serve as a social art, the designer should simultaneously consider--how human needs affect the built environment as well as how the built environment will affect the human condition. For myself this results in a simultaneous interest in the creation and the potential experience of architectural space.

This is a design process stems from design from the "inside-out" and "outside-in". The built environment, then, can be seen to comprise both a social and physical component. Both components simultaneously rely upon each other for complete expression. Thus social need + aesthetic concern create a harmonious whole for social housing.

At the onset I do not wish to limit the potential of this social housing investigation by a traditional program. In order that this thesis remain a process in search of "qualitatively better" "high density" urban housing and at the same time remain an experimental investigation, I believe that a program initially deciding upon optimal and economically feasible "room sizes", arrangements and

densities is inappropriate. Therefore the investigation will take the form of a process responding to perceived social and aesthetic needs. These needs will be termed "forces" affecting the outcome of the housing design investigation.

4.1 PRIMARY CONCERNS

A. Social Component

1. User Group Needs - considers both the individual and collective needs of the three user groups. In this study collective needs will address issues of interaction occurring outside one's dwelling. This study will demonstrate the need for clear divisions between public and private space.

2. Social Context - a graphic study focusing on the use of public space at street (or pedestrian) level in downtown Edmonton. The purpose of this study is to demonstrate how the interface between social housing and the street responds to the needs of the typical downtown dweller (be it office employee, shopper, resident, etc.)

B. Physical Component - represents the forces of built form existing outside of the user groups domain which are considerations in the design process. These forces will attempt to illuminate specific issues indigenous to the physical context of Edmonton. This will take the form of a graphic study of specific architectural form ideas for referential use in the design process; reflecting upon materials, scale, light penetration, character, etc.

Climate is acknowledged as a physical force affecting the shape of building envelopes in Canada.

> "The severity of the Canadian climate has caused a major re-thinking about buildings composed of separated building elements as an organizational device."[4]

This in part entails more enclosed space, shelter at entries, considerations for heat loss, etc.

As an environmental force, climate requires no further discussion. It is a concern that will ultimately emerge as a part of the total symbolic expression of social housing form.

4.2 SECONDARY CONCERN

As always, a concern for materials and light/shadow as textural devices to convey symbolic meaning and to enrichen the aesthetic experience of urban architecture.

5.0 USER GROUPS

5.1 THE CITY CENTRE AS A PLACE TO LIVE

> "Living in a central urban environment is certainly not everyone's choice. It is, nevertheless, a distinct life-style which appeals directly to an increasingly large percentage of the population. Providing the choice of such a residential environment is one of the characteristics of any distinguished city.
>
> People living in a major urban centre can be close to their work, usually within walking or relatively short transit distance. They have at their immediate disposal the whole range of ammenities - the bars, bookstores, and other services. They may own an automobile but do not have the worries of driving and parking it during the day."

Excerpt from City of Edmonton Planning Department, Downtown Housing Study, April 1979 by R. L. Wilkin Architects/Planners.

In his paper The City, the suburb and a theory of social choice, Wendall Bell postulates that the city attracts people oriented to a stage of "vertical mobility." This he defines as a life-style reflecting both a "consumerist" attitude (having a good time, living it up) and "career oriented" attitude (spending time and money on one's career to the partial exclusion of other activities), as opposed to "familistic" orientation.[5] As groups, they tend to be holding professional jobs, and smaller than normal households as a result of their position in the early or late life cycle. While Bell's theory of social choice postulates that the city generally does not support "familistic" needs, I am assuming that a user group category of young couples with pre-school children is a viable consideration as a group in transition to "suburbia".

As a premise then, I am assuming that each of the designated user groups has chosen the city centre as a place to live based upon the amenities available to them in an urban situation such as; convenience of public transportation, proximity to work and shopping facilities, and cultural ammenities which are concentrated in the city-centre. The purpose of defining the three user groups in some detail, is to specifically address the issue of social needs.

The user groups in this study will be limited to:

1. young singles
2. young couples with one or two children (children are assumed to be pre-school age)
3. elderly couple or elderly single

5.2 USER GROUP NEEDS

1. Young Singles

"territory - people in this group are only moderately concerned with territory. They tend to be more gregarious and seek maximum social interaction with their peer group."

"orientation - being away from the dwelling units during workdays and fairly mobile on weekends, they benefit less from orientation amenities."

"privacy - they seek privacy in an environment that enhances social interaction, with the emphasis on privacy inside their dwelling space."

2. "young couple, with children- with the transition to a two-generation family, attention is focused on the development and well being of young children, so that emphasis of human need shifts."

"territory - the children's territory must be clearly defined and physically bounded. This becomes synonymous with safety as barriers must be secured with locks and spaces made free of hazards."

If both parents are working then, the description of the young single generally applies. However, if one parent remains at home during the daytime, amenities such as good solar orientation, daylight and view are essential.

"orientation - children instinctively seek out good orientation and warm bright places on a cold winter day or cool shady places on a hot summer day. Although they are affected by the perceptual world, they do not yet value view, amenity or identity. Children (one to four years) also require adult supervision, however they can roam and play in yards, balconies or enclosed areas." A diversity of experiences should be provided for in such environments.

"privacy - children require a minimum amount of private space since they live in a world of their own. Couples with young children may find their personal privacy and territory encroached upon by the children and thus require a minimum amount of adults-only space, at least during evening hours."

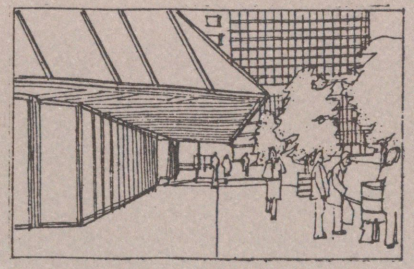
3. elderly couple, elderly single

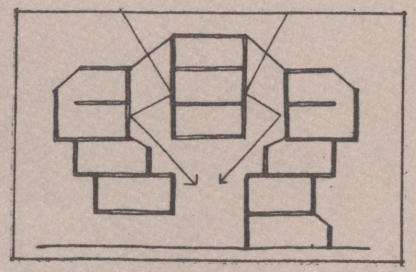
"territory - a position in a cluster that allows for privacy on an optional basis is ideal. If a site can allow for some lower rise units, the elderly can cluster with their peers, but their units must be reasonably close to other household types, so they can enjoy the experience of watching children at play, people passing by, or doing simple outdoor activities, etc."

"orientation - since our physical systems become less tolerant of extremes as they age housing plans for the elderly should provide an even orientation - even temperature, very little air movement (chill factor) and moderate north day light."

"privacy - this group is at a time of life when a more restful and passive lifestyle can be enjoyed. Privacy becomes more important; the option of having total visual and acoustical separation is essential.

NOTE: All of the above quotes used in the user group descriptions are excerpts from Unterman and Small, Site Planning for Cluster Housing, pp. 57-59. (refer to bibliography)





6.0 ARCHITECTURAL ANALYSIS

A. USER GROUP NEEDS

B. COLLECTIVE LIVING

C. CONTEXTUAL ISSUES

D. ARCHITECTURAL CONSIDERATIONS

7.0 CASE STUDIES

8.0 SYNTHESIS: TYPOLOGICAL MASSING STUDIES

6.0 ARCHITECTURAL ANALYSIS

6.1 INTENDED USE OF THE STUDY

-The purpose of this study is to illuminate contextual issues which are both physical and social by nature.

-By illustrating and discriminantly analyzing existing and conceptual forms and needs, it is hoped to transpose key ideas to a design process which seeks appropriate social housing form.

-Graphic images will continue to remain as a source book of information from which architectural vocabulary for my design will be drawn.

-The following concerns are by no means an attempt to deal with all the social and physical issues available for study. They do however, address issues that constitute the primacy of concerns for this discussion.

A primary issue of inquiry in this thesis involves man's physical, emotional and intellectual well-being, and the spatial forms that are responsive to these needs. The desired result from this investigation is to observe form as a theoretical "building block" that additively generates and leads to the expression of a total building envelope.

Three primary issues will be dealt with in this study, namely:

1. privacy
2. orientation
3. territoriality

A. USER GROUP NEEDS

1. PRIVACY CONCERNS IN SOCIAL HOUSING

Privacy should transcend mere enclosure--it should permit the user to envisage his own needs through freedom and choice.

Enclosure in physical terms may be seen as an envelope separating inside from outside or within a dwelling in terms of physical hierarchies of space allowing the perception of the "room" as a unit of control. The "room" as a standard measure of dwelling space division and an expression of individuality and boundary.

Boundary - in social terms, is defined as a concern for a clear separation of social realms. In hierarchical terms, this implies the separation of the dwelling (private) from the street (public) or the need for privacy within the dwelling. Each member of a family should be able to find sanctuary from other family members within the dwelling itself.

Boundary - in physical terms, may be defined as the degree of openness or enclosure provided by a physical surface. This may be exemplified by a wall, window, door, or virtual enclosure. Ultimately privacy is achieved when an individual or group controls a space in terms of:

visibility - able to see out but control over visibility into a private domain.

ownership - or temporary occupation of a space, a designation respected by others.

interaction - controlling interaction within a private space and a sense of distance from unwanted social interaction. For some this may also involve avoidance of unwanted perception of others--visually, or in terms of sound and smell.

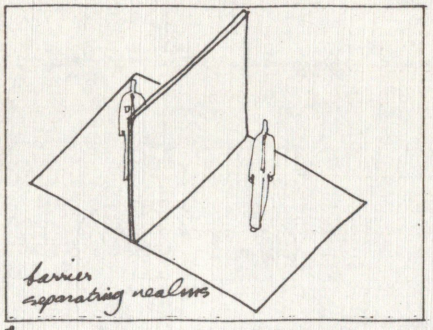
Conclusion

-degrees of privacy can be manipulated in the physical environment in many ways, but appropriately relative to user needs.

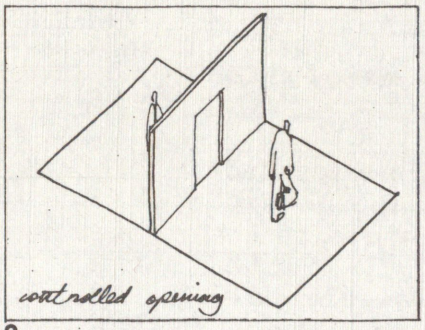
-the following examples represent some of the means by which privacy may be conveyed:

1. physical barriers
2. controlled openings
3. physical barrier/symbolic representation
4. symbolic barrier
5. physical distance
6. privacy relative to vertical scale
7. privacy relative to vertical scale and source of public realm.
8. degrees of privacy within the dwelling
9. privacy versus light and view

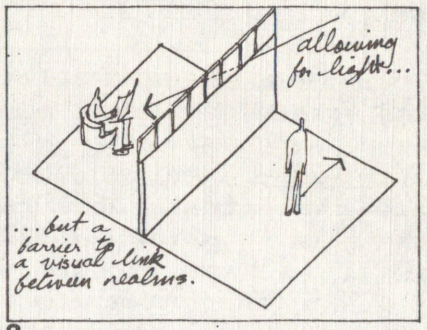
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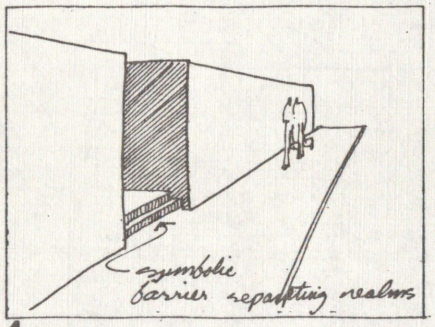
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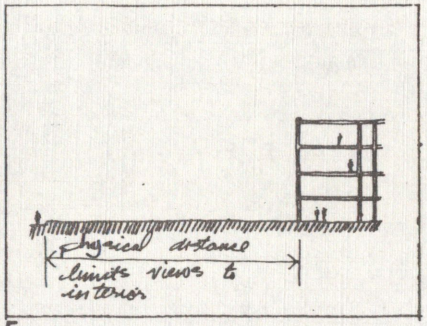
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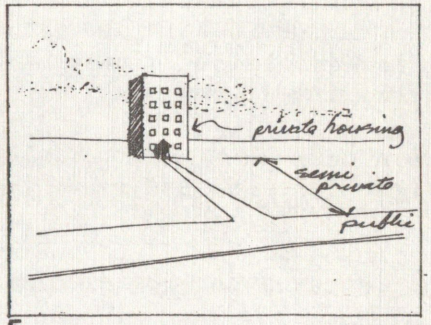
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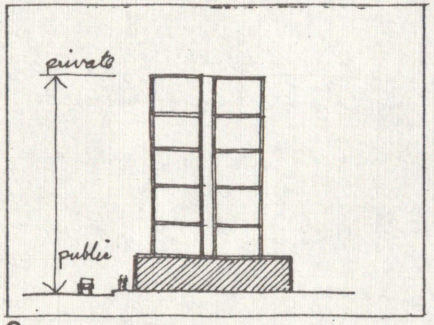
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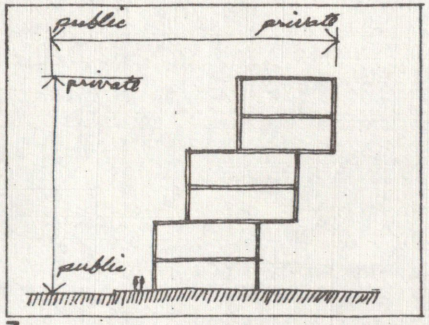
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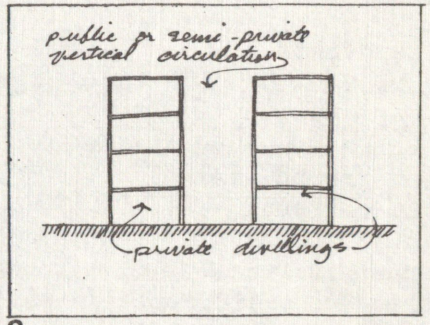
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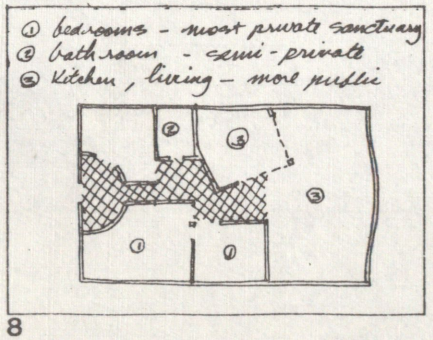
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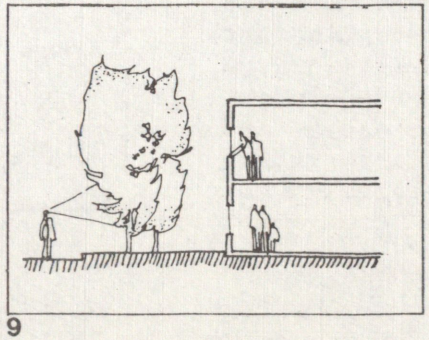
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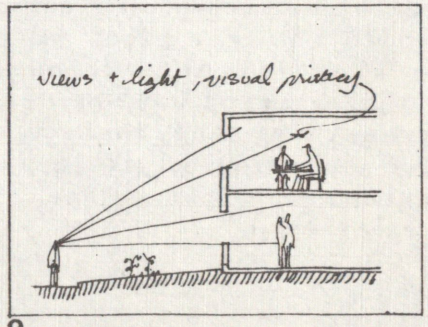


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2. ORIENTATION

-Orientation is a concern related mainly to climatic and spatial-perceptual needs.

-In this study social housing is being investigated relative to the climate of a general context because the final housing solution(s) are to be prototypical in nature. The site is to be typically urban Canadian downtown therefore site specific information is irrelevant to the design.

-The concern for enclosure and privacy in stacked dwellings is equalled by a concern for a degree of openness relative to orientation.

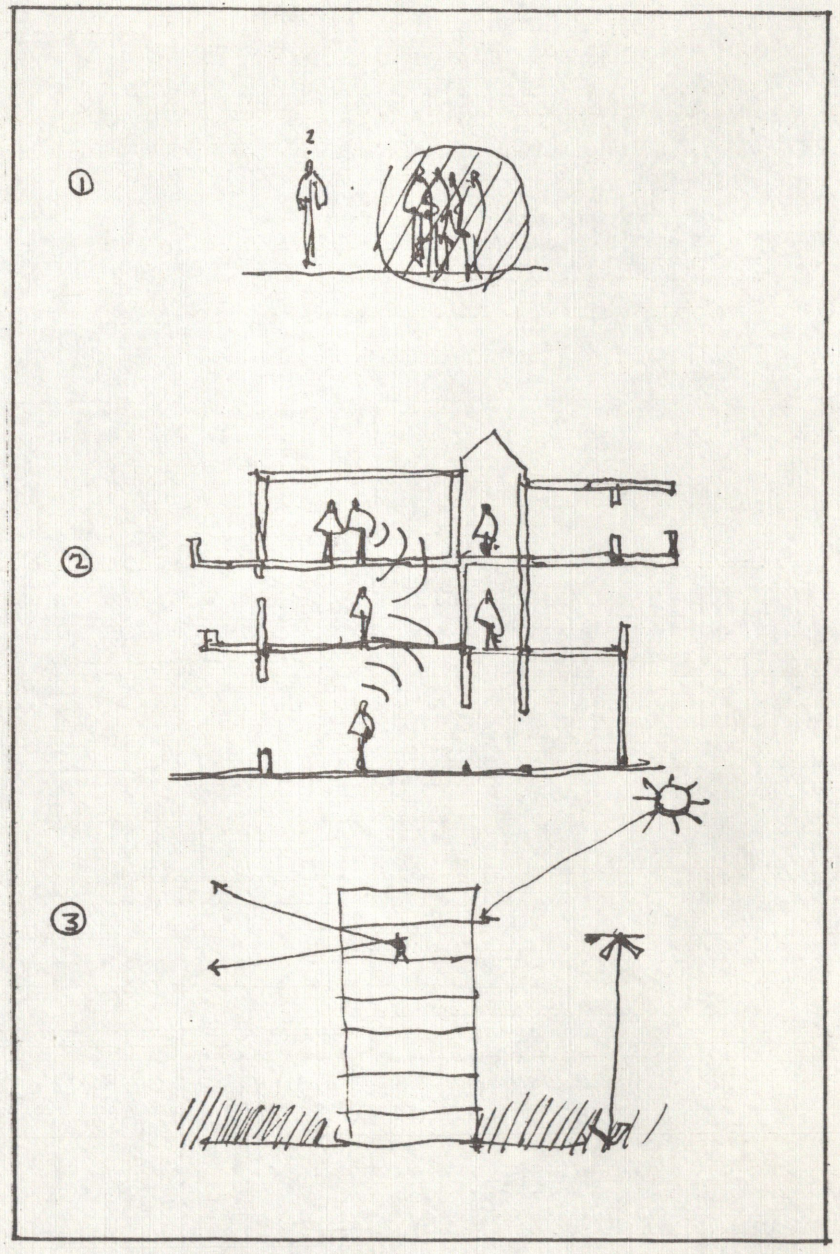
-Orientation considers man's biological need for natural light for time and view.

Orientation Concerns for Social Housing

Location of man:

-relative to others
-within a dwelling (with knowledge of that position)
-relative to inside and outside
-relative to ground plane
-relative to the sun

Man's relationship with the environment has largely become one of an inside-outside realization. This is most readily apparent where the severity of the climate coupled with technological innovation has allowed man to ensure comfort and non-confinement from natural conditions through built form. Therefore the exterior wall becomes an important element preserving the idea of enclosure and allowing for an inside/outside connection which to a large extent can manipulate the effects of climatic conditions.



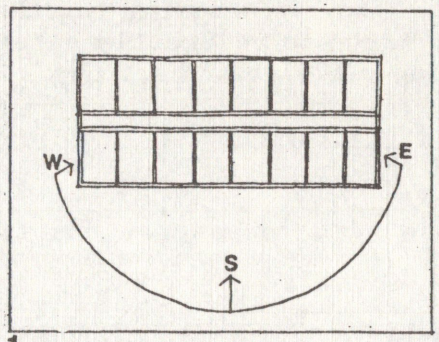
Building Orientation

Example 1 - shows a traditional double loaded corridor serving units arranged in a rectangular prism.
-south orientation with preference to one side establishes a non-egalitarian relationship between housing units.

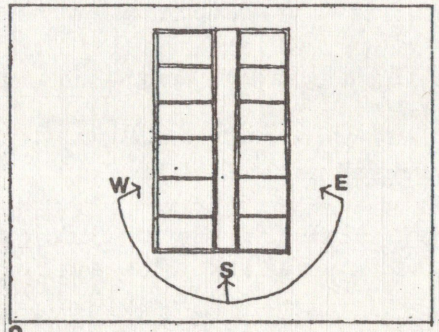
Example 2 - rotating example 1 by ninety degrees allows both sides of the arrangement to have direct daylight for a part of the day.

Example 3 - taking a rectangular floor layout and separating the linear arrangement of units by an atrium effectively draws direct light internally. North facing dwellings may capitalize on orientation by directing inwards (to atrium).

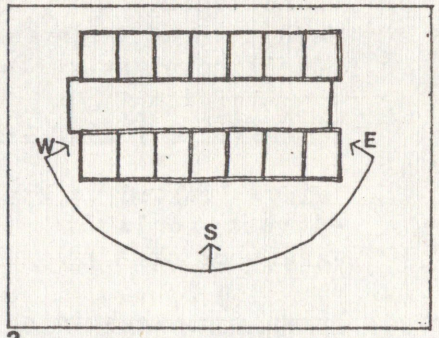
Example 4 - rotating example 3 by ninety degrees brings direct southern light into the atrium along its length while allowing the dwelling units on either side to benefit from both east and west light conditions.



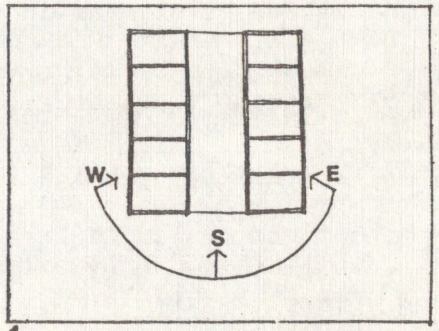
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Dwelling Orientation for Direct Day-Light

Example 1 - punctured fenestration

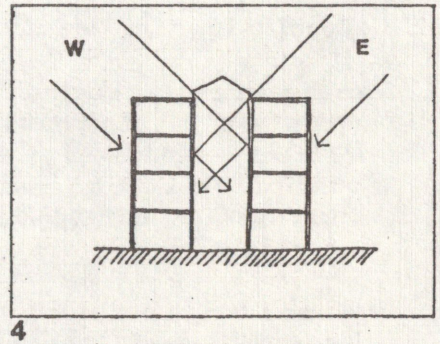
-direct light situations must be controlled by drapes or blinds.

Example 2 - full height fenestration

-same control situation as in example 1 but with more light to control.

Example 3 - overhang

-allows for the control of high angle sun penetration, allowing lesser angle penetration (more desirable in winter).



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Example 4 - overhand/reflective

-same condition as example 3, but allowing for the addition of high angle light to indirectly enter dwelling after reflecting off porch or balcony.

Example 5 - skylit type fenestration

-views limited to sky.
-direct sunlight may be hard to control due to angle of opening.

Example 6 - hybrid solution

-a two level example maximizes daylight penetration.
-difficulty in controlling angled skylight, view limited to sky.

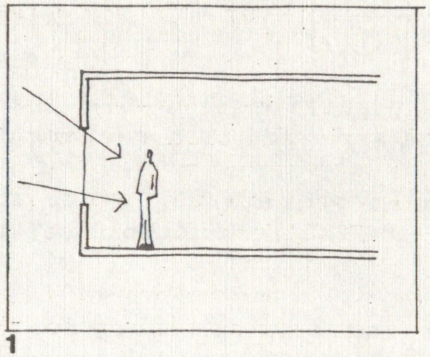
Example 7 - alternative hybrid

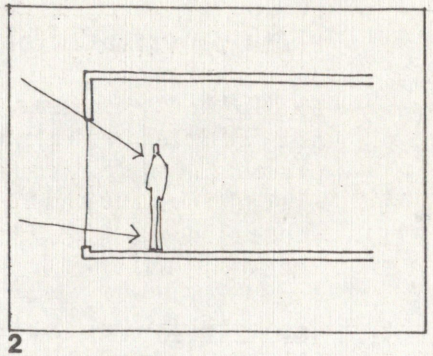
-lower angled skylight may allow for the definition of a space by physical means and the strong presence of light.

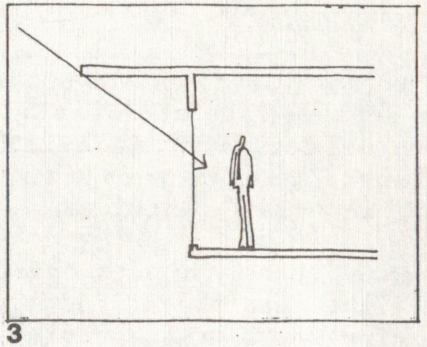
Conclusion

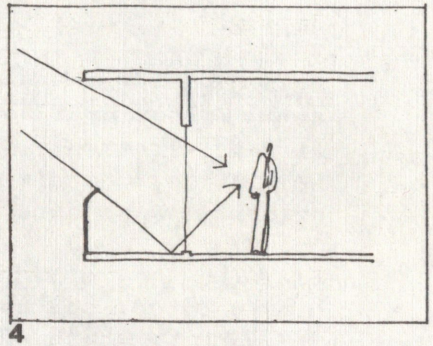
-The translation of spatial ideas to a physical context must consider the forces of climate (light, wind, and precipitation) and view relative to orientation. This means that particular attention should be addressed to the issue of daylighting for all residents as much as possible.

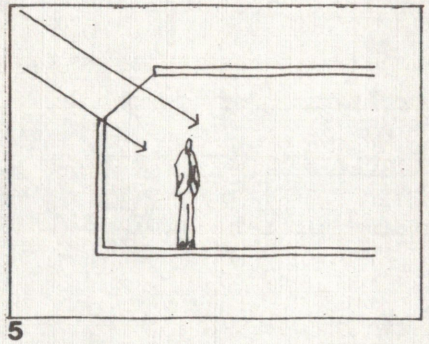
-In addition to fenestrations allowing for quantities of transmitted light, their importance also addresses orientation for view, time and location. This helps to strengthen man's relationship with his environment.

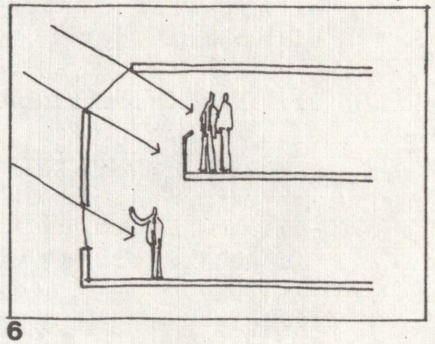

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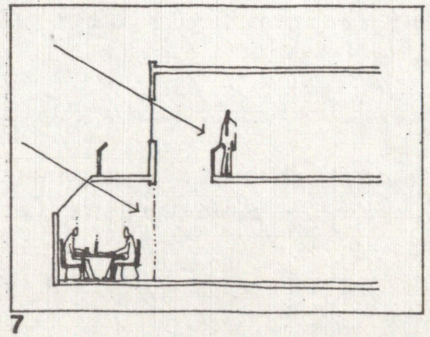

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3. TERRITORIAL CONCERNS IN SOCIAL HOUSING

In his book Defensible Space, Oscar Newman points out that territoriality in Western culture is traditionally based on "a symbolic stake in the social system."[6] He compares this idea to notions of ownership and belonging to the establishment.

Territoriality may or may not have anything to do with physical separations or boundaries.

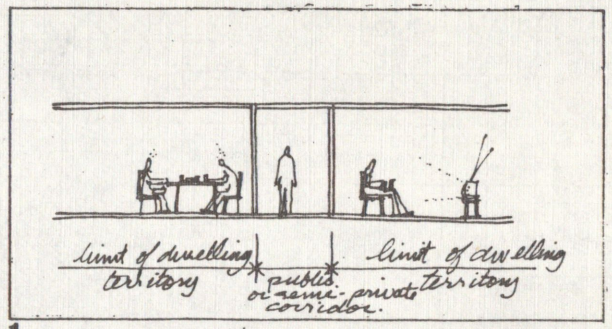
Privacy deals more with controlling a space in terms of visual and physical interaction--it often demands a physical enclosure that can be "defended". For an individual to penetrate another individual's private domain it is usually necessary to remove a physical barrier (such as opening a door).

Territoriality transcends ownership of private property in social housing when outside of one's dwelling.

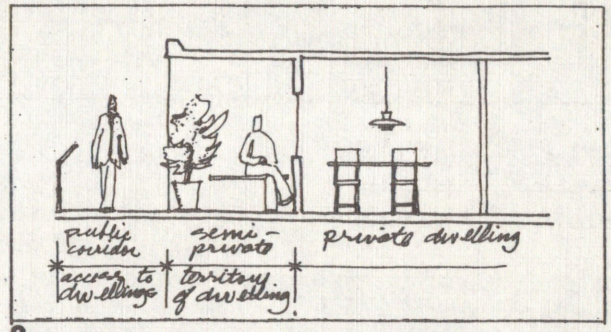
The spaces outside of one's dwelling (such as laundry rooms, gathering spaces, corridors, parking and lobbies are designated as collective or a shared condition). Within these less private spaces is the chance for people to lay claim to a space for temporary or more permanent conditions. Examples:

- -a table in a restaurant
- -a park bench
- -an alcove in a corridor immediately outside of one's dwelling for storage of something
- -a weekly meeting in a gathering space.

Territoriality then, is individual or group behavior to claim, personalize or defend spaces wherever they go as though it were private for temporary or a more permanent condition.



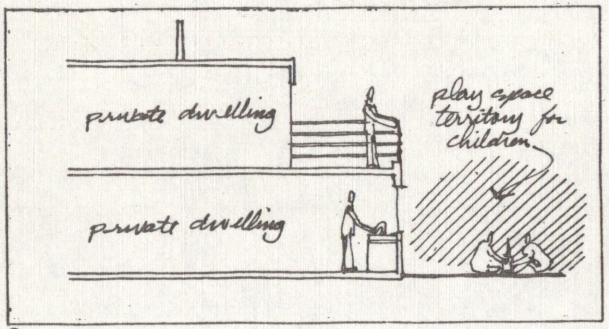
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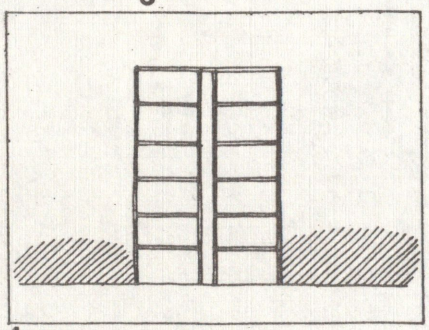
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Example 1 - the corridor as an anonomously designed space.
-little interaction or scale for activities.

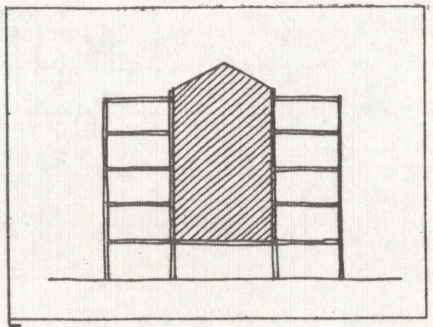
Example 2 - treating the corridor as a public access to dwellings and providing a semi-private buffer zone that enters an individual's dwelling units.



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Example 3 - children's play space claimed by residents.
-symbolic of a group's identity and values.

Example 4 - anonomous open space surrounding an apartment block.
-who uses it, maintains it and how?

Example 5 - an atrium is a space that is visible to all residents.
-may promote social interaction and collective activities (laundry, children's indoor play space, coffee shop or pub).
-active involvement in a collective atrium space (example - a parent working in the kitchen may overlook activities of children to ensure safety or the watchful eyes of elderly would contribute to the character of the space. Playing in the space and observing activities in the space out of concern or interest extends the territory of dwellings to include the collective space).

Conclusion

As Oscar Newman points out in Defensible Space, people experience the space immediately outside their dwelling as distinctly public thus allegating its maintenance to public authorities. This is especially true in high density living situations.

Improving the condition of collective spaces (such as corridors) in housing may allow for more active use and collective participation in them. This may extend the perceived territory of the dwelling unit outside of its physical separation from collective space. However, the privacy of dwellings must be maintained.

Boundaries in territoriality may be visible, invisible but symbolically comprehensible.

B. COLLECTIVE LIVING

The term "collective living" generally connotes a group of people co-existing in a co-operative of communal living. In his study of large scale French social housing projects, Raymond Ledrut stated that, the main problem lay not in meeting people in buildings and surrounding open space, rather, the unwanted perception of other people in their dwellings interfered with one's personal lifestyle[8]. There is a need to provide clear distinctions between private and public realms in collective living so that individuals can regulate how much interaction occurs relative to their need for privacy. Giving people social choice (options) will hopefully allow individuals to control the degree of interaction they will actively participate in, and they will be more likely to seek interaction out of interest.

My primary interest in collective living stems from a concern for providing varied interaction possibilities in social housing. While ritualistic activities provide the possibility for interaction, one must consider that if a person is given the choice of sharing a space or not at all, they may be more likely to share nothing. As a premise I am assuming that the quality and appropriateness of the environment can play a role in structuring interaction possibilities. Thus, appropriateness is intimately tied to form and the social concerns of users.

To this end I will identify five collective activities for further consideration. Hopefully individual and collective needs can merge to create appropriate architectural form.

1. entry
2. internal circulation
3. urban open space
4. possible commercial component
5. parking.

1. ENTRY

-is a link between inside and outside.

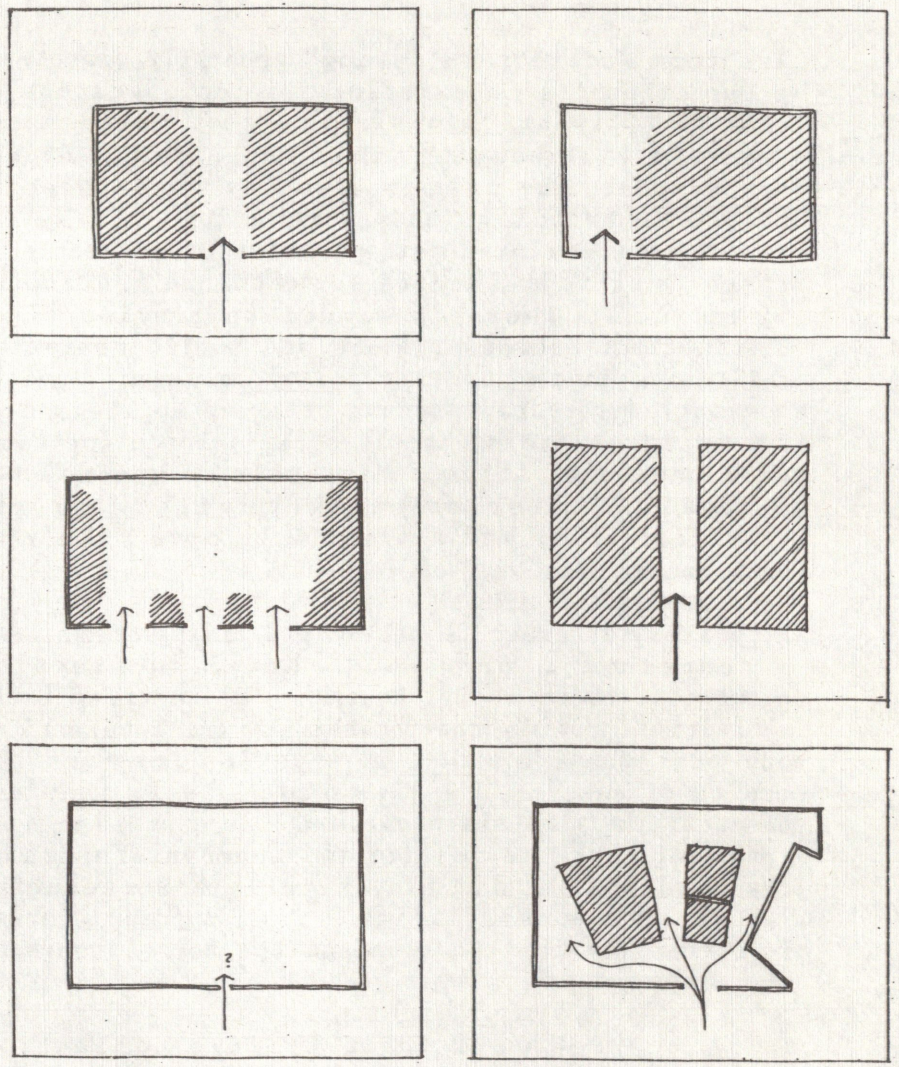
-may at times represent a significant climatic change.

-as a ritual activity--may inspire social interaction.

-maintain ideas about enclosure, therefore should be an integral element in the building "skin".

-as a transition where one gains access to an enclosure, entry highly structures first recognition of that space establishing what options are available to the user.

-can allow the user to establish his own spatial hierarchies if the internal space is not so directed as to force movement in a conditioned manner.



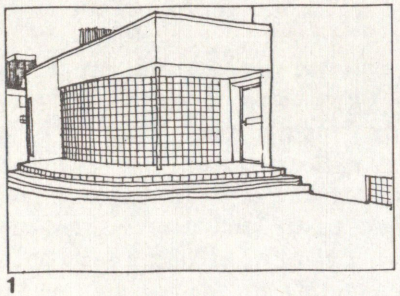
Criteria for Evaluation

Entry should symbolically express its intentions as a transitional device.

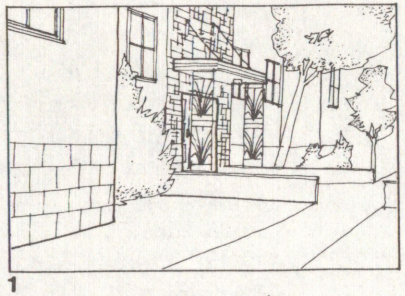
As a link between inside and outside, entry should express the continuity of public realms (such as a sidewalk to an interior commercial mall), or separate the realms into degrees of privacy (sidewalk to a semi-private dwelling lobby or a private dwelling entry).

Entries should encourage social interaction as a collective housing activity.

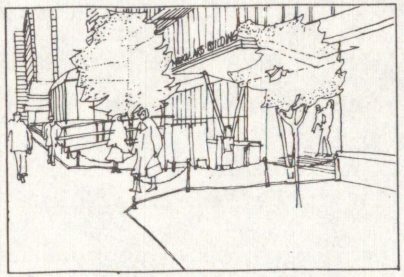
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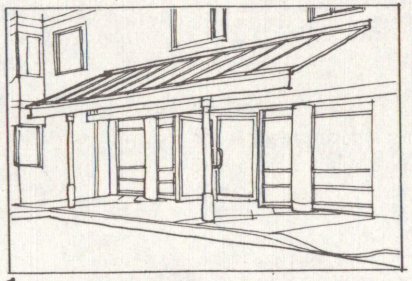
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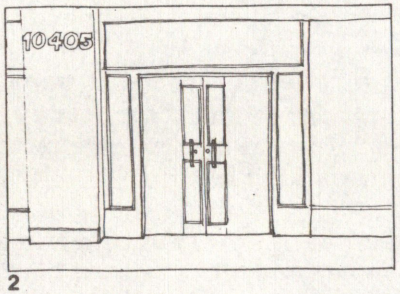
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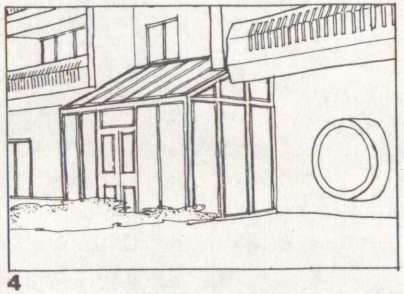
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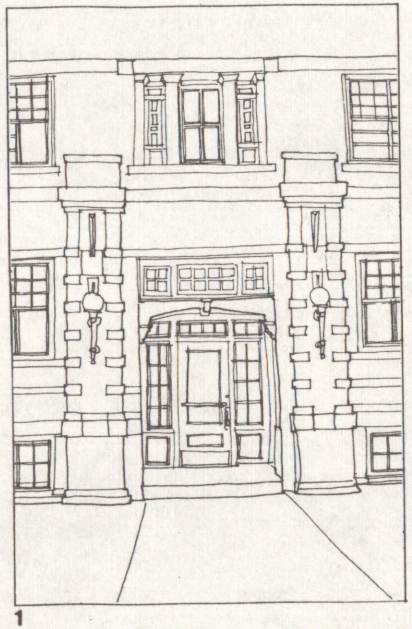
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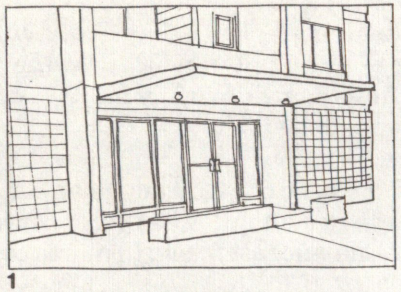
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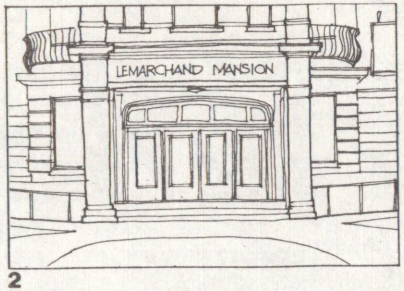
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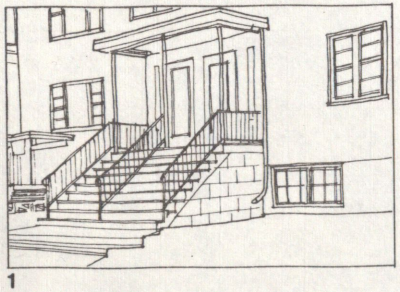
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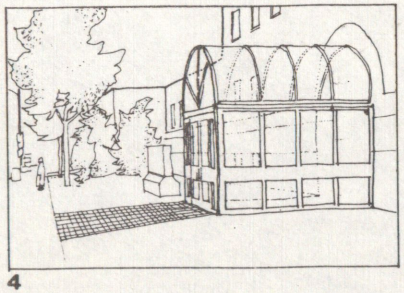
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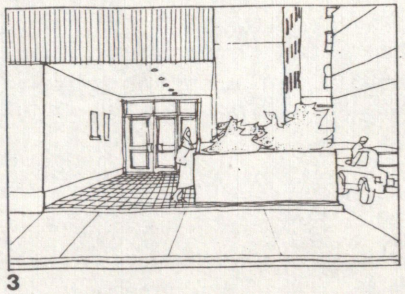
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Category 1 - Canopy Type Entry

-makes a statement about the protected nature of entry.

-invites, especially where projected over sidewalk.

-is proportionate to scale of building facade.

Category 2 - Planar Entry Types

-recognition of entry through textural and/or material changes (structural bays such as pilasters columns is common).

-usually more ornamental as an architectural function.

Category 3 - Recessed - Protected Entries

-rely more on shadow for definition.

-can be used as an outdoor lobby or waiting space if transition is adequately large enough.

Category 4 - Add-on Entries

-superficial as an entry statement - usually bares no relationship with the architectural facade treatment.

-visually recognizable, but in terms of design decisions - usually remains an afterthought.

Conclusions

NOTE:

Most of the examples are historic in nature demonstrating how entry has been previously handled with surface undulation, texture, and material changes. In more modern examples signage is heavily used to define not only function but entry location and in many cases this is necessary for otherwise expressionless facades. In modern times, signage mainly addresses the user of the automobile and caters to his perception of it at increased speeds.

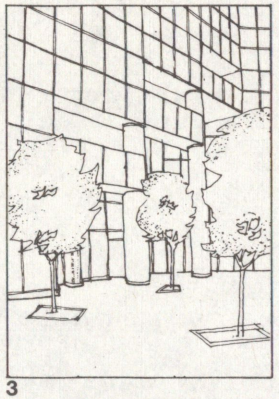
The canopy types (1) and recessed types (3) seem to be the most sensitive entry types for sidewalk interface. Both examples offer weather protection and social interaction possibilities.

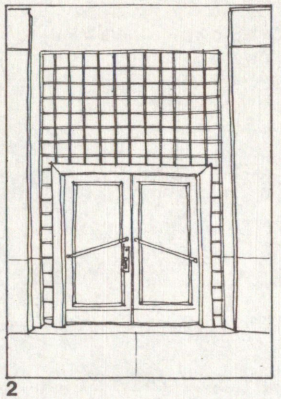
A successful hybrid would be a continuous canopy forming an arcade with recessed entries allowing for pausing spaces.

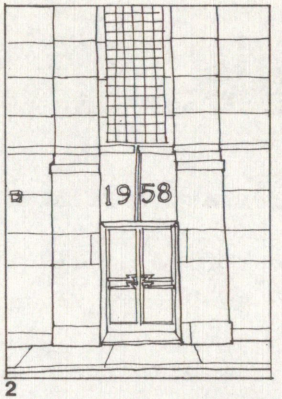
Continuity or separation of realms is symbolically conveyed not only in physical form and ease of access, but also in the degrees of visual continuity between inside and outside.

Visual clues such as windows, bright internal light sources, displays, signage and visible human activity may enforce a continuum of public space.

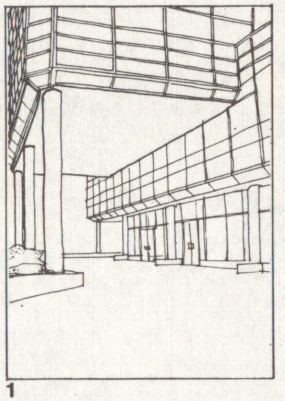
ENTRY

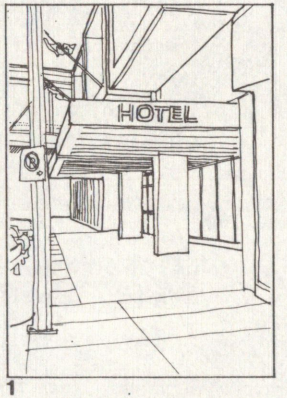

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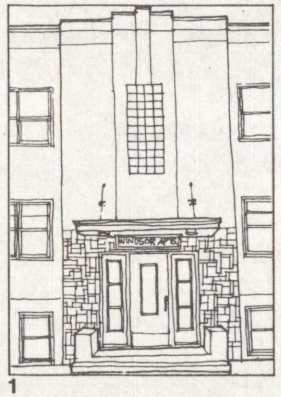


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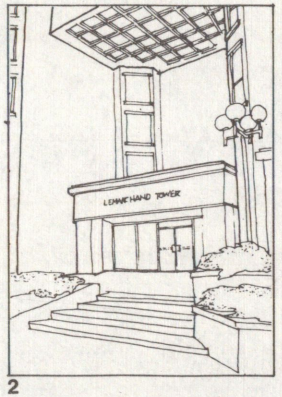

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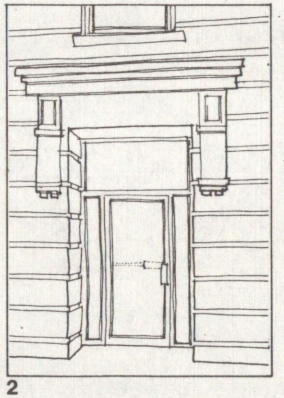
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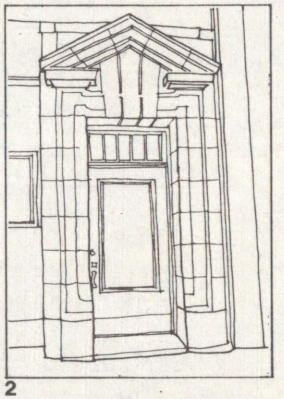


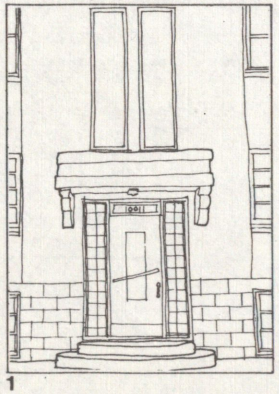
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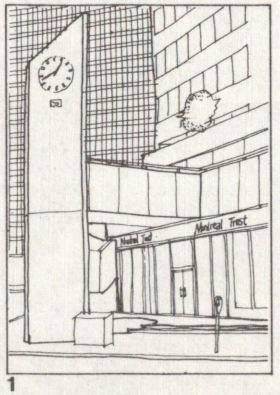
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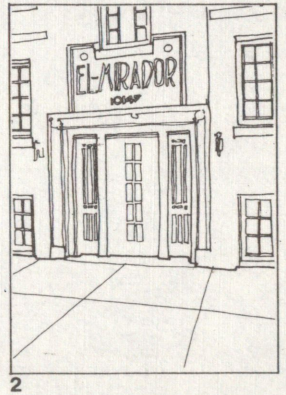

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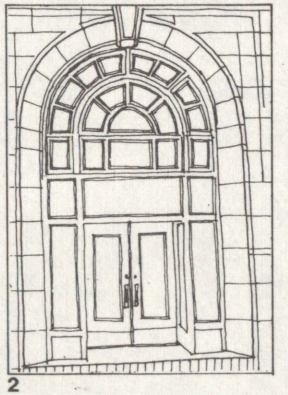
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2. INTERNAL CIRCULATION

The hierarchy of spaces in social housing ranges from the intimate dwelling sanctuaries through corridors, down stairs and elevators into lobbies or interior public space and which spill out into the streets.

Internal circulation provides the necessary buffer zone between completely private and public realms of space. It is able to create successful transitional space reinforcing the co-existence of dwellers and general city users.

Criteria for Evaluation

-a concern for the quality of transition between entry and dwelling units.

Category 1 - Double-loaded Corridor

-this all too typical section renders circulation via elevators and "stair wells" a socially impersonal environment for transition.

-no social interaction anticipated.

Category 2 - Low Rise - Internalized Stair Circulation

-possibility of natural lighting from exterior and view to atrium internally.

Category 3 - Individualized Access

-access from street directly to individualized dwelling units.

-too much physical choice and not enough social choice.

-inappropriate for urban social housing at higher densities.

Category 4 - Hybrid - External/Internal Circulation

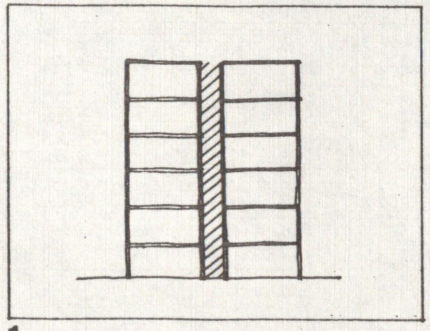
-most appropriate for low density, low-rise housing.

-external circulation requires weather protection.

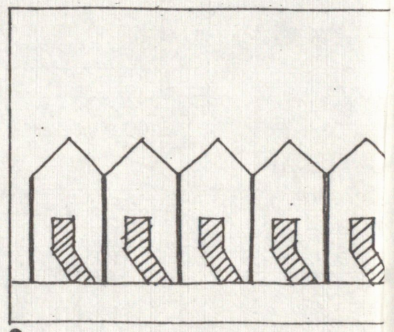
Category 5 - Escalator or Diagonal Stair Circulation Connecting Vertical Masses

-disregards ease of access.

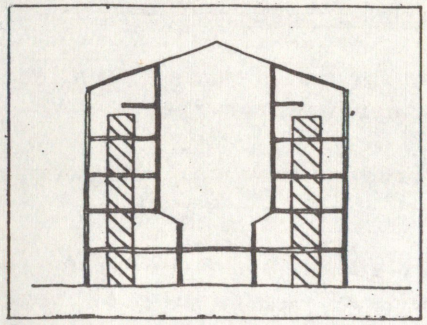
-seems more appropriate for commercial situations than to housing.



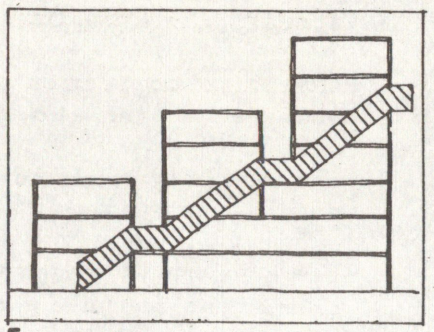
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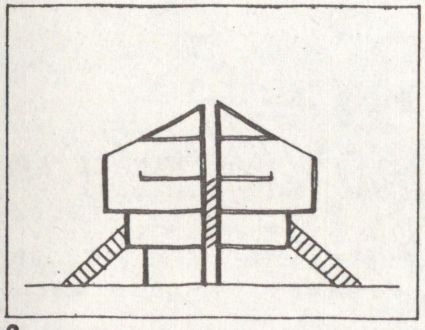
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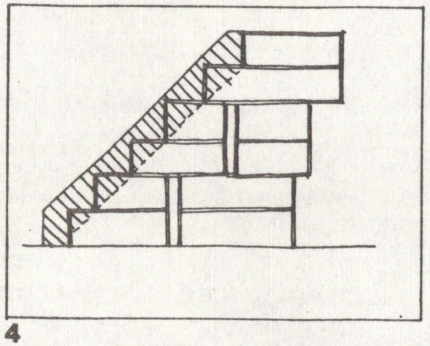
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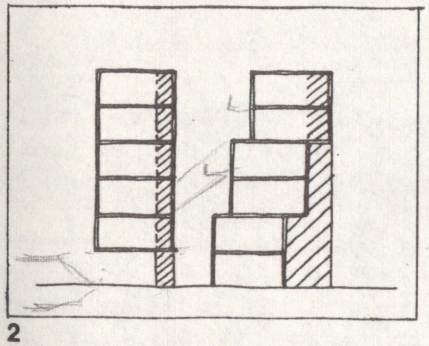
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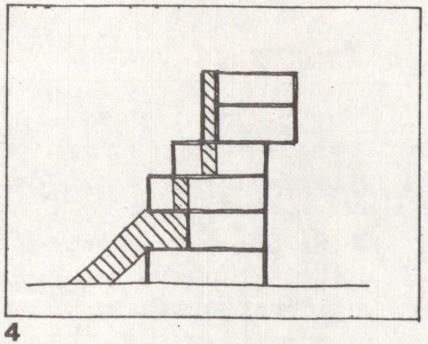
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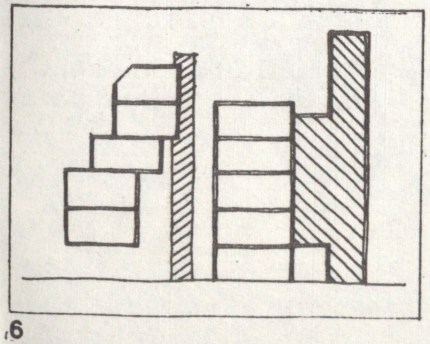
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Category 6 - Hybrid-External Tower and Internal Atrium Circulation

-the stair and elevator towers seem compatable.

-circulation in both cases could capitalize on ample natural lighting.

-the external tower seems too visible and exposed demanding special importance in its autonomy.

-the atrium circulation may suffer from excessive visibility for residents.

Conclusion

-category 2 seems most appropriate as a referential example.

-there exists strong possibilities for social interaction.

-with the addition of natural light and views to both the inside and outside, this example serves as a most interesting transition between distinctly public and private realms.

-for safety and interest concerns it is visible from inside and outside.

3. URBAN OPEN SPACE

Criteria for Successful Open Space

-simultaneously enhance and enhanced by surrounding environment (restaurants, bars, other commercial and office functions, and views). These functions enclose it and give it a sense of purpose.

-sun is a primary consideration to compliment activities.

-place where the city can be enjoyed from (perspective encompasses a large scope) and may contribute to a greater sense of orientation.

-popularity of indoor open space related to convenience (intensity of commercial activity) and climatic reasons.

-As Jane Jacobs points out in The Life and Death of Great American Cities, magnificent views and handsome landscaping fail to operate as demand goods. Most people don't use open space just because it is there--parks (open space) are not anything unless people choose them to be--through active participation.[9]

Category 1 - Soft Outdoor Open Space

-serve as a textural (soft) relief to hard urban form.

-important in choice for habitat selection (nearness to outdoor open space).

-should establish a framework for user needs to: walk, stand, talk, sit, eat, admire a view, read, sleep, play games, etc.

Category 2 - Hard Outdoor Open Space

-should be complimented by areas of shade, sun, and trees to soften the hard urban materials.

-more likely to find defined zones for movement, sitting, standing.

-in the case of sidewalks, arcades are necessary to allow for variable speeds of movement, support browsing, waiting, etc., relative to the harshness of the climate.

Category 3 - Indoor Open Space

-highest level of physical structuring for movement, and activities.

-internal light through atriums is important, improving character necessary for prolonged exploring.

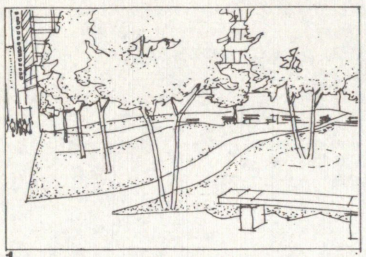
Conclusion

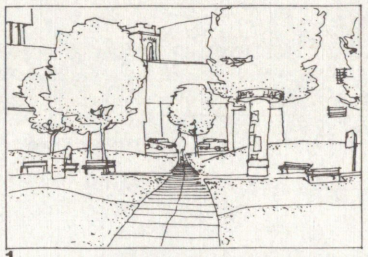
-appropriateness is socially subjective (some prefer hard open spaces, others prefer soft types).

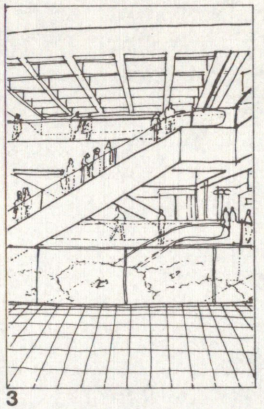
-the primary importance of open space is to enhance the spontaneity of human activity and to visually "soften" hard urban surfaces. This involves novel stimulus, flexibility of movement, and activity possiblities, and natural light.

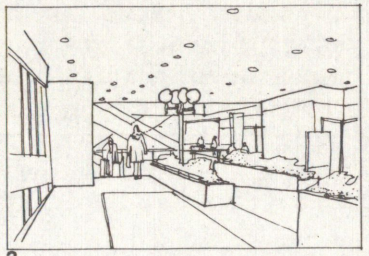
-The structure of open space should be inherently flexible--responding to choice and surrounding functions.

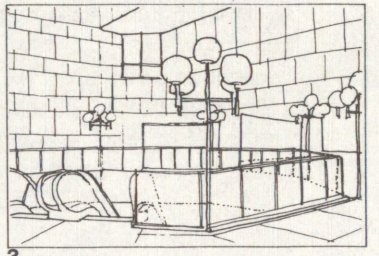
URBAN OPEN SPACE

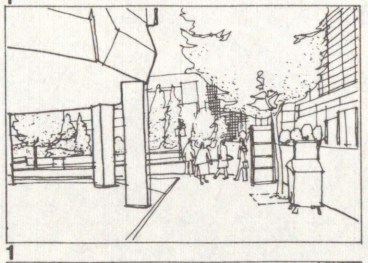

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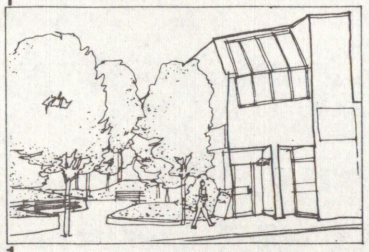

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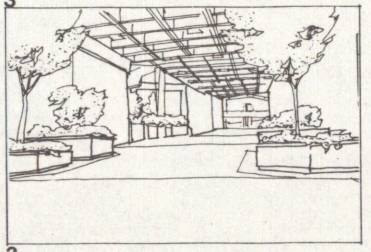

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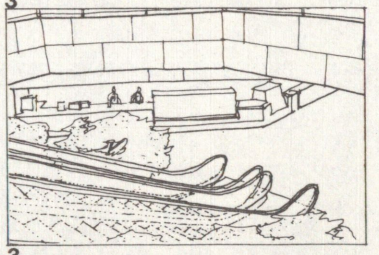

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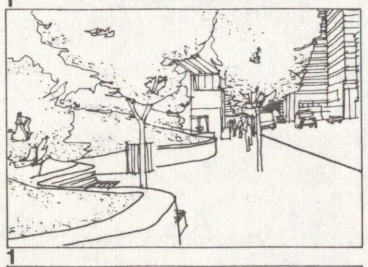

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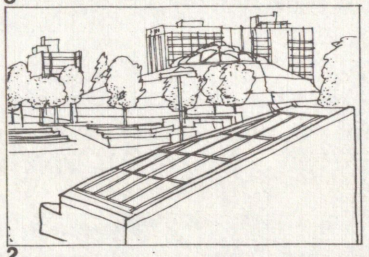
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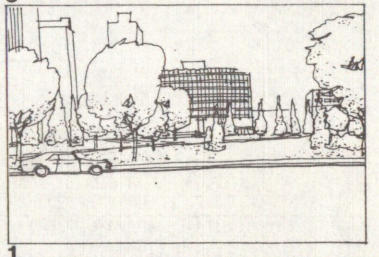

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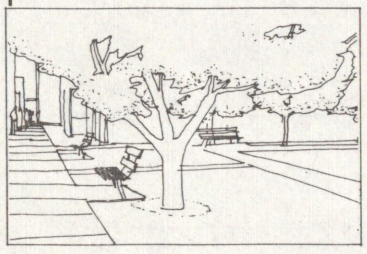

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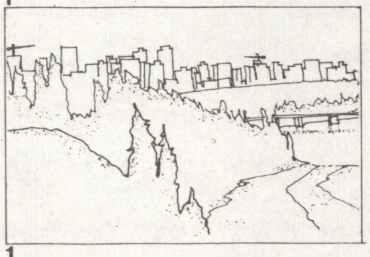

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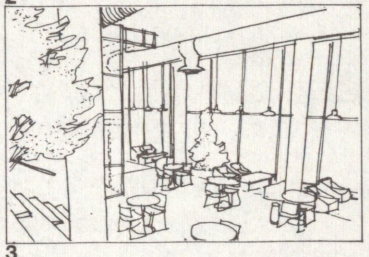

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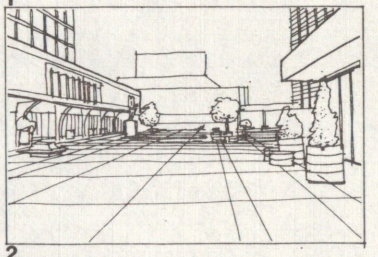

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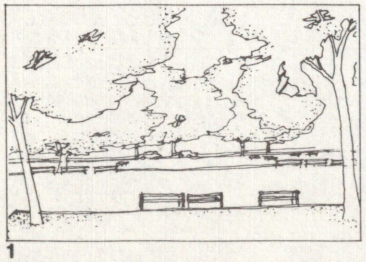

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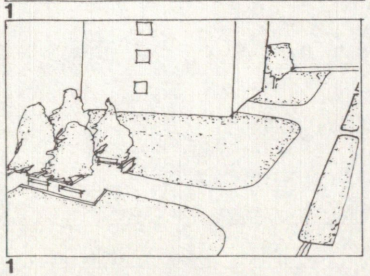


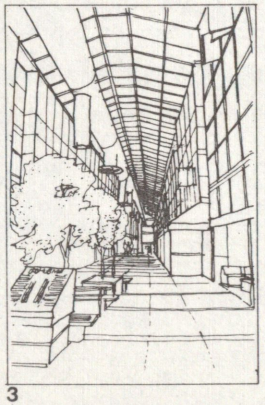

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4. PARKING

A study considering social needs as an "active ingredient" in the design process has to take into consideration, the importance people place on the automobile. I wish to point out that while there is nothing wrong with the car per se, our exaggerated use of it as a private amenity is often in violation of public interest in many parts of our cities.

Criteria for Evaluation

The following issues represent the primary of concerns for this analysis:

1. safety
2. aesthetics (form)
3. social interaction

It is to be noted however, that these issues will involve a considerably more detailed evaluation in the application to urban and social housing needs.

The following then, represents fragments of a total scenario for the use and storage of cars, considering issues of social and aesthetic needs:

1. adequacy of parking (residents, visitors).
2. service vehicle access (fire, garbage, delivery, moving).
3. visibility of one's car (safety, convenience).
4. visual issue (desirability of living next to a parking lot).
5. headlight glare, noise, exhaust fumes.
6. safety of children in play areas, and pedestrians on sidewalk.
7. family lifestyle - need for close proximity to car.
8. elderly rely more on public transit.
9. old standard for parking stall is wasteful - consider angles closer to 90^{o} and smaller stalls.
10. on street parking and on site parking.[10]

It will be assumed for flexibility of site possibilities, that parking be considered as an integral part of the housing design.

Category 1 - Exposed Podium

-clear separation of (2) levels of parking from the residential tower.

-visually obtrusive to community.

-no possible interaction anticipated.

Category 2 - Underground Parking

-solves visual problem but creates a potential safety problem.

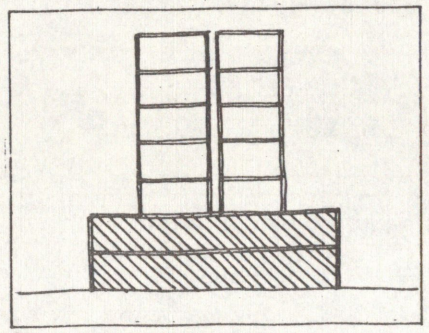
-no possible interaction would be anticipated (due to mistrust and general concern for safety).

Category 3 - Parking with Direct Street Access

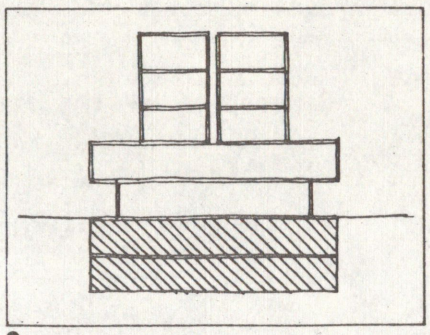
-frees centre of site for recreational uses.

-exposed cars may be visually obtrusive.

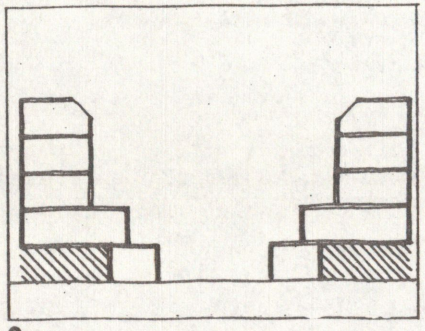
-does not support the continuity of public activity at street level.



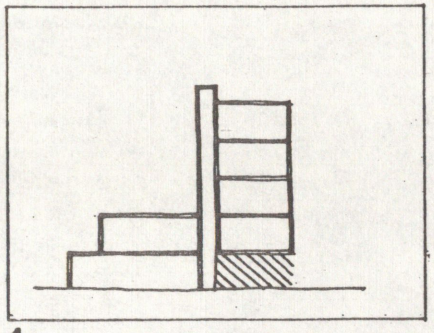
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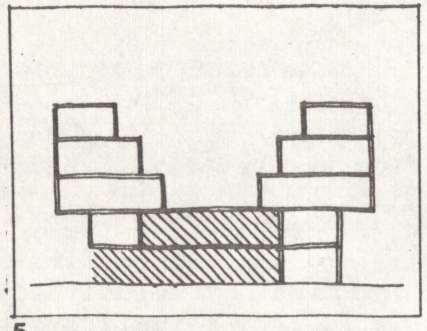
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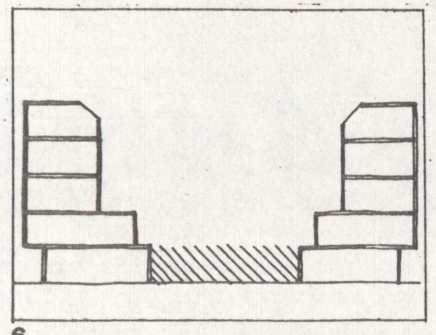
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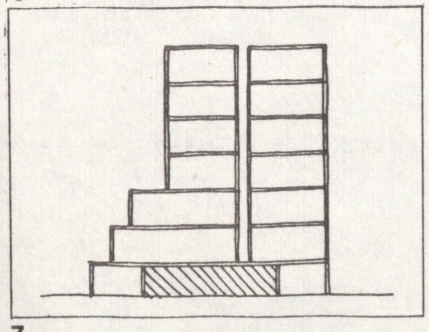
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Category 4 - Covered Parking - Direct Street Access from One Side

-safety through visibility when facing street as opposed to alley.

Category 5 - Internal Podium

-possibility for surrounding parking with commercial activities.

Category 6 - Grade Level - Internally Sited Parking

-visibility to all residents for safety, protection and control of car.

-visually unattractive.

-good interaction possibilities.

Category 7 - Grade Level Internal Parking

Conclusion

In terms of a limited site, parking is hierarchically low in considerations of visibility especially if it conflicts with open space.

Introduction of light could improve interior aesthetics and interaction possibilities.

Entries to parking are important--should be unobtrusive and minimize conflicts with pedestrians on the sidewalks (note the problems in categories 3 and 4).

C. CONTEXTUAL ISSUES

1. SOCIAL CONTEXT: THE FORM AND FUNCTION OF DOWNTOWN PEDESTRIAN CORRIDORS

Purpose

To examine the relationship between pedestrian sidewalk activities and the physical structuring of elements, and to illuminate some concerns that social housing must address with respect to interface and general city user needs.

Pedestrian Activities

-to see (for direction, entertainment or inspiration from environment, and for shoppping).

-to hear (people talking, street noises).

-to smell (food).

-to have the freedom for variable speeds (to stop, change direction, browse, to participate in something along the way, etc...).

-to talk to someone.

-to wait for a bus, train or a ride.

-to link the sidewalk as a corridor serving places--it ought to be of high quality to encourage pedestrian activity.

Qualitative Issues of Concern

-sidewalk texture, patterning--more detail for slower movement.

-slower movement makes the sidewalks appear to be more active.

-covered sidewalks as a shelter from climate and to reduce the impact of building scale to the pedestrian.

-trees as a separation and visual relief from traffic.

-places to sit.

-light to imbue the sidewalk with character.

Orientation in Space and Time

Built form is essentially static and the temporal experience of movement allows for the perception of position in space.

> temporal (experience) - Websters - "a representation of the stream of time and the position of man with it."

In city form the dynamic quality of pedestrian movement is directed by structural links (sidewalks, paths, bridges, platforms) between places, and meaning is derived from the temporal experience.

The degree of structuring (or amount of flexibility) and the ability of space to symbolically communicate its intent is in part a qualitative measure and the ability of that space to serve human needs.

Awareness of an environment is largely due to an active participation in it.

Symbolic Communication - how does the built environment communicate ideas to individuals about appropriateness?

-responding to functional need.

-clarity in structuring so that people seek further understanding and exploration.

-structure the user's memory with reference points relative to circulation paths, for an awareness of one's bearing and position.

-hierarchies of variation in the built environment (complexity and articulation, detailing, material changes) For example, people may prefer greater variation for short term exploration (shopping) but more stable levels of environmental stimulus for dwelling.

Symbolic Communication - is a result of both intent (a hypothesis) on the part of the designer and meaning derived by the user. The success of intent seems largely determined by the response of users in active participation relative to their perception of how a space was intended to be used.

Meaning occurs at many different levels and is based on perception, however it is not within the scope of this thesis to deal with perception relative to neurological synthesis or in terms of cultural value.

Conclusion

Structuring Orientation:

-should respond to clarity in the built environment and act as a departure point for greater involvement of the user.

-should never cease to accommodate ease of access and sense of direction.

-may create complexity as a result of providing a basic sense of orientation (clarity as a departure point for seeking complexity).

-should accommodate for a multiplicity of meanings but should avoid creating uncertainty (lack of orientation).

Criteria for Evaluation of Sketches

-Does the physical structuring of elements support user needs and enhance the possibility of active participation by users to explore?

Category 1 - Arcades

-used to provide protection from adverse weather conditions.

-some arcades do not cover the sidewalk at all, but rather cover a corridor adjacent to it. While some draw people closer to building (for shopping) they do not address the needs of all city users.

Category 2 - Open Space as a Corridor

-often pedestrians find themselves in residual space from architectonic manipulations of siting.

-the problem is to associate meaning (intended use) with the variations in corridor width and scale.

Category 3 - Waiting for a bus

-should provide heated enclosures when located adjacent to curb or become integral with adjacent building.

-busy waiting zones should aim not to interfere with the free passage of sidewalk users.

-enclosures for waiting provide a good opportunity for social interaction.

Category 4 - Entries to Subways

-should be weather protected, well lit for safety, clearly identifiable for orientation, yet not visually obtrusive.

Category 5 - Covered Entries

-mainly aimed at defining and emphasizing entry location rather than providing a service to general sidewalk users.

-commonly used for pausing or to wait for someone or something (like a bus).

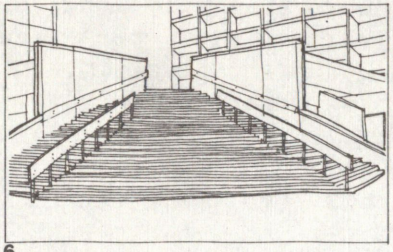
Category 6 - Raised Plazas

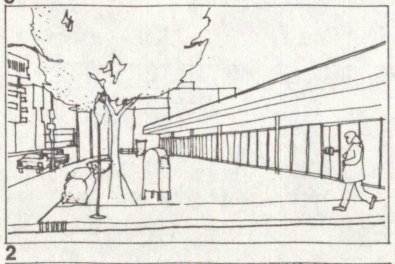
-can be used to hierarchically separate realms or to separate activities of a similar realm.

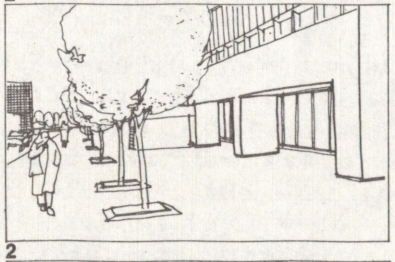
-usually void of people and are under utilized especially in temperate climates such as Canada.

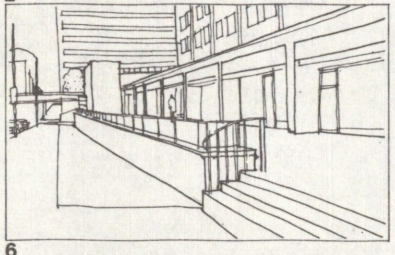
-are mainly used as pedestrian links which could otherwise be provided by landscaped pedestrian paths.

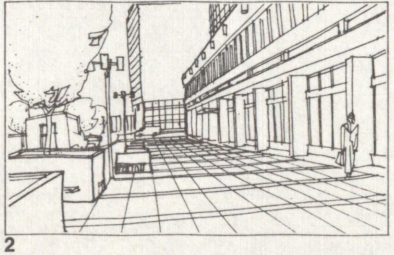
SOCIAL CONTEXT
FORM AND FUNCTION OF DOWNTOWN PEDESTRIAN CORRIDORS


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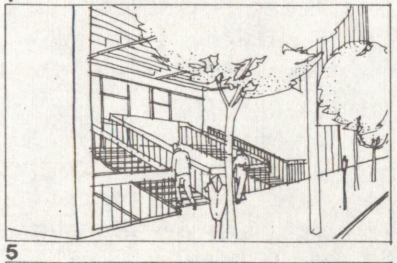

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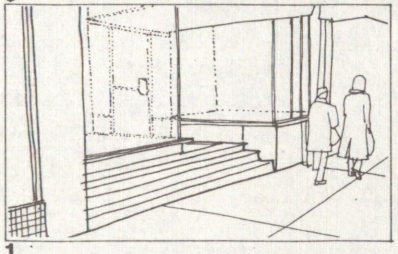

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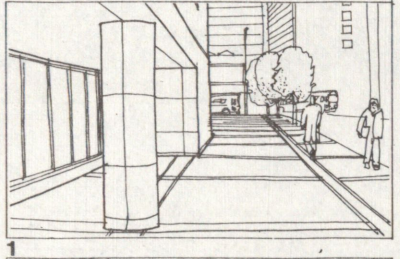

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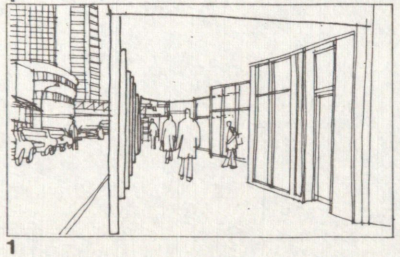

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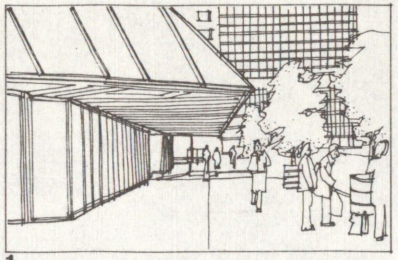

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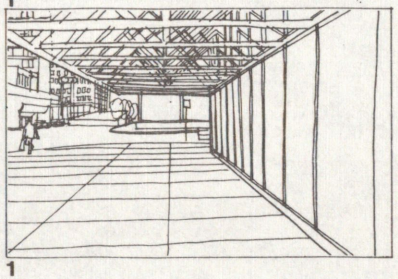

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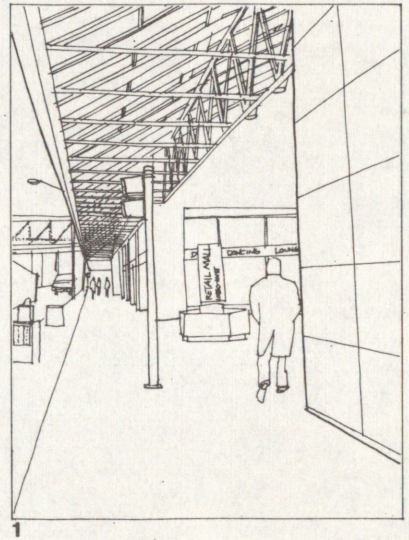

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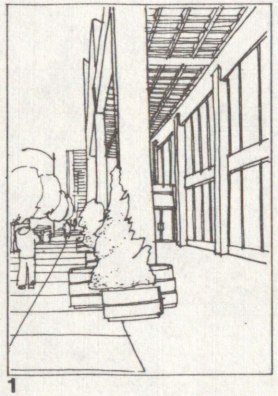

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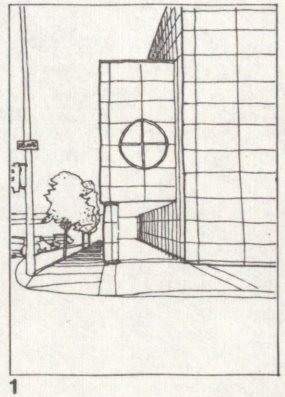

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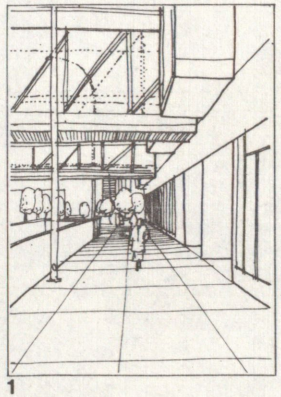

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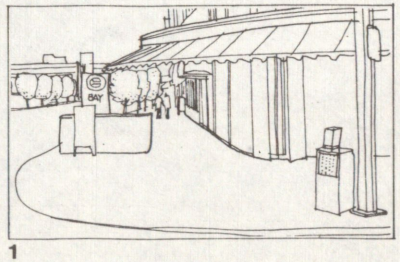

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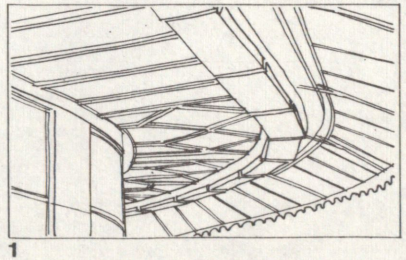

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Conclusions

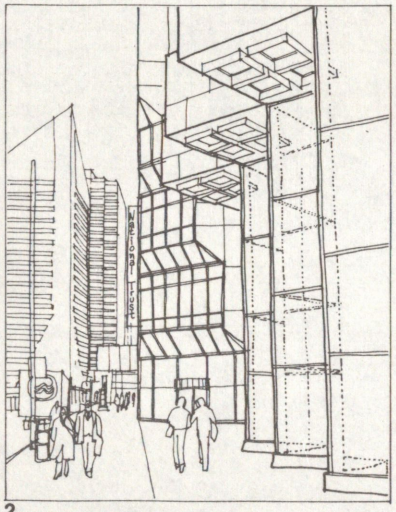
In order for arcades to be useful they must cover the sidewalk, not obstruct vistas that would normally enhance walking and shopping activities. They need not however, be limited to add-ons; colonnades combined with a canopy can effectively increase the width of the pedestrian corridor while allowing the building to meet the lot line.

Visual connections between outside and inside should be particularly emphasized at the pedestrian level to create an active interest in public realm continuity.

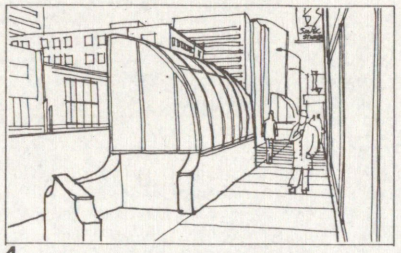
Surface relief in sidewalks should increase in detail and richness where slower speeds of movement are to be encouraged, and where the sense of enclosure or scale is appropriate.

Raised plazas like parks are meaningless unless they enhance and are enhanced by adjacent activities such as commercial activities. "Many setbacks, irregularly dimensioned fragments of space, and raised plazas have originated out of various incentives, none of which are essential concerns for public space--eroding the quality of the street in many cases. Problems such as unclear territoriality, excessive wind problems, and discontinuity of retail may result."[11]

SOCIAL CONTEXT



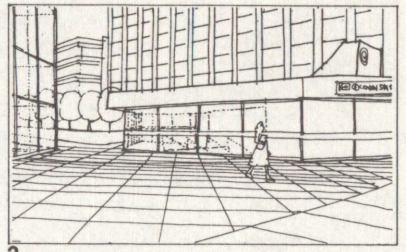
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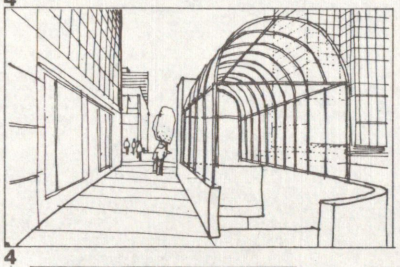
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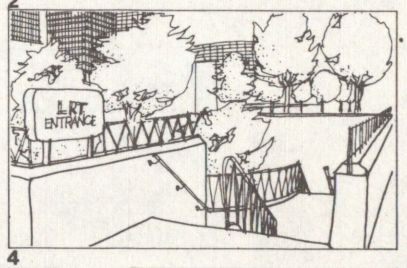
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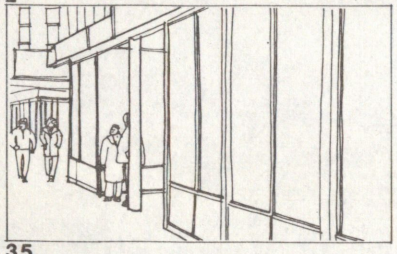
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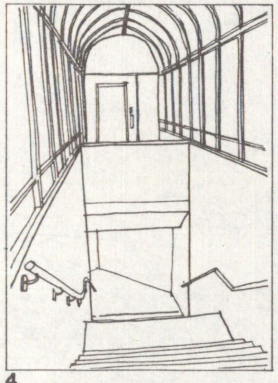
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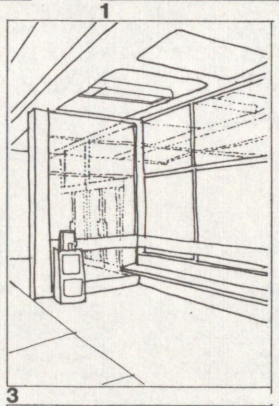
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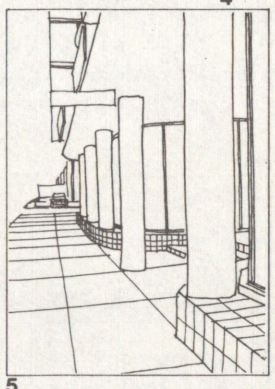
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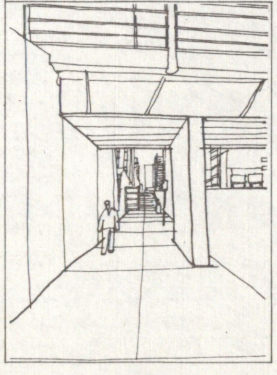
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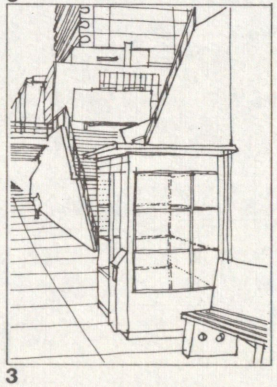


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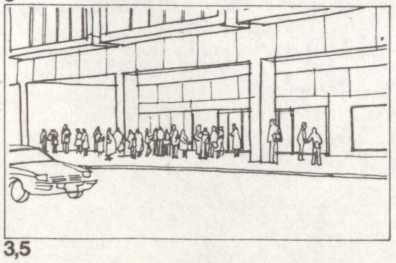




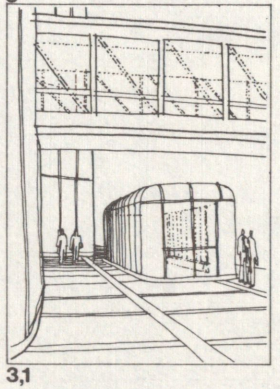
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2. CORNER

-nodal activity points in a city's regular grid infrastructure occur at corners.

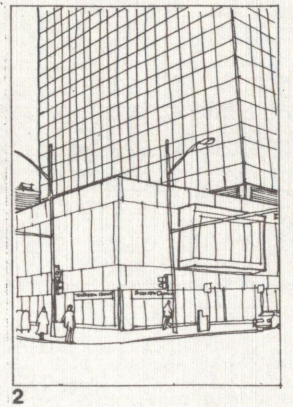
-corners slow down pedestrians and traffic, and allow them to become more actively involved with the environment. They also give the user a greater sense of visual comprehension of urban space.

-slower speeds invite social interaction.

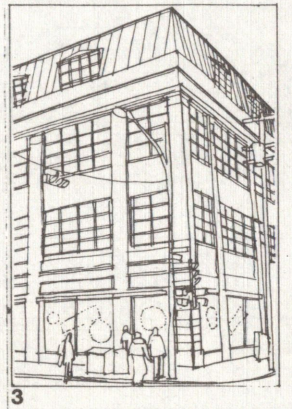
-the corner's nodal importance can be emphasized by the architectural demarcation of corner.

-corners are reference points for orientation, direction and views along street corridors.

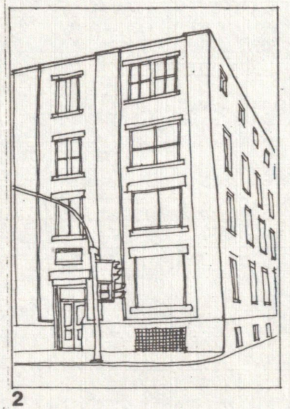
-the visual importance of corner renders itself a natural communication device, open to everyone and an important consideration for entry.



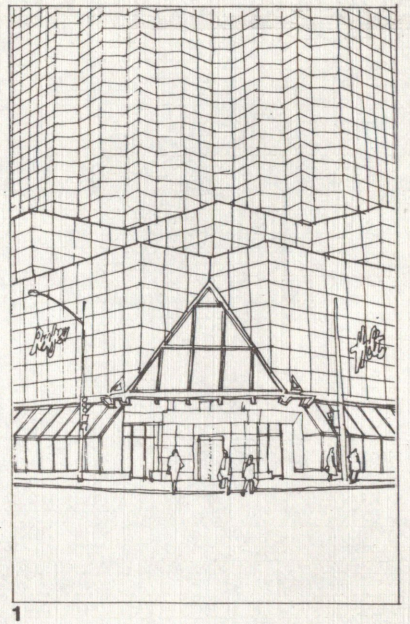
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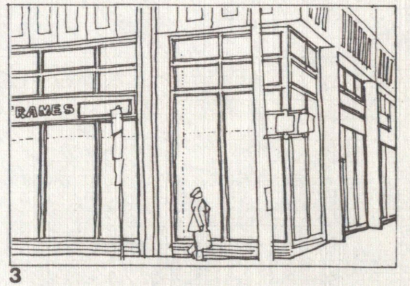
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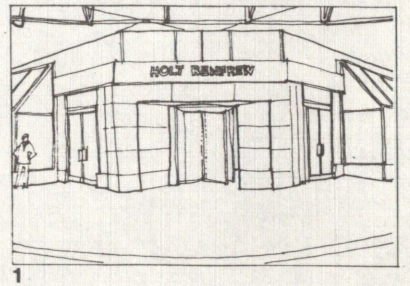
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Corner Types

Category 1 - Corners for Entry

-provide the opportunity to express architectonic variations to the ninety degree corner.

-entry occurs where the chance for sidewalk social interaction is assumed to have the greatest potential for occurrence.

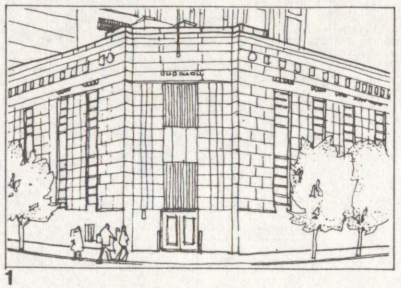
-can be clearly observed from adjacent corners.

-enhances the architectural demarcation of corner as an important image in the city.

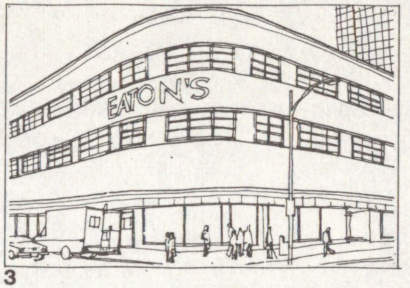
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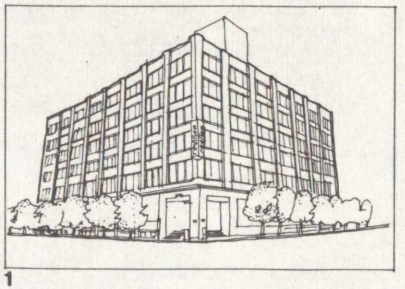
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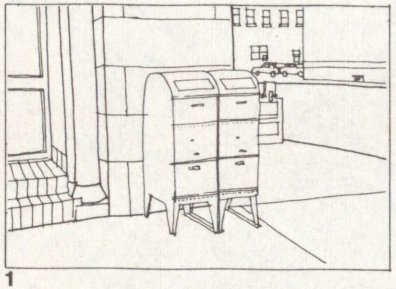
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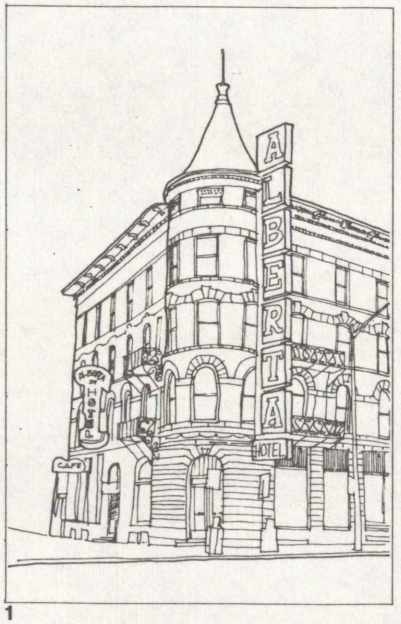
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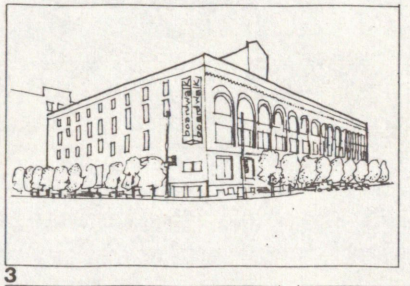
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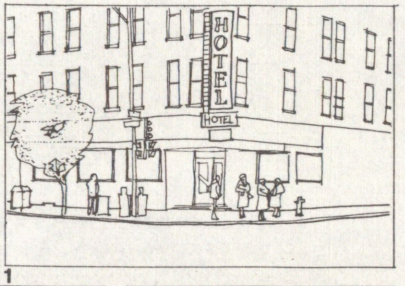
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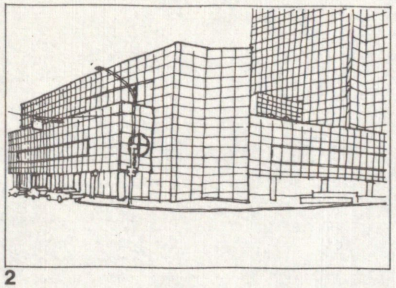
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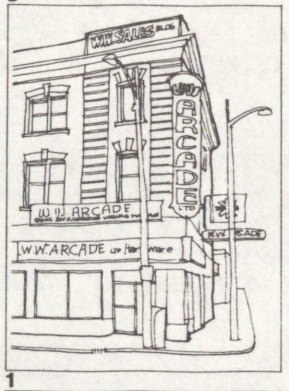
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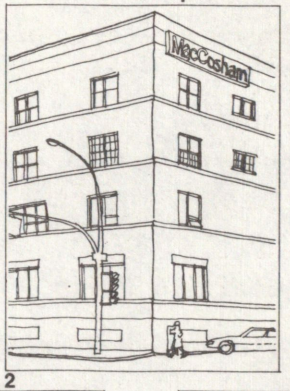
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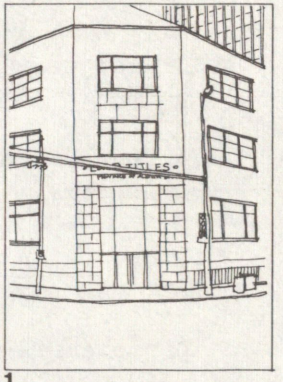
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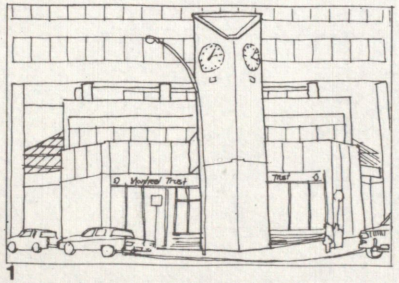
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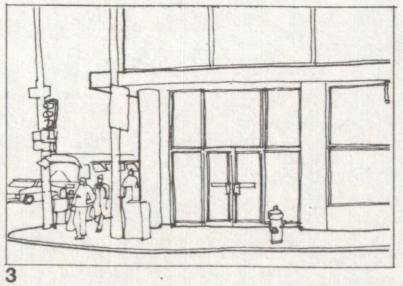
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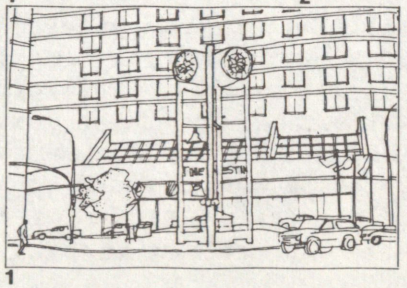
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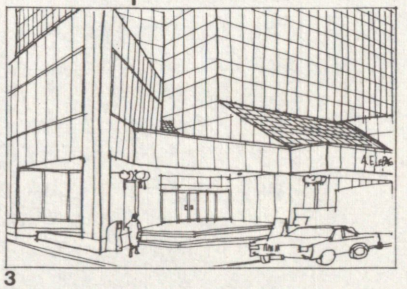
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Category 2 - Hard Corners

-strength and solidity occurs through geometric representation.

-often mundane where the corner uneventfully turns ninety degrees and continues with no facadal change.

-does not contribute to inside/outside visual connection or enhance social interaction per se.

-it is therefore a socially and aesthetically weak statement.

Category 3 - Soft Corners

-while often geometrically mundane, these examples promote user anticipation and activity through the use of windows as visual clues.

-windows allow for the perception of interior atmosphere and activities, relative to the outside schema.

-windows often provoke one to seek out the location of entry.

Corner - A Concern in Urban Social Housing

Represents a hierarchical concern:

-where commercial functions occupy the pedestrian level, with a colonnade or sidewalk arcade, categories 1 and 3 apply most readily. The corner entry and a strong visual connection to the inside activities reinforce use and social interaction. Housing above the arcade could then respond to the corner with a harder interface (see interface investigation). The main concern for housing at the corner is the scale and impact of massing relative to the street scape.

-where housing occupies the pedestrian level, a corner entry would be more symbolic of a continuum of public space and might therefore be inappropriate.

-an appropriate corner for urban housing considers degrees of privacy, therefore, setting back the corner or a level change at the sidewalk may effectively serve to symbolize a transition from a public to a semi-private realm.

3. WAREHOUSE DISTRICT SCHEMA

Schema refers to an outline and in this case a more specific vocabulary of form ideas

Purpose

The warehouse district is a major component of Edmonton's transforming downtown and a constant visual reminder of Edmonton's evolution from a prairie town to a large urban centre.

The drawings are to be viewed as visual anecdotes that illuminate:

1. issues of form, materials, surface articulation and detailing that have both contextual and abstract implications.

2. pedestrian visible images contributing to the formal quality and character of the city as a place.

3. a referential vocabulary of contextual imagery.

The warehouse district was planned to serve the needs of wholesale, light manufacturing, and storage. While such functions have gravitated to the city periphery in recent years there has not been a significant change in the built form within the district.

As referential images, inspiration for me largely revolves around the textural quality of their construction. Most modern development has tended to be mundane and largely symbolic of economic expediency in construction. Housing is a textural problem because a key issue is the formal process of bringing a sense of individuality into the attributes of form at the scale of a single building. This is in part a textural concern.

Category 1 - Fenestration

-"reveals" are due to load-bearing masonary construction technique.

-small divisions of glass in fenestration are due to availability of glass size and technology.

-placement of fenestration reflects the load-bearing nature of walls--but could further be used to symbolically represent functional divisions, hierarchies or uses.

-useful in social housing to reference means of facadal division based on interior need for light, ventilation and expression of identity.

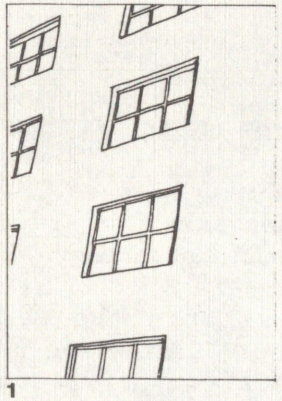
-the purity of reflective curtain wall design, so typical of Canadian cities, does not convey the multiplicity of uses within, nor does such construction allow more than a visual relationship with the surrounding environment.

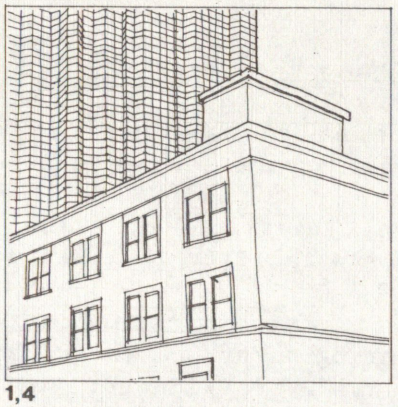
Category 2 - Mechanical Systems

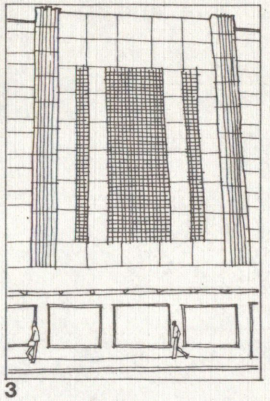
-emphasizes the modernization of specific warehouse structures and particular ventilation needs.

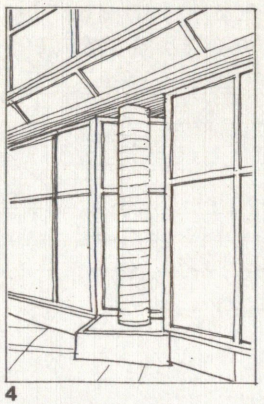
-personifies the building as a breathing organism.

WAREHOUSE DISTRICT SCHEMA


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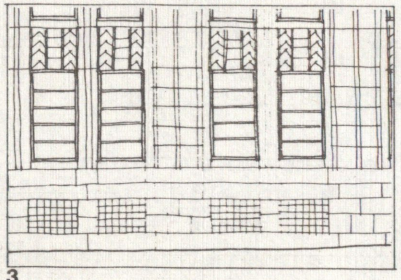

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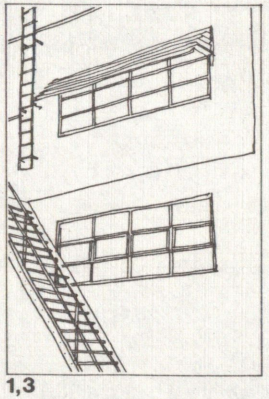


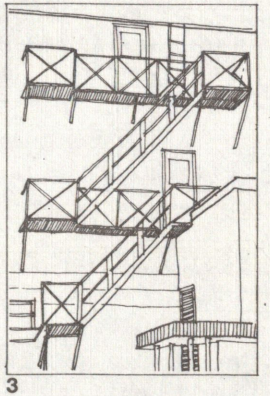
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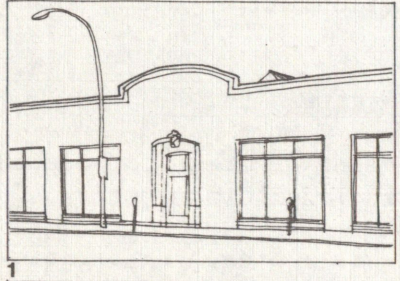


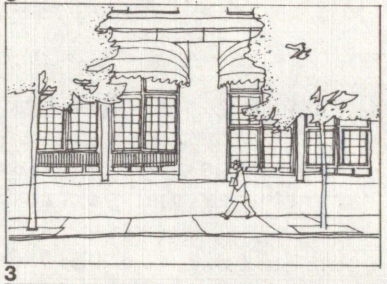
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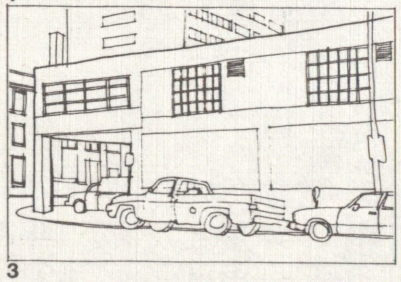

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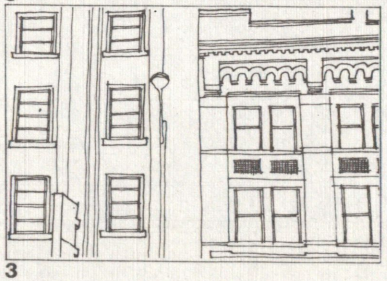

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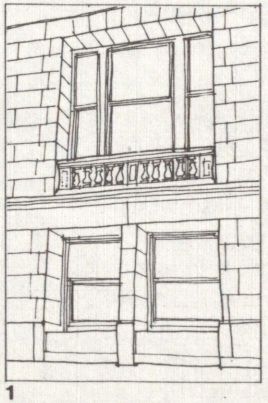

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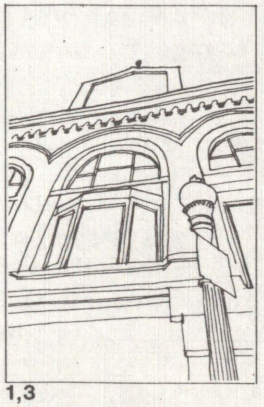

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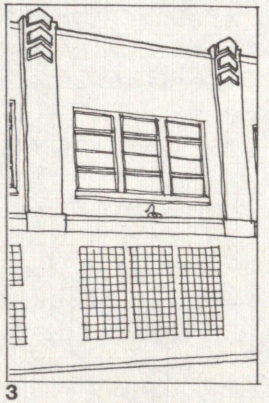

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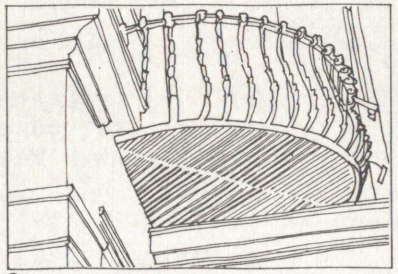

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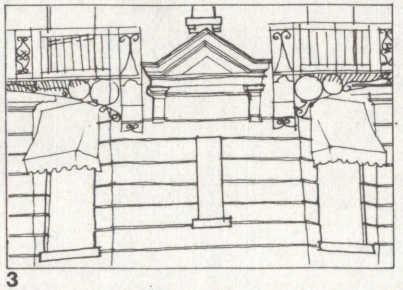

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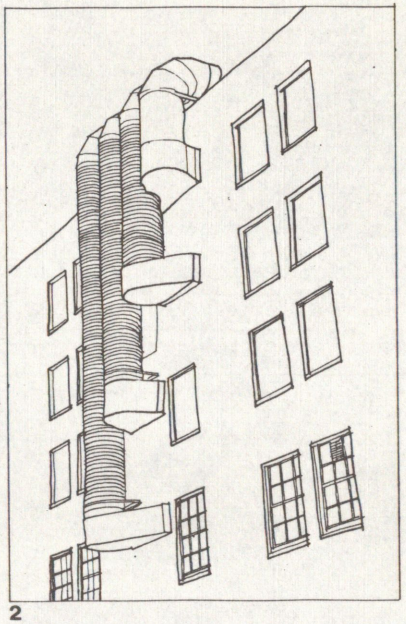

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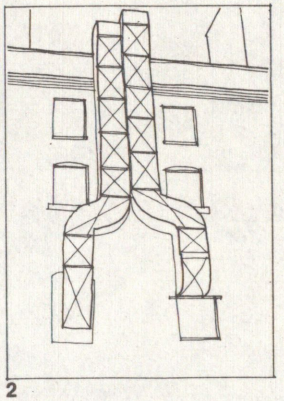

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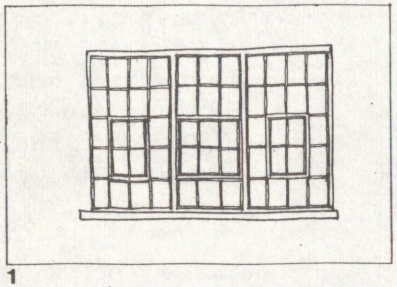
WAREHOUSE DISTRICT SCHEMA

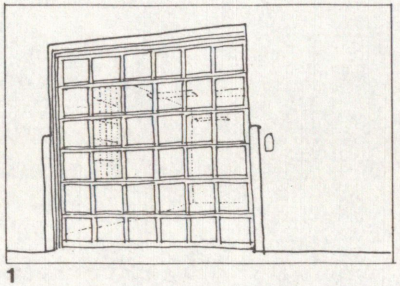

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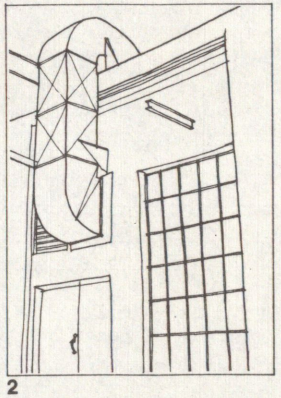

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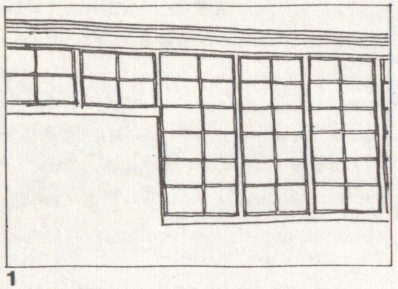

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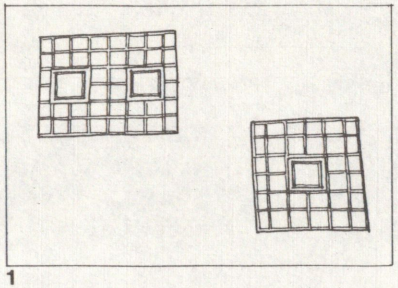

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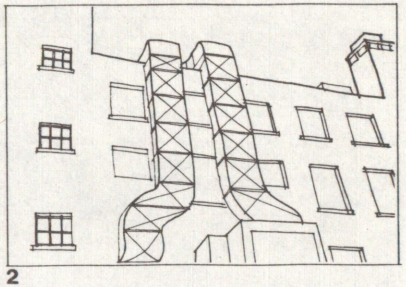

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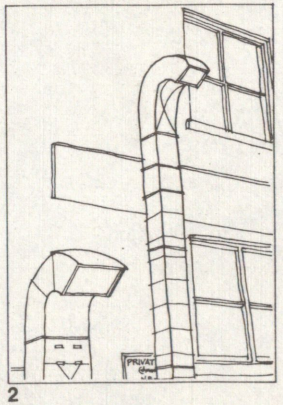

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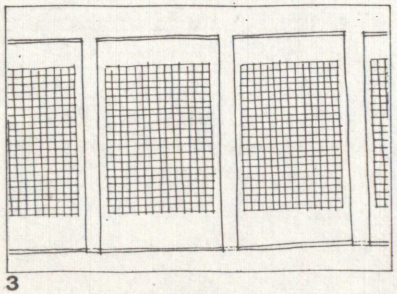

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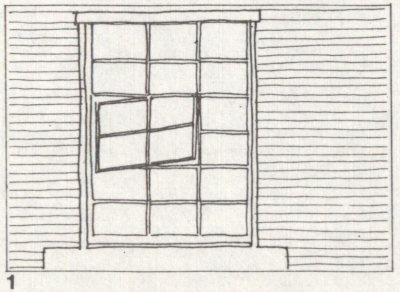

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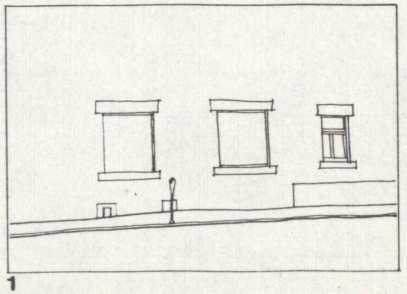

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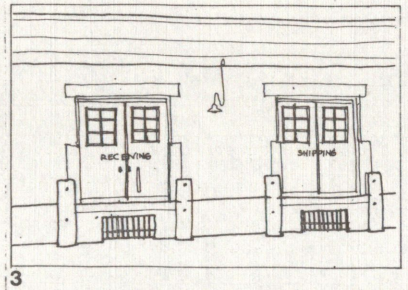

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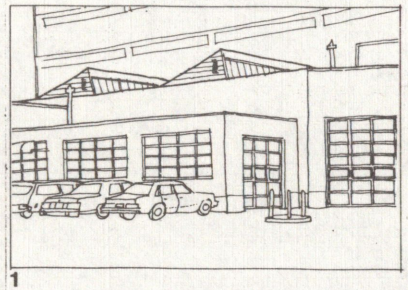

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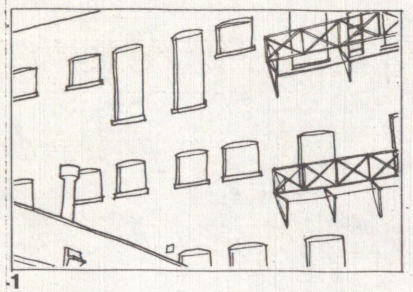

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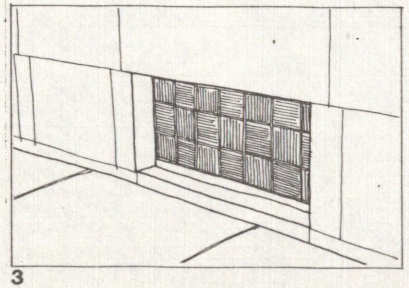

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Category 3 - Materials, Details, Textures

-example of abstract usage of warehouse vocabulary in a hypothetical application:

1. pilaster columns --- vertical devisibility and the "repetition of a motif"--Louis Kahn.

2. material changes --- -horizontal divisibility (level changes)
-hierarchical arrangement of functions
-ornamental considerations.

3. fenestration --- -proportions and sizes of openings can vary to meet user needs and convey information about internal functioning.

4. materials --- stucco, brick, stone, steel, concrete, glass block, industrial sash windows awnings.

Conclusion

While choice of materials and construction technique conveys information about technological means, I am interested in the human scale of the materials.

The scale of warehouse structures can be understood in terms of their parts, (familiarity of material unit sizes), surface articulations and the interplay of light and shadow.

As inspiration for a social housing design process, I see such a referential vocabulary being valuable not only as an awareness of physical context, but as a reminder of means by which aesthetic information may be conveyed.

4. IMPORTANCE OF TEXTURE IN SOCIAL HOUSING

-the purpose of these drawings is to convey the importance of texture in architecture.

-as abstracts these drawings demonstrate a "black and white" representation of housing facades, which is reflective of the amounts of light and shadow that are captured by a wall surface.

-these sketches are meant to be analogous to actual perception of architecture when we squint our eyes to eliminate much detail and concentrate on high/low levels of contrast.

Light and Shadow

-to express the divisibility of large masses in material and functionality.

-to express individuality (or identity) of dwelling units by perceiving the light and shadow patterns as symbolic functional divisions.

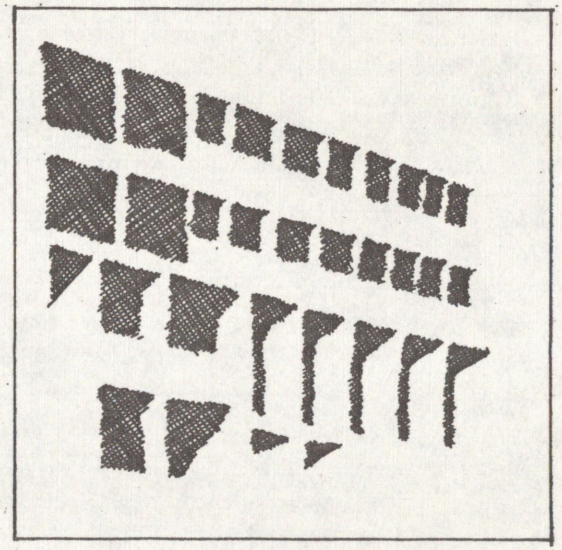
-to shelter fenestrations from the sun.

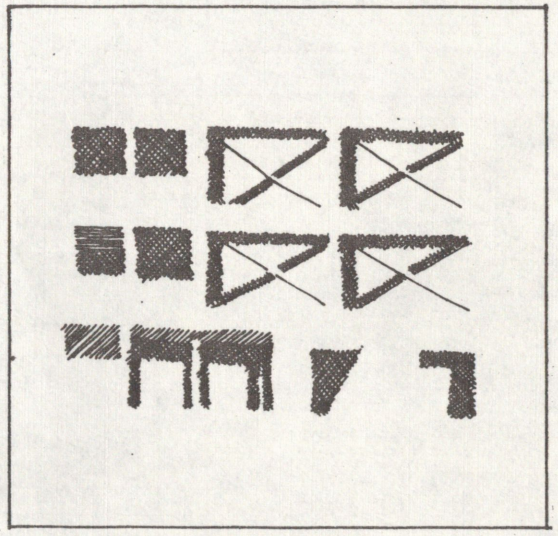
-to provide shadows defining entries.

-to express the repetition of structure.

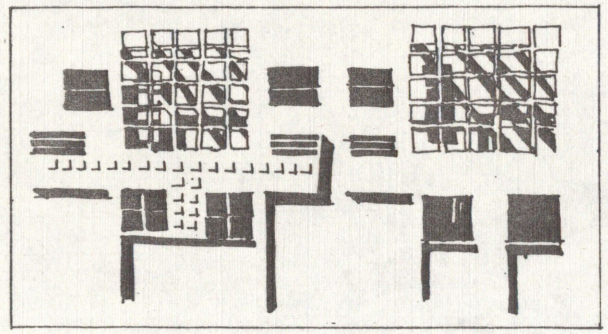
-to provide visual interest to casual and critical observers in everyday city life.

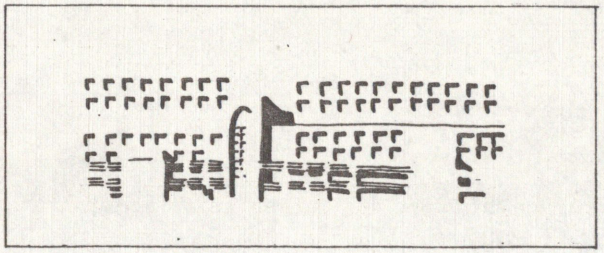
-to provide for a sense of scale by the breakdown of parts.

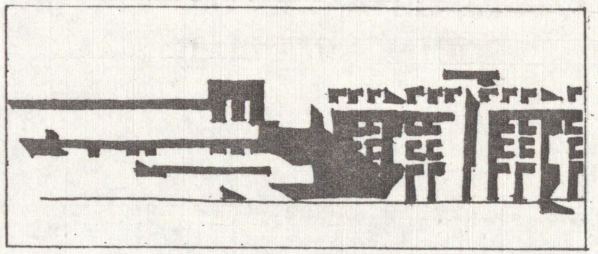


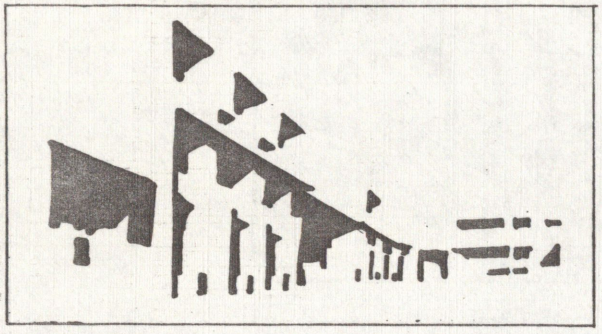


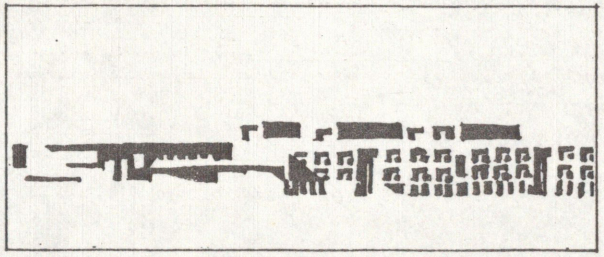
LIGHT AS TEXTURE

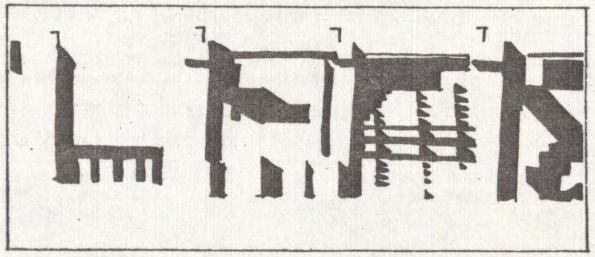


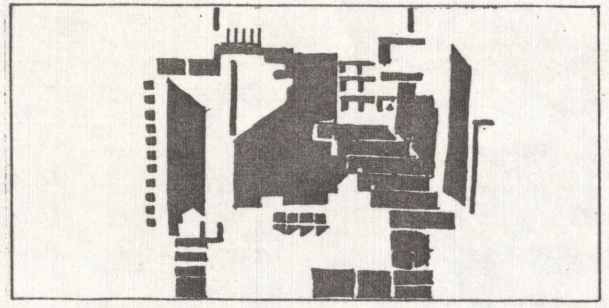


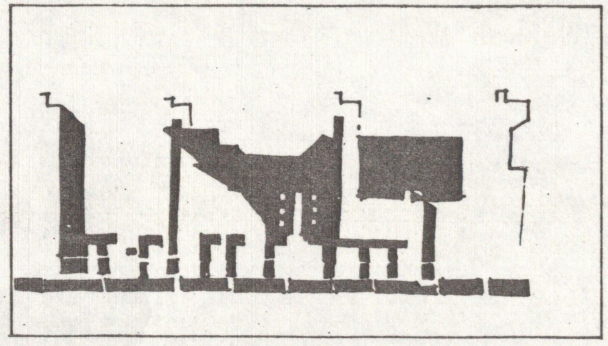


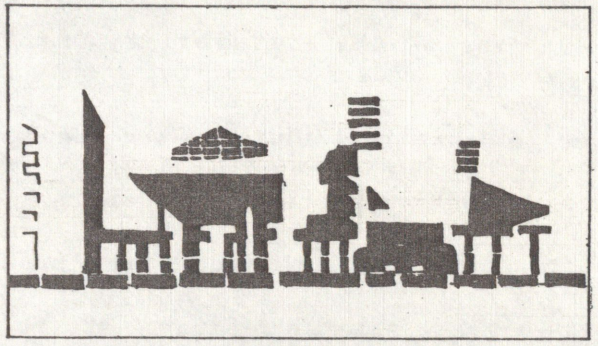


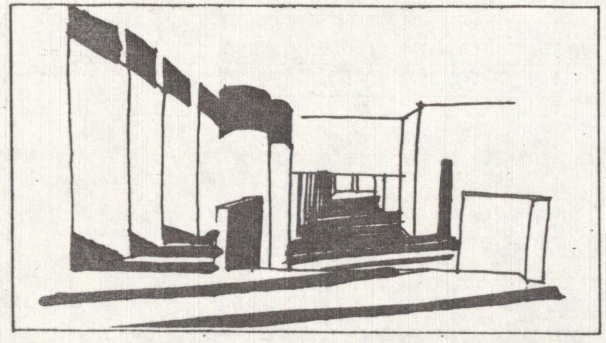


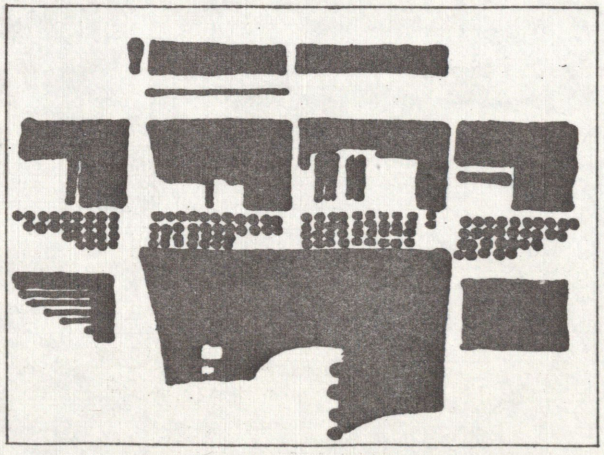


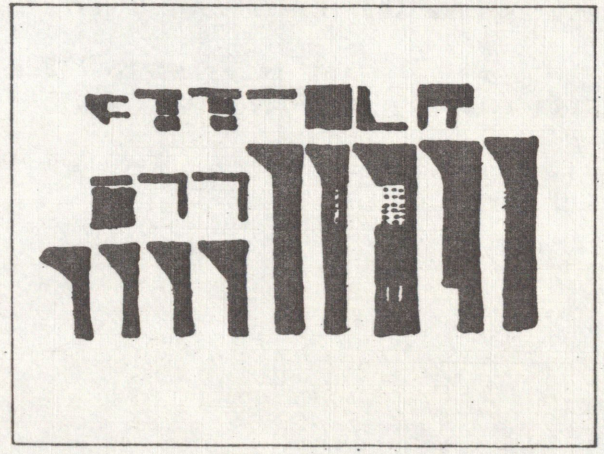




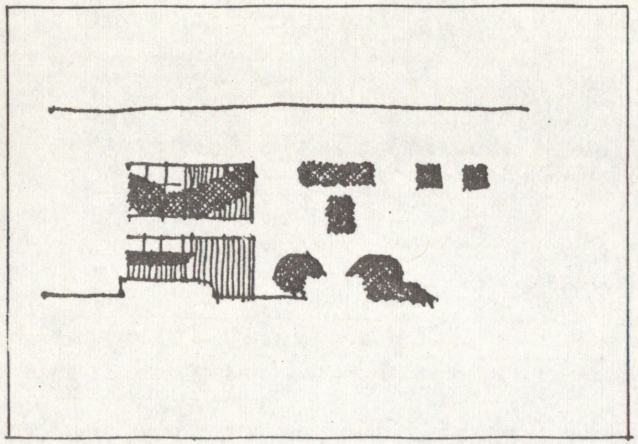


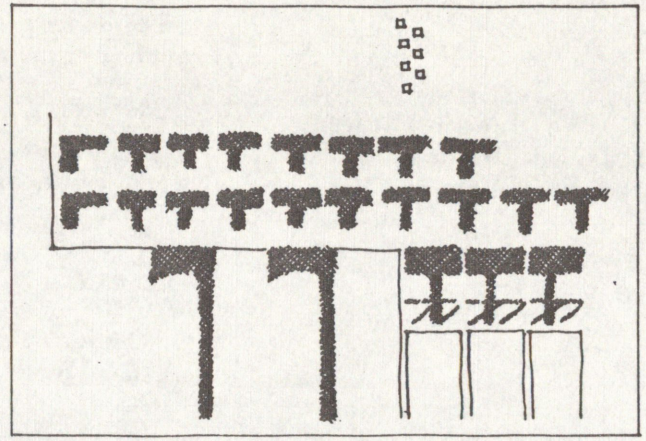


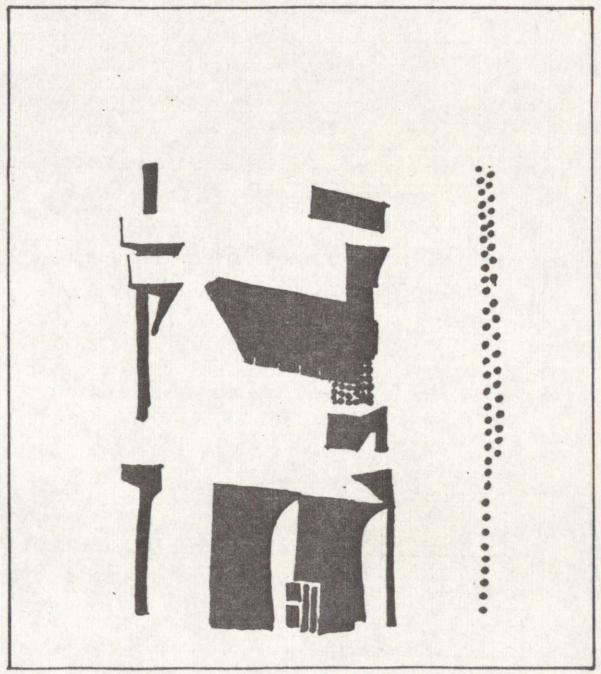


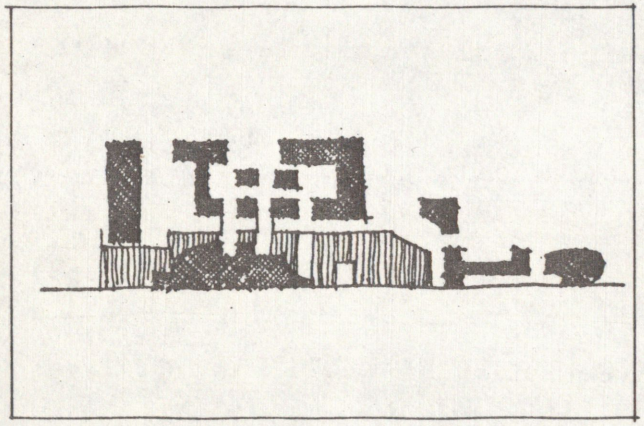


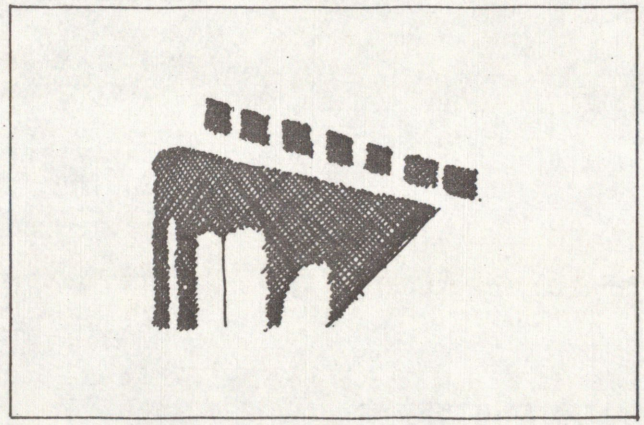
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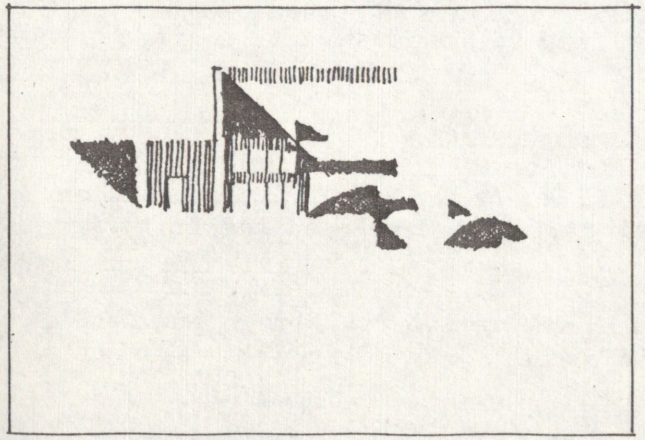


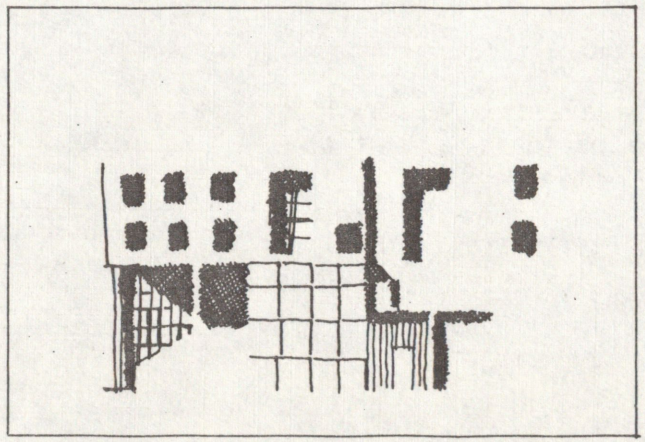


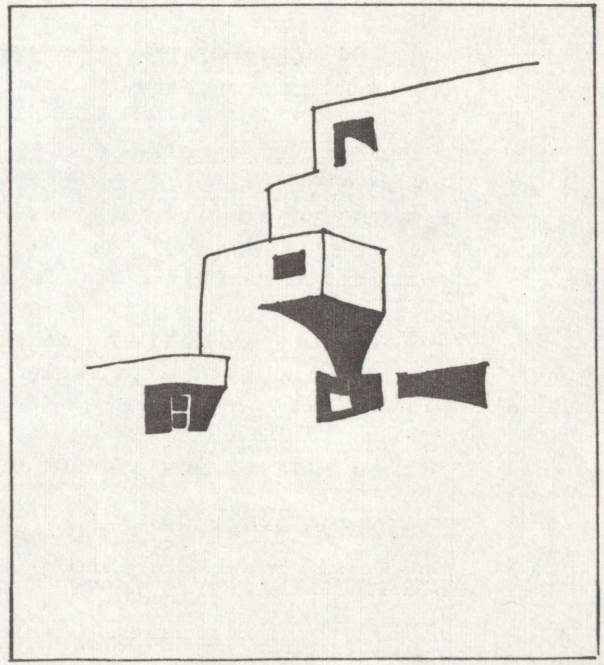












5. EDMONTON: MASS HOUSING SCHEMA

Purpose

To illuminate issues from the urban housing situation in a qualitative discussion demonstrating problems and attributes of form and function.

The examples chosen represent high density solutions.

Criteria for Evaluation

-appropriate scale and interface relative to context.

-appropriateness of commercial mix if any.

Category 1 - "High-Rise Apartment Block"

-solely devoted to housing.

-scale often dwarfs the neighborhood they currently serve to transform.

-quality of interface with street is minimal due to the repetition of an economically feasible floor-plan for cost efficiency.

-typified as tall, stark, rectangular prisms.

-socially uninviting to general city users as the public and semi-private realms interface at the sidewalk.

-main entries are locked and require a key.

-parking is usually underground.

-normally surrounded by grassy space, unused by residents and requiring the care of public authority.

-most appropriate living condition for young singles or elderly who seek little interaction with other residents.

Category 2 - Low-Rise

-scale of form allows it to be easily integrate with lower scale urban residential sites.

-possibility for internal atrium as an additional natural light source.

-entry expression usually more in scale with building form.

-usually based on wood or masonry wall construction allowing for more surface undulation and articulation than pre-fab hi-rises.

-interface with street usually based on setback with some grassy areas.

-strong differentiation of public and private realms as in hi-rise study

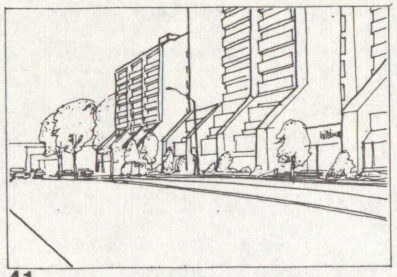
-stresses the privacy of dwelling and therefore socially uninviting to generally city users.

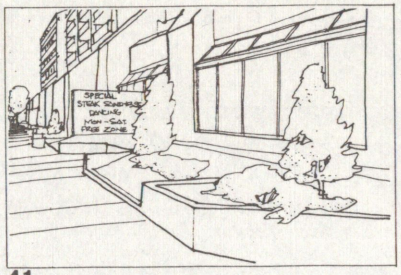
Category 3 - Atrium Housing

-this is exemplified by the HUB Mall in Edmonton, an urban housing project developed for University students.

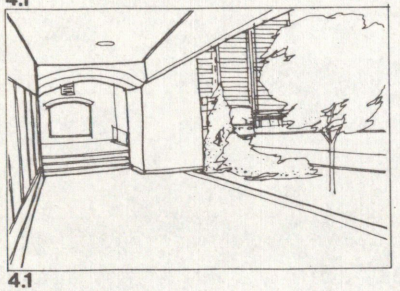
-interface with parking side is abrupt and facade treatment is relatively flat and regularly

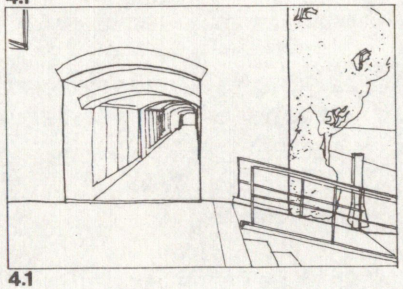
EDMONTON:
MASS HOUSING SCHEMA

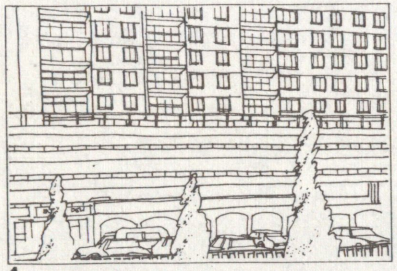

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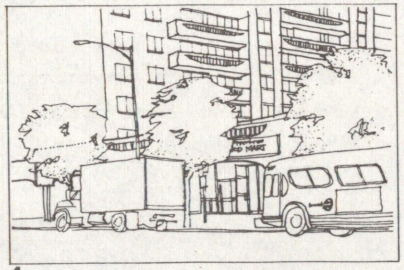


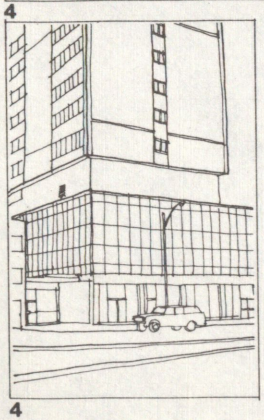
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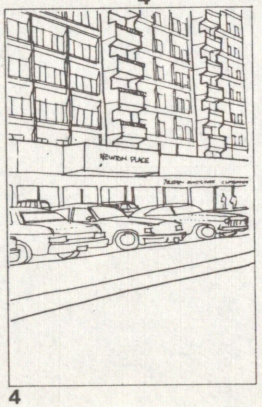

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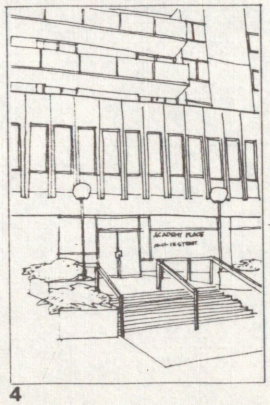

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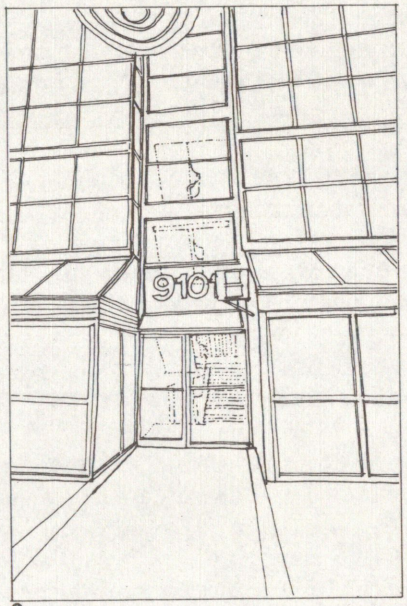

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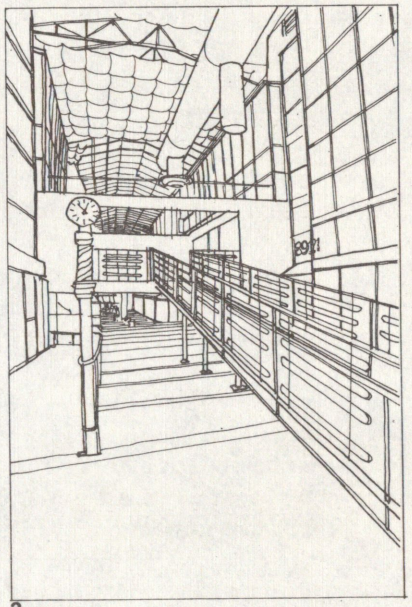
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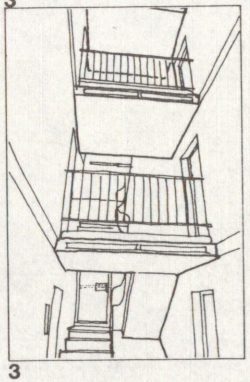
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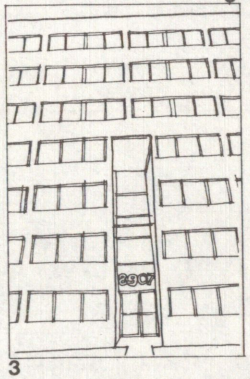


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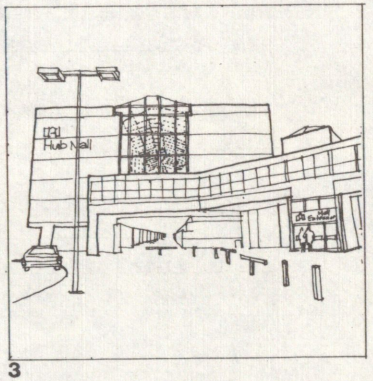


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ordered. On the campus side the housing is cantilevered to provide some weather protection.

-repetitious stair cases introduce a strong vertical element to an otherwise long, linear structure.

-dwelling units have natural light available from both exterior and interior sources.

-the atrium encloses a pedestrian promenade at the +15 level that houses both recreational and commercial activities.

-noise provides some inconvenience to residents.

-internal daylighting and nocturnal heat loss can be modulated via an active "curtain" system on tracks under skylight.

-socially inviting especially from +15 pedestrian walkways connecting to two campus buildings and the main library.

-side entries read as semi public.

Category 4 - Mixed Use

-commercial/office, or parking podium for hi-rise residential tower.

-activity centered around commercial component, pedestrian and especially vehicular access and parking.

-residential towers are extremely regular and mundane.

-daylighting is clearly non-egalitarian due to orientation.

-pedestrian conflicts with vehicular traffic.

4.1 - an exception to some of the major criticism in category 4.

-interface with street is not merely a setback for grass or parking space, rather, it steps back to three connected towers of diminishing scale (a response to the street scale).

-an arcade raised above street level serves a commercial component.

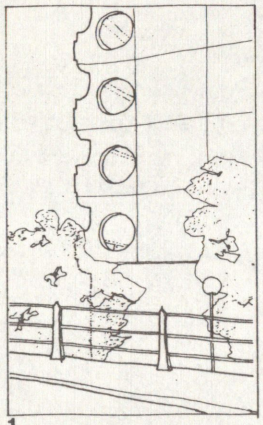
-parking is underground and there are no conflicts with pedestrian movement.

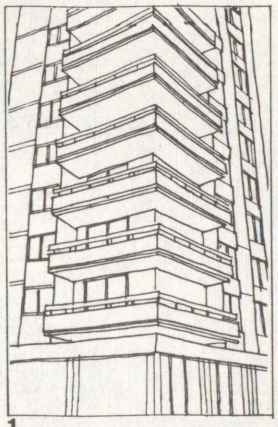
Conclusion

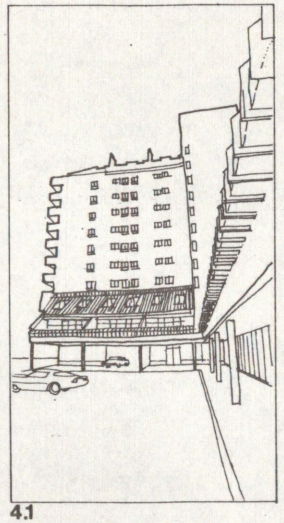
-categories 3, 4.1 most appropriately regard a commercial mix with urban housing

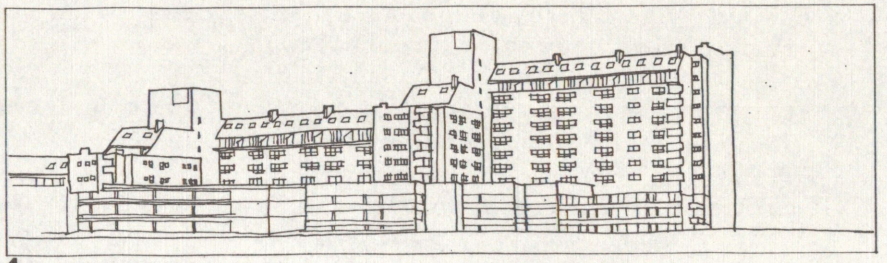
-category 3 successfully creates an inviting interior environment for collective use (for residents and general users alike) This is supported by a strong and active commercial component.

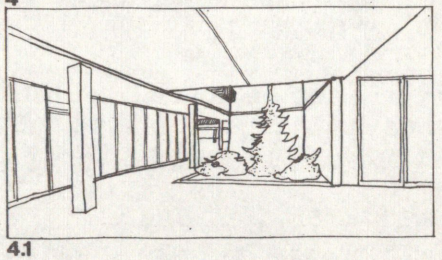
EDMONTON:
MASS HOUSING SCHEMA

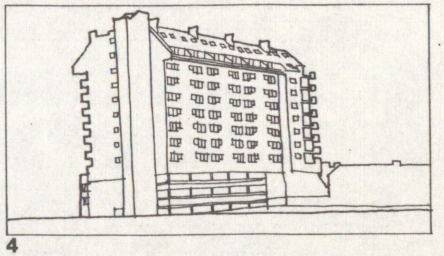

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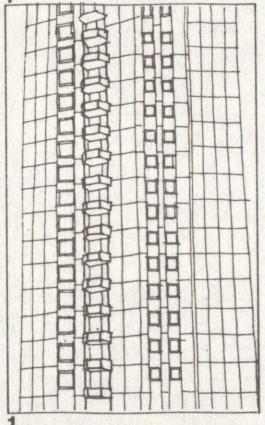

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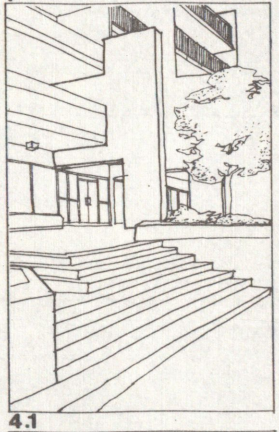

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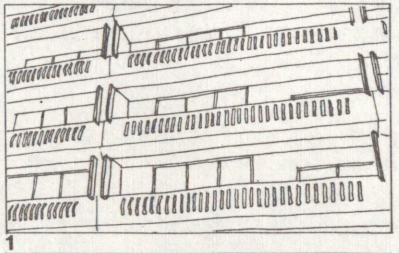

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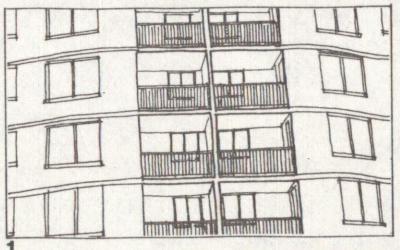

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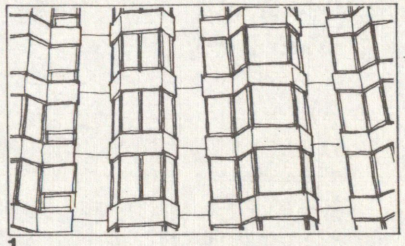

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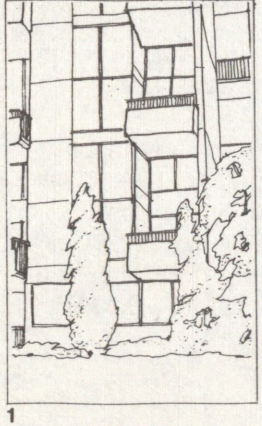

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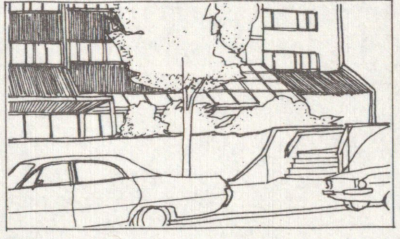

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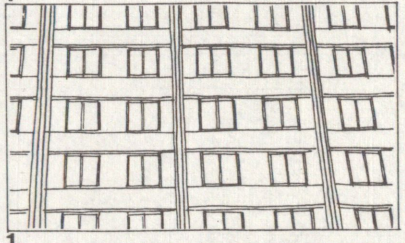

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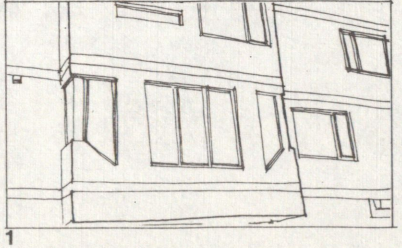

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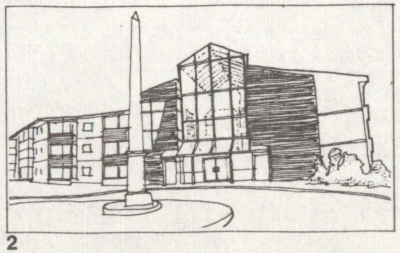

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6. POSSIBLE COMMERCIAL COMPONENT

The purpose of considering a commercial mix with urban social housing is as follows:

-to promote and enhance street activity and the possibilities for social interaction.

-commercial activity relates to dynamic pedestrian involvement at a very public level and could serve as a transition between public street activity and the private nature of dwelling.

-commercial activity is of general public interest--enforcing the public nature of the street, and serving to continue public spatial experience.

-a commercial component would allow a social housing prototype to be applicable to a greater variety of inner city sites.

Criteria for Evaluation

-seeking a qualitative fit for the commercial component based on an integration that does not interfere with the less public nature of housing, but rather, supports it.

Category 1 - Double Skylit Atrium

-to enhance the character of the interior with natural light.

-commercial occupies the lower, more public level.

Category 2 - Double Skylit Atrium

-commercial addresses street for full height of facade, and occupies the entire lower level and middle building component.

Category 3 - Atrium "Rue Interieur"

-centrally skylit atrium with the commercial component occupying the lower level with housing above. The atrium space serves as an interior street.

Category 4

-commercial podium with housing tower.

Category 5

-commercial podium with two towers; one for office/commercial the other for housing.

Category 6

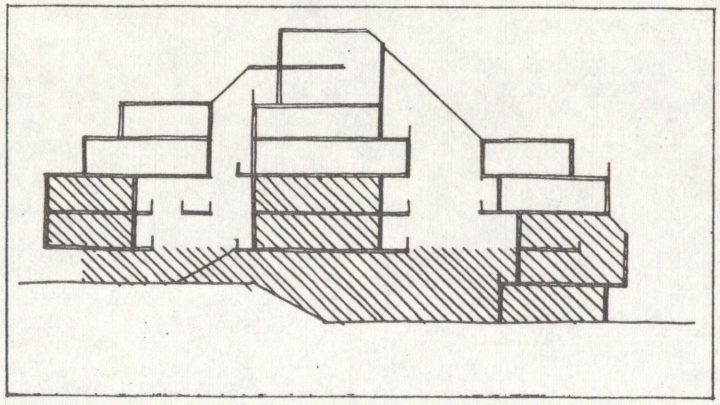
-commercial/office tower joined to housing component by a shared atrium space.

Conclusion

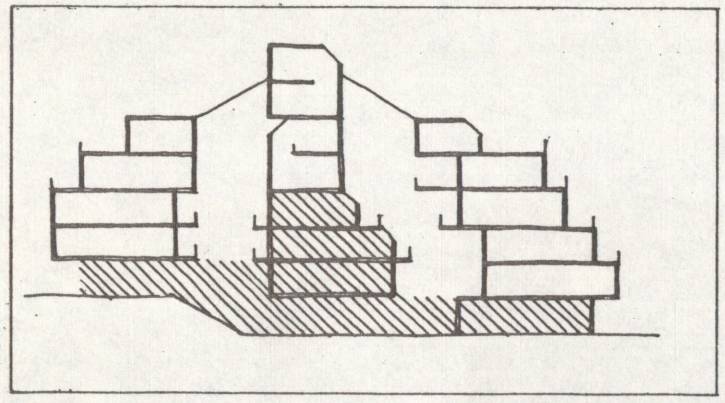
-Category 2 has proportionately too much commercial/office space for an appropriate mix.

-Category 4 has clearly separated commercial from housing but may be more successful if the commmercial component is limited to the outermost (street oriented) section, for maximum visibility. The inner most section could perceivably become parking to support a recreation plaza above.

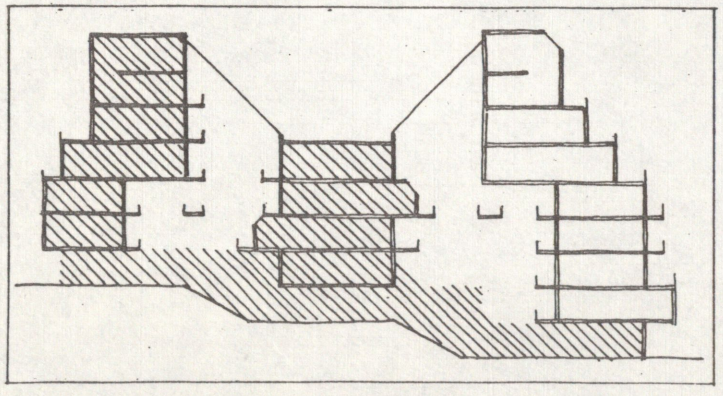
POSSIBLE COMMERCIAL COMPONENT



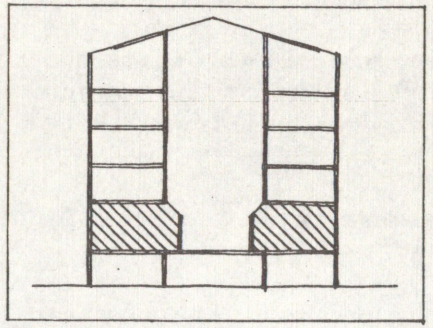
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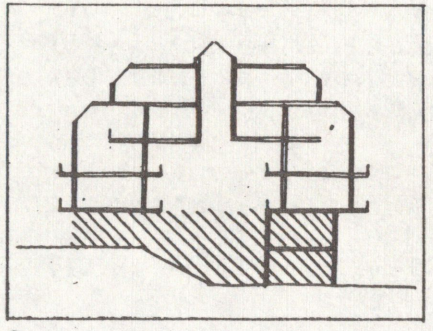
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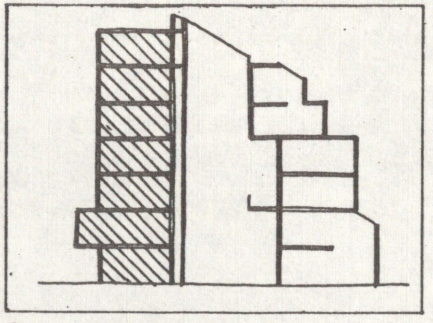
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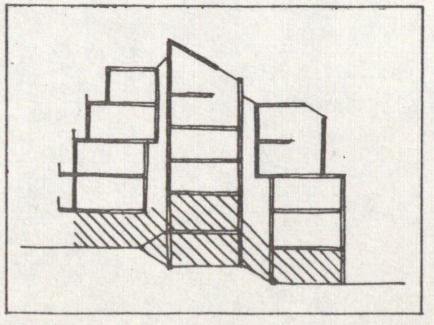
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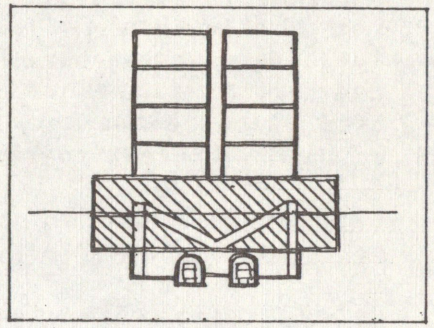
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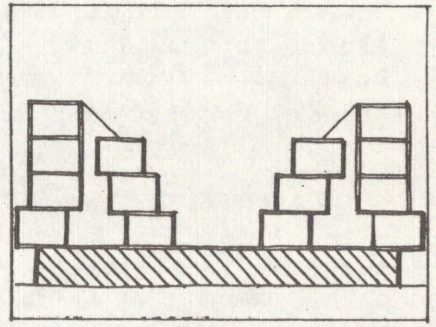
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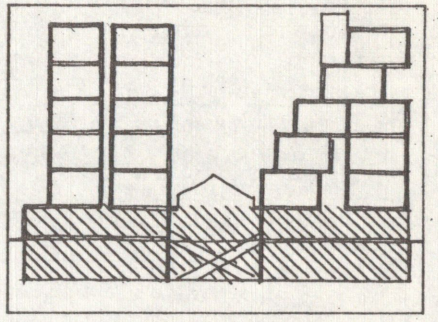
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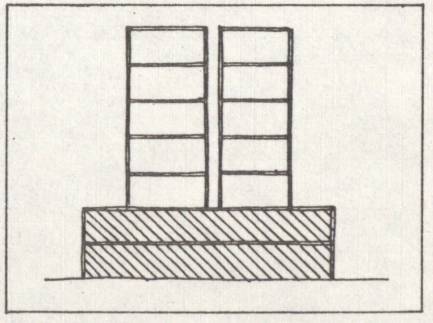
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4.1



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4

-Category 6 creates the problem of visual privacy for the residents. Access to and from the dwelling unit has become too visible to office and commercial component. How is the atrium space used? It becomes very ambiguous and less likely to be an interest to residents.

-Category 5 - not considered as it is too heavily oriented to commercial activity.

-Category 1 - while remaining the most complex examples, limiting the commercial component to the lowest level seems like an appropriate mix. The strong natural light sources seem supportive of both the activities of shopping and the arrival and departure of residents.

-Category 3 - these simple sections reveal the potential for a manageable commercial component:

-any commercial component should remain primarily at the pedestrian (street level).

-clear separations of public and private realms should be reinforced.

-Categories 1, 3, 4.1 seem to best integrate commercial as a component. The housing is middle rise and many of the dwellings could remain suitable for families.

D. ARCHITECTURAL CONSIDERATIONS

1. INTERFACE

As a definition, interface deals with the "transition" between two different environments, in physical terms, or domains in social terms.

-interface also includes the "transition" between thoughts, ideas and emotions.

Transition or Boundary

Where distinctly separate realms of space are concerned (such as private dwelling and public corridor) the interface may be called a boundary.

Interface between individuals establishes two major conditions:

1. an individual seeking social interaction lets down his defences allowing for such communication.

2. individuals defending a territory feel most secure when they sense control over their domain.

Qualities of Physical Interface

1. Hard interface (abrupt)

-walls separating territories or spaces.

-windows which allow visual interaction, but lack in smell, taste, noise and physical aspects of interaction.

Social Uses

-to separate public from private realms to discourage discourse and social interaction.

-to establish boundaries and reinforce domains.

2. Soft Interface (transitional)

-courtyards, balconies, trees and, links.

-links may be exemplified as walkways, paths or bridges, and other such connecting devices.

Social Uses

-provide for the continuity of realms or subtle separation (public from semi-public).

-provide a boundary without a physical barrier (often times more symbolic such as change of materials, incline, risers and so on).

Qualities of Social Interface

-Individual perception of appropriateness (quality, desirability, inspired or pacified, relaxed or nervous) with respect to a physical object or social being.

Criteria for Evaluation

-support for the continuity and enjoyment of public space at the pedestrian level (sidewalks).

-visual impact of a building's scale to the pedestrian at sidewalk level.

Building Interface with Street

1. Section with pitched roof.

2. With flat roof.

3. With top floor set back. This device reduces the height visible to the eye.

4. With a projection at pedestrian level in the form of an arcade or a solid structure. This device "distances" the pedestrian from the real body of the building and creates a pleasing human scale.

5. Halfway up the building the section is reduced by half its depth; this allows for extensive floors in the lower levels and flats with access-balconies on the upper level.

6. Random terracing.

7. Sloping elevation with vertical lower and upper floors.

8. Sloping elevation with protruding ground floor.

9. Stepped section.

10. Sloped section with moat or free-standing ground floor.

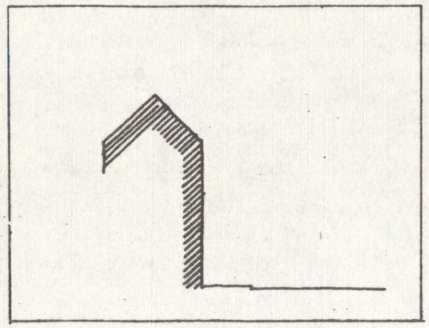
11. Standard section with moat.

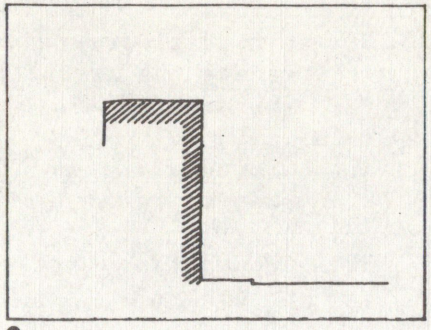
12. Building with ground floor arcades.

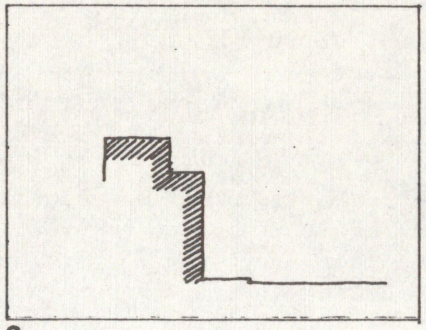
13. Building on pilotis.

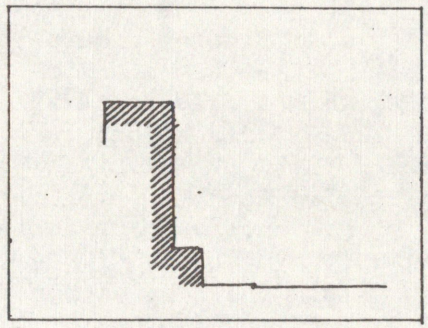
14. Building on pilotis, with an intermediate floor similarly supported.

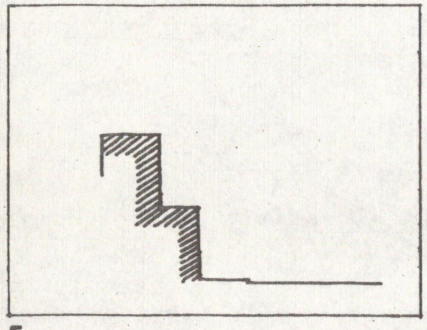
INTERFACE : BUILDING SECTION AT STREET

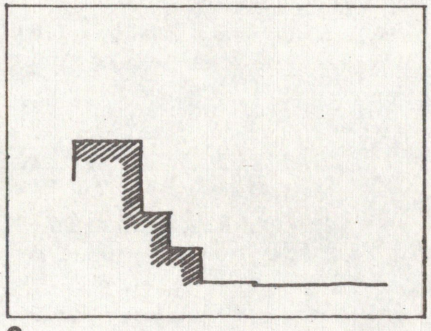

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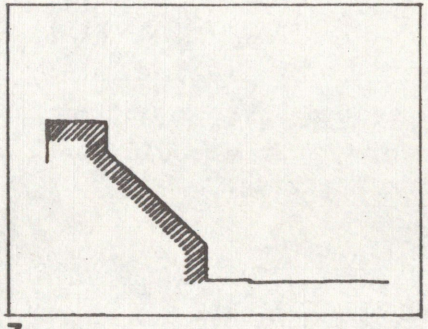

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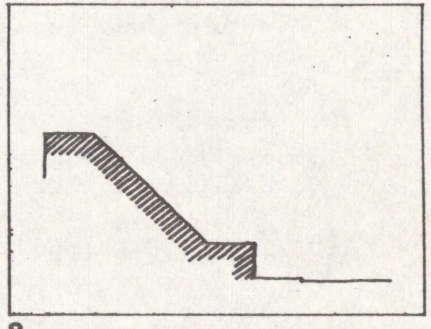

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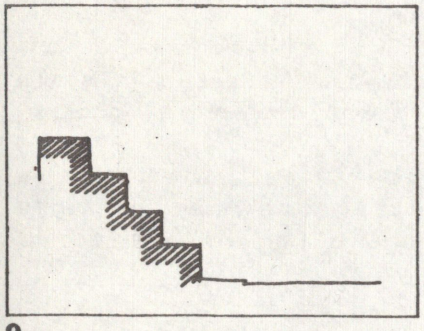

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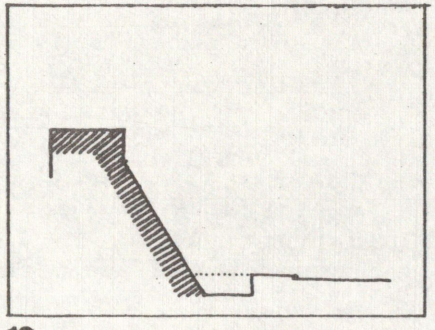

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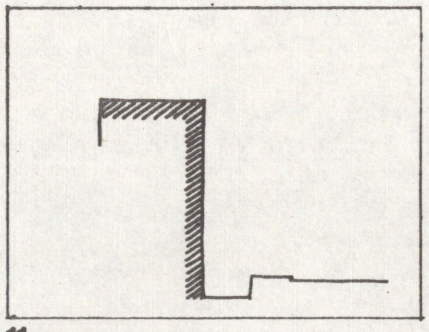

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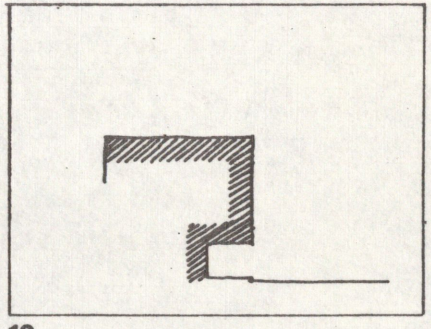

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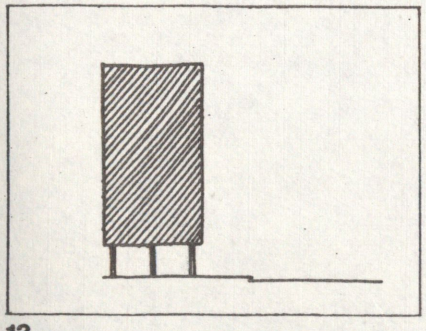

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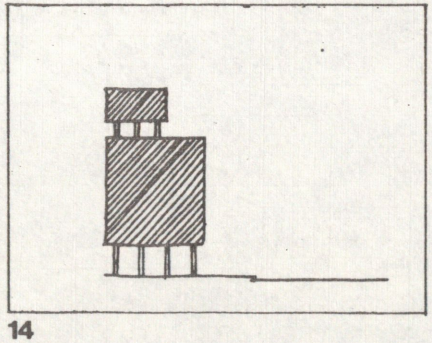

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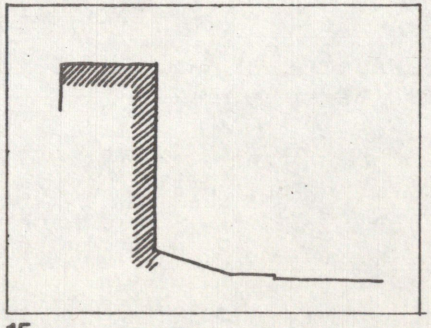

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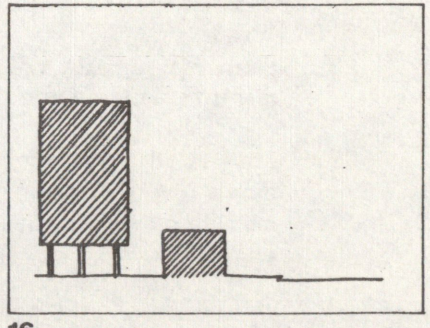

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15. Sloping ground in front of building.

16. A free-standing lone building placed in front of a higher one.

17. Building with arcade above ground level and access to pedestrian level.

18. Building with access balcony.

19. Three level arcade creating visual interest at pedestrian level and reducing the impact of the tower.

20. Arcade set away from sidewalk with a three level podium to a tower. Podium could contain offices, commercial, or parking.

21. Inverted stepped section.

22. Building with pitched projections.

23. Small plaza from sidewalk with stair access to a two level arcaded "porch". Tower above.

24. Plaza lower than street to "soften" the interface of a large building at the sidewalk level.

25. Building with projections.

26. Building with free-standing towers.

27. Raised plaza.

28. Canopy used to "lessen" the impact of an abrupt interface with the sidewalk.

29. Inverted type section with free-standing wall framing private yards. Effectively softens the interface of the building with the sidewalk and street.

30. Ground floor arcade with a two level podium to reduce the visual impact of the tower above to the pedestrian.

31. Ground floor arcade with canopy or one-level projection.

32. Ground floor arcade "cut out" of a tower with no setback.

NOTE: Notes and drawings to examples 1-18 and 21, 22, 25 and 26 are taken from Urban Space by Robert Krier, p. 24.

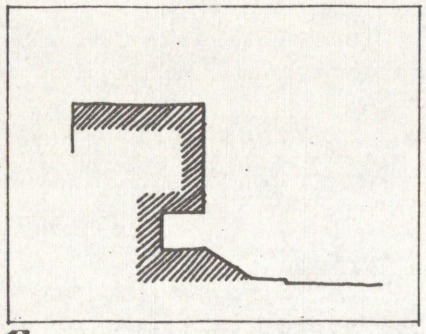
Conclusion

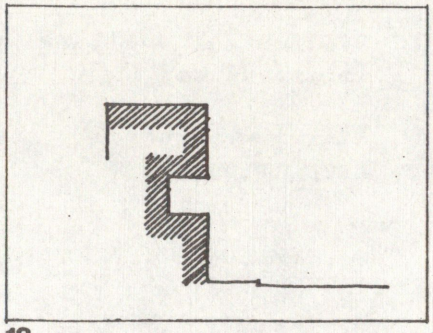
-examples 19, 20, 30, and 31 satisfy the criteria in the most sensitive manner.

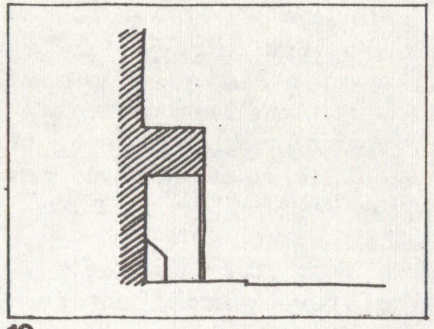
-they all protect the sidewalk from weather in the form of arcades which serve to benefit general city users.

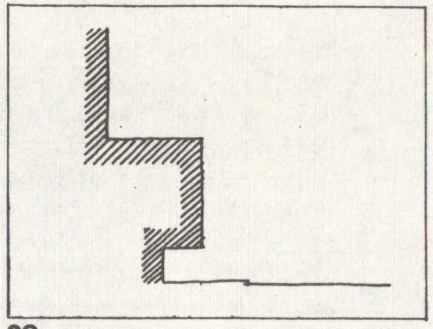
-examples 20 and 30 maintain a "streetwall" while outlining the possibility for a commercial podium.

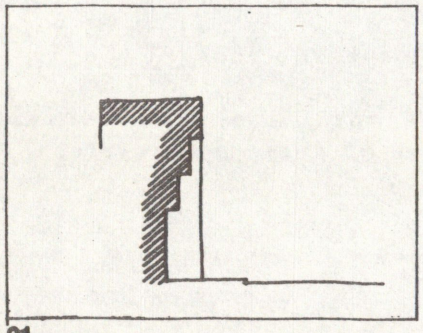
-example 19 meets the criteria but, the entry is over-scaled for residential use--may be more appropriate as an interface to a lobby for a commercial/office tower.

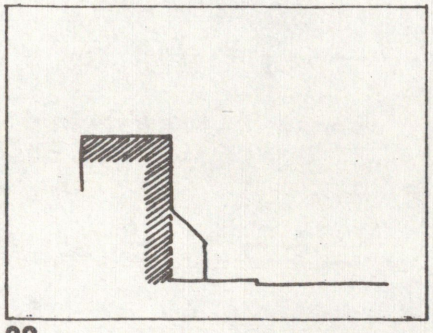

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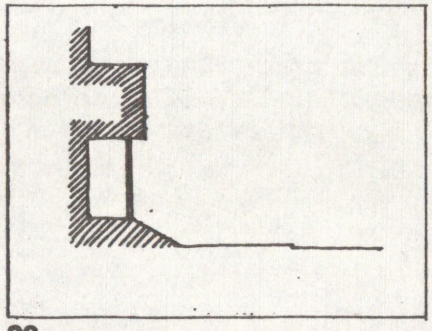

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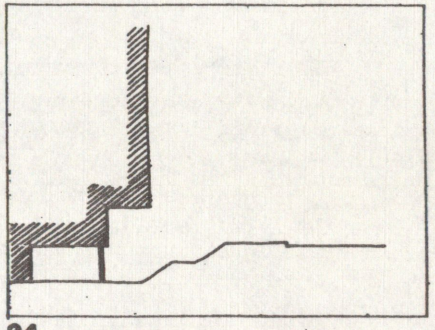

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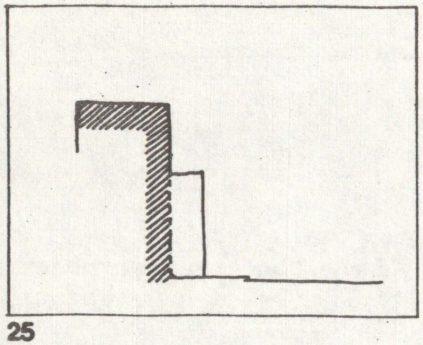

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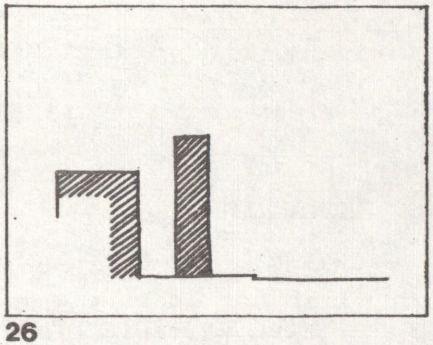

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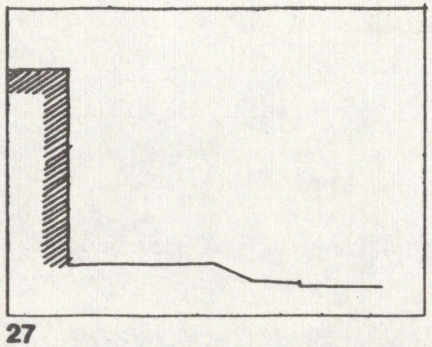

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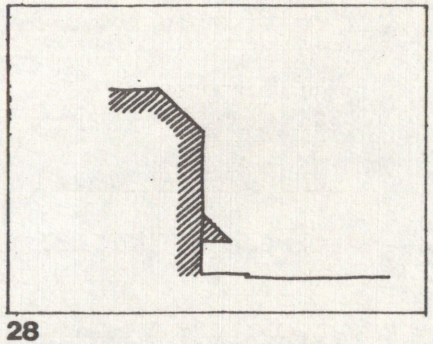

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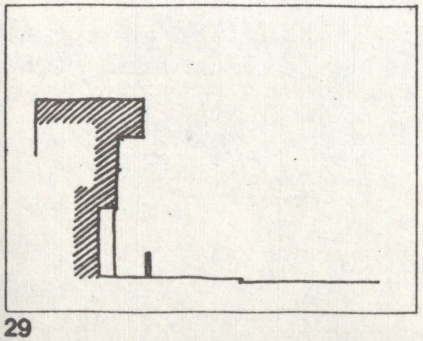

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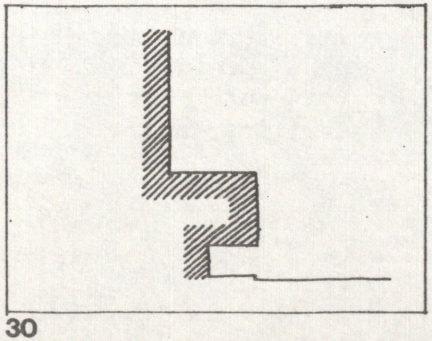

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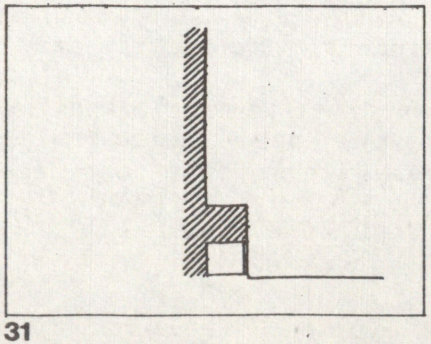

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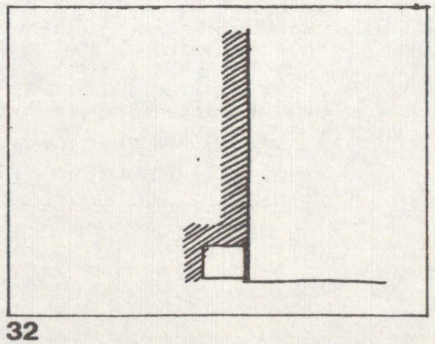

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2. INTERNAL DAYLIGHT CONSIDERATIONS

-There are discussions in art suggesting the ability of paint to take on a luminous quality where the "light" seems to emanate from within the paint itself. In essence the application of the paint (or the structuring of it on a surface) more correctly captures (absorbs and reflects) light.

-As Louis Kahn points out, "structure is the giver of light" and Le Corbusier states "Architecture is the masterly correct and magnificent play of masses brought together in light."

-The ambience a naturally lit space can generate is to give that space a dynamic quality of existence. However this is not to ignore the strong social need for light.

-People and their dynamic activities are what make "a space come alive".

-Light is an important attribute to the dynamic use of interior space and to the perception of the quality in interior spaces.

Category 1 - Double Loaded Corridor

-the problem stated--no internal daylight.

-little social interaction in internal corridors.

Category 2 - Skylight with Limited Penetration

-too selective and hierarchical (non-egalitarian).

-the limited scale of the interior corridor allows little variation to the mere function of arrival/departure, even with daylight considerations.

Category 3 - Centrally Skylit Atrium

-individual dwelling units have both internal and external day lighting considerations.

-increased social interaction possibilities in atrium space.

Category 4 - Double Skylit Atrium

-complexity of section most appropriate for lower scale-high density housing.

-good potential for social interaction.

-possibility for different levels of social interaction based on interior surface undulation.

Category 5 - Hybrid Solution

-both top and side lighting example.

Category 6 - Differential Use

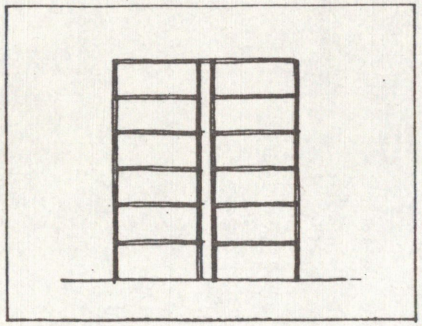
-selective skylighting.

Conclusion

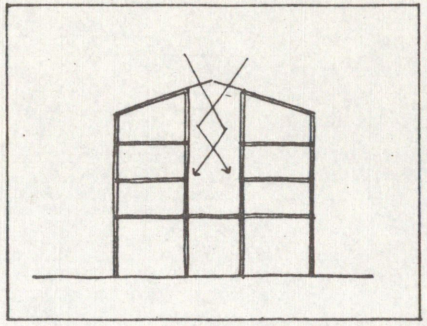
-Categories 3, 4, 5 and 6 have the greatest potential for inspiring a multiplicity of use through active participation.

-Atrium typologies provide a constant source of daylighting and a sense of orientation with respect to time, levels of activities, and dwelling units.

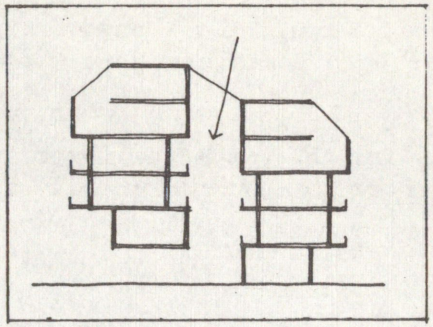
INTERNAL DAYLIGHT CONSIDERATIONS



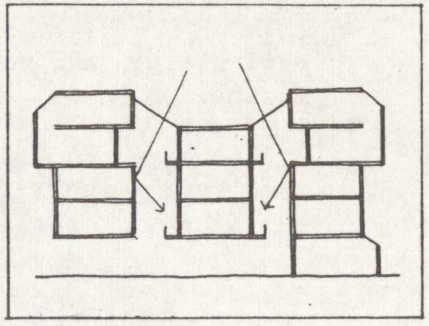
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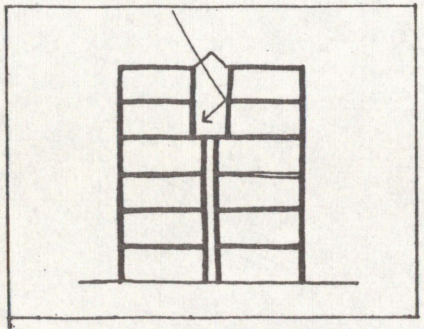
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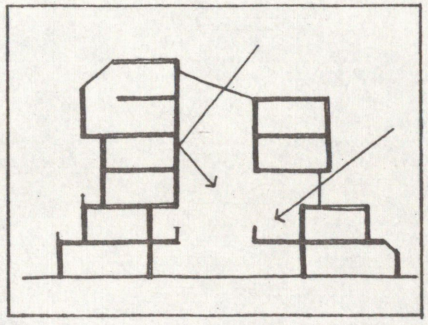
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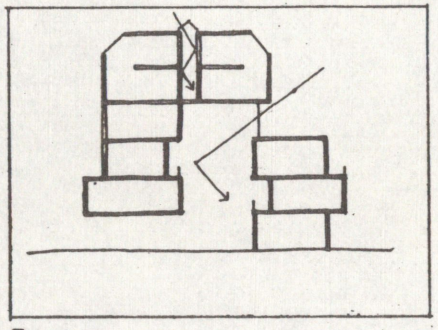
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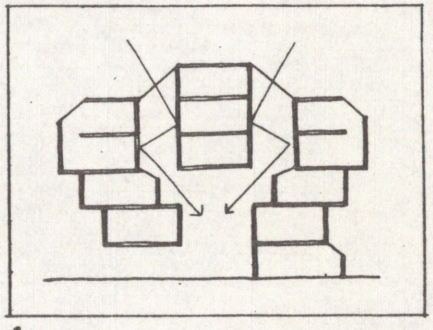
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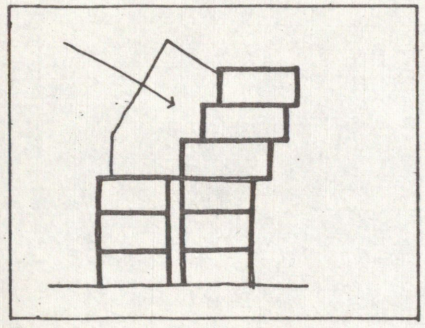
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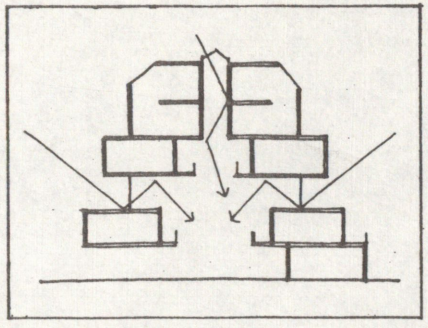
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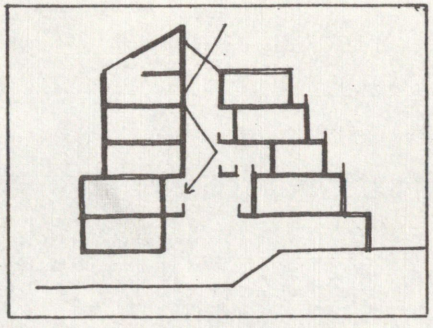
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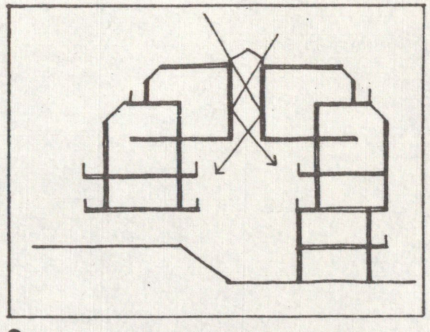
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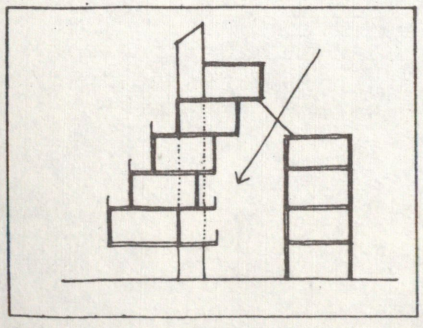
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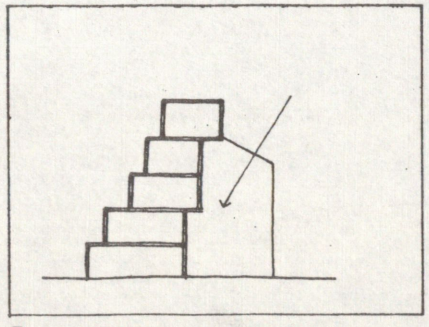
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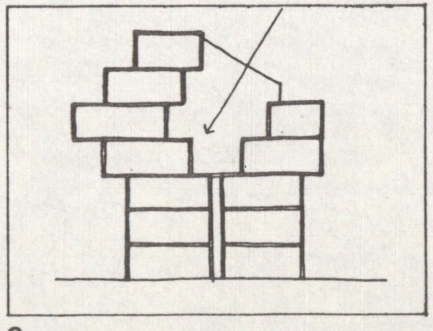
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3



5



6

-In a severe climate such as Canada the atrium typologies are a viable solution to maximizing daylighting, and public open space usage in winter months.

-Atrium types may allow for the visual differentiation of privacy hierarchies from within the building.

1. CANANADIAN CASE STUDIES

The three examples chosen for examination reflect primarily different attitudes:

1. the first two examples are clearly high-rise/high-density types reflecting quantitative and cost-efficient solutions.

2. the third type of example is a rare case--it is the actualization of a competition entry. It was primarily chosen as a contrast to the very typical high-rise problems, currently so popular with developers in Edmonton.

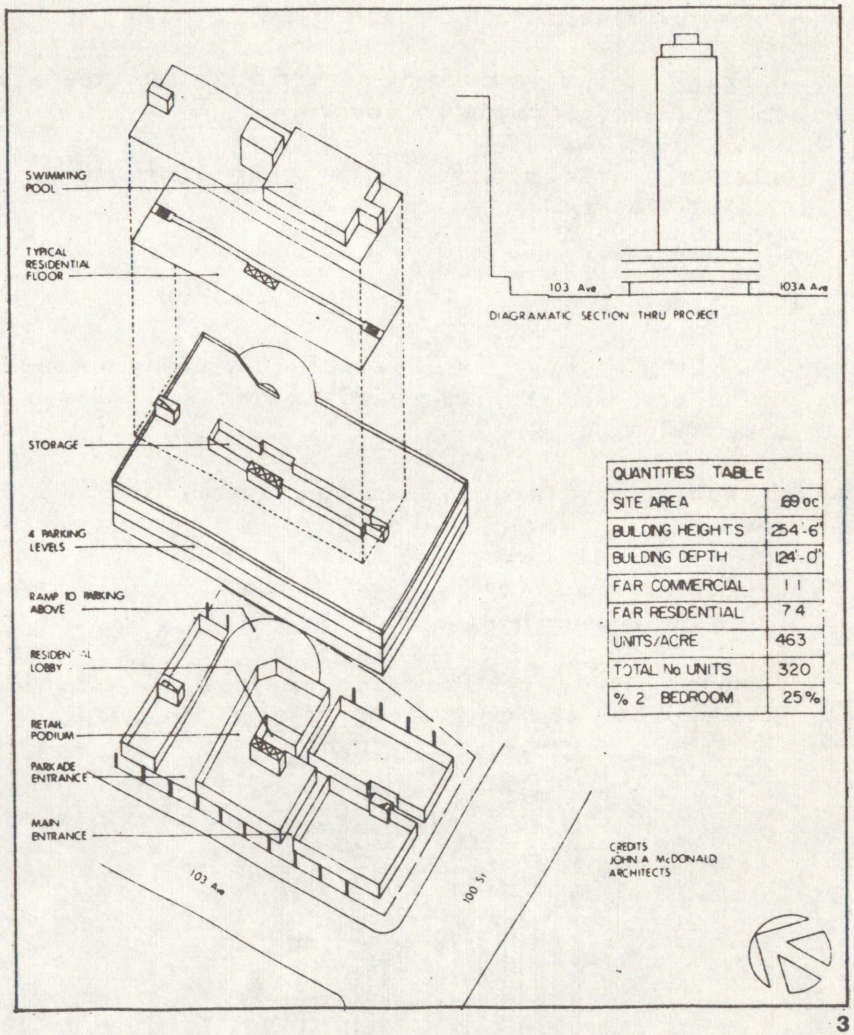
-the examples are all situated within Edmonton's downtown.

Case 1. Avord Arms

-one of a few examples mixing a commercial component with high density housing. Some offices are located in the primarily residential tower.

-the pedestrian level has some commercial activities under a four level parking podium, above which is situated a tall residential tower.

-it is located in the central business district of Edmonton.



3

1. Site Planning

-public access through the "block" is minimal.

-public spaces are directly accessible from the street.

-entrance lobby location lacks clear physical definition.

-lobby provides minimal public amenities.

-parking podium maintains street edge by extending to lot line, forming an arcade.

-arcade provides minimum weather protection to sidewalk users.

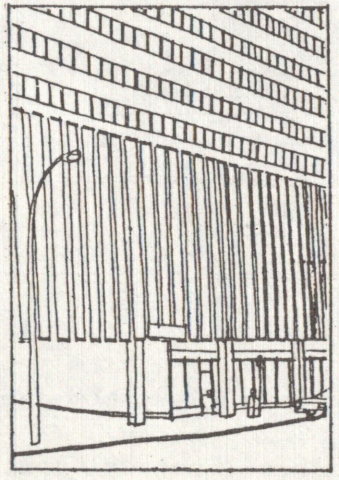
2. Circulation

-dwelling access via elevators and double loaded corridors. Staircases mainly serve as emergency access.

-access from parking podium to private dwellings is good.

-vehicular access to parking podium is well planned from the southern access.

-parking on level four (top level) is visually obtrusive to apartments and adjacent buildings.



3. Public/Private

-public and private territories are not clearly defined--the residential lobby is separated from the commercial component but offices and residential share lobby, creating a security conflict.

-the arcade provides an extension of the public sidewalk.

4. Unit Ammenities

-no provision has been made for outdoor spaces or balconies.

-double-loaded corridor access does not permit through ventilation.

-dwelling unit types represent a minimal choice (75% single units, 25% 2 bedroom).

-none of the units have direct access to grade.

5. Collective Ammenities

-collective activities are minimum and occur at the top of building specifically in the party room and swimming pool.

-no outdoor collective space is provided (but could be located on top of parking podium).

Conclusion

-unit types do not represent a latitude of choices.

-ammenities to general city users are minimal (arcade provides minimal weather protection).

-units lack any private outdoor space.

-good access to downtown for work and shopping opportunities.

-security problem in parking as it is a common access route to residential and commercial components.

-because of the scale of the building, stairs are an inappropriate means of arrival/departure for most dwellers--further demonstrating the lack of contact with the ground.

-collective activity spaces do not exist outside and are minimal inside.

-at best this housing serves the needs of young singles who specifically do not seek social interaction with their neighbors.

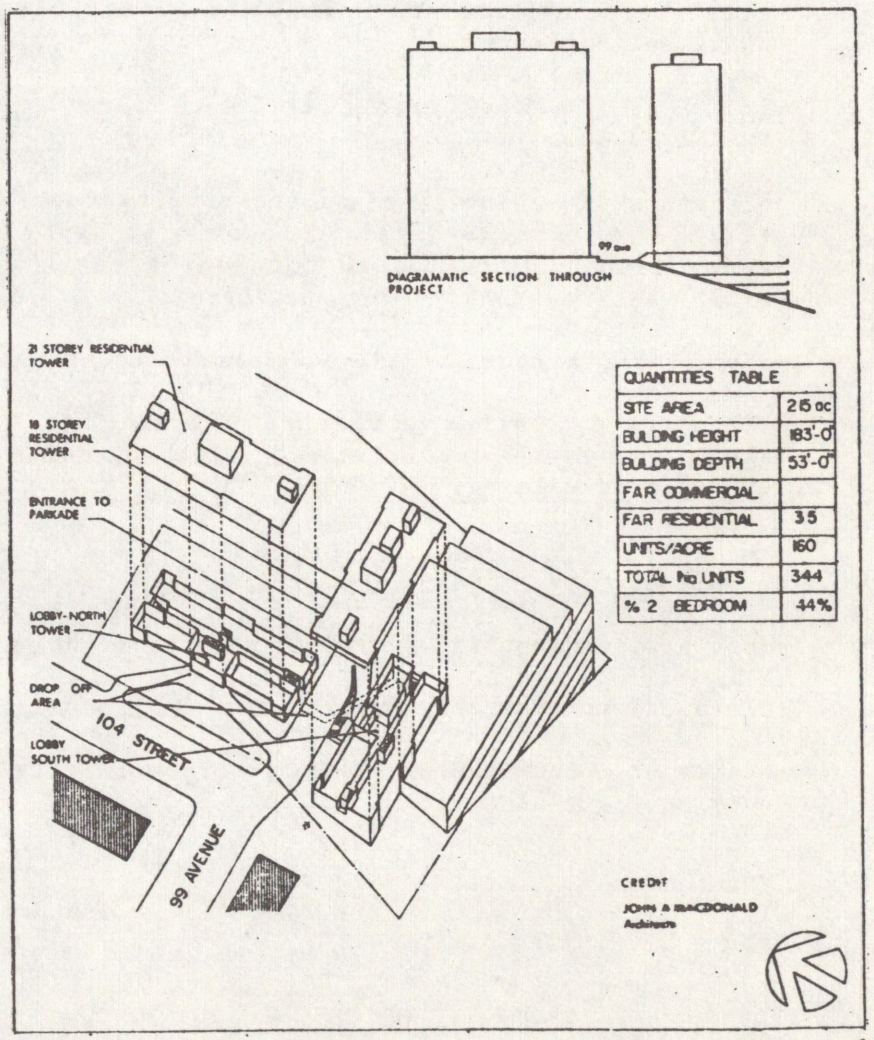
-lack of ground contact at street level and lack of open space make this project inappropriate for family consideration.

Case 2. Hillside Estates

-primarily a high density residential solution, the exception being a convenience store at the ground level.

-represents a typical high-rise/high-density solution to urban housing in Edmonton.

-it is located on the edge of the river bank.



4

1. Site Planning

-consists of two hi-rise towers, one facing east-west, the other north-south.

-the towers are set back from the street, the residual space neither useable to residents, or a viable extension of the public street.

-small commercial store is insignificant to general city users but both convenient and accessible to apartment dwellers.

-lobby is stark offering little in the way of amenities to anyone.

-elevators are established as the primary means of vertical access--stairs are located at opposite ends of the double-loaded corridor scheme, and primarily function as emergency egress.

-good drop-off zone is limited to north tower only.

-there is a weather protected parkade for car storage and is connected to north tower via underground walking.

2. Circulation

-double-loaded corridors with no natural light.

-elevators are the only feasible vertical access.

-stairs at either end of the corridor--primarily an emergency access route.

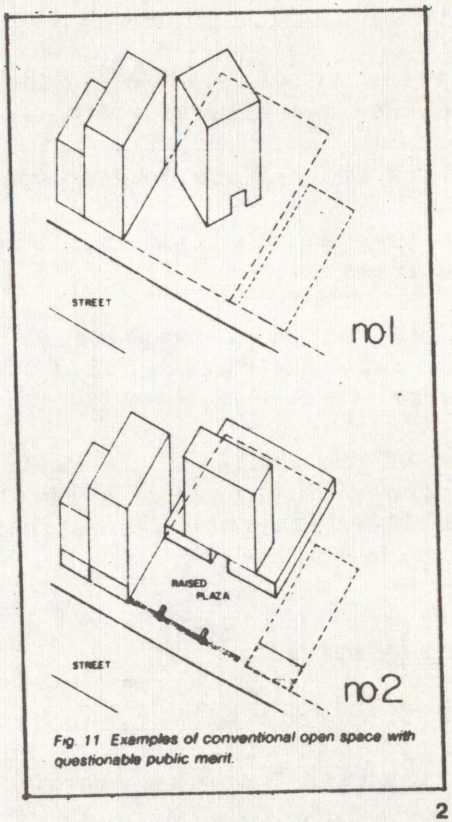


Fig. 11 Examples of conventional open space with questionable public merit.

2

3. Public/Private

-clear separation of public and private realms but the physical distinctions are not supportive of flexibility nor collective gathering/activity space.

-there is no apparent relationship between the scale, form, or siting relative to the existing street condition or contextual building scale.

4. Unit Ammenities

-no units with direct access to grade.

-each unit has balcony.

-most units are oriented to one direction only and have limited cross ventilation possibilities.

-some open space at grade is enclosed by a fence but this trivial gesture is of little interest to residents.

5. Collective Ammenities

-potential grade space is ill-defined and unnecessarily wasted.

-the top of the parkade serves as a communal terrace with views of the river valley.

-the lobby offers no ammenities to the general public.

-no collective spaces exist within the tower.

Conclusion

The relationship of this building to its surrounding context is particularly bad because:

1. it makes a weak interface with the street creating an anonymously defined open space.

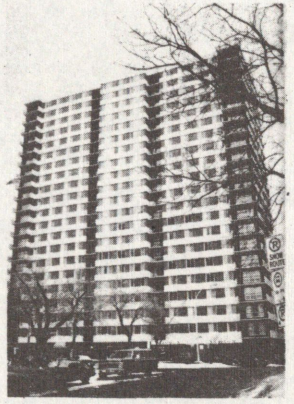
2. siting does not respond to the street building line yet it provides no amenities to the public outside of a convenience store.

3. scale of the buildings creates a strong wind condition and together they heavily shade a good portion of the immediate surroundings.

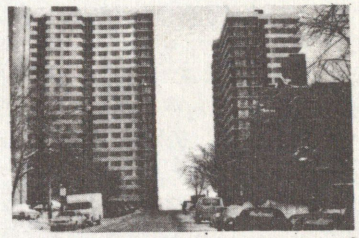
-lack of collective open space and ground contact make it undesirable for family situations.

-daylighting is non-egalitarian.

-similar to the conclusion of the Avord Arms, this type of housing may at best serve the needs of young singles who do not specifically seek interaction with their neighbors.



4



4

Case 3. Galleria

-high density - low rise.

-located in an inner-city, older neighborhood which still remains residential.

1. Site Planning

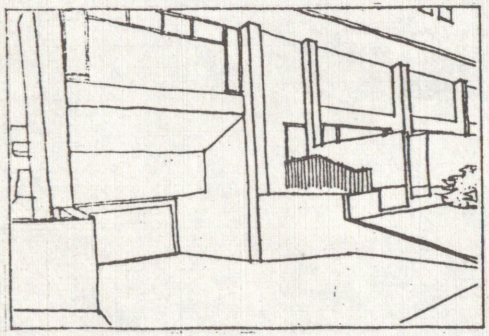
-interface with street is soft--a setback acknowledges the surrounding residential context.

-lower dwellings have enclosed private outdoor space.

-parking is under the building.

-atrium and major access routes are oriented north-south.

-respecting the existing contextual scale, the massing maintains a four level street facade increasing to six levels at the alley (rear side).



2. Circulation

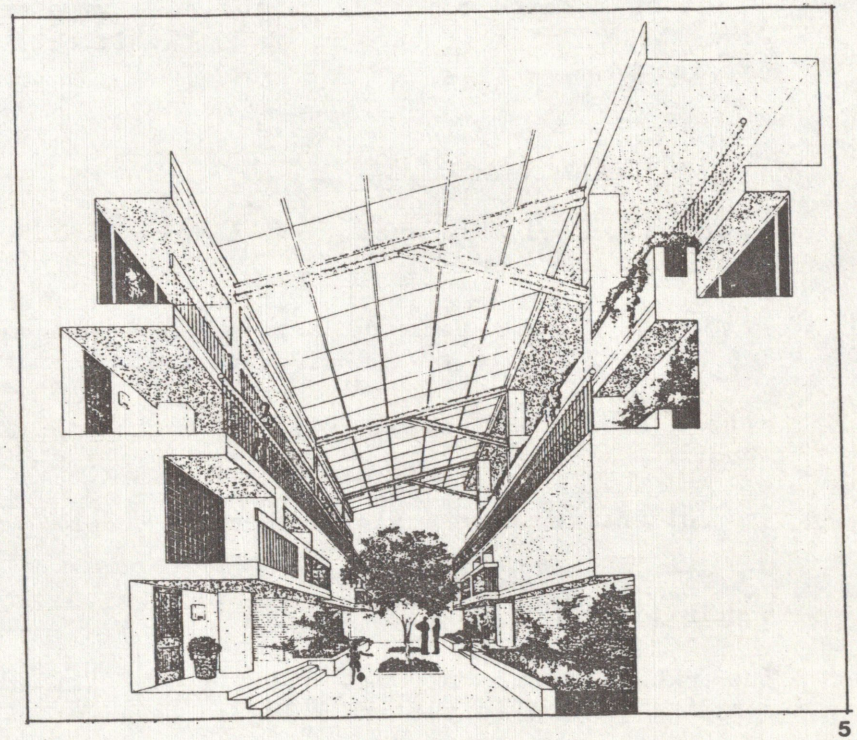
-internal pedestrian street.

-atrium elevators are centrally located and extremely visible.

-stairs become an important alternative to the elevator because of the building's low-rise scale.

-parking access is from the west street, ramping down under the building. It does not interfere with pedestrian activities on the sidewalk.

-elevated corridors parallel the atrium axis to serve the dwelling units.



5

3. Public/Private

-dwellings maintain privacy from inner atrium space.

-the atrium is locked at all times from non-residents and therefore is a public space to the residents only.

-both the atrium "street" and the corridors paralleling it are places where residents can interact.

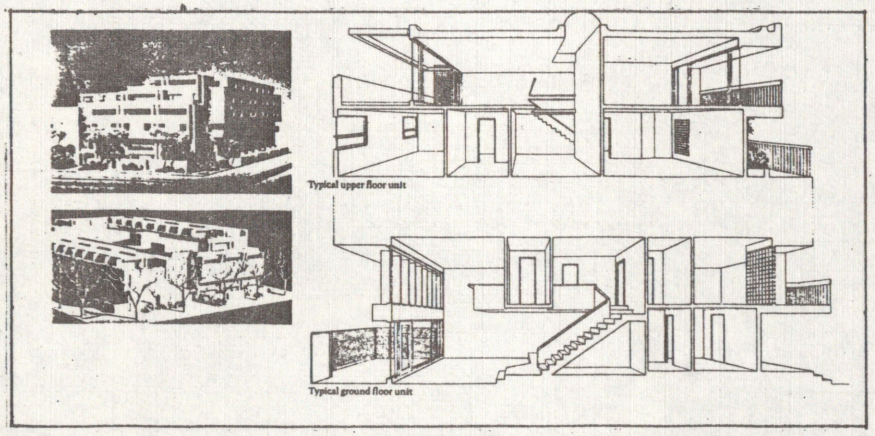
4. Unit Ammenities

-each dwelling has two orientations (inner/outer).

-the dwellings are organized on two levels so that a private terrace is accessible for exterior use and the atrium orientation is for circulation.

-through ventilation is possible.

-ground floor units have an enclosed outdoor courtyard. Freestanding walls appropriately allow residents to use the exterior spaces where without the sense of enclosure their activities would be overly visible to the street.

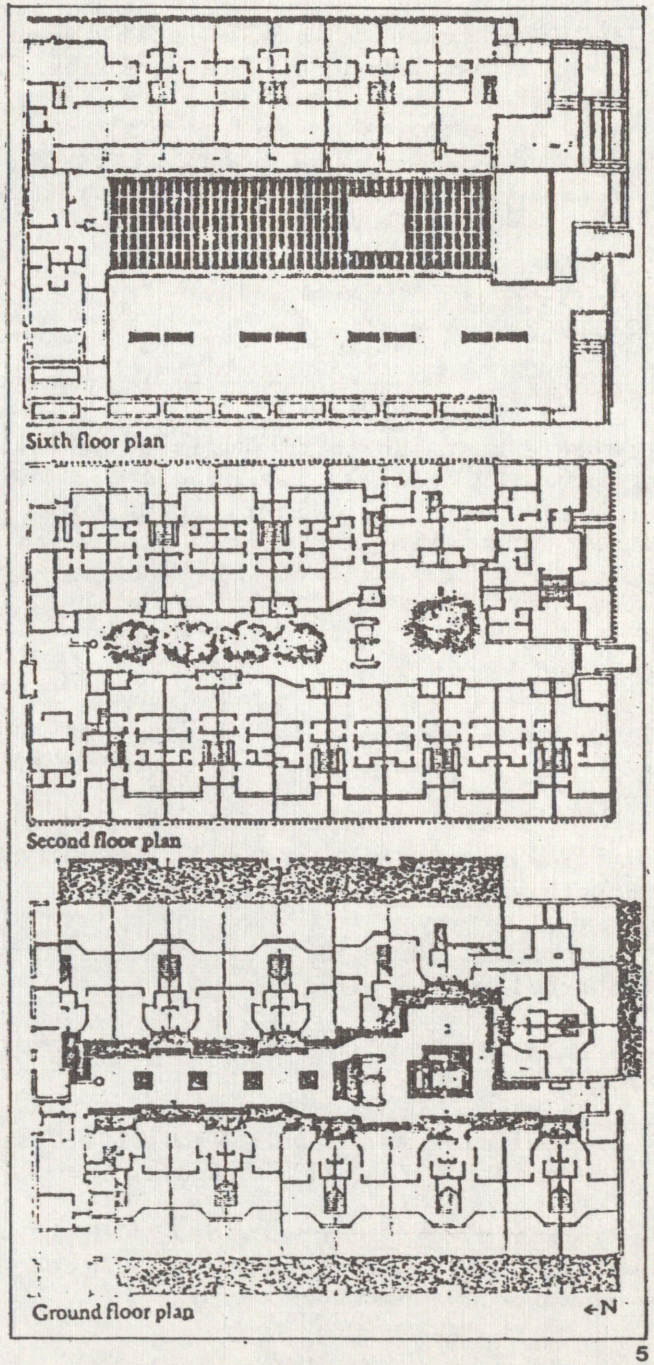


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5. Collective Ammenities

-the atrium itself ameliorates the possibility for social interaction.

-As an orientation device the atrium allows for an awareness of:



5

1. the sense of scale established by the length and height of the building from the inside.

2. an awareness of other residents, their location in the building structure, possible activities.

3. time orientation (daylight).

6. Material

In complete contrast to the Hillside and Avord Arms examples, the Galleria has used a rich choice of materials (paver tile floor, brick infill - both interior and exterior over a concrete infra-structure and large amounts of skylight glass.)

Conclusions

-this project has taken the attitude of addressing the severe climate with an indoor collective space.

-it is the organizing principle for the building structure and use of the building.

-no commercial component makes the building rather introverted and lifeless.

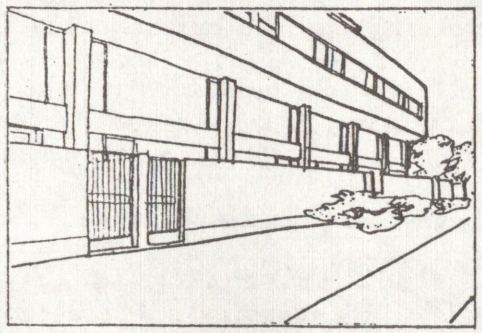
It has embraced many contextual concerns outside of climate including:

1. building scale as a sensitive response to the existing residential scale.

2. building scale produces no problems with shading or wind conditions as the hi-rise examples demonstrated.

3. interface with the street is comfortable to pedestrians.

The scale of the building and the lower dwellings with their ground contact make this a viable intra-urban family housing typology.



2. DANISH CASE STUDIES

The following three particular examples were chosen because:

1. they all inherently possess urban qualities (high density, but low to medium rise and cluster organization).

2. they represent the implementation of competition ideas responding to modern societal concerns in social housing.

3. my personal familiarity with each example through site visitation and class oriented discussion.

A Note on Collectivity

Erling Knudsen, managing director for the Danish Public Housing Association during the late 1940's was instrumental in supporting the increased amounts of collective facilities in Danish social housing. This allowed among other reasons for women to be freed of work in the house to find time to pursue work in commercial life

The concern for daycare, kindergartens, cleaning service and co-operative restaurants in modern large scale social housing is testimony to this concern for freedom and choice.

Case 1. Fredericksberg Housing (1977-80)

-a response to the need for more varied and visually interesting housing as demanded by consumers.

-located in a suburb near Copenhagen.

-hybrid between apartment complex and low-rise dense development, housing approximately 700 units.

1. Site Planning

-the housing that enforces the site boundary is 4-6 story apartment buildings diminishing in scale to the centre most buildings.

-parking is peripheral, allowing the site to be largely a pedestrian experience.

-street edge is maintained and enhanced by strong vertical forms which gain interest in their surface articulation.

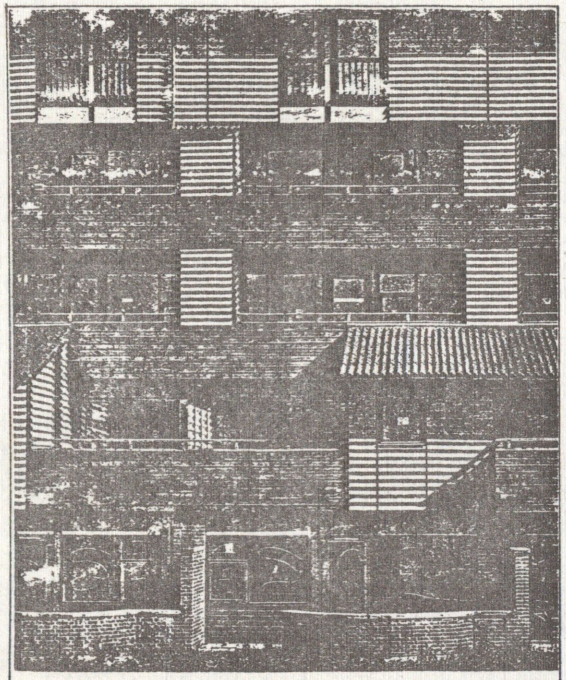
2. Circulation

-pedestrian site circulation meanders around the housing and is enhanced by low building scale at the pathway interface, and interesting path materials.

-access to units mainly via stairs with the provision of elevators for the larger forms.

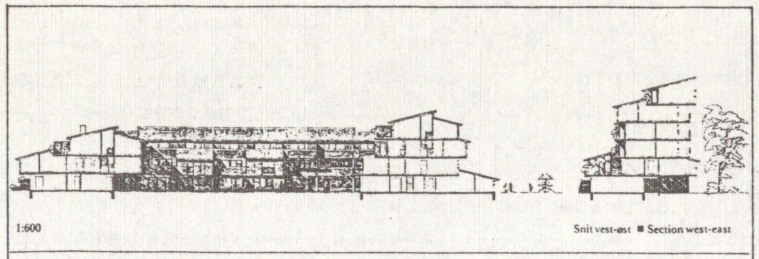
-wherever possible the housing forms have allowed for a strong presence of light to be experienced on the exterior circulation pathways, and to a lesser extent on those housing the interior ones.

CASE 1.



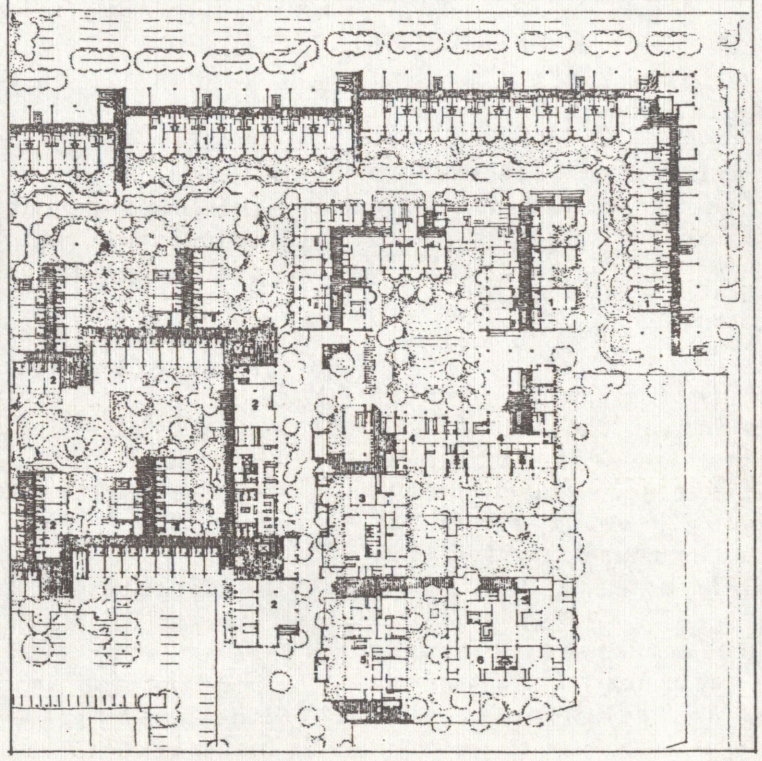
Boligkvarter på Frederiksberg

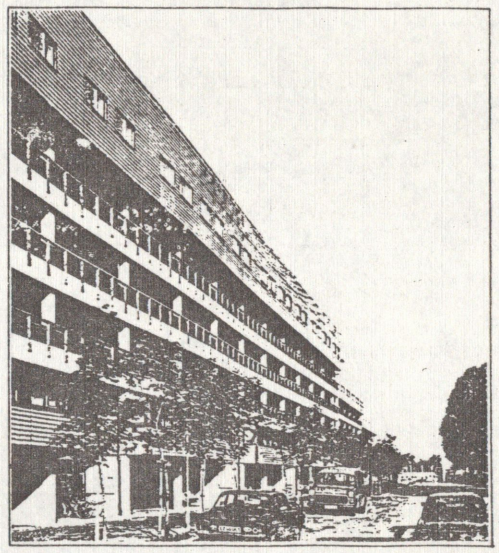
Arkitekter: Fællestegnestuen ApS ved Jørn Ole Sørensen, Viggo Møller Jensen og Tyge Arnfred

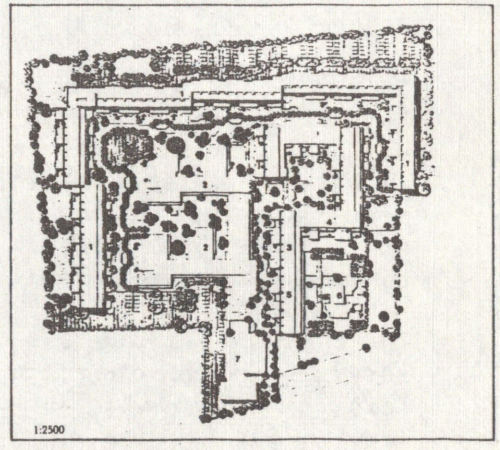


1:600

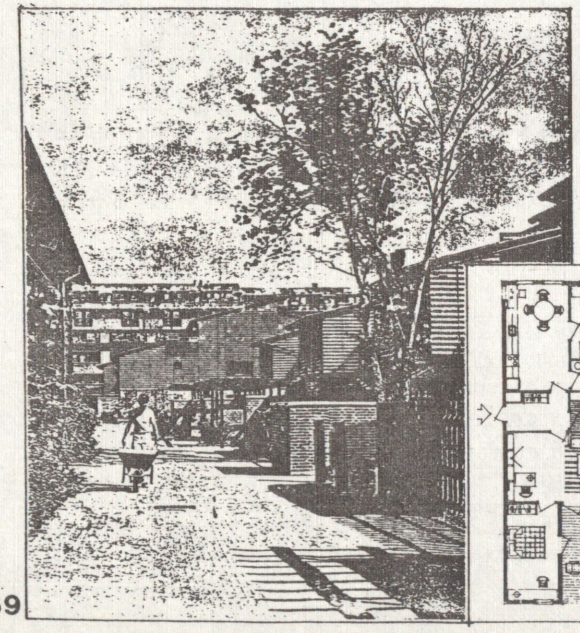
Snit vest-øst ■ Section west-east

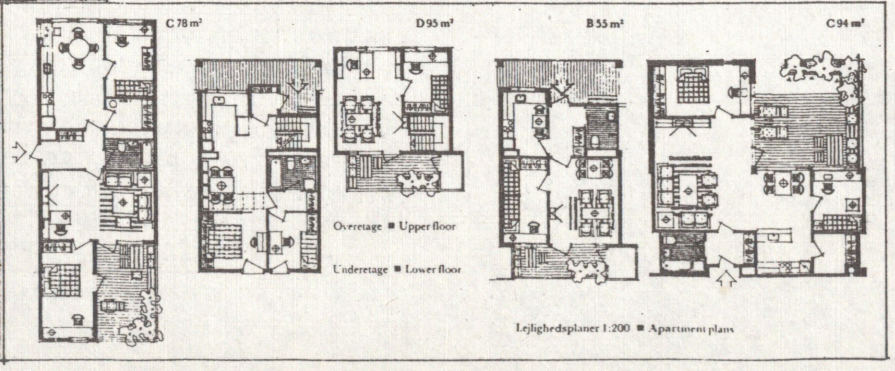






1:2500





C 78 m²

D 95 m²

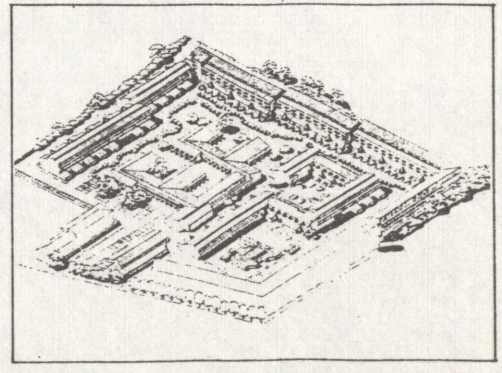
B 55 m²

C 94 m²

Overetage ■ Upper floor

Underetage ■ Lower floor

Lejlighedsplaner 1:200 ■ Apartment plans



3. Public/Private

-clear articulation of public and private territories.

-there is a strong semi-private transition zone at the pedestrian level separating the public paths with the more private dwelling yards.

4. Unit Ammenities

-48 different apartment types ranging from one room dwellings (50 sq. metres) to five room dwellings of some 120 sq. metres.

-each apartment has access to an outdoor terrace.

-residents have been active to construct gardens at ground level.

-all units address the "inner" open space of the site condition wherever possible.

5. Collective Ammenities

-daycare, kindergarten, nursing home and some shops located within the site.

-some commercial activities at pedestrian level serve the public streets.

6. Materials

-post and beam construction cast in concrete permitting the facades to be freely designed.

-light weight transite (similar in appearance to corrugated asbestos-cement panels) is affixed to exterior walls and roof surfaces.

-plinths and foundation walls at ground level passageways are in red brick.

-balcony railings are stained horizontal wood members.

-nursing home is clad in red stained wood.

-ground level pedestrian paths are of small scale interlocking paver tiles.

Conclusion

Has supplied a good choice of unit types.

Variety and clarity are both expressed in the highly complex facade treatment.

Both the form undulations and the external qualities of the transite, brick, wood, paver tiles and greenery contribute to the rich visual appearance of the various buildings.

The possibility for residents to orient themselves without sacrificing the meandering qualities of the site circulation seems highly possible.

Good scale transition from the street oriented (6 story) apartments inward to the low scale housing and collective facilities. This seems to enforce the open space within the site to be clearly pedestrian oriented. My site visitation clarified this notion as the inner site was very active as a promenade and play space.

A successful attempt to integrate all age groups into one scheme. The elderly are centralized and highly visible, family oriented units are mainly ground oriented.

Social interaction seems to mainly occur outside the housing at ground level, maintaining the inner privacy of the dwellings.

Case 2. Farum Midtpunkt (early 1970's)

Such projects as Farum "represent the culmination of a technological and economic development which, permitted a freer formulation of prefabricated construction methods, a response to the criticism of the uniform residential complexes of the mid 1960's".[12]

In the late 1960's there was an increased demand for lower-rise high density housing to permit more ground contact. Farum is one such example built to satisfy those needs.

1. Site-Planning

-organized in linear blocks with "piazzas" for collective gathering and children's play, and to enforce the notion of nodal points of interest in the linear circulation.

-entry to dwelling units from flights of stairs located at each internal wall.

-site is heavily treed; care and attention to lighting, ground textures, grass, commercial and furniture make the outdoor spaces an ammenity which is enjoyed.

2. Circulation

-continuity of blocks is broken by "presinct divisions" to facilitate orientation at the various pedestrian levels.

-all blocks are interconnected with a series of walkways and bridges.

-vehicles are confined to the lowest level for parking (below housing).

-from parking and wall level ramps and stairs lead to walkway promenades and patios (for collective use).

3. Public/Private

-emphasis on collective spaces (the success of shared activities is complemented by a strongly spirited sense of community).

-the separation of private from more public type realms is clearly defined.

-public malls and parking occupy the lowest levels, outdoor plan and ground level promenades are peripheral to the buildings and interconnected, some commercial exists at the lowest dwelling level, and dwellings above remain very private.

4. Unit Ammenities

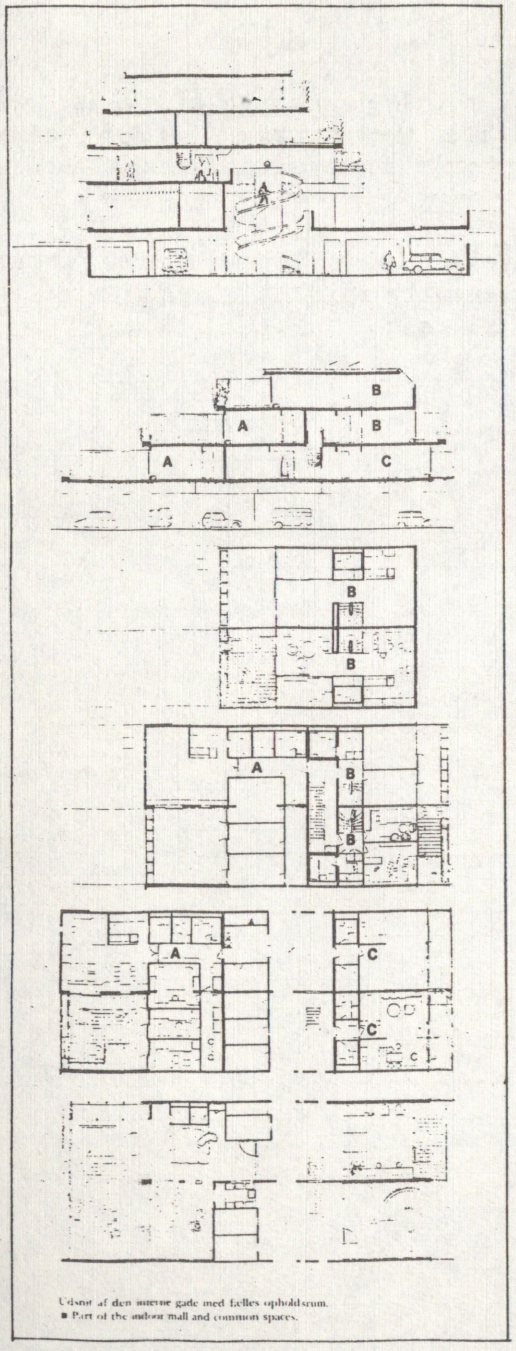
-each unit has a large 6x6 metre private terrace oriented west.

-strong considerations for natural light and cross or through ventilation.

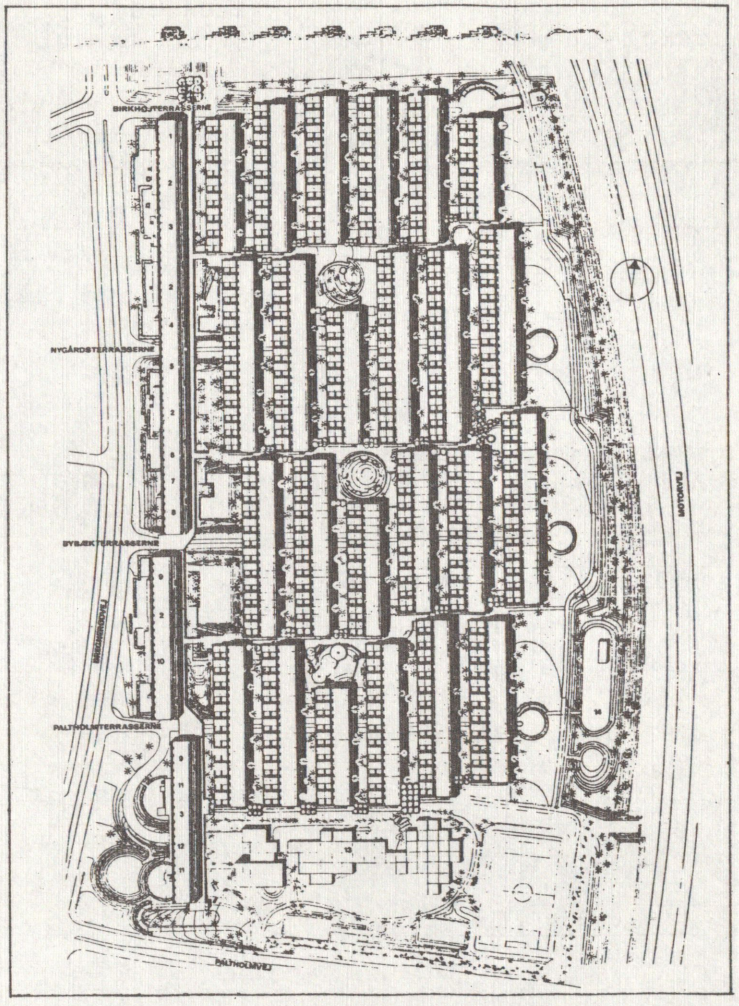
-all units have a reasonable sense of ground orientation, and gardening is very popular.

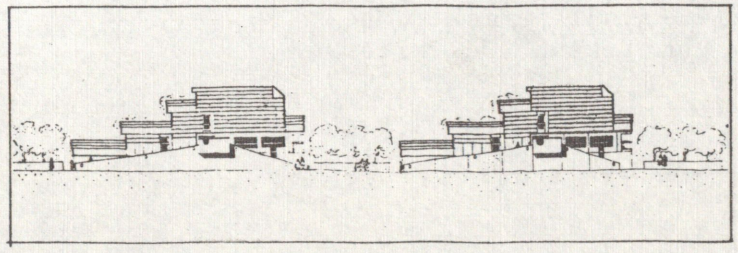
-unit types are 1, 2 and 3 bedroom solutions (2 bedroom dwellings are organized on two levels).

CASE 2.

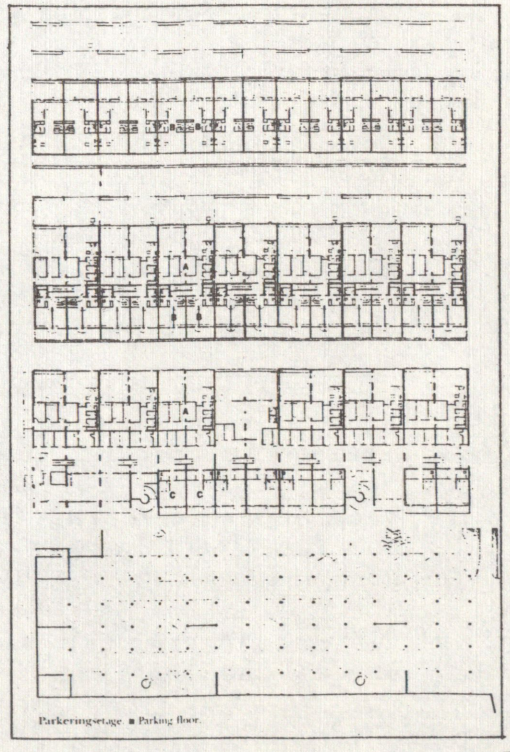


Udsnit af den interne gade med fælles opholdsrum.
■ Part of the indoor mall and common spaces.









Parkeringsetage. ■ Parking floor.

5. Collective Ammenities

-kindergartens, clubs, social rooms, service centres, co-operative restaurant with banqueting facilities, guest rooms run by residents, taverns, youth club, pedagogic play ground, cleaning services and a bus route to central Copenhagen.

-especially attractive to young families who are interested in participating in a collective community.

6. Materials

-mainly concrete construction with external cor-ten steel cladding (sensitive colour choice for this heavily forested area).

-roofs are covered in grass--giving the housing an appearance of being a green colony.

-dwelling floors are hard wood.

-outdoor paths at grade level are cobblestone, grass lawns, etc.

Conclusion

The housing at Farum seems successful for several reasons:

1. as much as possible the buildings are an intrinsic part of the surroundings--largely accomplished by terracing the typical building section and covering the roofs with grass. The cor-ten steel serves to complement the green surroundings).

2. considering the scale of the project (1500 units) the building sections are sensitive to pedestrian scale, and both the ground and terrace landscaping further serve to soften the hard architectural forms.

3. unit amenities are high (choice of types, good natural light, ventilation, terrace, strong sense of ground orientation visually and through ease of access).

4. collective facilities enhance social interaction and the community spirit, a measure of the solution's social success.

Case 3. Holmstrupp Terrasserne (1976)

Originally designed to house 6000 dwellings and large centres with every conceivable service, cultural and commercial facility, but the recession in mid 70's halted construction and only 3000 units and a very large centre completed.

It is located near Aarhus on Jutland.

1. Site Planning

-planned so that there is close contact between dense urban housing and open park space

-dwellings are closely grouped so that there is the shortest distance between housing and local services.

-vehicular traffic and pedestrians are completely separated by hierarchical level changes. (similar to Farum but less successful--see conclusion).

-from each dwelling unit it is possible to walk to all services and open parkland via pedestrian paths at levels above vehicular parking. However, access paths are externalized and not weather protected.

2. Circulation

-strong physical separation of vehicular and pedestrian levels, but vehicles remain visible from centre promenade.

-ramps and stairs connect parking level to promenade level above.

-vertical circulation to dwellings occurs at every second dwelling unit and is based upon a modular building system.

-walkways along terrace housing promenade is connected with bridges over the sunken driveways.

-vehicular access from public streets is via driveways, maintaining a physical separation from pedestrians.

3. Public/Private

-realms are clearly separated, however, the modular and linear repetition of this concept is mundane. These hierarchies are immediately understood but inflexible and less imaginative than in the previous schemes.

4. Unit Ammenities

-a variety of unit types are available to satisfy the needs of single people, young and old, childless couples and families.

-terrace housing type with protected outdoor balconies as an extension of the indoor living space.

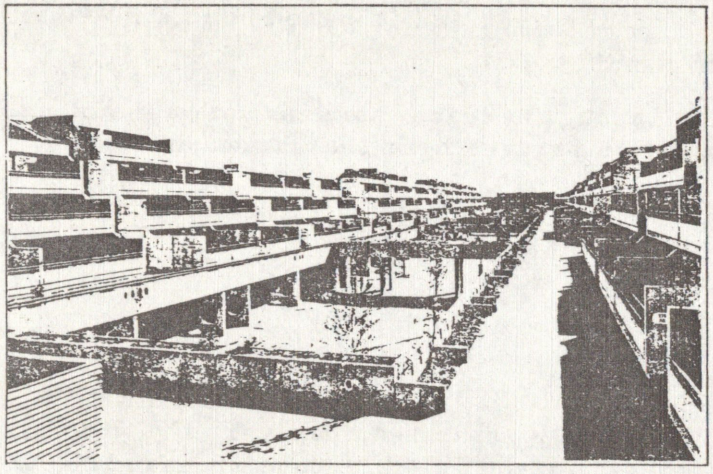
-all dwellings have access to the outdoors either directly (as in the case of ground units) or indirectly (via open or glass-roofed stairs).

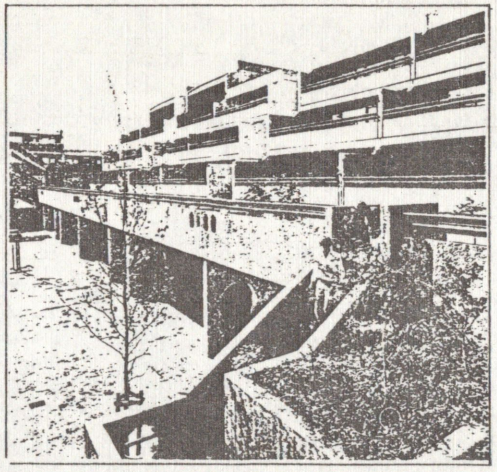
5. Collective Amenities

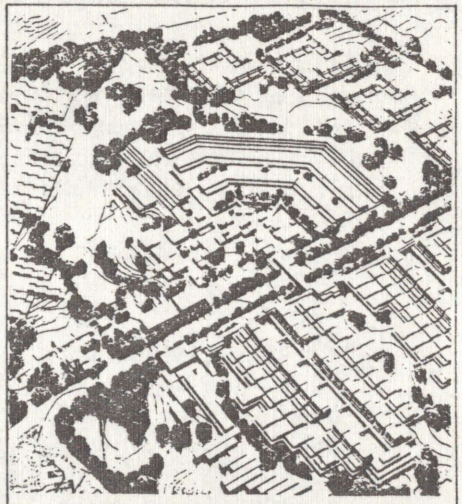
-shopping centre, children's institutions.

-each "neighborhood" unit contains space which residents can collectively arrange and organize.

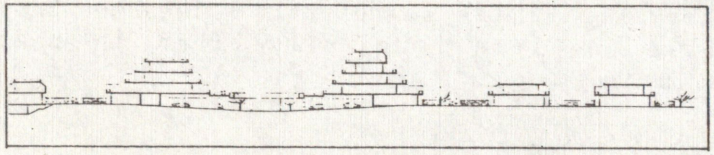
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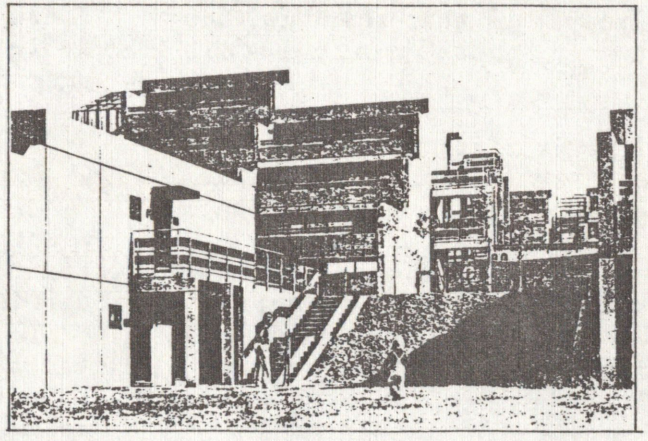


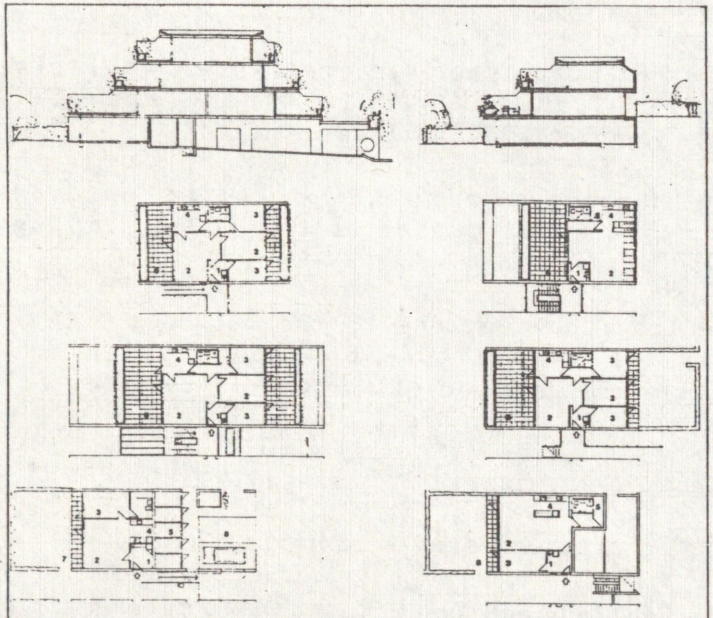




Holmstrup terrassehuse, Århus
Arkitekter: Knud Blach Petersens Arkitektfirma A/S

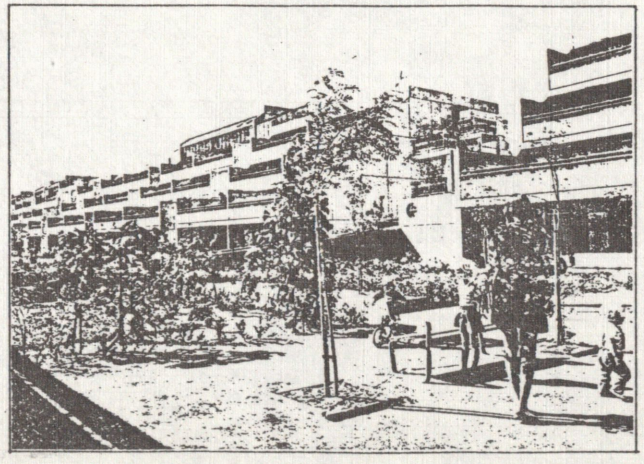


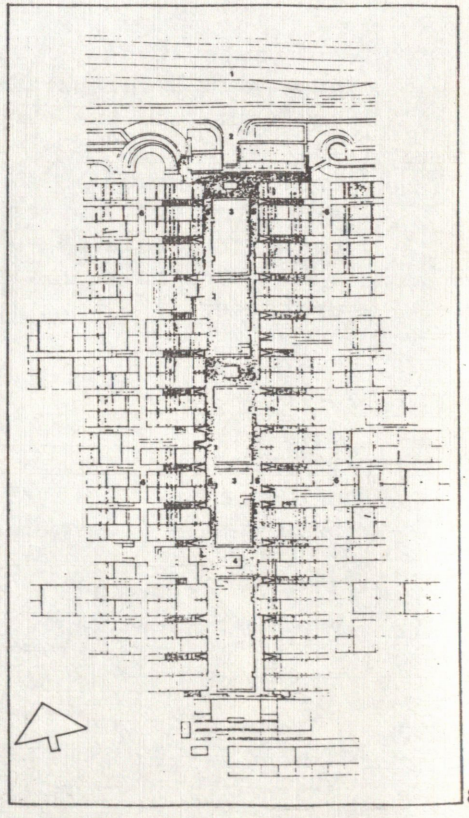




Planer og snit 1:400.
1. entre. 2. ophold. 3. værelse. 4. køkken. 5. depot. 6. terrasse. 7. gårdhave. 8. parkering.

Plans and sections, 1:400.
1. entrance hall. 2. living room. 3. bed room. 4. kitchen. 5. storage room. 6. terrace. 7. garden court. 8. parking.





6. Materials

-built with prefabricated concrete components using a building system permitting considerable variation in the additive architectural construction.

-the component flexibility is seen in a range from one to five level terrace houses.

-public promenades lack the detail seen in the previous cases.

Conclusion

The presence of parked cars is obtrusive and functionally inconvenient (lacks a feeling of safety as residents have communicated).

The hierarchy has separated pedestrians and cars but has also separated many residents from ground contact. This is hierarchically wrong in the social sense of organization.

"Neighborhoods" are spoken of conceptually, but were witnessed as geometric divisions in the modular structure, rather than social grouping by choice.

Concrete has proved in this example to be a cold, hard material and its repetitive use is particularly mundane. However, the addition of greenery has helped to soften the architectural impact, making the environment more liveable.

The excessively long and straight promenades are uninteresting and impersonal and are primarily used for the purpose of circulation. This is most apparent in the central "corridor" where the use of concrete as a path provides little texture.

The major success of this housing example can be seen in the ground level pedestrian promenades:

1. a greener environment, more trees, presence of gardens.

2. noticeable social interaction.

3. residents have de-emphasized the linearity of the path through actively changing it.

4. housing forms diminish in scale from the centre concrete corridor and seem much more family oriented in this case.

CONCLUSION TO THE DANISH SOCIAL HOUSING CASE STUDIES

Site Planning

Clear separation of vehicular access and parking from living and pedestrian activity spaces:

1. in Farum and Holmstrupp this is accomplished through a vertical hierarchy--vehicles occupy the lowest levels.

2. in Fredericksberg vehicles are peripherally situated and are neither physically or visually obtrusive to living or maximum utilization of the site for "people activities".

Siting to ensure public open space for collective activities. A concern for detailing public open space expressed by interesting ground textures, natural light penetration, trees, playgrounds, plazas and soft furniture.

Pedestrian Activities

Concentrating on small social activities.

Walking activities - allow people to use all of their senses, sight, hear and talk, touch, variable speeds, change direction, sit down to rest or observe etc.

People largely evaluate the qualitative amenities in the physical environment by active participation in it. (the realization of its potential through perception and experience):

1. Farum and Fredericksberg seem to have satisfied this concern most apparently through the detailing of site at the ground level. In both these cases the site landscaping has become a concern with no less importance than the housing itself.

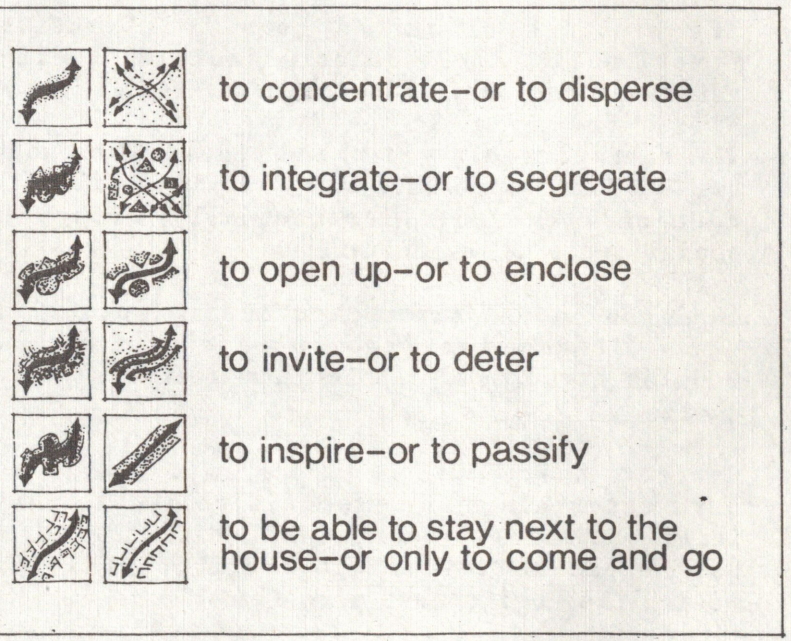
2. Holmstrupp is to a lesser degree successful. The concrete promenades are inflexible to user participation.

CHOICES "a rich variety and choice in the social environment will in many cases, be contradictory to great variety and choice in the physical environment."[13]

Jan Gehl

To ensure that a "rich variety" of social choices exists (ex. interaction) in many cases it is necessary to limit the number of actual physical choices (pathways, entries, directional choice, etc.) to ensure that people may interact by sharing situations.

Learning from the textural quality of ground textures (such as the interlocking tiles at Farum or Fredericksberg)--the quality of the physical environment may effectively slow down pedestrians and make the area seem more lively and attractive to others. Such qualities may not have an affect on necessary activities such as walking to the car, to the bus, or to work because these are necessary functions of daily life. To inspire an active participation in one's environment, that environment ought to be of good quality. Inspired activities such as walking, playing, sitting and observing, for the pleasure of it is not an accident.



9

Fredericksberg, for instance has created a rich walking environment within the site.

-diminishing building scale for light and comfortable interface with pedestrians.

-textural interest (buildings, path, plants, grass and people).

-visible activities - (elderly engaged in hobbies, mothers with young children).

-meandering path (surprises, changing orientation).

Materials

Undoubtedly the rich choice of materials one experiences in Denmark is a cultural manifestation, but, materials do however express an attitude of concern for environmental quality.

A study conducted in Scandinavia has shown that more persons/hour are walking than driving cars. This has in part become a reason to express more concern for the pedestrian environment.

Public and Private

-a concern for interface.

-softening interface with low fences, semi-private courtyards, benches.

-a concern for gradation from public to private (this can be witnessed especially in Fredericksberg.

-semi-private areas adjacent to front doors can be effective in enhancing social interaction between residents and passerbys. (In Fredericksberg a major factor in the success of these spaces as vital communication links was the presence of sunlight--terracing back to allow greater depth of penetration).

-privacy is in transition from entry further into the dwelling offering increasing amounts of privacy (In the Farum example one enters the two level units from a public passageway and by reaching the second level has attained the greatest amount of privacy--location of living space).

High Density and Scale

After studying numerous examples of housing typologies while in Denmark it became quite apparent why the current trend was to lower-rise ideas.

Hi-rise housing examples seemed to exhibit similar tendencies--lots of movement to and from the building but fewer instances of social interaction or inspired activity. This in part may be attributed to the anonymous and impersonal housing forms but discussion with several residents proved the case to be largely inconvenience. Outdoor activities were largely seen as inconvenient because of the physical distance involved in getting to the outdoors. Lack of visual and physical orientation with the ground was also a consideration because the act of going outside becomes a less of a spontaneous activity.

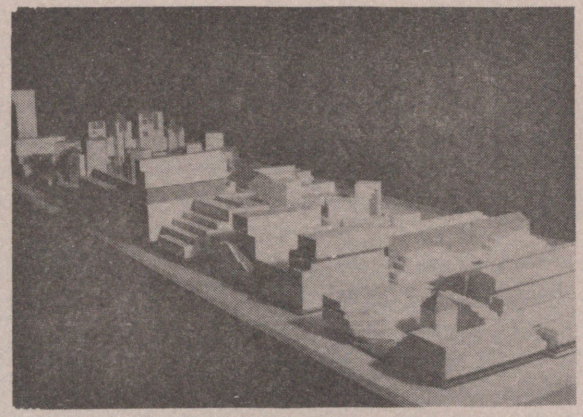
Unit Ammenities

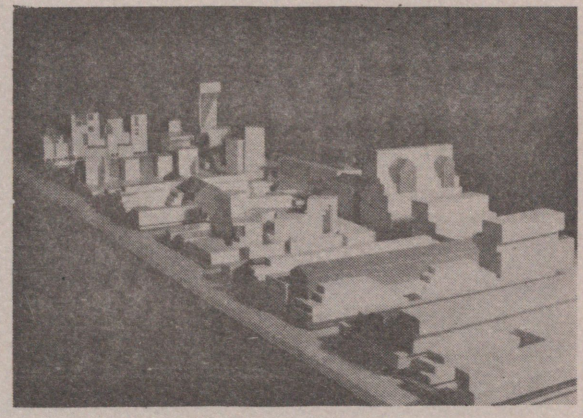
Daylight is essential and direct ground access is preferred, balconies and terraces serve the outdoor space problem at higher levels but may not encourage social interaction.

Providing a variety of dwelling types helps to encourage a rich choice of users.

> -in all the cases studied the presence of various age groups was encouraging. This seemed to suggest a healthy user mix that is culturally appropriate to Danish society.

The process I have witnessed in these very different case studies is proof that there are architects and public authorities in Denmark who respect the architecture of housing as an artful contribution to enrichen the environment.





8.0 SYNTHESIS : TYPOLOGICAL MASSING STUDIES

1. **FRAGMENTED TYPES**
2. **LINEAR MASSING TYPES**
3. **HYBRID TYPES**

8.0 SYNTHESIS: TYPOLOGICAL MASSING STUDIES

-The purpose of the massing investigation is to transpose key ideas to three-dimensional form, to test the flexibility and reaction of certain ideas compiled from the research so far.

-The application was seen as a hypothetical one based upon the regularity of Edmonton's street infrastructure.

-The models are not meant to be definite recommendations for concrete situations but should be understood as thoughts for structural attempts to actualize specific housing types in search of hybrids. The main types studied were:

1. interior street
2. point-tower
3. terrace house
4. podium or roof-garden.

Group 1 - Fragmented Typologies

Introduction

Group 1 is representing clusters of high density units, that each have their own individual identity. It is also characterized by high density solutions that leave a base or part of the site open for recreation or shared activities. Many of the housing forms are prismatic in nature and allow light to penetrate at the corner interces. It is anticipated that such housing would be most appropriate in high density urban areas which would benefit from open space, light penetration into the site, and a strong ground level commercial component, combined with high density high rise housing forms. This housing is aimed at non-family oriented users.

A. figure 1

-separate buildings allow users to identify with each individually.
-varied paths into each small tower.
-shared or collective space exists at platform level.
-possible commercial activity at base.
-sunlight is allowed in at corner of glass prisms.
-parking below grade.

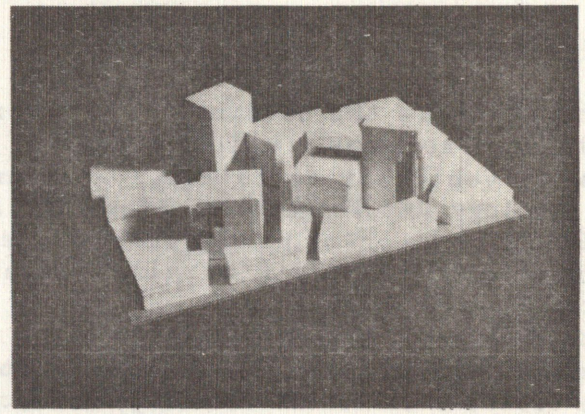


figure 1

B. figure 2 and 3

-separate buildings create separate identity for various users.
-entry is shared, along with a linear corridor or internal street that could house commercial activity or collective recreation space.
-towers vary in height.
-on one side the typology meets grade - leaving the ground free for recreation space. On the other side the building is sunken into a platform which houses commercial and parking space (with the roof free for a play and collective exterior space).
-sunlight is allowed in at corners of glass prisms.

C. figure 4 and 5

-in this example the housing forms are raised on pilotis or columns, which straddle an alley allowing vehicular circulation to occur beneath. This typology simultaneously allows for a park or public space to occur at the base of one side and a raised platform with varying plazas on the other.
-separate "towers" grouped together allow different fenestration patterns and different roof forms which create a different identity for each tower.

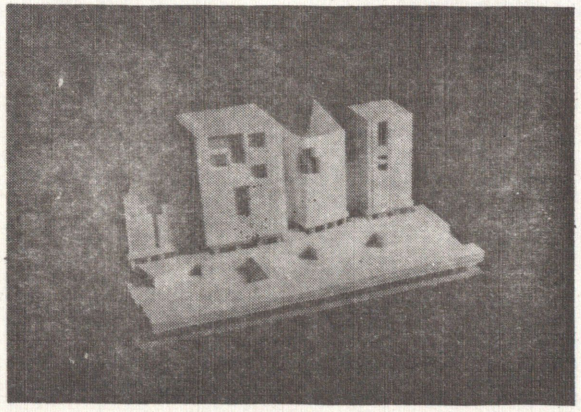


figure 4

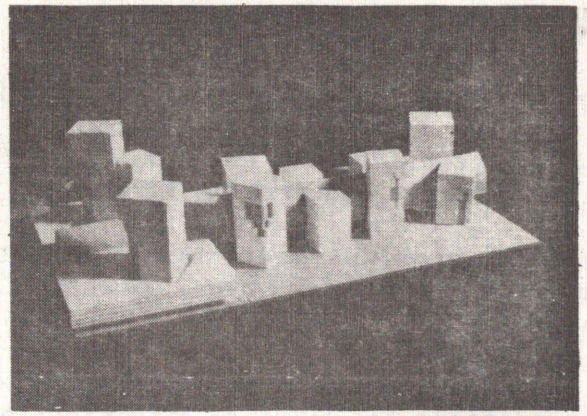


figure 2

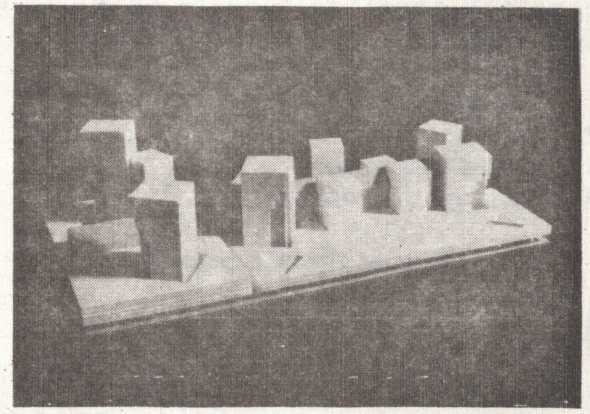


figure 3

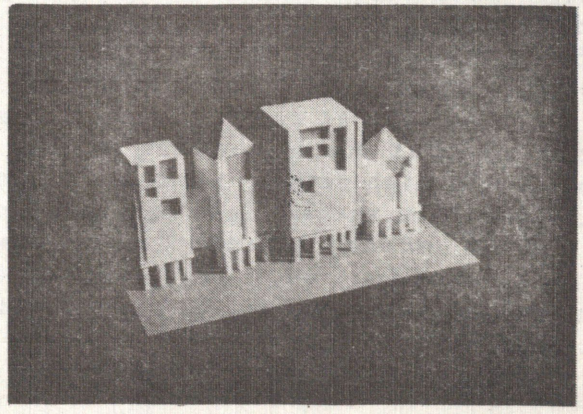


figure 5

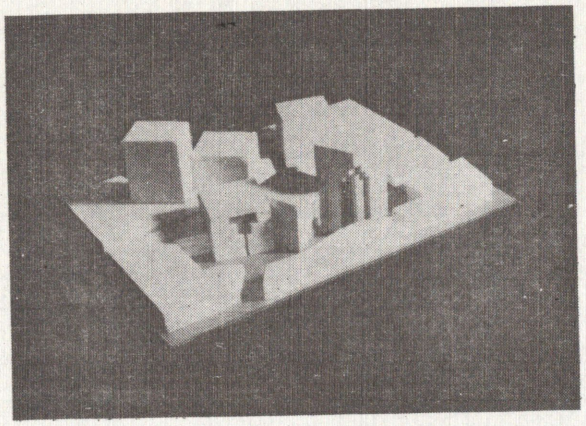


figure 6

-pedestrian linkage occurs at +2 to +8 levels, which may be suited as a collective space (interior street, atrium etc.).
-common space occurs at base, through which all users must enter.
-parking is located beneath grade or in platform.

D. figure 6

-housing units are clustered together, possibly shared or collective space could occur at points of tangency.
-external court or plaza is surrounded by platform area which could potentially house collective spaces / commercial / and or parking.
-towers have separate identity.
-towers in centre of block allow great amount of sun penetration into the site.
-various entries from street allow user choice and flexibility.

Group 1 - Conclusions

1. identity - group identity has been implied in the form language of the towers themselves, but individual privacy would require more detailed examination. The ammenities of air, light and view were strong considerations in the tower typologies and a force that was examined in the site arrangement of elements.

2. collectivity - siting and vertical organization hierarchies were conscious decisions to make ammenities to the general public and the user groups for open space. User group collective space was typically realized as a physical separation (enclosure or platform) from the most public pedestrian realms, allowing for the user groups identity with that space.

Group 2 - Linear Massing Typologies

Introduction

Group two is represented by long narrow housing masses that produce a very uniform and rather anonymous image. More individualized identity would have to be created through detailing, material choice and facadal layering which would occur later on in the design process. Most of the housing schemes are characterized by large shared or collective spaces which are either interior or exterior. Many are organized along a long narrow interior street or atrium space which sheds light, pedestrian activity and life into the core of the housing type. This typology is anticipated to be appropriate for a variety of user types and meant to contain an active commercial component at lowest levels, making it in terms of scale and functioning appropriate to an urban district outside the central business district.

A. figure 7

-one singular building or form.
-one main entry.
-shared or common space is clearly defined by a central atrium or interval street which also allows for an abundance of natural light.
-possible commercial activity at base.
-terraced form increases the amount of sunlight and recreation or leisure space for each individual housing unit.

B. figure 8

-this is a direct variation of figure 7 where the single atrium is replaced with a double atrium, the advantage is that this gives the resultant interior space more visual complexity and interest.

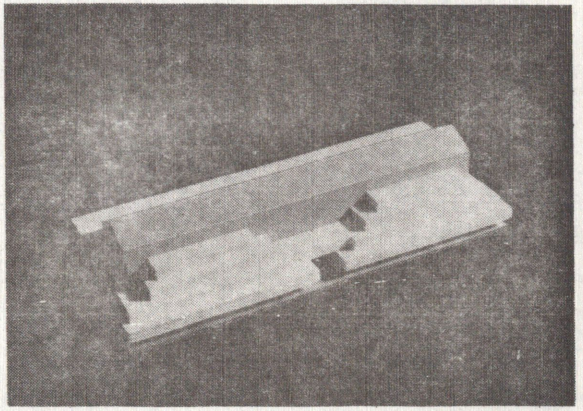


figure 7

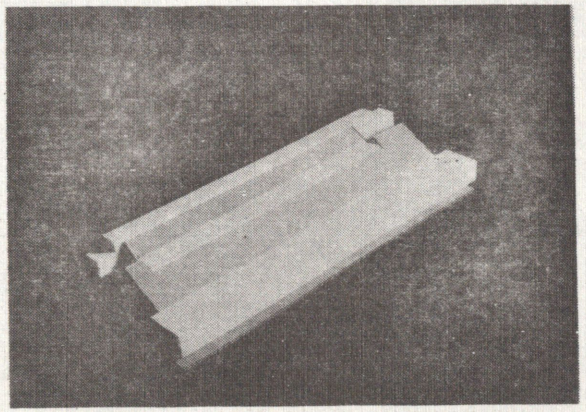


figure 8

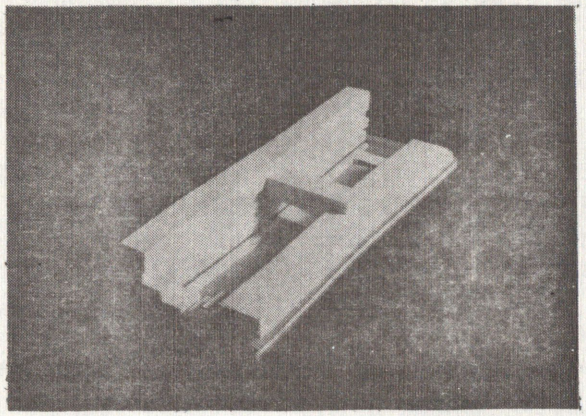


figure 9

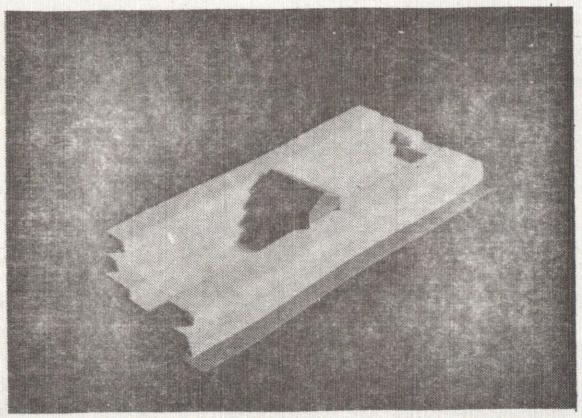


figure 10

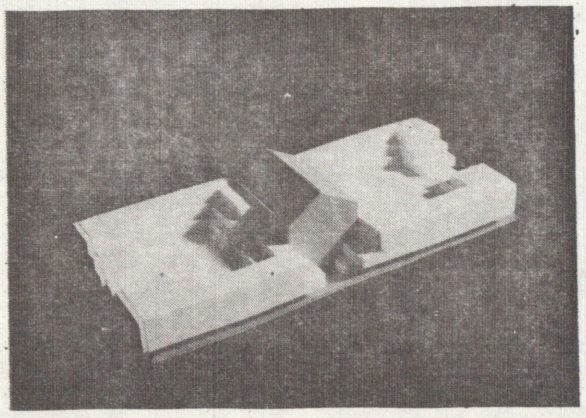


figure 11

C. figure 9

-this typology is similar to the previous one, although the closed atrium or collective space is replaced by an exterior one.
-two linear housing forms are bridged by a common pedway. The resultant exterior space is one which can be visually observed from either side of the housing forms, allowing maximum air, sunlight, and visual continuity between users of either side.
-entry seems most likely to occur on the width or narrower sides.

D. figure 10

-this typology is a direct variation of figure 9 where the connecting bridge is given a stronger statement (identity) by enclosing it within an atrium.
-the terraced sides maximize air, sun and visual penetration into each of the housing units.

E. figure 11

-in this typology the bridging element becomes an integral part of the form as opposed to a "link". Entry occurs through and within it, and it functions as a collective space (gathering, recreation space, possibly containing a commercial component within it.
-this large atrium not only connects the two housing forms on either side, yet also serves to nourish the two halves with light, energy and recreation and maintain a more public aura. A collective node.
-the two housing components remain relatively private, each having their own outdoor plaza or recreation space which provides visual continuity and a sense of community. (safe place for children to play, old people can sit and watch activity)

-terracing allows maximum sun and wind penetration, views and outdoor balcony spaces for each individual unit.

Group 2 - Conclusions

1. identity - egalitarian concern for view, light, air, and access to collective space for each individual is a primary organizing element in these overtly linear typologies. Further detailing would be necessary to explore the possibilities for privacy and individual identity in these anonymous forms.

2. collectivity - the typical linear interior/exterior streets is a concern for collective space as a focal point and organizing principle for the housing itself. Wherever possible the ammenities of collective space have been considered for the general public (mainly commercial level) and the users (interior/exterior streets and raised plazas).

Group 3 - Hybrid Typologies

Introduction

These typologies may be characterized by their attempt to create a statement which is simultaneously individual and anonymous. This is achieved through formal statements which imply collective form (such as in long singular housing masses) and slightly more fragmented and personalized building forms where detailing creates various user identity with the housing types.

A. figure 12 and 13

-on one facade - identity remains hard, urban and fairly anonymous.
-the other major facade reveals a variety of entries leading into common areas which could be

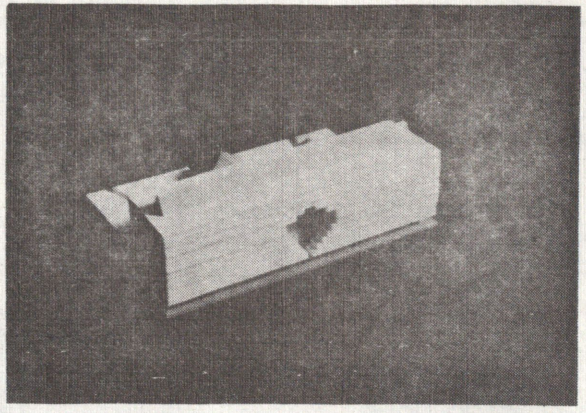


figure 12

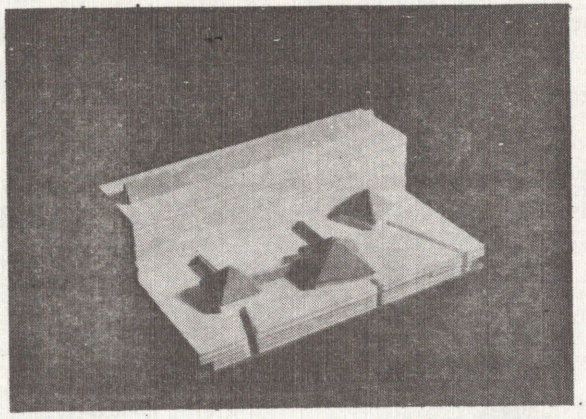


figure 13

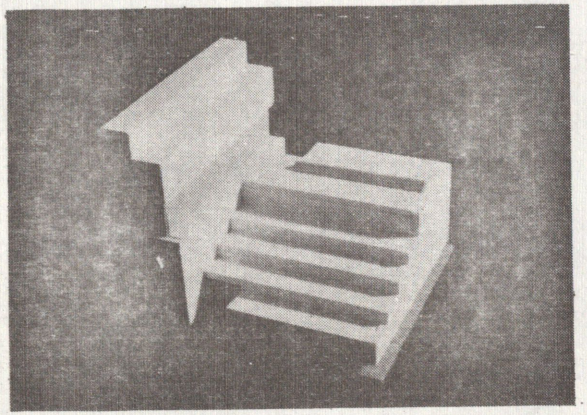


figure 14

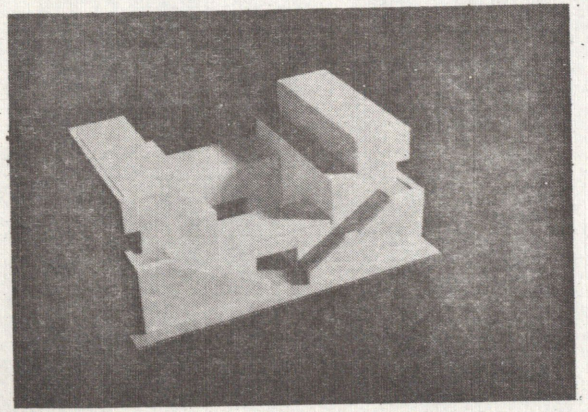


figure 15

designated as recreation spaces; pool, green space, lounge, daycare. This lower platform could house more housing units or (a greater variety of housing mix) or could house activities of a commercial nature.
-the long narrow housing form has a singular shared entry and central skylight which provides orientation, light and visual focus.

B. figure 14

-fusion of terrace housing - platform and tower terraced housing.
-no common outdoor space.
-singular entry.
-integrating atrium or winter garden at an upper level.
-terraced area - condensed, maximum light, air, views, balconies.
-atrium circulation.
-little effort to create collective space.

C. housing around a courtyard - figure 15

-courtyard remains focus of housing typology - and is main organizing principle. It also serves as a public thoroughfare and is in part - an element of the public - semi-public realm.
-diagonal stair represents facadal layering which indicates to the public the presence of a private realm belonging to housing residents.
-stepback form is a response to increased light penetration into the individual housing units.
-commercial component is intended to occupy the lowest level of courtyard to encourage pedestrian movement through the site.
-this application seems feasible for a dense urban and more commercial area.

D. combination tower / platform - figure 16

-major axis through the site forms the axis of the podium - commercial component occupies the lowest level and office are intended to be mixed with some housing to complete the podium.
-tower form is connected to podium on columns and via an "umbilical" core. It is totally dwelling oriented and the spatial organization is peripheral to the breakdown of the outer "skin" for light penetration.
-within the tower is a multilevel winter-garden increasing in size in the vertical upward direction.
-this example is scaled to contend with a high rise, high density setting with a heavy commercial climate and least amount of familistic orientation.

Group 3 - Conclusions

1. identity - the identity of dwelling itself has been hierarchically raised above the most public lower realms in all of these typologies. The questionable aspects of user privacy / identity will likely emerge out of concerns for entry and circulation / transition from the public / commercial realm to the dwelling units. This is a serious question of hierarchy in all the typologies. User identity would likely evolve in greater concerns for unit ammenities and upper level collective space coupled with site location relative to views, downtown, etc.

2. collectivity - is in part the sensitive mixture of a strong commercial component with dwelling units. Every ammenity should be provided to the residents for privacy and clear separation from the commercial component yet the equal ability to enjoy the public services. Thus the issue of collectivity is both the marrying of the residential/commercial components and the designation of collective ammenities that are clearly residence oriented only.

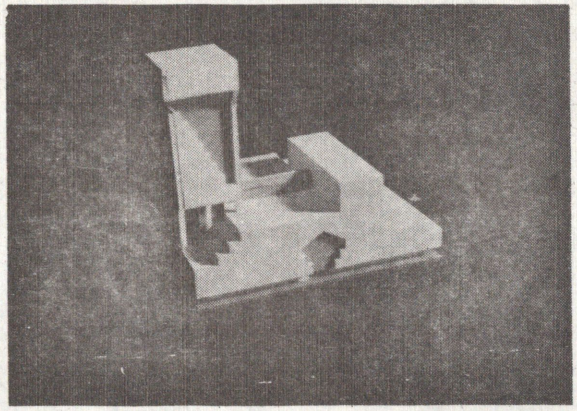
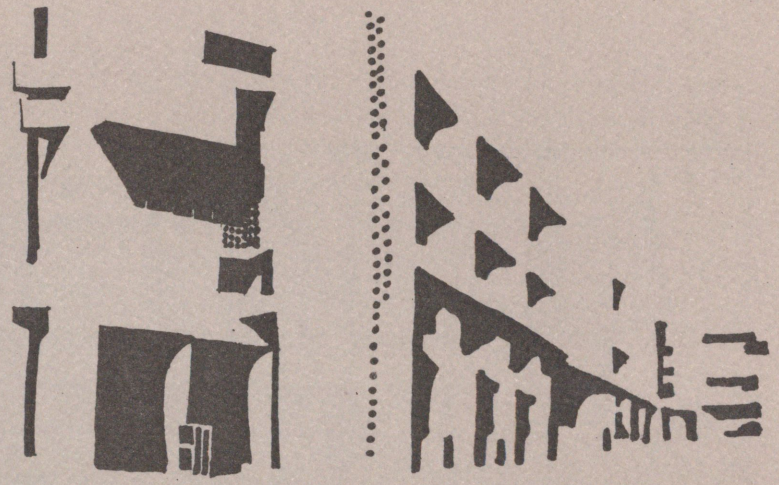


figure 16



9.0 DESIGN PROCESS

9.1 DESIGN OBJECTIVES

9.2 DESIGN DEVELOPMENT

10.0 DESIGN DOCUMENTATION

9.0 DESIGN PROCESS

9.1 DESIGN OBJECTIVES

A. Site Considerations

Edmonton was selected as an example of a Canadian city with a growing urban centre and increasing demands for inner city housing to meet the needs of a growing population. Other such cities with similar trends are Vancouver, Calgary, Toronto and Montreal. Edmonton was chosen out of personal familiarity with its structure and for ease of documentation.

Two districts have been chosen for hypothetical housing application:

1. Warehouse district
2. inner city residential district.

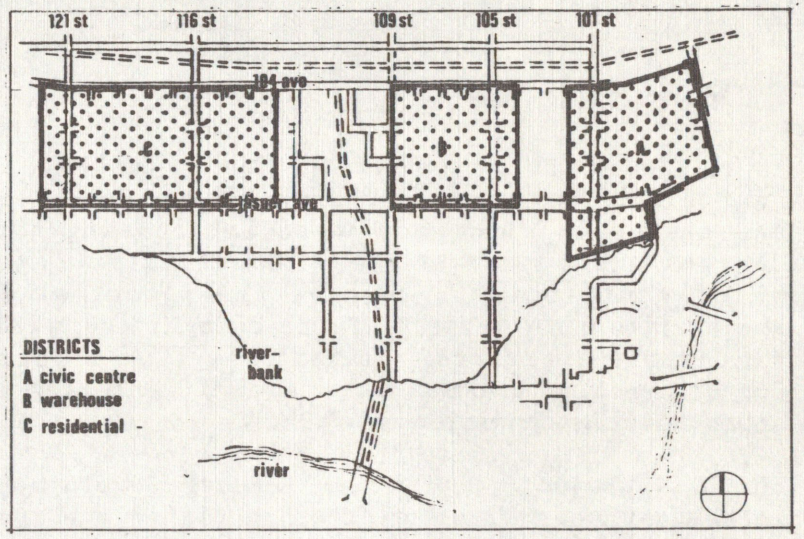
It is acknowledged that some of the districts may be more suited than others, but, I am assuming that housing could be feasible in each of them.

The purpose of the investigation is to determine an appropriate mix of housing / users / commercial / parking / open space specific to each of the two districts.

The appropriateness of the individual districts for housing will be evaluated in accordance with character, scale, density, land use, movement patterns and user ammenities within the district.

B. Typologies

The designated districts represent typical divisions of Canadian City cores, therefore the application of housing to each of the districts may



DISTRICT TYPOLOGIES

be considered as a typological application to each of the major cities discussed.

The development of two typologies is meant to test the flexibility and reaction of certain ideas at several scales.

C. Design Statement

To reiterate the purpose of the design problem, the search will be primarily focused towards spatial and aesthetic discovery in social housing form. The goal is to create two housing typologies which would be seen to have the potential for application in a variety of Canadian cities within comparable districts. In this way it is a search for alternative housing form towards improving the urban housing condition in Canada.

For this project, new social housing developments in the downtown areas of Canadian cities are aimed at smaller households and moderate to high incomes. Thus the emphasis on aesthetic exploration (form and spatial quality) that social housing could take on is both a personal interest and a response to user groups seeking innovative inner-city housing forms. A major concern will be the search for the expression of user group identity (privacy, individuality, light, air) and collectivity (shared space ammenities) as attributes of form at the scale of a single building.

Since the various contexts for application are discriptively outlined, it is realized that the design solutions will take on a hypothetical appropriateness to a site condition. As in any typological problem the solutions are not meant to be definite recommendations for concrete situations, but should be understood as thoughts for structural attempts to actualize personal ideas. The facades shown should not be seen as final solutions, but only as basic structures which can reach their specific, elaborate form only when realized as departure points for more specific design development where each design may evolve as an intrinsic part of the surrounding physical landscape.

9.2 DESIGN DEVELOPMENT

A. CONSTANTS

1. Typical Unit Types

Family units - Dwelling units which will probably contain children are defined as family units. These will include 2, 3 and 4 bedroom units. Ideally these units should:

1. have a separate, non-mechanical entry from the outside. (identity)

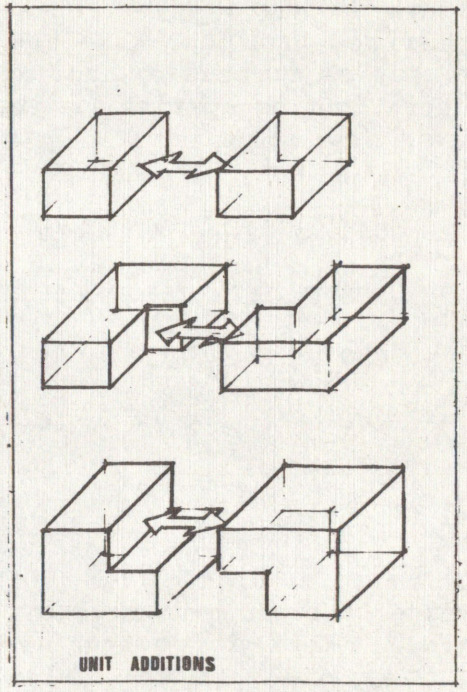
2. have a private exterior space adjoining the unit.

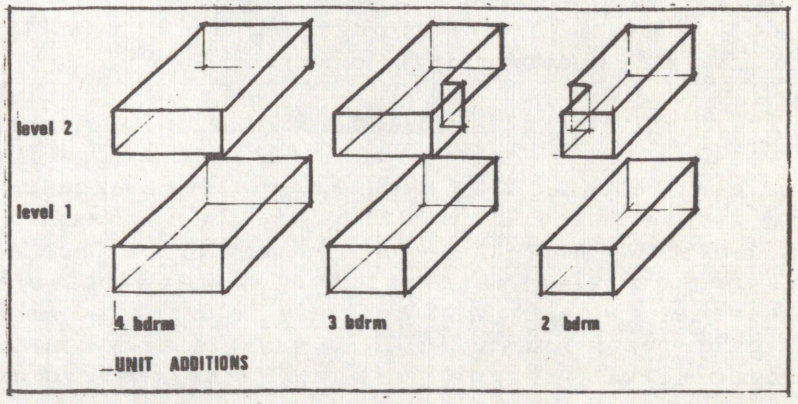
3. have a shared exterior play space adjacent to the dwelling which may be observed by parents. (collectivity)

From the case studies it has been extrapolated that it becomes difficult to maintain these ammenities at densities greater than 40-60 units/acre, however, greater densities may be achieved by combining family and non-family units without sacrificing the quality of the family units themselves.

Non-Family units - This will include young or elderly singles and couples for this problem. These units are typically characterized by 1 and 2 bedroom units occupied by adults without children. They are assumed to be united to elevator access and can be clustered densely in hi-rise form to reduce the cost of land per dwelling.

It has been found that a density of 80-150 units/acre[14] is possible without sacrificing the potential quality of the living conditions in terms of identity.





POSSIBLE DWELLING UNIT COMBINATIONS

2. Typical unit sizes

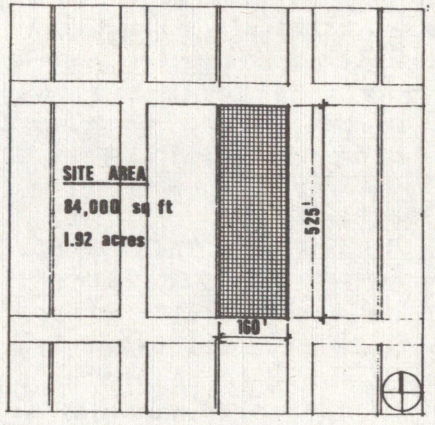
For volumetric considerations and site planning purposes typical unit sizes have been established as guidelines in the design process. They have been synthesized from the case studies and HUD figures[15], but as numbers **are not meant to imply unit configurations or spatial quality.**

	minimum	maximum	average
1 bedroom --	600 sq ft	800 sq ft	700 sq. ft.
2 bedroom --	900 sq ft	1100 sq ft	1000 sq. ft.
3 bedroom --	1000 sq ft	1300 sq ft	1150 sq. ft.
4 bedroom --	1200 sq ft	1500 sq ft	1350 sq. ft.

3. Typical Site Size

Inherent in many Canadian cities is the underlying infrastructure that patterns movement and building organization. This infrastructure or "block" patterning is typically quite regular, especially in the city centres and most immediate peripheral districts. This has occurred as a result of relatively modern city planning.

The two districts chosen for housing application in this thesis are comprised of similar block sizes, repeated in a regular grid-like manner and for ease of comparison they will be assumed to be identical. A further assumption will be that each site condition is completely flat and that the longest proportion of the site is oriented on the north-south axis. In this way the sites become typological, that is, assumed to be a structural similarity found in every major Canadian city.



Site area 160 ft x 525 ft = 84,000 sq. ft.
= 1.92 acres

4. Parking requirements

It has been assumed for flexibility of site possibilities within each district that parking be considered as an integral part of the site condition.

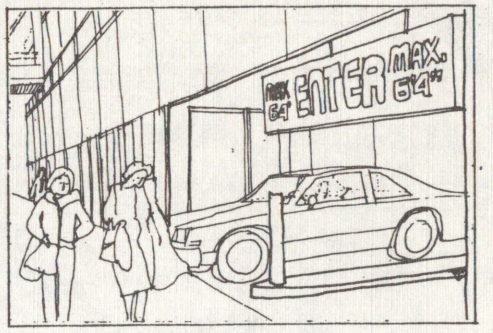
Residential - 1 stall per bachelor or 1 bedroom unit.
1.5 stalls per 2 bedroom unit.
1.75 stalls per 3 bedroom or larger unit.

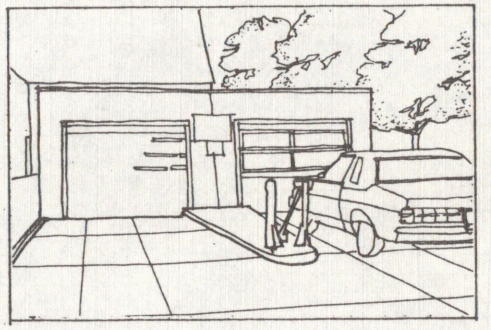
Commercial - 1 stall per 1,000 sq. ft.
1 stall per 2,500 sq. ft. if connected directly to light rapid transit. (subway system).[16]

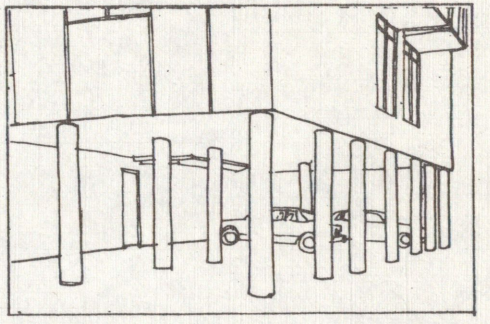
5. Explanation of Density

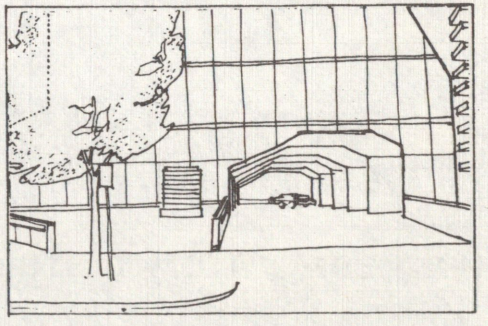
Density (Defn.) - Quantitative description of housing in terms of a ratio of floor area, dwelling units or people to the area of the site.[17]

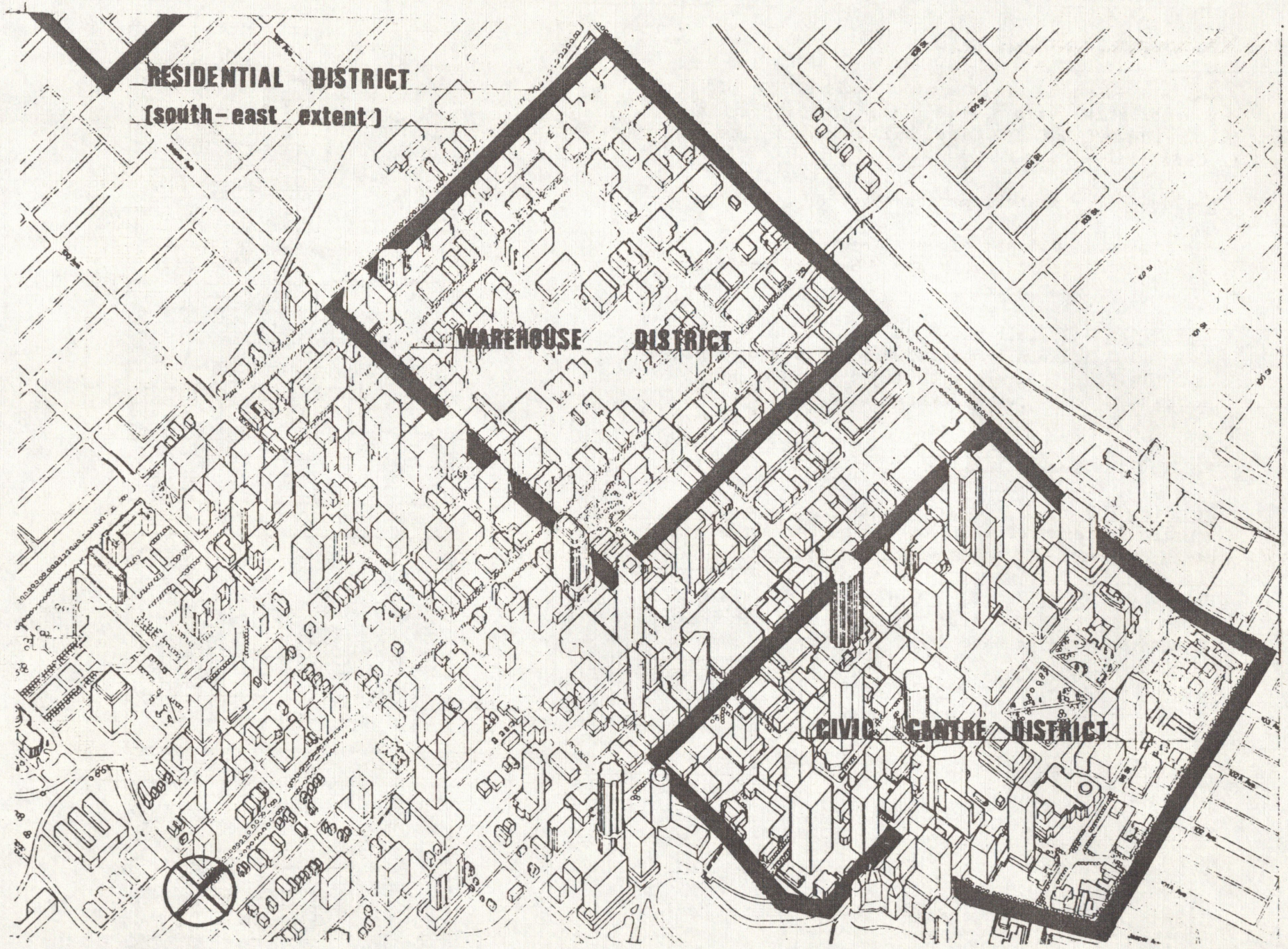
Floor Area Index (F.A.R.) - refers to the number of square units of building floor area to the number of square units of site area.











DOWNTOWN EDMONTON - DISTRICT DIVISIONS

B. DISTRICT SCENARIOS

Warehouse District

1. Boundaries - The Warehouse district is bounded by 104 Avenue (CNR tracks) to the north, Jasper Avenue on the south, 104 Street to the east, and 109 Street to the west.

2. Physical Characteristics

Character - Although this area is known as the Warehouse district, in fact there is not a heavy concentration of warehouses.

The area was planned to serve the needs of wholesale, light manufacturing and storage. Such functions have tended to gravitate to the city periphery in recent years, but not incurring a significant change in the built form.

The area is mostly dominated by retail, restaurants and professional offices.

The warehouse district is however a slowly transforming downtown district and a constant reminder of Edmonton's evolution and past function.

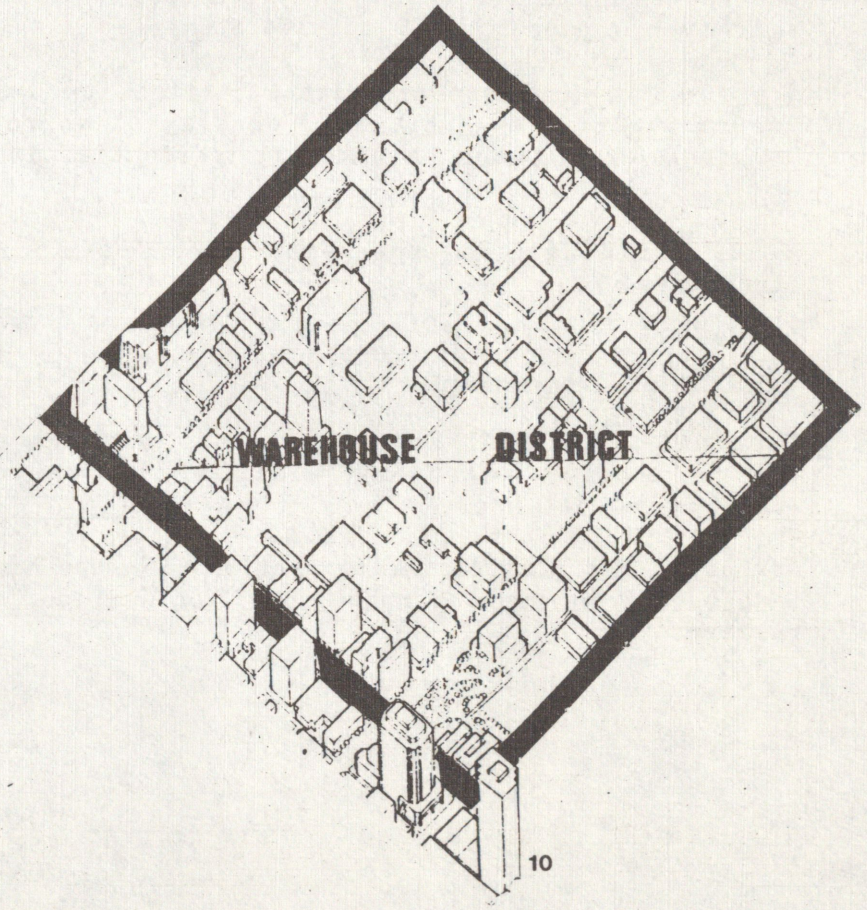
The buildings are predominantly brick, an older style of architecture with more detailing than many modern examples of the area. (See Warehouse District Schema)

There is very little in the way of pedestrian concern at the 1-2 story level, introduction of some awnings.

Noise is generated primarily from vehicular traffic and is moderate confined mainly to daytime activities.

Street width is a constant 80 ft for most of this district.





Vegetation is minimal, landscaping is a means of making this area more comfortable for pedestrians. The potential for parks and landscaping is excellent considering how under-utilized this area is.

Circulation - automobile traffic is moderate, and the abundance of open space and meters presents few problems for parking.

Pedestrian traffic is low because there is little retail and general ammenities to be found in the area. The exception being Jasper Avenue to the southern boundary of the site which is a busy retail hub.

Bus routes circulate on the busy avenues, 104, 102 and Jasper Avenue and 109 and 106 Streets.

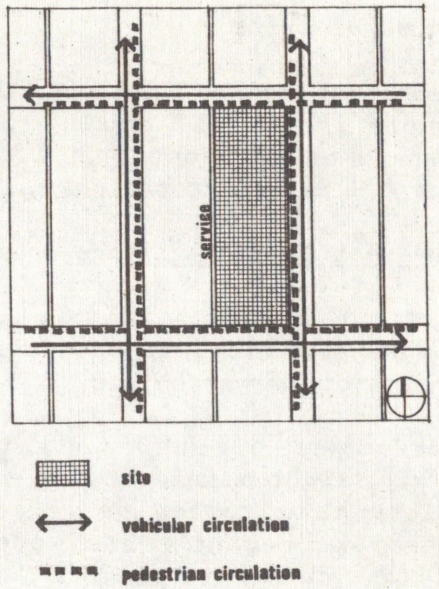
Scale - The warehouse district maintains low land values ($20-$30/sq. ft.) and a density of approx. 26 people/acre (based on existing residential land use).

Most buildings in the area are 1-5 story structures.

3. Predominant Land Use

Currently this district comprises a mixture of office, storage, secondary retail, wholesale and light industrial uses.

Approximately thirty-five percent of the land area is presently vacant and mainly used for surface car parking.



SITE CIRCULATION



WAREHOUSE DISTRICT CHARACTER

There is very little housing in the area, although a large high density development was completed on 109 Street.

The environment is largely inadequate for an appropriate residential environment, largely due to the quality of the streets and landscaping. It is felt however, that the addition of housing would be a beneficial contribution provided that it could contribute to the quality of the streets as the primary public realm.

4. Ammenities to the User Groups

Singles - Ammenities - some restaurants, night clubs, close to place of work and major transportation routes.

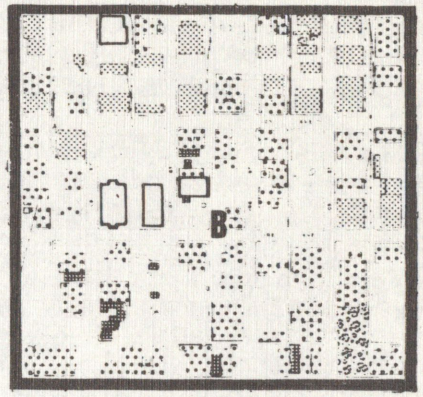
Ammenities lacking are recreation (tennis, swimming, jogging, etc.) and choice of grocery stores.

Young Families - Ammenities - same as above.

Amenities lacking are school, grocery shopping, laundromats, parks to play in, general recreation, proximity to other housing.

Old people - Amenities - proximity to Oliver district some senior clubs are located, some restaurants, proximity to public transit.

Amenities lacking - activity in general area for interest and enjoyment to watch, parks, adequate grocery shopping.



LAND USE LEGEND

INSTITUTIONAL / PUBLIC
COMMERCIAL
WAREHOUSE / INDUSTRIAL
RESIDENTIAL



WAREHOUSE DISTRICT CHARACTER

Strategy

To "marry" the old with the new, to allow for the life and vitality of the surrounding city centre to flow into the existing underutilized area.

To consider a street level commercial component that will contribute to a wide range of activities (restaurants, laundry, food stores, bars).

To consider public open space or street parks providing places where people could comfortably sit.

User groups

To encourage housing for an even mix of the three user groups.

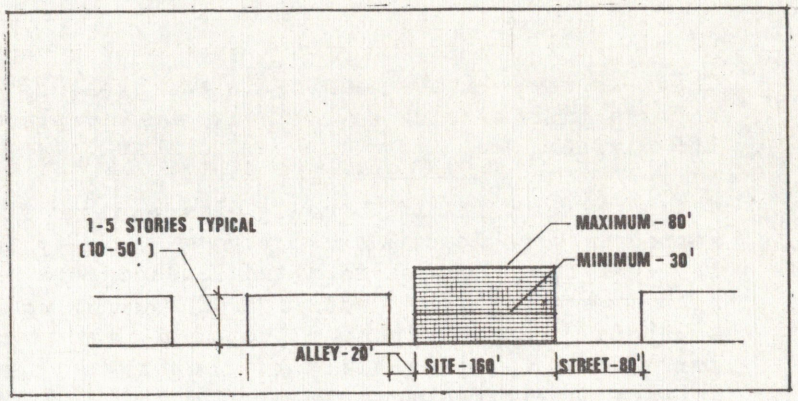
Suggested Residential Density	minimum	3.0 F.A.R.
	maximum	5.0 F.A.R.
Suggested Commercial Density	minimum	1.0 F.A.R.
	maximum	2.0 F.A.R.

Residential District

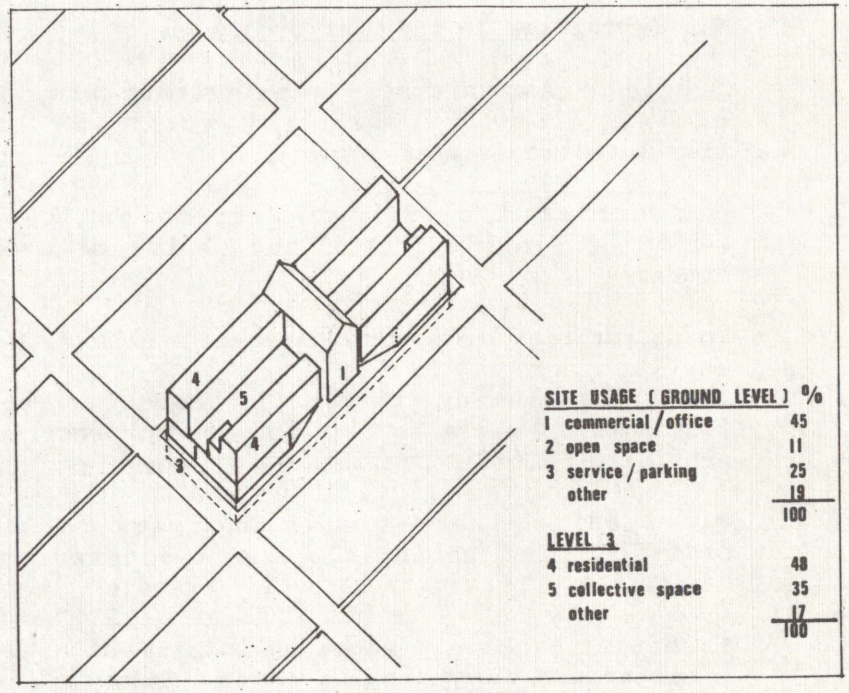
1. Boundary - Inner-city residential neighborhood - district of Oliver. Area of study bounded by 104 Avenue to the north, 122 Street to the west, Jasper Avenue to the south and 113 Street to the east. This district is considered to be bordering the downtown area proper.

2. Physical Characteristics

Character - This area has been changing over the past 20 years from what was primarily a single family dwelling neighborhood to the inclusion of higher density housing in a variety of forms ranging from low to high rise. However, it still remains a primary residential district.



BUILDING ENVELOPE STRATEGY



SITE USAGE STRATEGY

Of the single family dwellings that remain many are older wood frame structures (50 years or more).

The area is heavily treed with mature deciduous types giving the district a unique, intimate character.

In complete contrast to the Warehouse and Civic districts, the Oliver area is typified by building setbacks, rendering a "softer" building/street interface.

While the setback requirement requires new housing to set back from the street at ground level, the end result has often been towers in landscaped reserves. Considering the bad design of some of this landscaping some flexibility in the requirements would permit a more satisfactory use of this otherwise ambiguous and unused space.

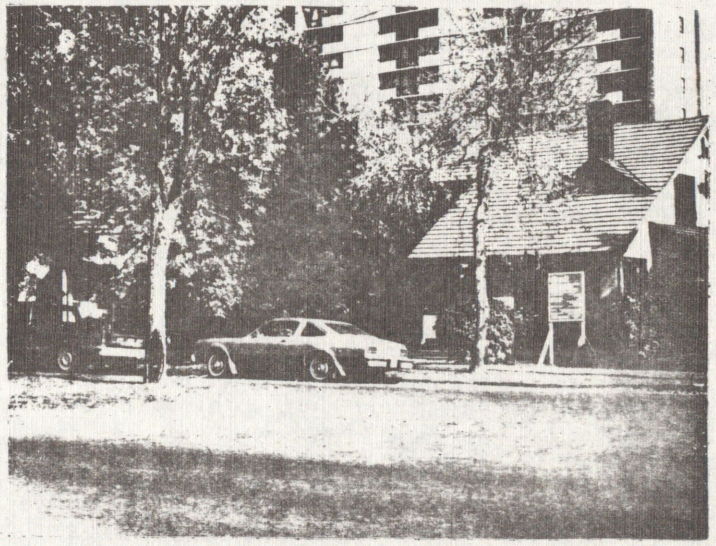
The trend in recent years has been to slowly replace single family dwellings with higher density housing mostly in the form of condominium apartments. This trend is the result of numerous factors, particularly the rising cost of construction and money and the expectation for higher returns on condominium sales.

Jasper Avenue at the south edge of the district study is the major retail hub which links Oliver to the C.B.D. This retail component primarily serves the local residents.

Paul Kane Park is a major focus in this district, being the only major park in the area.

Noise is mainly vehicle generated and unobtrusive.

<u>Circulation</u> - The main vehicular routes in this district are Jasper Avenue and 104 Avenue mainly serving the downtown.





INNER-CITY RESIDENTIAL DISTRICT CHARACTER

Traffic is moderate within the district and more pedestrian and cycling activities become evident.

Bus routes link the District to the Downtown area, a distance not exceeding two miles.

Scale - The Oliver district consists primarily of 1-4 story dwelling structures with several hi-rises in the 8-15 story scale.

The presence of hi-rises in this district speaks about the pressures of the downtown nearby. Transition problems in scale are evident if one considers the adjacency of a hi-rise structure and a single family dwelling.

The land value is low (approx. $10-20/sq. ft.) and a density of approximately 215 people/acre was based on existing residential land use. The assumption was:

50% single family dwelling @ 1.0 F.A.R.

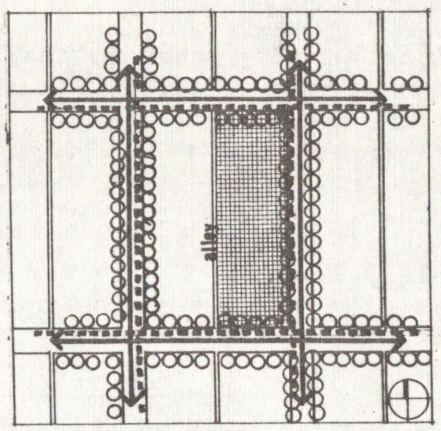
20% walk-up apartments @ 2.0 F.A.R.

20% circulation, institutional, other @ 0.5 F.A.R.

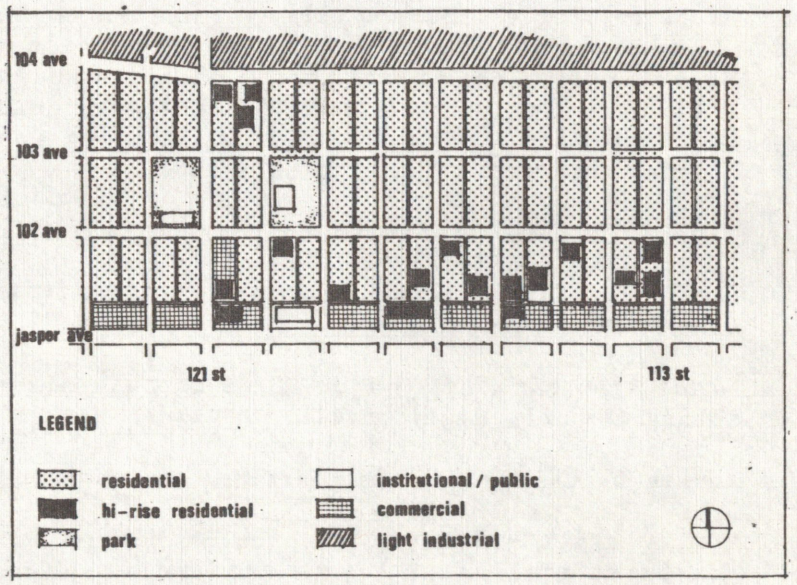
10% hi-rise apartments @ 7.0 F.A.R.

3. Predominant Land Use

The Oliver area under study is a primary residential area supported by schools, a park, churches, recreation facilities such as a pool, hockey rink and the peripheral main arteries are strip developed with commercial ammenities.



SITE CIRCULATION



LAND USE

4. Ammenities to the User Groups

Singles - Amenities - proximity to work, public transit, and recreation facilities, ease of parking.

Amenities lacking - downtown ammenities are not within walking distance. (shopping, cultural and work)

Young Families - Amenities - proximity to school, churches, recreation, park and play areas, other families.

Amenities lacking - laundry, stores, and shopping.

Old people - Amenities - proximity to senior club and facilities, bus stops with routes downtown and parks. Mixture with families is good for people watching.

Strategy

To reinforce this area as a primary residential district and to prevent the intrusion of major office/commercial components.

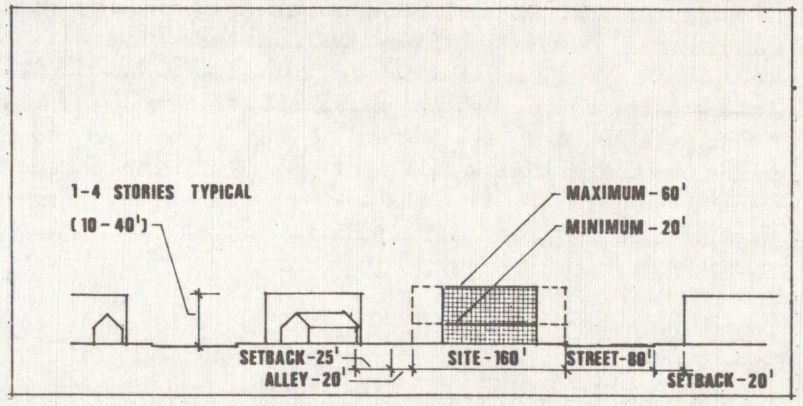
To consider the provision of collective activity spaces such as laundry, open and play space, indoor recreation as well as a minor commercial component at ground level to serve the local residents.

To provide dwellings at a scale enhancing the identity of individuals and family units and to create a form dialogue complimentary to the character of the area.

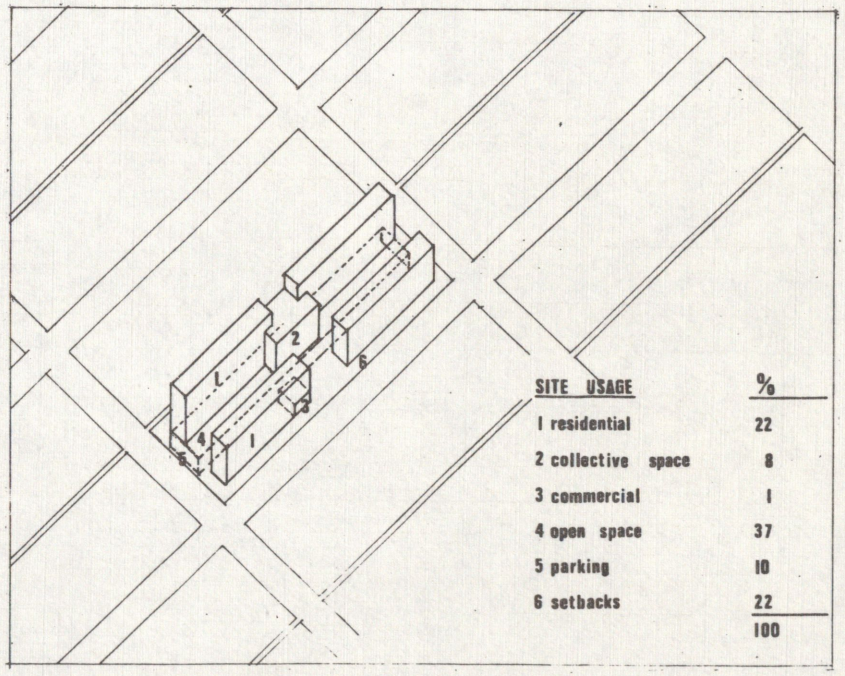
User groups

To emphasize young family and elderly units, seeming more compatable to this district.

Suggested Residential density	minimum	1.0 F.A.R.
	maximum	2.0 F.A.R.
Suggested Commercial density	minimum	0.0 F.A.R.
	maximum	0.5 F.A.R.



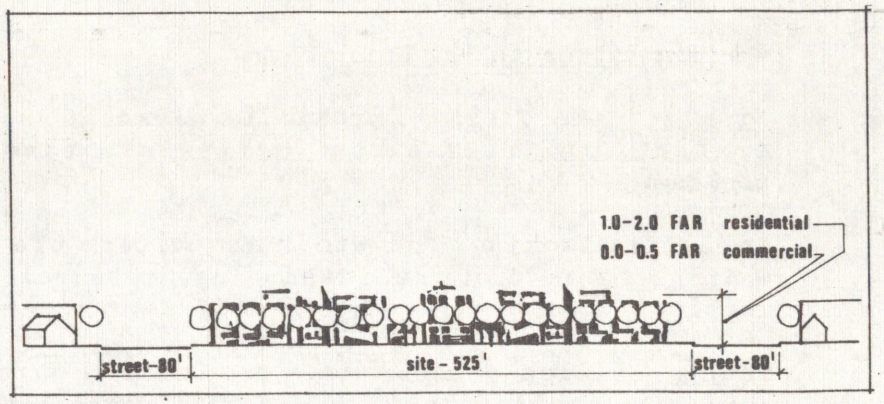
BUILDING ENVELOPE STRATEGY



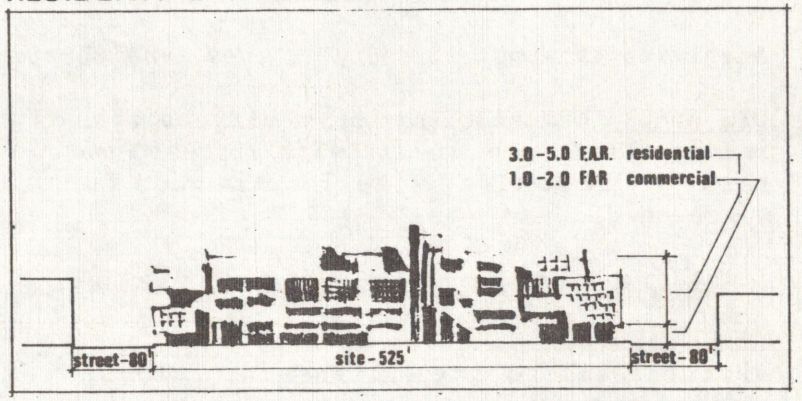
SITE USAGE STRATEGY

C. CONCLUSIONS: AREA / DENSITY GUIDELINES

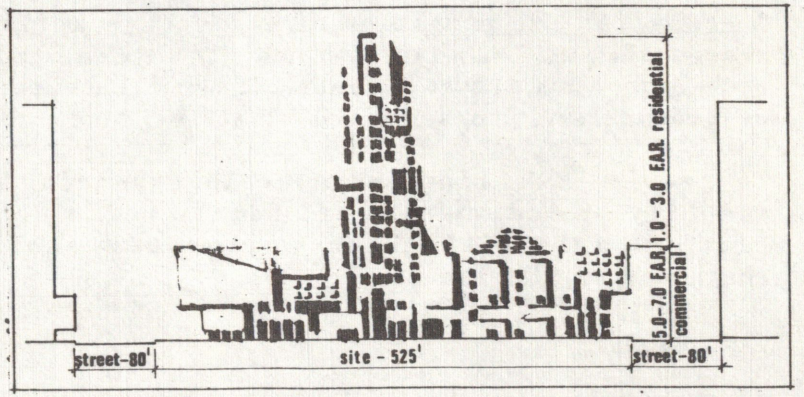
The purpose of the areas and densities is to provide guidelines for the design process. **They are not meant to be concrete figures.** However they are an attempt to decide upon an appropriate mix of functional considerations to conclude the district studies. NOTE: A one or two bedroom unit is anticipated to be of a similar design in the calculations for all three of the user groups, but are classified as a percentage of the anticipated user group mix. In this way the demand for other ammenities may be anticipated.



RESIDENTIAL DISTRICT



WAREHOUSE DISTRICT



PRELIMINARY DESIGN SKETCHES BASED ON SUGGESTED DENSITIES

Residential District

gross site area		84,000 sq ft
		1.92 acres
setbacks	front	20 ft
	ends	20 ft
	back	25 ft - consider parking usage
maximum building area		58,775 sq ft

1. Residential Mixture

Family units - 60% (30% 2 bdrm, 50% 3 bdrm, 20% 4 bdrm)
Non Family units - 40% (60% elderly, 40% young)

Family units	
2 bdrm (16 units @ 1000 sq ft)	16,875 sq ft
3 bdrm (24 units @ 1150 sq ft)	28,125 sq ft
4 bdrm (8 units @ 1350 sq ft)	11,250 sq ft
Subtotal (48 units)	56,250 sq ft
Non Family units	
elderly 1 bdrm (12 units @ 700 sq ft)	9,000 sq ft
2 bdrm (14 units @ 1000 sq ft)	13,500 sq ft
young 1 bdrm (8 units @ 700 sq ft)	6,000 sq ft
2 bdrm (9 units @ 1000 sq ft)	9,000 sq ft
Subtotal (43 units)	37,500 sq ft

2. Collective Space

daycare/kindergarten	3,000 sq ft
recreation	2,000 sq ft
laundry	400 sq ft
Subtotal	5,400 sq ft

3. Commercial

Subtotal	800 sq ft
Total building area	99,950 sq ft
Residential building area	93,750 sq ft
+15% circulation	14,062 sq ft
+5% services	4,688 sq ft
Total residential	112,500 sq ft
Residential density . . 48 units/acre - 1.4 F.A.R.	
Collective space	5,400 sq ft
+15% circulation	810 sq ft
Total collective space	6,210 sq ft
Commercial building area	800 sq ft
+15% circulation	120 sq ft
+5% service	40 sq ft
Total commercial	960 sq ft
Commercial density	0.01 F.A.R.
Parking area	
130 stalls @ 240 sq ft/stall	32,000 sq ft
+15% circulation	4,800 sq ft
Total parking	36,800 sq ft
TOTAL BUILDING AREA	156,470 sq ft
Building density	1.9 F.A.R.

Warehouse District

gross site area	84,000 sq ft 1.92 acres
setbacks	none
maximum building area	84,000 sq ft

1. Residential Mixture

Family units - 40% (50% 2 bdrm, 30% 3 bdrm, 20% 4 bdrm)
Non Family units - 60% (60% young, 40% elderly)

Family Units	
2 bdrm (38 units @ 1000 sq ft)	37,800 sq ft
3 bdrm (20 units @ 1150 sq ft)	22,680 sq ft
4 bdrm (10 units @ 1350 sq ft)	15,120 sq ft
Subtotal (68 units)	75,600 sq ft
Non Family Units	
elderly 1 bdrm (26 units @ 700 sq ft)	18,144 sq ft
2 bdrm (28 units @ 1000 sq ft)	27,216 sq ft
young 1 bdrm (39 units @ 700 sq ft)	27,216 sq ft
2 bdrm (41 units @ 1000 sq ft)	40,824 sq ft
Subtotal (134 units)	113,400 sq ft

2. Collective Space

daycare	2,000 sq ft
recreation (open space - 25,000 sq ft suggested)	
laundry	800 sq ft
common space (15% of residential)	9,500 sq ft
public open space	10,000 sq ft
Subtotal	22,300 sq ft

3. Commercial

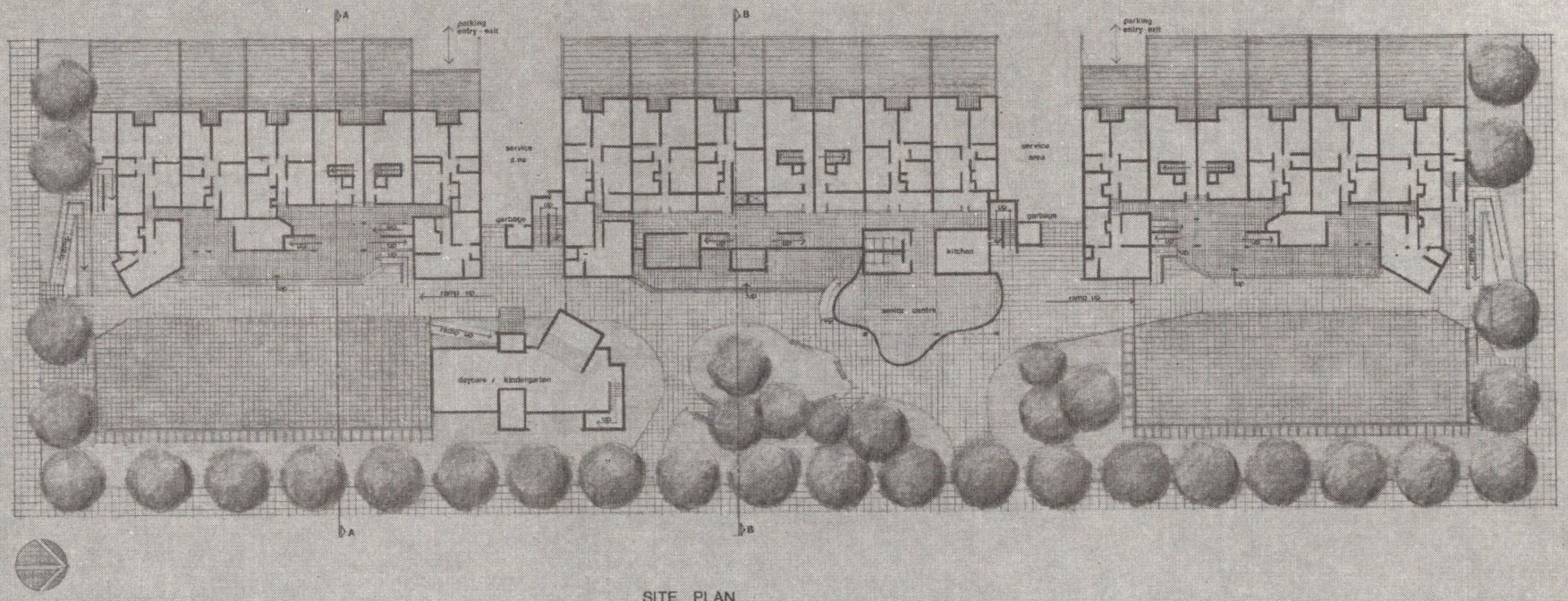
office (2nd floor)	10,000 sq ft
retail (ground floor)	20,000 sq ft
restaurants/bars (ground floor)	5,000 sq ft
Subtotal	35,000 sq ft
Residential building area	189,000 sq ft
+15% circulation	28,350 sq ft
+5% services	9,450 sq ft
+5% mechanical	9,450 sq ft
Total residential	236,250 sq ft

Residential density . . 105 units/acre - 3.0 F.A.R.

Collective space	12,300 sq ft
+15% circulation	1,845 sq ft
+5% services	615 sq ft
+5% mechanical	615 sq ft
Total collective space	15,375 sq ft
Commercial building area	35,000 sq ft
+15% circulation	5,250 sq ft
+5% service	1,750 sq ft
+5% mechanical	1,750 sq ft
Total commercial	43,750 sq ft

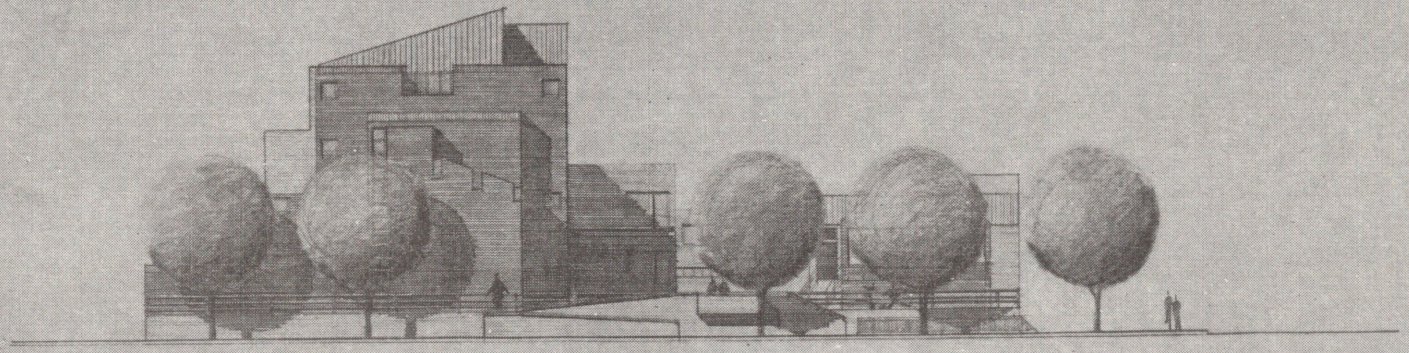
Parking area (residential + commercial)

300 stalls @ 240 sq ft/stall	72,000 sq ft
+15% circulation	10,800 sq ft
Total parking	82,800 sq ft
TOTAL BUILDING AREA	378,175 sq ft
Building density	4.5 F.A.R.



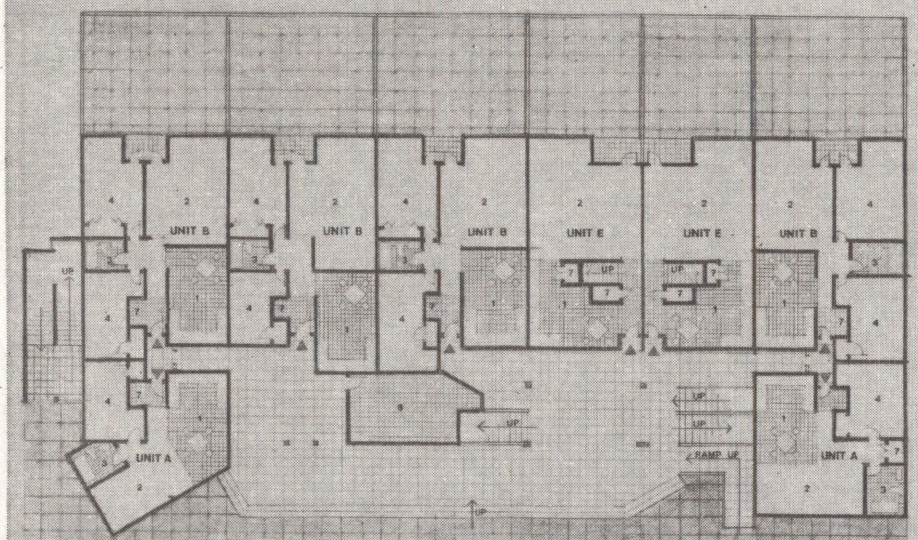
SITE PLAN

SCALE 1/16"=1'0"



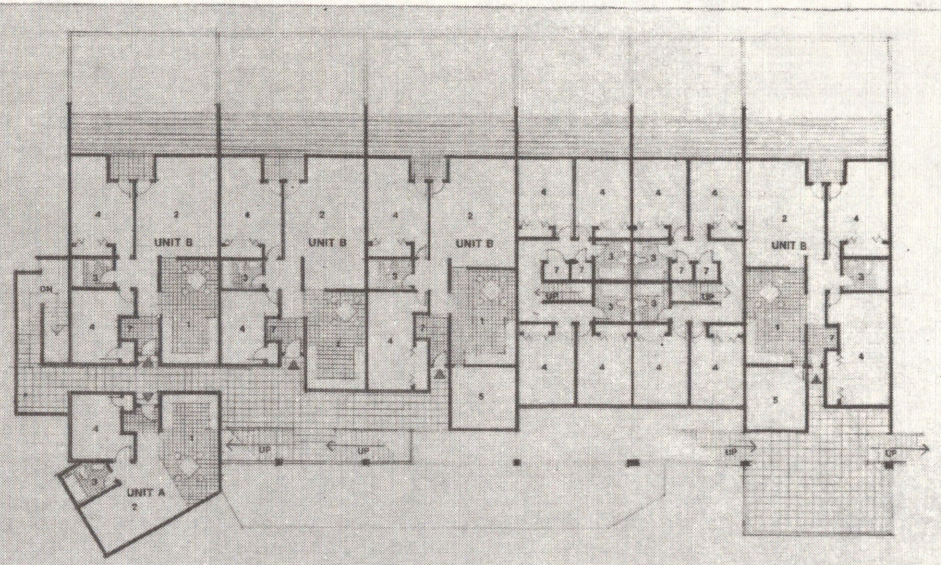
END ELEVATION

SCALE 1/8"=1'0"



MAIN LEVEL

SCALE 1/8"=1'-0"

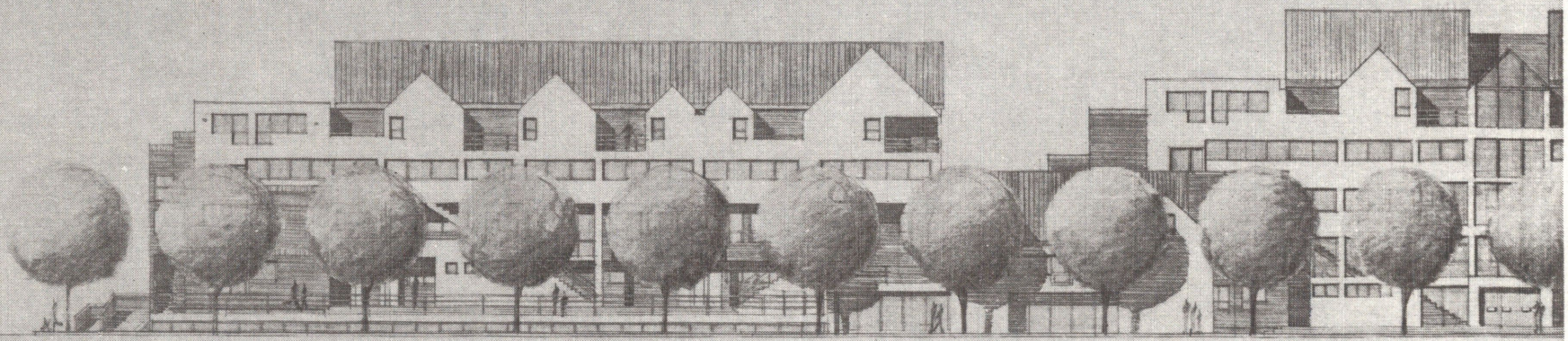


SECOND LEVEL

UNIT TYPES		AREA (SQ.FT.)
A	1 BDRM	544, 575
B	2 BDRM	768, 828, 924
C	3 BDRM	1280
D	3 BDRM	1642
E	4 BDRM	1332
F	4 BDRM	1742
A+B	3 or 4 BDRM	1312
A+B	3 or 4 BDRM	1403

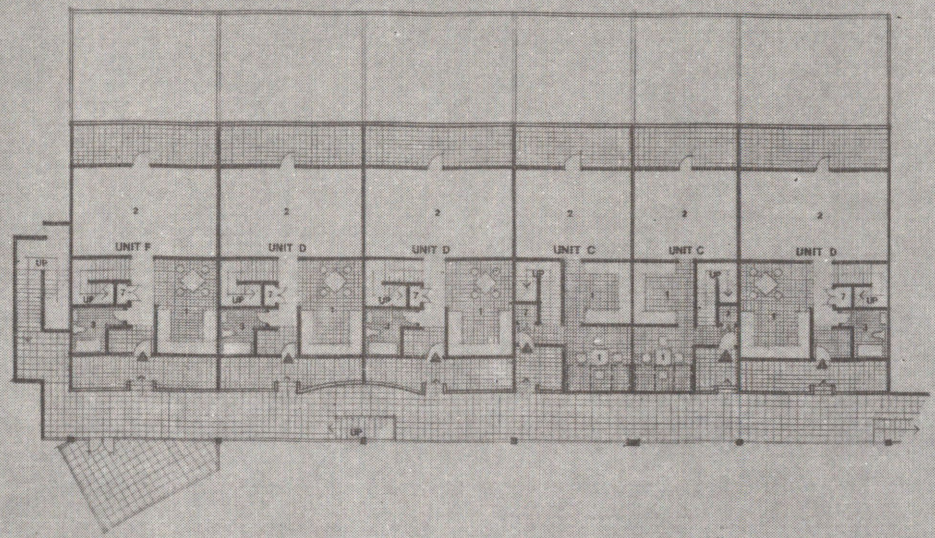
KEY

1 KITCHEN / DINING
2 LIVING
3 WASHROOM
4 BEDROOM
5 SOLARIUM / DEN
6 DEN / BEDROOM
7 STORAGE
8 LAUNDRY



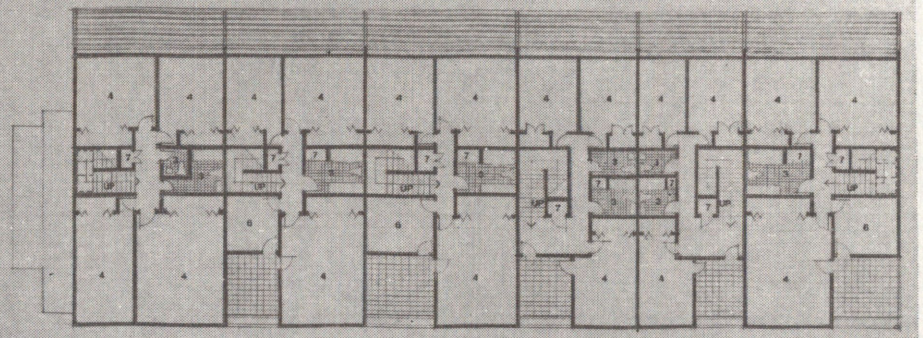
PRINCIPLE STREET ELEVATION

SCALE 1/8"=1'-0"



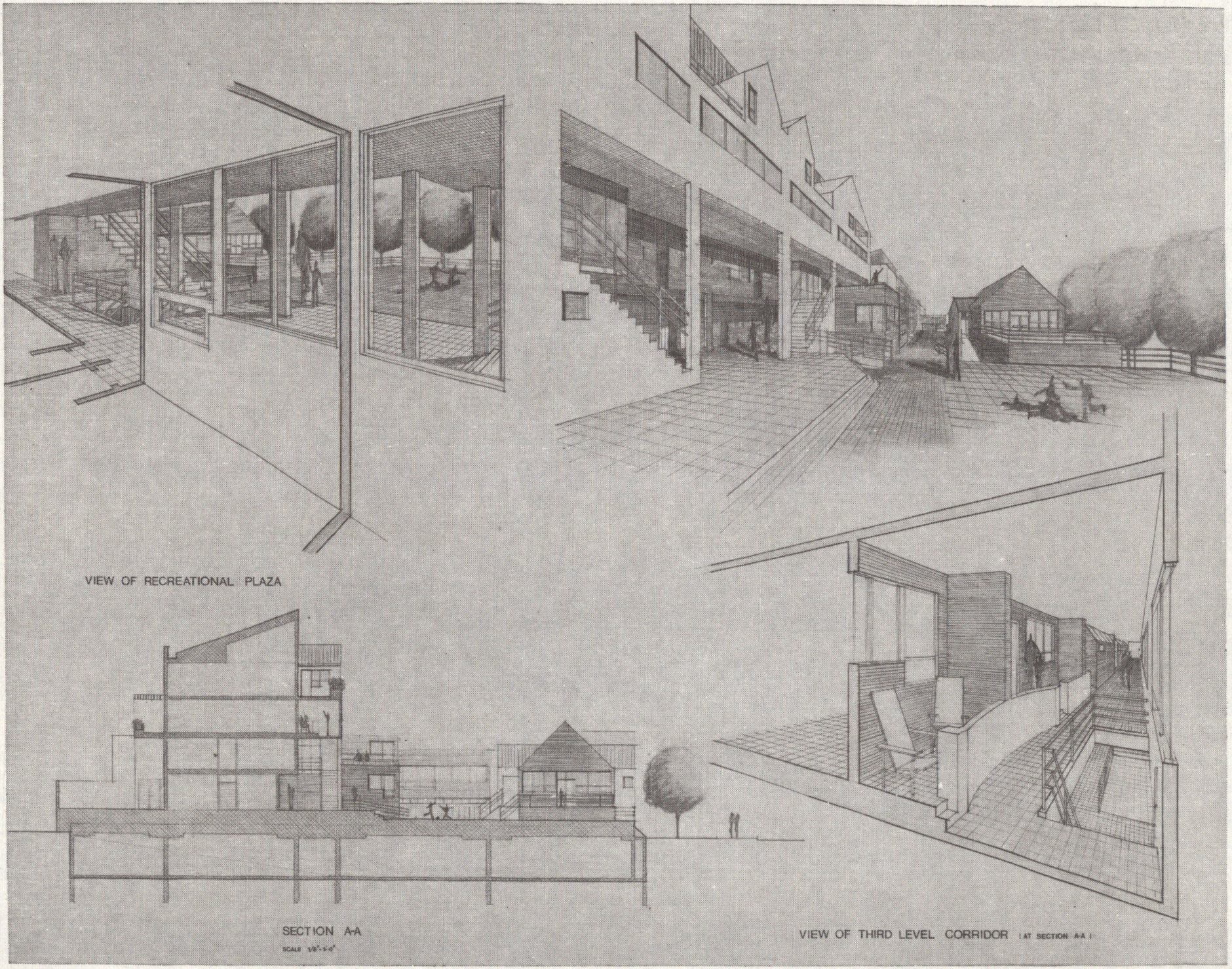
THIRD LEVEL

SCALE 1/8"-1'



FOURTH LEVEL



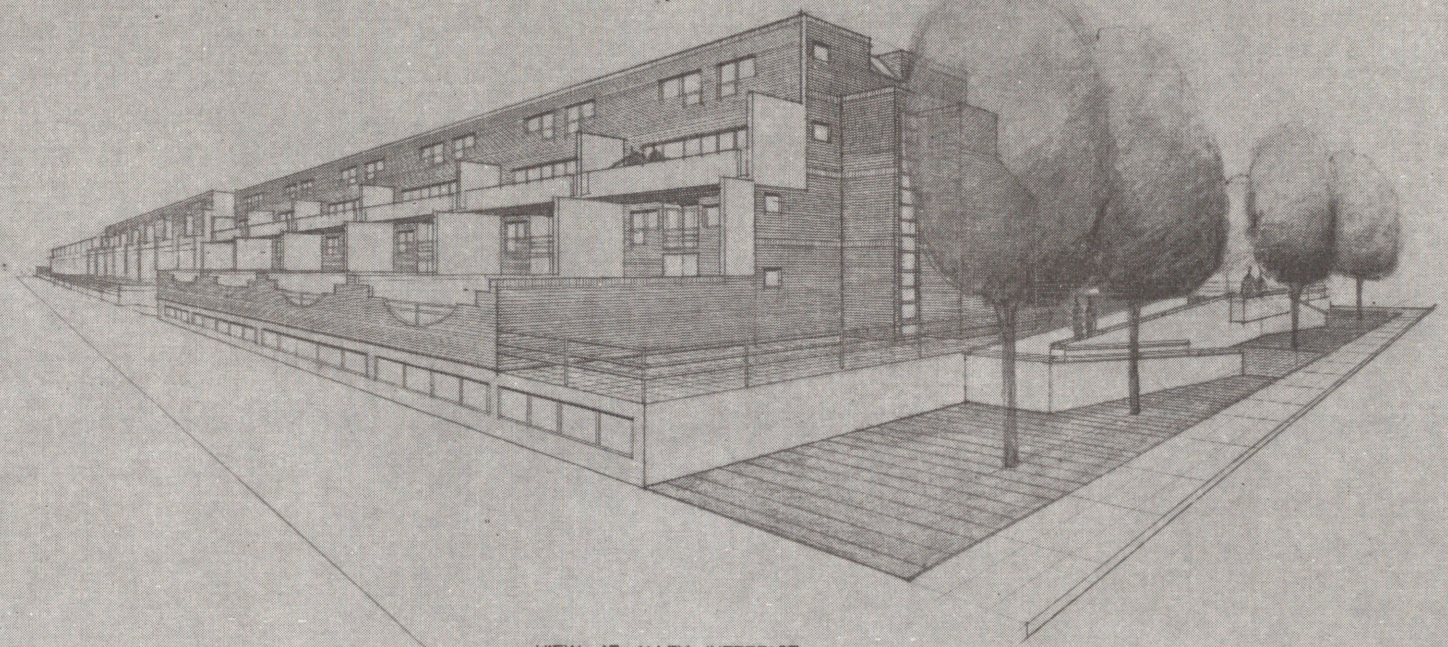


VIEW OF RECREATIONAL PLAZA

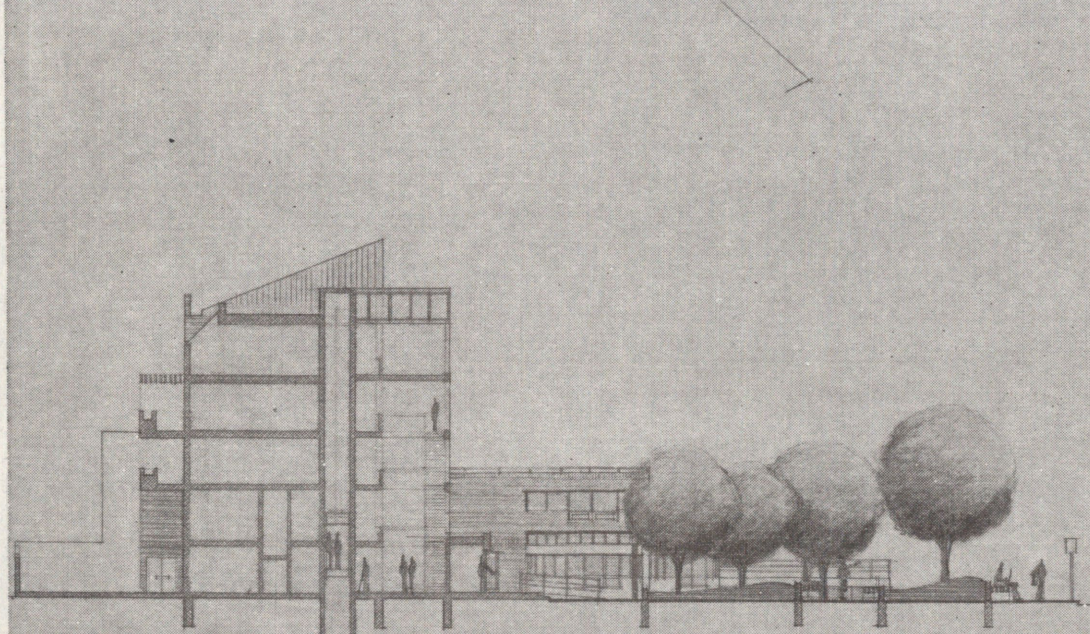
SECTION A-A

SCALE 1/8"-1'-0"

VIEW OF THIRD LEVEL CORRIDOR (AT SECTION A-A)

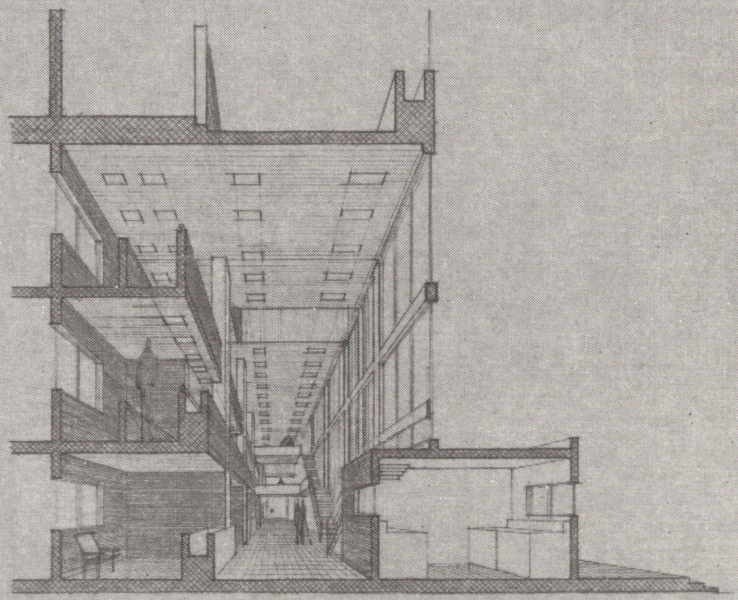


VIEW AT ALLEY INTERFACE

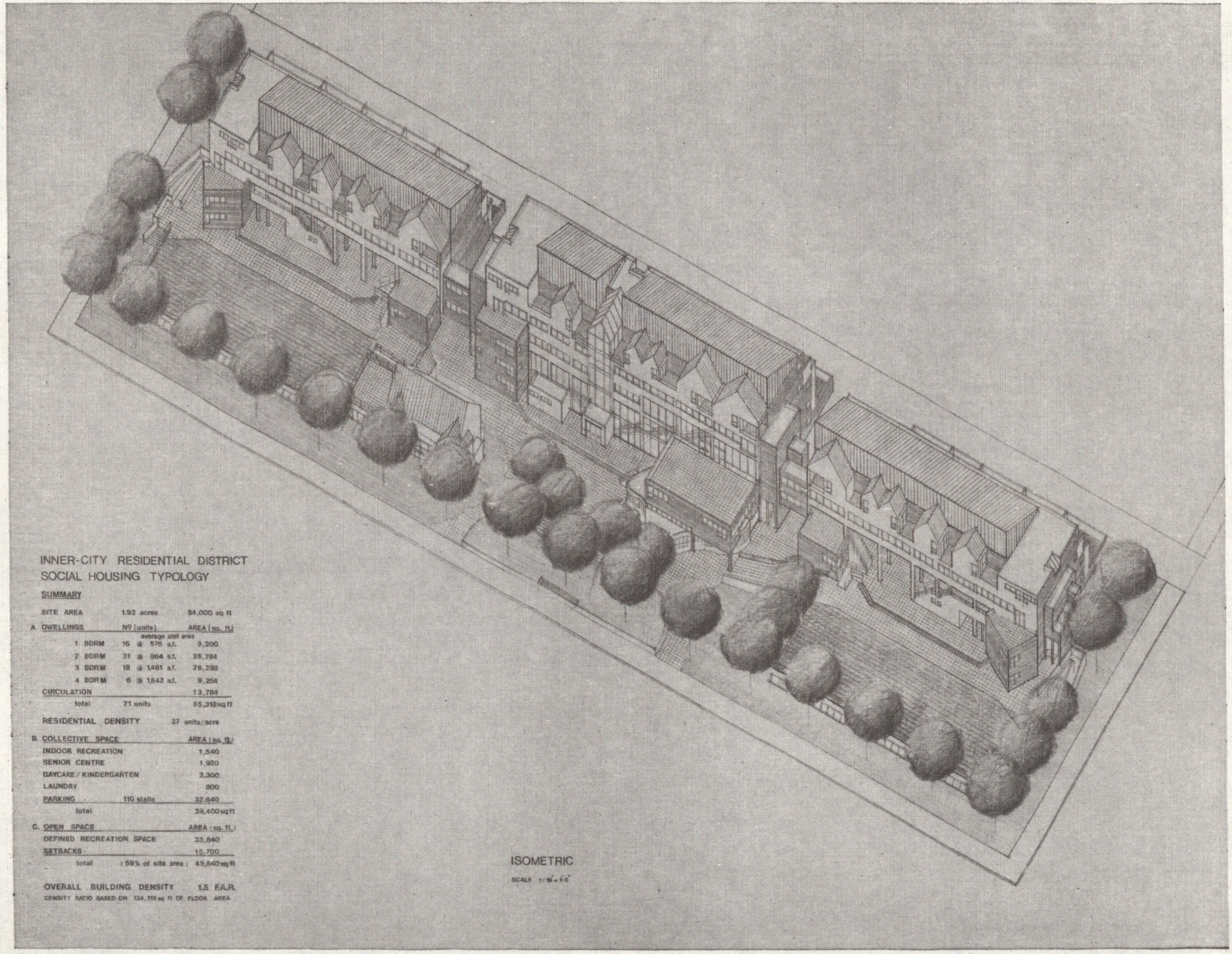


SECTION B-B

SCALE 1/8"-1'-0"



SECTIONAL VIEW THRU SENIOR HOUSING



INNER-CITY RESIDENTIAL DISTRICT
SOCIAL HOUSING TYPOLOGY

SUMMARY

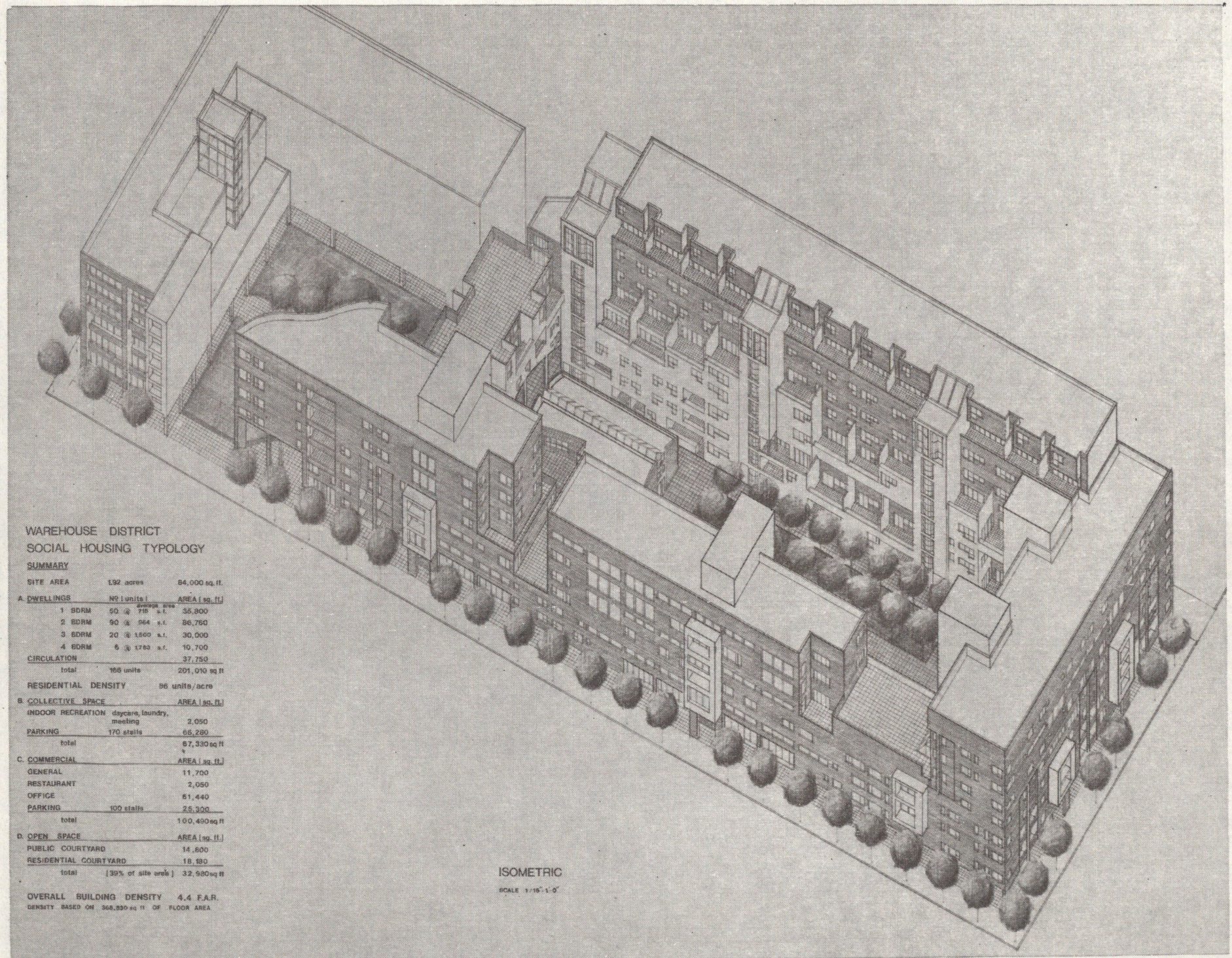
SITE AREA	1.92 acres		84,000 sq ft
A. DWELLINGS	Nº (units)	average unit area	AREA (sq. ft.)
1 BDRM	16	@ 575 s.f.	9,200
2 BDRM	31	@ 864 s.f.	26,784
3 BDRM	18	@ 1,461 s.f.	26,298
4 BDRM	6	@ 1,542 s.f.	9,254
CIRCULATION			13,784
total	71 units		85,318 sq ft
RESIDENTIAL DENSITY			37 units/acre

B. COLLECTIVE SPACE		AREA (sq. ft.)
INDOOR RECREATION		1,540
SENIOR CENTRE		1,920
DAYCARE / KINDERGARTEN		3,300
LAUNDRY		800
PARKING	110 stalls	32,640
total		39,400 sq ft

C. OPEN SPACE		AREA (sq. ft.)
DEFINED RECREATION SPACE		33,840
SETBACKS		15,700
total	(59% of site area)	49,540 sq ft

OVERALL BUILDING DENSITY 1.5 F.A.R.
DENSITY RATIO BASED ON 124,718 sq ft OF FLOOR AREA

ISOMETRIC
SCALE 1/16" = 1'-0"



WAREHOUSE DISTRICT
SOCIAL HOUSING TYPOLOGY

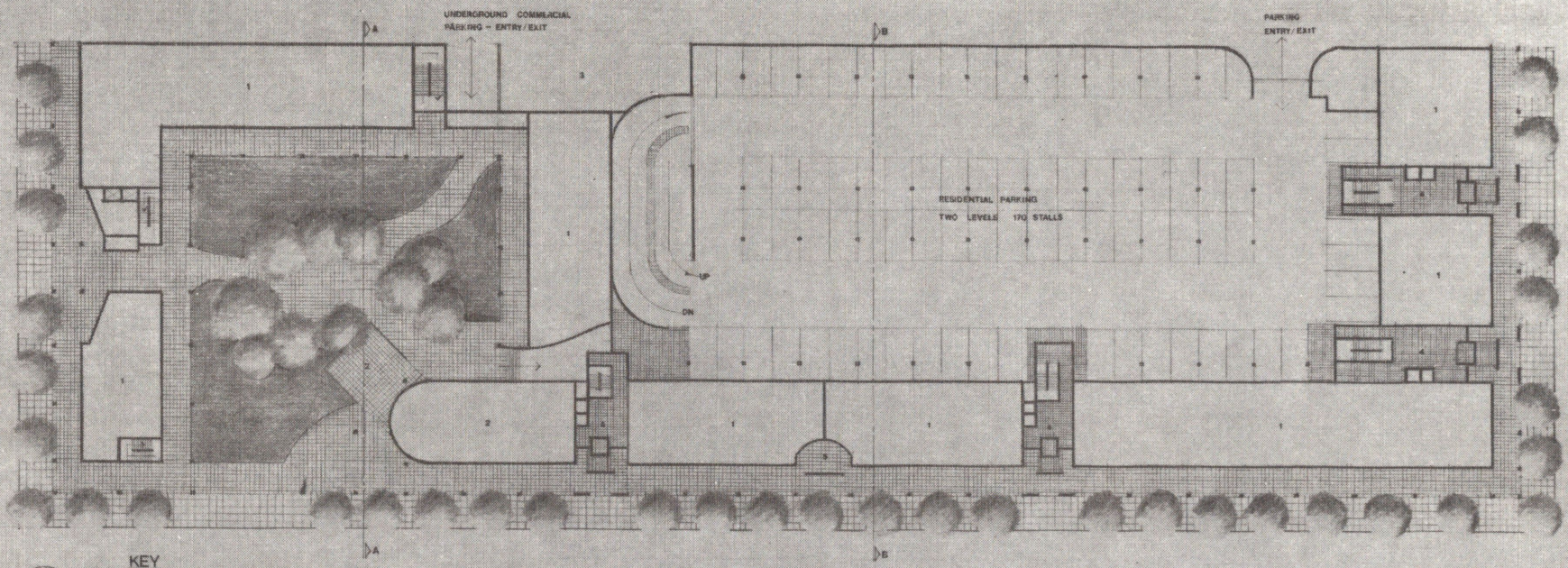
SUMMARY

SITE AREA	1.92 acres		84,000 sq. ft.
A. DWELLINGS	Nº [units]		AREA [sq. ft]
		Average area	
1 BDRM	50 @	715 s.f.	35,800
2 BDRM	90 @	964 s.f.	86,760
3 BDRM	20 @	1500 s.f.	30,000
4 BDRM	6 @	1783 s.f.	10,700
CIRCULATION			37,750
total	166 units		201,010 sq ft
RESIDENTIAL DENSITY	86 units/acre		
B. COLLECTIVE SPACE			AREA [sq. ft]
INDOOR RECREATION	daycare, laundry, meeting		2,050
PARKING	170 stalls		65,280
total			67,330 sq ft
C. COMMERCIAL			AREA [sq. ft]
GENERAL			11,700
RESTAURANT			2,050
OFFICE			51,440
PARKING	100 stalls		25,300
total			100,490 sq ft
D. OPEN SPACE			AREA [sq. ft]
PUBLIC COURTYARD			14,600
RESIDENTIAL COURTYARD			18,180
total	[39% of site area]		32,980 sq ft

OVERALL BUILDING DENSITY 4.4 F.A.R.
DENSITY BASED ON 368,830 sq ft OF FLOOR AREA

ISOMETRIC

SCALE 1/15" 1'-0"

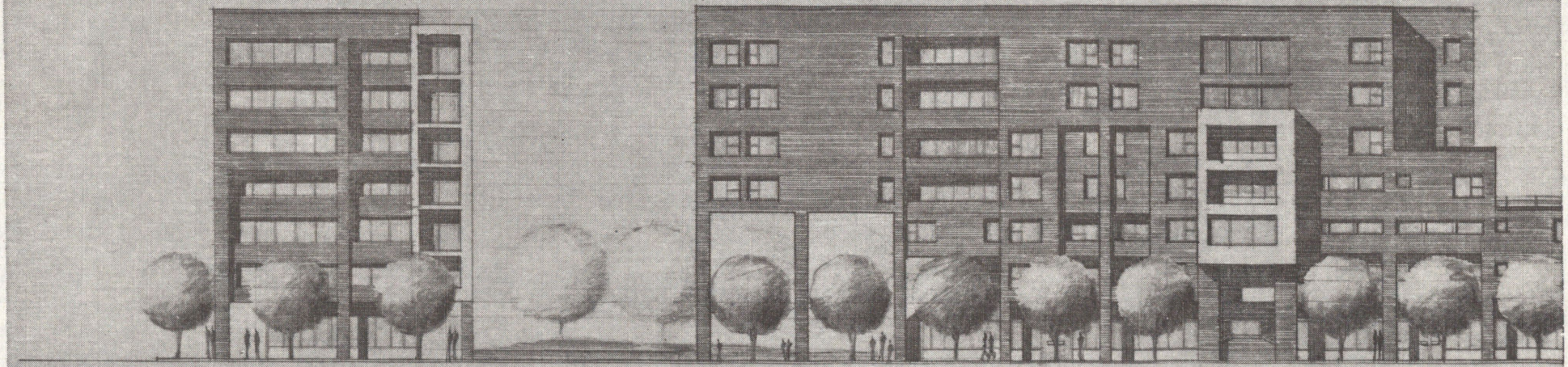


KEY

1 COMMERCIAL
2 RESTAURANT
3 SERVICE AREA
4 RESIDENTIAL ENTRY
5 BUS SHELTER
6 OFFICE SPACE
7 COLLECTIVE SPACE
(LAUNDRY, DAYCARE, MEETING, RECREATION)

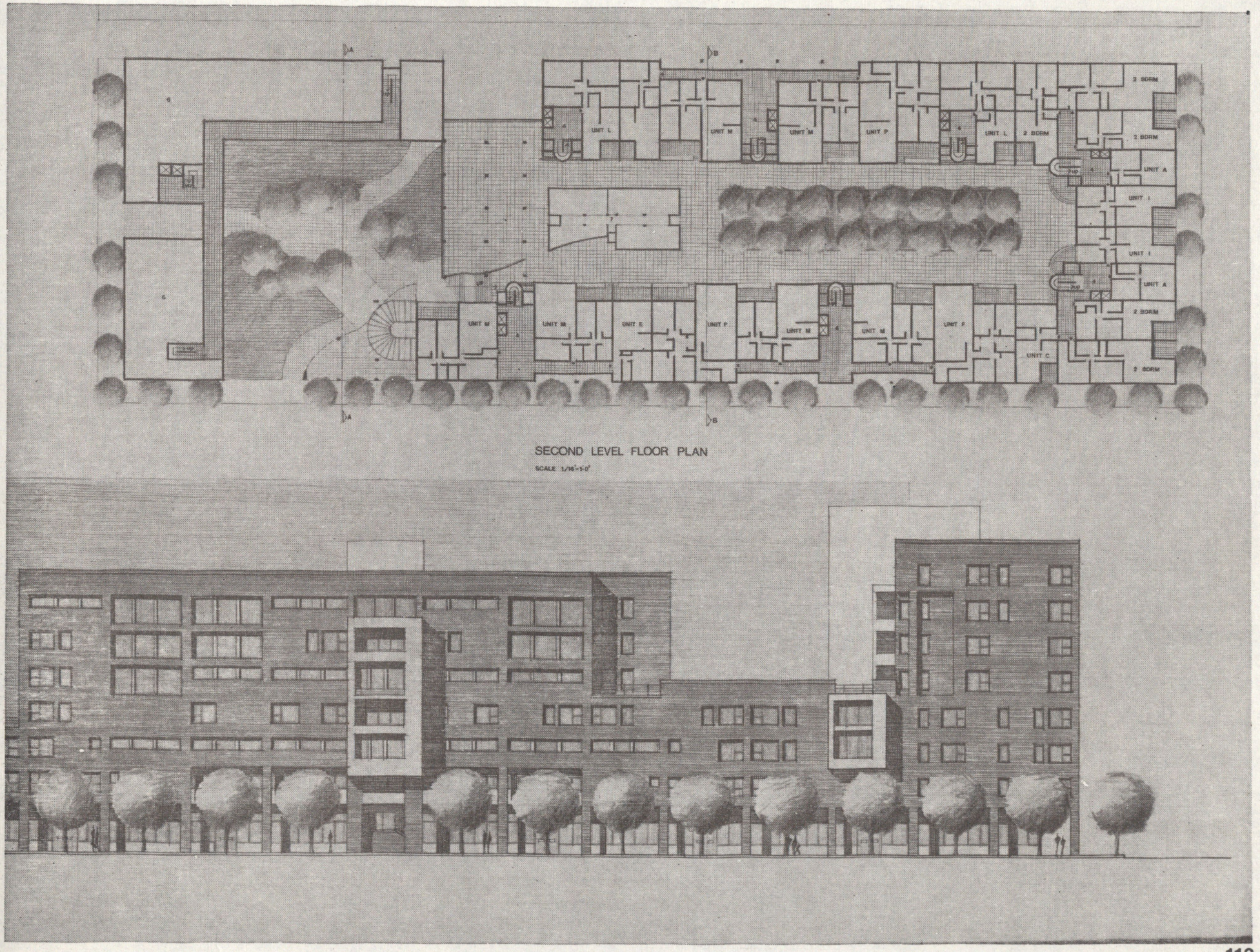
STREET LEVEL FLOOR PLAN

SCALE 1/16" = 1'-0"



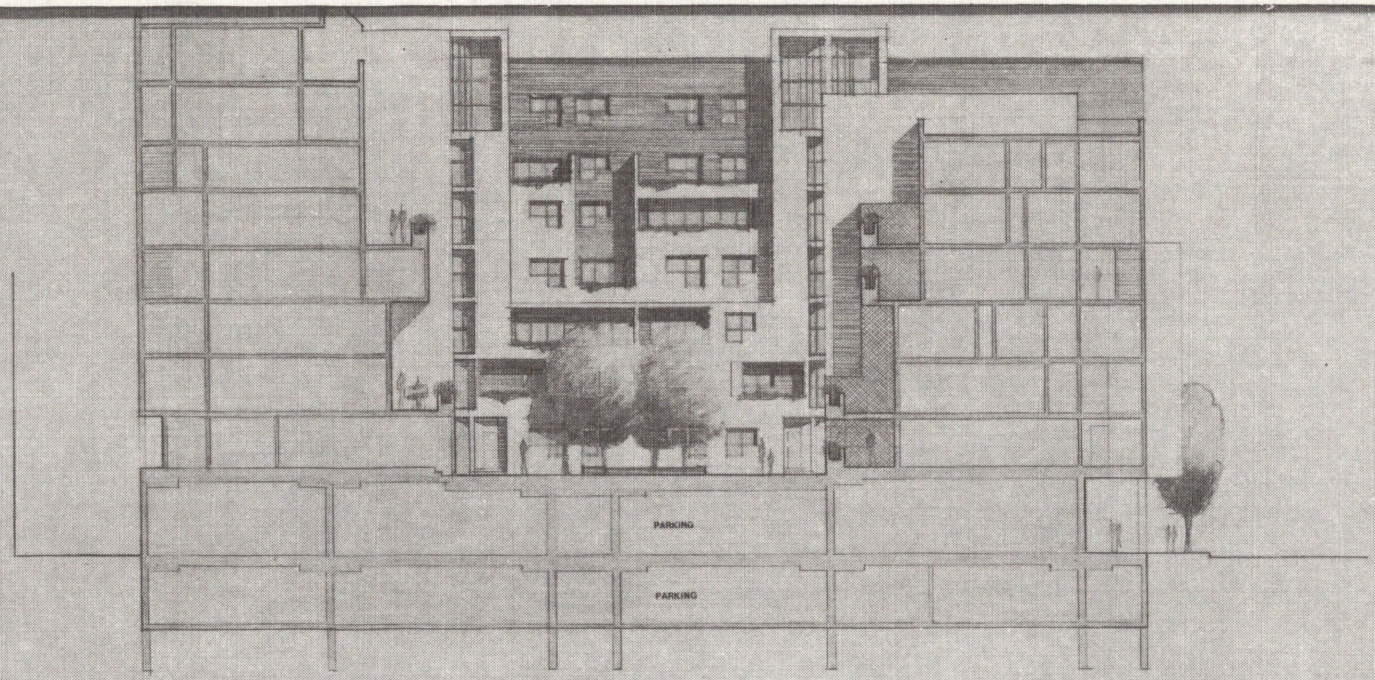
PRINCIPLE STREET ELEVATION

SCALE 1/8" = 1'-0"

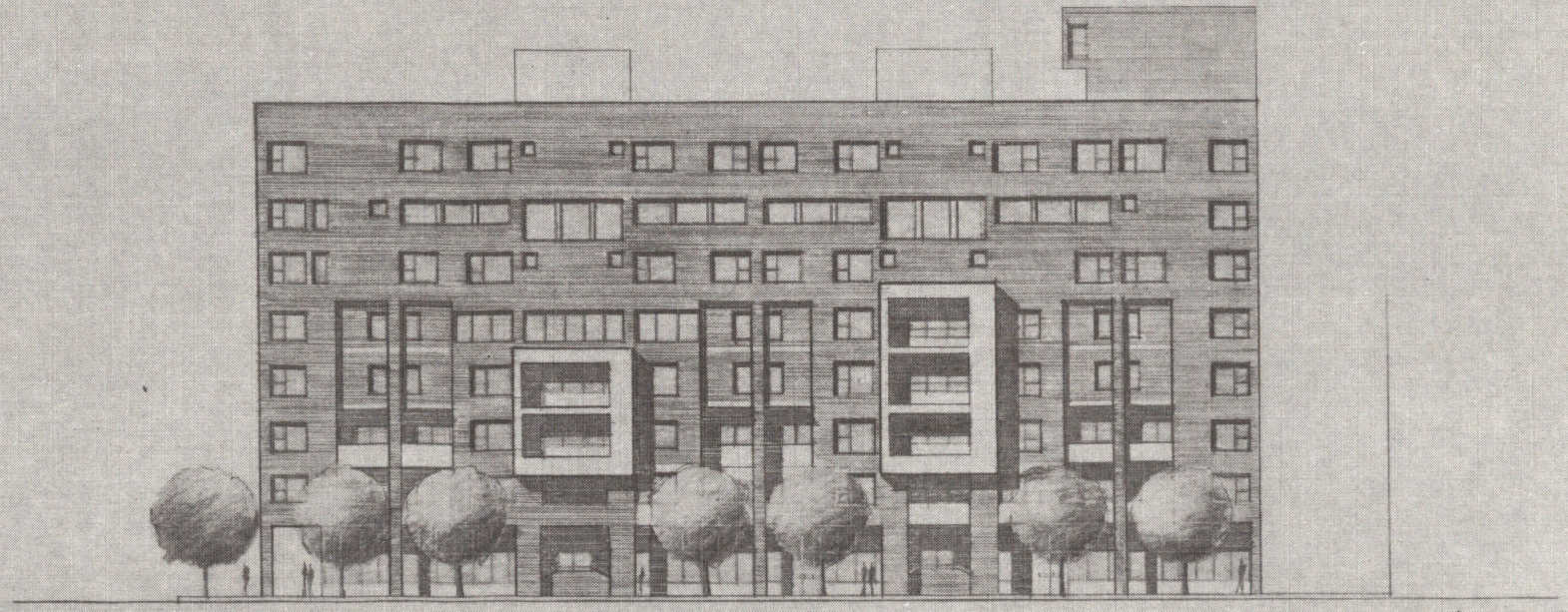


SECOND LEVEL FLOOR PLAN

SCALE 1/16"=1'-0"

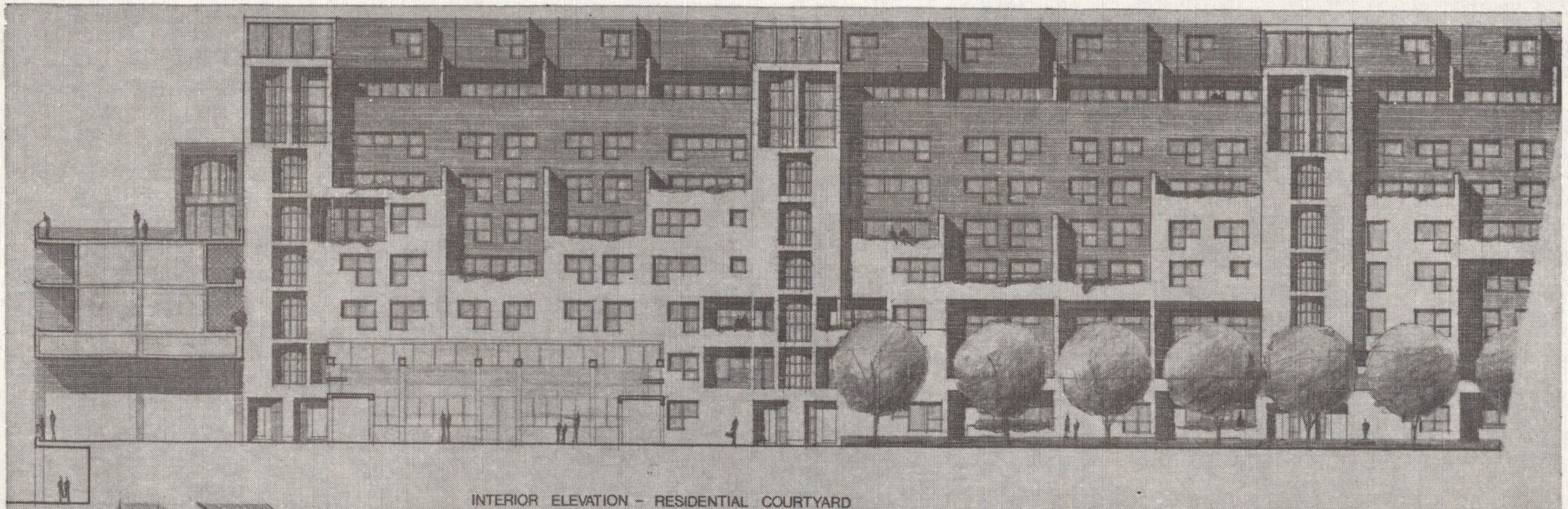


SECTION BB



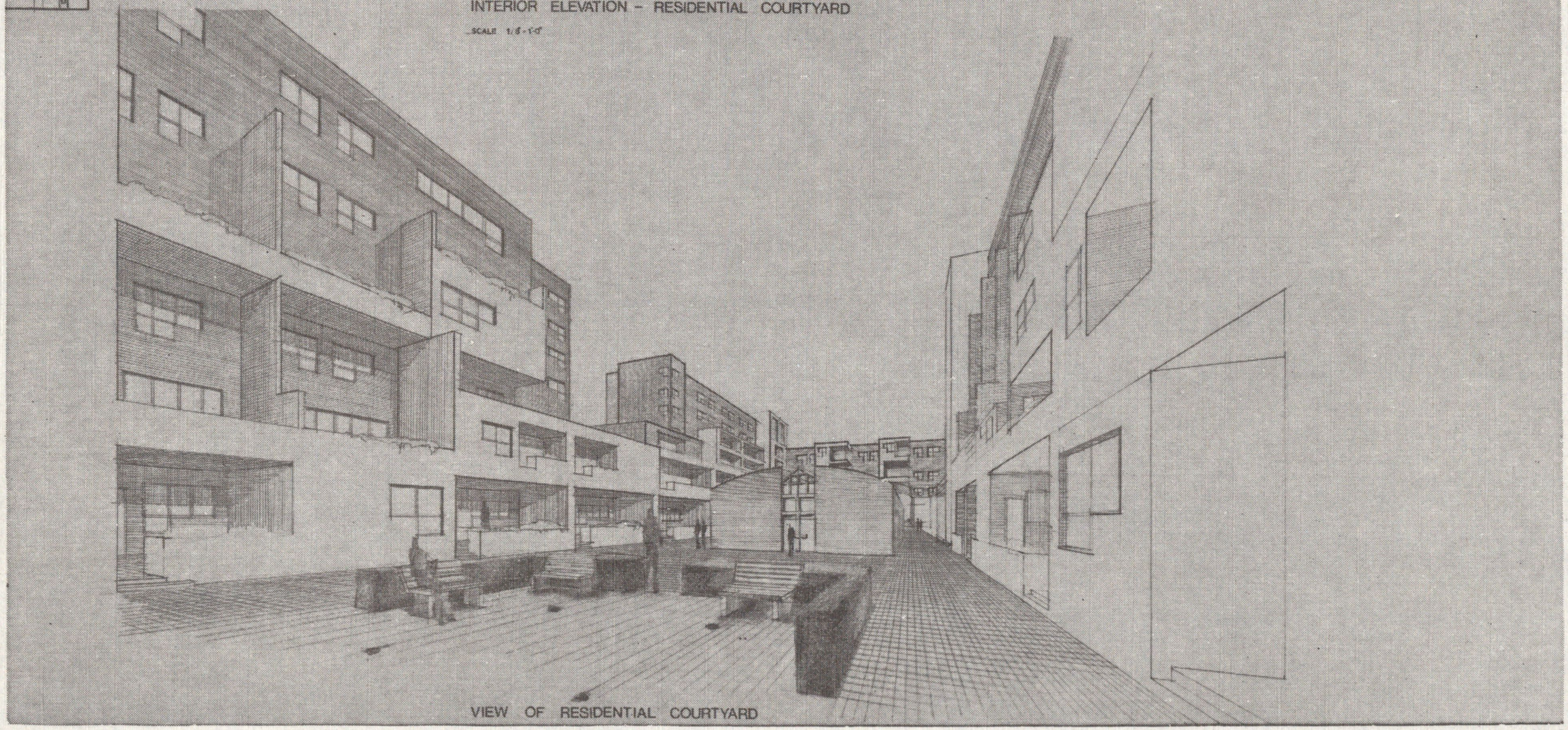
END ELEVATION

SCALE 1/8" = 1'-0"

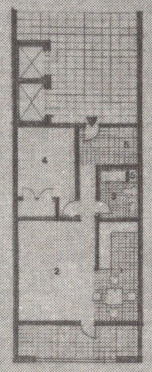


INTERIOR ELEVATION – RESIDENTIAL COURTYARD

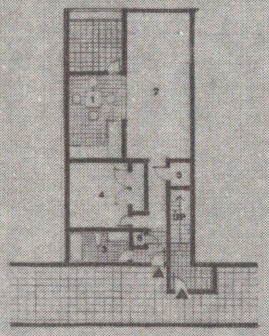
SCALE 1/8"-1'-0"



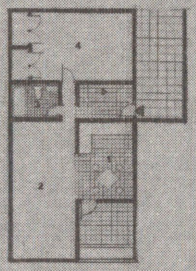
VIEW OF RESIDENTIAL COURTYARD



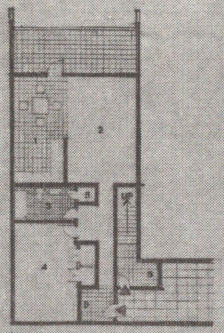
UNIT A 575 sq ft



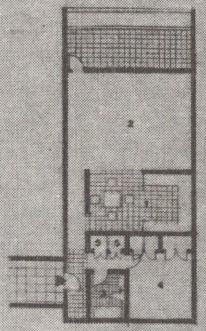
UNIT B 670 sq ft



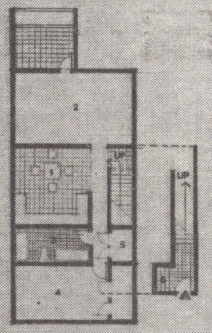
UNIT C 710 sq ft



UNIT D 740 sq ft

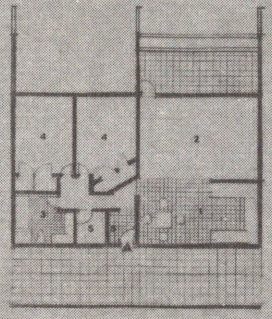


UNIT E 800 sq ft

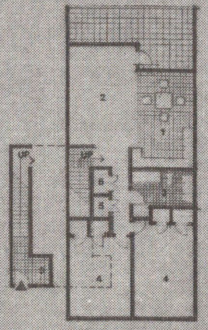


UNIT F 800 sq ft

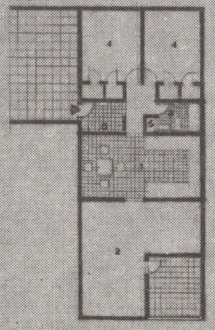
ONE BEDROOM UNIT TYPES



UNIT G 720 sq ft



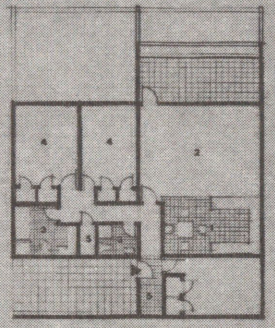
UNIT H 800 sq ft



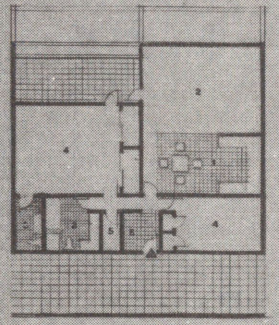
UNIT I 900 sq ft

KEY

1 KITCHEN / DINING
2 LIVING
3 WASHROOM
4 BEDROOM
5 STORAGE
6 DEN / BEDROOM

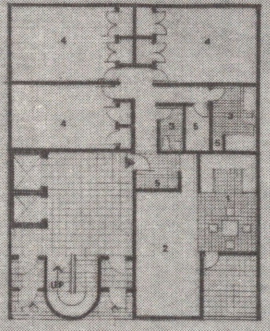


UNIT J 1 200 sq ft

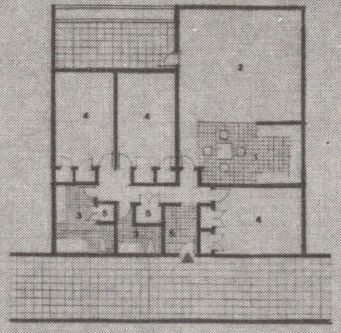


UNIT K 1 200 sq ft

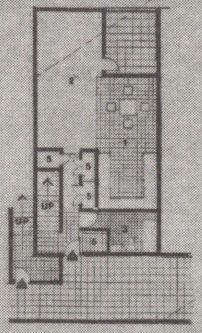
TWO BEDROOM UNIT TYPES



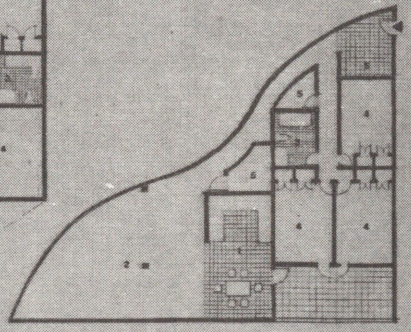
UNIT L 1 390 sq ft



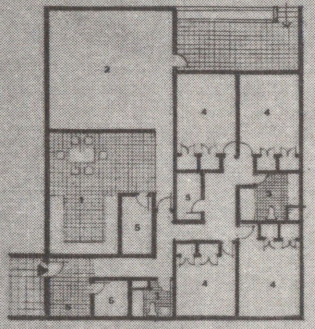
UNIT M 1 410 sq ft



UNIT N 1 500 sq ft



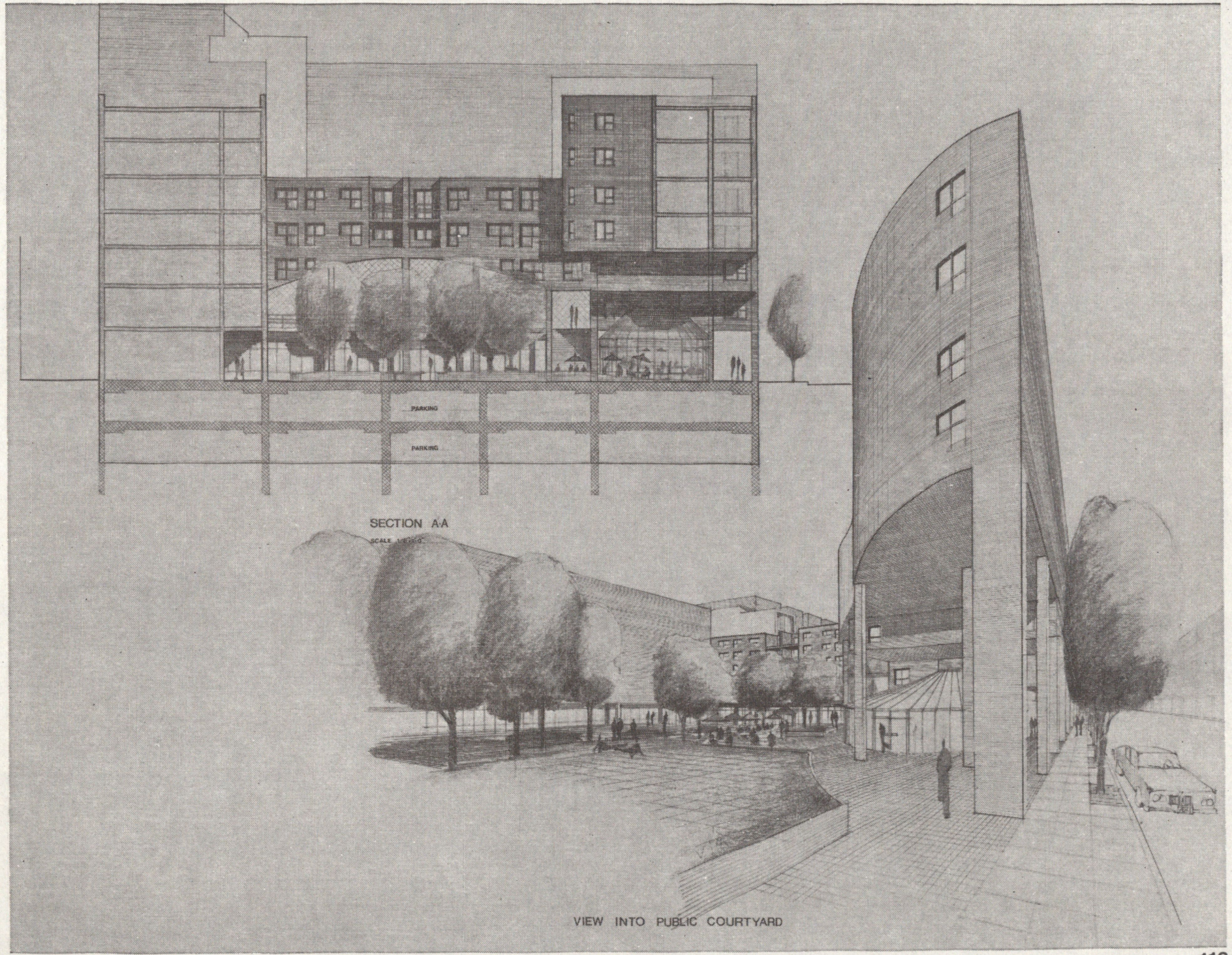
UNIT O 1 750 sq ft



UNIT P 1 790 sq ft

THREE BEDROOM UNIT TYPES

FOUR BEDROOM UNIT TYPE



SECTION A-A

SCALE 1/16"=1'-0"

VIEW INTO PUBLIC COURTYARD

REFERENCES

11.0 ILLUSTRATION CREDITS

1. Interface: Building Section at Street. drawings 1-18, 21, 22, 25, 26 are taken from Robert Krier, Urban Space (New York, 1979).

2. R. L. Wilkins, Architects and Planners, Downtown Housing Study (Edmonton, 1979), p. 68.

3. Ibid, p. 60.

4. Ibid, p. 129.

5. Progressive Architecture, Apartment Building, middle-rise, enclosed winter garden; John and Patricia Patkan Architects (Cleveland, Ohio, Jan 1981), p. 142-143.

6. Arkitektur DK, nr. 1, Farum Midtpunkt, boligbebyggelse (Copenhagen, 1976), p. 1-11.

7. Ibid, nr. 7, Boligkvarter pa Fredericksberg (Copenhagen, 1980).

8. Ibid, nr. 6, Holmstrup terrassehuse, Arhus, p. 250-258.

9. Jan Gehl, Housing, Site Planning and Urban Design (Copenhagen, 1980), cover page.

10. City of Edmonton axonometric by du Toit Lambur Consultants Ltd. (Edmonton, 1981).

12.0 FOOTNOTES

1. Newman, Oscar, Defensible Space, (New York, 1972), p. 42.

2. Anonymous, Architektur DK, nr. 7-8, (Copenhagen, 1979), p. 36.

3. Wilkins, R. L. et al, Downtown Housing Study (Edmonton, April, 1979), p. 21.

4. Meyers, Barton, Canadian Architect (November, 1972), p. 51.

5. Bell, Wendall, The City, the Suburb, and a Theory of Social Choice, op cit in The City as a Social System, anonymous authors (Milton Keynes, 1973), p. 56.

6. Newman, Oscar, Defensible Space (New York, 1972), p. 51.

7. Ibid, p. 16.

8. Ledrut, Raymond, L'espace sociale de ville.

9. Jacobs, Jane, The Death and Life of Great American Cities (New York, 1961), p. 108-109.

10. Archer, John, The Problems with Parking at Medium and High Density Housing in Habitat Magazine, (Vol. 24, No. 2, 1981), p. 56.

11. Wilkins, R. L., Downtown Housing Study, (Edmonton, April, 1979), p. 85.

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13. Gehl, Jan, Housing Site Planning, and Urban Design, (Copenhagen, 1980), p. 16.

14. Wilkins, R. L., Downtown Housing Study, (Edmonton, April, 1979), p. 55.

15. Macsai, John, et al, Housing, (New York, 1976), p. 33.

16. Wilkins, R. L., Downtown Housing Study, (Edmonton, April, 1979), p. 37.

17. Ibid, p. 54.

13.0 BIBLIOGRAPHY - BOOKS

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