

"ACCESSIBLE HOUSING IN THE INNER CITY"

R.A.I.C. SYLLABUS THESIS

DOCUMENT B PROGRAMMING

by DAVID W. RYDER A.C.T.

APRIL, 1984.

"ACCESSIBLE HOUSING IN THE INNER CITY"

DOCUMENT B

PROGRAMMING FOR THESIS

RAIC SYLLABUS THESIS PROBLEM

DAVID W. RYDER
1032 - Adamson Crescent,
SHERWOOD PARK, Alberta

APRIL, 1984

1. understanding the problem. / focussing on problem originally.
2. research techniques
3. evolution of problem:
4. presentation.
5. documentation
6. design characteristics
 1. Site selection process.
8. urban context.
9. overall site design.
- 10 detail.

1.0	<u>SPECIFIC USER PROGRAM</u>	<u>Pages</u>
1.1	INTRODUCTION	1
1.2	CLIENT CHARACTERISTICS	2
1.3	PROJECT DESCRIPTION	4
1.4	GENERAL CHARACTERISTICS	5
	1. SITE	
	2. SITE DEVELOPMENT	
	3. HOUSING FORM	
	4. PARKING	
1.5	UNIT DESIGN CRITERIA	9
	1. DISABLED UNITS	
	2. ACCESSIBLE UNITS	
	3. COMMUNITY CENTRE	
	4. COMMERCIAL	
1.6	FUNCTIONAL DESIGN CRITERIA	13
	1. DISABLED UNITS	
	2. ACCESSIBLE UNITS	
	3. COMMUNITY CENTRE	
	4. COMMERCIAL	
2.0	<u>PROGRAM DEVELOPMENT</u>	14
2.1	DESIGN PHILOSOPHY	
2.2	SITE	
2.3	HOUSING FORM	
2.4	COMMUNITY CENTRE	
2.5	COMMERCIAL	

2.6	PARKING	
2.7	LANDSCAPING	
2.8	STRUCTURAL	
2.9	MECHANICAL	
2.10	ELECTRICAL	
3.0	<u>COSTING STUDY</u>	28
3.1	BUDGET	
3.2	DEVELOPMENT COSTS	
3.3	FEASIBILITY STUDY	
4.0	<u>SUMMARY</u>	34
5.0	<u>APPENDIX</u>	35
5.1	DESIGN DRAWINGS	

1.0 SPECIFIC USER PROGRAM

1.1 Introduction

"We want to live in our own houses, and control our own lives. We want the opportunity to become part of the main stream of society; to mix, work and play with the majority."

There are many design manuals, home making and personal care books and architectural barrier check lists that identify approaches toward usable housing for disabled people. While each addresses itself to the issue of independent and accessible living, there are considerable differences in perspective among them. The failure to provide suitable accommodations for the true needs of the handicapped are partially due to the constraints of economics and the legislative limitations which currently exist. It is also in part due to the lack of understanding on the part of designers and product manufacturers who fail to realize or have not been instructed in the divergent needs of handicapped individuals.

As noted in the above quotation, the main goals of the handicapped individuals with respect to housing are independence and integration.

Independence relates to the physical situations which will allow handicapped people to live as normal a life as they choose. To accomplish this the demands on the housing unit are elimination of physical barriers, flexibility of design, accessibility to all areas of the development and the elimination of internal supervision.

Integration requires that the facility allow disabled and non-disabled to inhabit the common development with no difficulty. In order to accomplish this there are needs therefore for interactive activities and spaces, a general mix of units, common facilities as well as the flexibility of design to accommodate both disabled and non-disabled persons.

This identified need then forms the basic conceptual model from which the following program document is developed. The detailed development of the program was achieved through interviews and discussions with various handicapped individuals, the Handicapped Housing Society of Alberta, as well as knowledgeable representatives from support disciplines.

1.2 Client Characteristics

Although this project will accommodate non-disabled persons, it is intended here to identify the basic characteristics of the handicapped individuals who represent the user group for this facility.

Since it is not easy to categorize with limitations, the physically disabled, there is a general need for flexibility within the units themselves to be adaptable to the various handicaps which might require the space. Many of the disabled will require assistance in order to carry out one or more of the basic personal activities such as dressing, preparation of food, housekeeping, etc. It is intended that this support will be provided by either family members or by a service provided from outside of the residential development a large majority will require little medical attention, but would benefit from medical assistance being close at hand. Although there is a possibility that the disabled may not have jobs, this is not to say they do not leave the home. There is in fact a great desire on the part of these individuals to have the opportunity to leave the home and to utilize outside support facilities and services. Therefore the integration aspect into the community is even more important to these individuals.

Since only a small minority of the handicapped people are capable of operating their own vehicles they must have the means available to move easily within the development as well as moving easily to alternative means of public transportation.

With respect to the family groups expected, there is great variance as there is with any housing developments. Although it could be expected that singles may live together in one of the units it may also be common that a family with one or more individuals being handicapped may also be inhabiting the facilities.

With respect to disability it should be noted that any and all individuals with handicaps will be allowed to inhabit these units with the only requirement being their ability to function independently from either institutional or medical continual care. Those with mental retardation and perhaps associated physical disabilities will primarily be those individuals who's rate of intellectual development is slightly below that of the average individual but who are able to learn basic academic and life skills. They will be capable of interacting with other people and can function socially as well as vocationally. As well, they are able to do unskilled or semi-skilled work and can in fact support themselves at the adult level.

The physically disabled on the other hand will involve a broader range of impairments ranging from mildly disabled or those whose mobility has been only slightly impaired, to moderate disability whereby the individual requires aid such as crutches, braces, or other special equipment for assistance in the upper and/or lower extremities, or the severely disabled or individuals who may need the use of a wheelchair or other specially designed equipment for mobility assistance.

Since irrespective of disability, the most difficult appliance in terms of bulk, weight and spacial requirements is the wheelchair, the basic design criteria implemented for this problem will in fact be accommodating the needs of wheelchair occupants.

1.3 Project Description

The following data is summarized from document 'A' and represents the basic design criteria established for the housing development.

- 1) A multi unit medium density housing development made up of accessible housing units approximately 50% of which are specifically identified for handicapped occupants.
- 2) The selected site or sites to be within or near the Garneau area of Edmonton.
- 3) The project at least in part utilize CMHC funding programs.
- 4) The project will be based upon the user group representing a co-operative venture.
- 5) The project is to be integrated within the context of the existing community fabric.

1.4 General Characteristics

1. Site

It has been expressed numerous times by the disabled that location of accessible housing should be in the inner city area. Since this criteria has been adopted as one of the major requirements for the site location, the reasons behind this form the following site locational determinants:

- 1) Ease of accessibility to modes of transportation.
- 2) Proximity to educational, medical and recreational facilities.
- 3) Proximity to varied ranges of shopping facilities.
- 4) Ease of acceptance within selected neighbourhood.
- 5) Ease of compliance with local bylaws.

In addition to these general requirements specific functional concerns have also be identified:

- the suitability of site grades.
- the orientation of the sun and views, etc.
- the possibilities for future expansion.
- noise relationship to adjacent roads, etc.
- availability of parking.
- availability of recreational space.
- proximity to support facilities such as fire, police, educational, medical, etc.
- existing and proposed adjacent developments conducive to low rise residential facility.
- extent of existing landscape development at the site and the development of exterior spaces, walks, streets and accesses are to be designed so as to accommodate wheelchairs. It should be noted however that designs for wheelchair access may be awkwardly large for certain semi-ambulant disabled persons who depend on narrow door ways, railing, and hallways for support.

2. Site Development

The site development while required to accommodate local bylaws and codes, should make allowances for the following concerns:

- .1 Green space.
- .2 Childrens' recreational areas.
- .3 Common amenity spaces.
- .4 Parking areas designed for the particular needs of the development.
- .5 Ease of access from parking and/or drop off areas to unit entrance.
- .6 Suitable hard and soft landscaping so as to enable the disabled movement throughout the site. This will pertain particularly to types of surfaces, radiance, lighting, ease of maintenance, overall dimensions and finishes.

3. Housing Form

Due to the restricted incomes of individuals the form or forms selected must bear relationship to the economics available to this development. The unit design both for the accessible units and the specific handicapped units will be as follows:

One bedroom units

Two bedroom units

Three bedroom units

Four bedroom units

The design solution for the specific handicapped units should enable the total accessibility within the unit to all areas of the plan by wheelchair occupants. This movement is to be possible without assistance and should therefore incorporate ramps and/or suitable lifts to any levels.

The final design will be based on a multiple type family housing development and consideration should be given to groupings which will promote the best means of neighbourhood integration. Although initially the handicapped units are seen as being limited to one level, consideration and acceptance will be given to innovative approaches utilizing various levels.

If permitted by soil conditions, some units may have basements which may be partially or fully developed with possible handicapped access.

4. Parking

Based upon the zoning bylaw, the minimum parking stalls shall be 2.6 m wide x 5.5 m long, with a minimum driving aisle width of 7.3 m. It has been identified however, that the number of vehicles used by handicapped individuals and their families are somewhat less in numbers than the normal family situation and therefore it has been identified that if possible the total number of parking stalls associated with the handicapped units could be reduced.

There is a specific need for at least several parking stalls to be somewhat larger than the normal stall allowance based upon the need to off load wheelchair persons from side loading ramps, etc. Therefore the size related these stalls should be 3.7 m in width x 6 m in length.

Driving ramps should not exceed a slope of 1:10 so they may be used as an emergency exit from the parking area.

Other suggestions with respect to parking are as follows:

1. If at all possible parking activities should not encroach upon the south side of the site or at least provide the minimum of intrusion upon that area.
2. The street must be readily accessible from the pedestrian area of the site.
3. An area related to passenger pick-up and drop-off should be identified.
4. If at all possible each individual unit should be provided with its own carport or garage with accessibility directly into the unit via a covered connection. Group parking may be provided only as suitable access is available to the individual.

5. ENVIRONMENT

Since some handicaps restrict mobility to a degree which causes the individual to remain indoors a great amount of the day, the design must sensitively maximize options of location and activity for these as well as other individuals.

It is important to allow use of outdoor spaces as much of the year as possible and to consider extending useability where possible.

Units themselves should provide options as to views, light, space and connections to the outdoors.

As well it is important to develop and promote contact with the immediate neighbours as well as with the neighbourhood at large.

Site development through landscaping should allow for both structured and spontaneous activities.

It is important to remember and provide for the varied types of use which might be appropriate to the handicapped, non-handicapped individuals, the elderly as well as children and adolescents.

1.5 Unit Design Criteria

1. Disabled Units

These units should satisfy a number of basic requirements which are identified as follows:

- a) The unit must functionally provide for the needs for the disabled. Primarily this will be related to the design influences related to wheelchairs. Due to the limitations of the wheelchair, the individual is limited with respect to movability, reach, as well as general dexterity. In light of this, it will be necessary to provide suitable space for wheelchair movement, allowances in various heights and locations of the fixtures and appointments in order to accommodate reaching concerns and specific designs related to controls, switches, handrails, etc. in order to provide for the limits of dexterity.

Generally speaking the units in total must contain a significant amount of flexibility with respect to appointments in order that provision may be easily made for various types of disability. As well, it should be remembered that over time disabilities may tend to involve varied stages of disability and therefore require change to the units design.

- b) These units will be family oriented and since it can be expected that these units will also be inhabited by non-disabled persons, the term flexibility will also pay particular attention to the needs of non-disabled individuals. This will mean that the design although related to the disabilities of the disabled, will respect the needs for non-disabled, remembering that the allocation of spaces with respect to order of priorities, varies significantly between units designed for the disabled and those designed for non-disabled people. Where the typical development design tends to reduce such areas as kitchen, bathroom, storage, etc. in order to maximize the size of living room spaces, units design specifically for disabled must provide adequate space in the kitchen, bathroom, entry area as well as providing suitable storage facilities. This will mean that should space be

limited, the additional areas requiring space must find it from specifically the living area. For the most part this would not present a significant problem to non-disabled people providing that suitable area is still provided for the living spaces.

- c) The size of the units must be comparable to similar project yet must provide areas which will allow for the cost indicated via the budget. Initially it has been indicated that the following gross unit areas should be identified for schematic design purposes.
 - 1. Two bedroom units - $93m^2$
 - 2. Three bedroom units - $112m^2$
 - 3. Four bedroom units - $125m^2$
- d) The accessibility of these units must be related totally to the needs of disabled persons. Although no restriction is placed on the height nor the levels associated with this unit, any levels indicated must provide access by ramps and/or suitable lifts. Access to all area must be possible without assistance. Should stairs be used ie. the basement access, the design should allow for the future installation of stair lifts.

Not only is internal accessibility a specific requirement but accessibility from the exterior to the interior is just as important a requirement. This will mean that access to and the use of exterior spaces related to the unit will be designed with the handicapped in mind.

2. Accessible Units

The definition given to "accessible" is that at ground level these units will be designed so as to allow handicapped access without assistance. Although the interior requirements for these units are not as stringent as those designed for the handicapped specifically, consideration should be given to the possibility of one or more of the inhabitants being handicapped to some extent at some time. This is to say that units for the non-disabled should give consideration to methods by which the units may be made better usable should handicapped individuals at some point desire to inhabit them.

3. Community Centre

There is a need, within a large residential development, for a facility which services the immediate communities' needs. When combined with the requirements identified by handicapped individuals, the community centre becomes even more appropriate.

The functional spaces identified must be provided in such a manner so as not to deter interaction and integration with the larger community. Rather such spaces should accommodate the local needs while reinforcing the integration with the surrounding neighbourhood by allowing joint use of spaces. This has been successfully accomplished in various co-operative ventures throughout Canada.

In order to accomplish these goals, the types of spaces and their use and location within the development is most important. Care must be taken to provide an identity for this facility which is easily recognizable by residents as well as visitors. The needs of the handicapped must be accommodated while still providing an inviting atmosphere for non-handicapped individuals.

Although initially to provide for the needs of the co-operative, this facility is perhaps one of the most successful tools in achieving integration and a cohesive neighbourhood.

As well as providing psychological and physical security to individuals, this facility may in part generate additional income to the co-operative on an ongoing basis which will allow not only an increase in the operations capital but will initially enable a lowering of residential density to a more human scale.

4. Commercial

The requirement to provide commercial space within this development has evolved during the course of the economic development as well as the programming development.

In order to provide the quality and lower scale development desired for the residential segment, it became obvious that additional capital would have to be generated so as to subsidize the higher cost of a medium density development. In addition to this, as part of the programming requirements, there was a desire to have closer at hand, certain personal care type services.

The Co-operative Foundation of Canada and CMHC identified that commercial spaces may be integrated into a co-operative development. CMHC will finance up to 100% of the mortgage cost for this space at reduced rates. Income obtained through the rental of these spaces goes to the co-operative and may be used as part of the operational capital fund. The most recent co-operatives utilizing commercial space to subsidize their income are found in the Vancouver area. "BROADVIEW", an apartment development in Vancouver has been able to double their subsidy pool by the use of commercial space rental.

Commercial space may be rented or may be used in part by the co-operative or a member of the co-operative. The maximum commercial area allowed by CMHC is 20% maximum of the total gross co-operative area.

It has been determined in discussion with various local residents and business men, that a neighbourhood type commercial development for both professionals, service areas as well as the normal retail functions would be appropriate in this area and would meet the existing zoning bylaws. Due to the proximity of the University and the condition of several existing commercial spaces it seems reasonable to assume that offices and retail space which currently exists would be amenable to relocating a short distance in order to be accommodated within more suitable and up to date facilities.

The introduction of commercial space as part of the co-operative development would not only produce an economic benefit but would provide potential for local residents, both handicapped and non-handicapped to find work and possibly additional training in the areas of life skills.

1.6 Functional Design Criteria

The following section will provide a detailed indication of specific areas and the design criteria specific to them. Although numerous requirements are applicable to all the units, these descriptions will be divided into four categories:

- | | |
|---------------------|---------------------|
| 1. Disabled units | 3. Community Centre |
| 2. Accessible units | 4. Commercial |

It is intended that by this subdivision specific requirements related to primarily the handicapped units, will be evident and the effect upon area and space distribution will be identified.

It should be mentioned that this criteria will form the initial base for schematic design and design development, but will continue to expand and evolve throughout the design development process. This section then forms only the primary base for future design and does not intend to identify all criteria at this time. It has been identified through interviews and discussions with various individuals involved in developments such as this, that the approach towards an ever developing specific program is desirable.

UNIT DISABLED

ROOM: ENTRY

AREA:

FUNCTIONAL CRITERIA:

1. Direct path unobstructed to all areas.
2. Relates to storage space.
3. Design for wheelchair maneuverability.
4. Accessible entrance.

RELATIONSHIPS:

1. DIRECT: Corridor System
2. INDIRECT All Areas.
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

- Coat and Boot Storage
- Wheelchair Storage

LIGHTING

Natural if possible

STORAGE

Coat
Boot
Wheelchair

SPECIAL REQUIREMENTS:

1. Main entrance security devices.
2. Visibility to exterior.
3. Entrance door min. 915mm wide.
4. Deck or porch desired for view and contact with neighbours.

UNIT DISABLED

ROOM: BASEMENT IF PROVIDED

AREA: AS REQUIRED

FUNCTIONAL CRITERIA:

1. Full or partial area for future development and mechanical space.
2. Stair access to main level.

RELATIONSHIPS:

1. DIRECT: Main Level
2. INDIRECT Kitchen
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

Mechanical/Electrical Equipment

LIGHTING

Artificial

STORAGE

General Shelf Storage

SPECIAL REQUIREMENTS:

1. Rough in for future bathroom.
2. Capability for future development
3. Stair straight run and capable of chair lift.

UNIT DISABLED

ROOM: LIVING

AREA:

FUNCTIONAL CRITERIA:

1. The living room is a sufficiently flexible space that no particular criteria is required.
2. Overall configuration must be conducive for numerous furniture arrangements.

RELATIONSHIPS:

1. DIRECT: Dining
2. INDIRECT Kitchen; Entry; Bathroom
3. SEPARATION REQUIRED: Sleeping

FURNISHINGS REQUIRED:

The amount of furnishings will be limited by the need for wheelchair access

LIGHTING

Natural Light

STORAGE

Included in moveable furnishings

SPECIAL REQUIREMENTS:

1. Consideration of connection to exterior private space.
2. Need to extend useability of exterior space.
3. Southern exposure desired.
4. Fireplace if possible.
5. Exterior adjacent landscaping important.

UNIT DISABLED

ROOM: DINING

AREA:

FUNCTIONAL CRITERIA:

1. Dining area may be physically part of the living room to allow for expansion of both areas.
2. Should be convenient to kitchen to allow ease of serving and cleaning.

RELATIONSHIPS:

1. DIRECT: Kitchen
2. INDIRECT Living, Bathroom
3. SEPARATION REQUIRED: Sleeping

FURNISHINGS REQUIRED:

Moveable table and chairs suitable for wheelchair seating and cleanup.

LIGHTING

Indirect Natural
Dimming Capability

STORAGE

Built in shelf storage if possible.

SPECIAL REQUIREMENTS:

1. Floor finish conducive to wheelchair movement and ease of cleaning.
Capability to expand area desired.
2. View to exterior desired.

UNIT
DISABLED

ROOM: KITCHEN

AREA:

FUNCTIONAL CRITERIA:

1. Relates to most used area in unit.
2. Must accommodate wheelchair.
3. Should allow wheelchair and non-disabled person to work simultaneously.
4. Ability to modify layout required.
5. Kitchen eating area if possible.

RELATIONSHIPS:

1. DIRECT: Dining, Laundry.
2. INDIRECT Living, Bathroom, Entry, Basement, Storage
3. SEPARATION REQUIRED: Sleeping

FURNISHINGS REQUIRED:

- Built in shelves and counters
- Fridge, Stove, Dishwasher if possible.
- Double sink.

LIGHTING

Fluorescent at work centre

STORAGE

- Cupboards
- Pantry
- Broom

SPECIAL REQUIREMENTS:

1. Ability to vary counter height.
2. Stove and sink at wheelchair height.
3. Wall oven if possible and counter top range.
4. Pantry with access for wheelchair.
5. Exhaust fan.
6. Wall pegboard.
7. View if possible to exterior.

UNIT DISABLED

ROOM: CORRIDORS (Circulation)

AREA: AS REQUIRED

FUNCTIONAL CRITERIA:

1. Provide suitable wheelchair access to all areas.
2. Minimize circulation where possible.
3. Provide 1.5m turn around at key intersections.

RELATIONSHIPS:

1. DIRECT:
2. INDIRECT To all areas.
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

LIGHTING

Artificial

STORAGE

SPECIAL REQUIREMENTS:

1. Avoid projections.
2. Reduce travel distances.
3. Ramps not to exceed 1:12.
4. Elevators and/or lifts acceptable to level changes.
5. Doors suitable for wheelchair.

UNIT DISABLED

ROOM: STORAGE

AREA:

FUNCTIONAL CRITERIA:

1. Provide typical unit storage.
2. Provide specialized handicapped equipment storage.
3. May be provided in several locations.

RELATIONSHIPS:

1. DIRECT: Entry, Laundry, Basement
2. INDIRECT All areas.
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

- Adjustable Shelving
- Hooks

LIGHTING

Artificial

STORAGE

SPECIAL REQUIREMENTS:

1. Flexible shelving.

UNIT DISABLED

ROOM: MASTER BEDROOM (DISABLED)

AREA: 18 m²

FUNCTIONAL CRITERIA:

1. Sleeping/Sitting/Dressing for wheelchair.
2. Located on main level with access to kitchen and bath.
3. Flexibility of layout and arrangement.
4. Direct and clear paths to bathroom or room exit.

RELATIONSHIPS:

1. DIRECT: Bathroom if possible.
2. INDIRECT Corridor
3. SEPARATION REQUIRED: Living

FURNISHINGS REQUIRED:

Moveable Furniture

LIGHTING

Natural Light

STORAGE

- Clothes Closets
- Wheelchair

SPECIAL REQUIREMENTS:

1. Closets need wheelchair access
2. Access to both sides of bed (s).
3. Sufficient area for specialized equipment ie. respirator.
4. Finishes conducive to easy movement.
5. Structural capability for special mountings of equipment.
6. Remote control light switches, intercom.
7. Visual relationship to exterior and light.

UNIT DISABLED

ROOM: BEDROOM (DISABLED)

AREA: 15 m²

FUNCTIONAL CRITERIA:

1. See master bedroom.
2. Required where a second bedroom accommodates a handicapped individual.

RELATIONSHIPS:

1. DIRECT:
2. INDIRECT BATHROOM
3. SEPARATION REQUIRED: LIVING

FURNISHINGS REQUIRED:

1. Accessible shelving.

LIGHTING

Natural light

STORAGE

1. Clothes

SPECIAL REQUIREMENTS:

1. Visual relationship to exterior view.

UNIT DISABLED

ROOM: BEDROOM (NON-DISABLED)

AREA: 10 m²

FUNCTIONAL CRITERIA:

1. Typical to accessible bedroom.

RELATIONSHIPS:

1. DIRECT:
2. INDIRECT
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

LIGHTING

STORAGE

SPECIAL REQUIREMENTS:

UNIT DISABLED

ROOM: BATHROOM

AREA:

FUNCTIONAL CRITERIA:

1. Related to General use as well as specific handicap requirements
2. Locational relationship to handicap bedroom
3. Ensuite desired
4. Basement rough in for future bathroom
5. Wheelchair design criteria

RELATIONSHIPS:

1. DIRECT: Hall, (master or handicapped bedroom)
2. INDIRECT Bedrooms, living, dining
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

1. Water Closet
2. Bathtub
3. Sink and vanity

LIGHTING
Natural and/or artificial

STORAGE
- vanity and linen
- medicine storage

SPECIAL REQUIREMENTS:

1. Non slip surfaces
2. Thermostatic temperature controls if possible
3. Various vanity and mirror heights
4. Full dressing mirror
5. Flexibility of storage
6. Ability to install grab bars
7. Shower in place of tub acceptable
8. Suitable controls and space

UNIT DISABLED

ROOM: LAUNDRY

AREA:

FUNCTIONAL CRITERIA:

1. Associated with main floor kitchen
2. Wheelchair use
3. May be combined with kitchen or in separate area.
4. May be combined with storage

RELATIONSHIPS:

1. DIRECT: Kitchen
2. INDIRECT Basement
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

- | | |
|------------------------|------------------|
| 1. Side opening washer | 5. Ironing board |
| 2. Front loading dryer | 6. Pegboard |
| 3. Storage shelves | 7. Hamper |
| 4. Laundry Sink | |

LIGHTING

Natural Light not mandatory

STORAGE

Shelf storage
Lockable storage

SPECIAL REQUIREMENTS:

1. Castors on appliances if possible
2. Built in ironing board capable of varied heights
3. Fire control consideration

UNIT ACCESSIBLE

ROOM: ENTRY

AREA:

FUNCTIONAL CRITERIA:

- Provides control access to unit
- Accessible to handicapped

RELATIONSHIPS:

1. DIRECT: Corridors
2. INDIRECT Living, Kitchen
3. SEPARATION REQUIRED: Bedrooms

FURNISHINGS REQUIRED:

LIGHTING

Artificial/Natural

STORAGE

Coat Closet

SPECIAL REQUIREMENTS:

1. Security observation control
2. Relationship to exterior balcony or deck for semi-private area.
3. Relates to view and light.

UNIT ACCESSIBLE

ROOM: BASEMENT (IF PROVIDED)

AREA: VARIES

FUNCTIONAL CRITERIA:

1. Storage/Mechanical
2. Future Development

RELATIONSHIPS:

1. DIRECT:
2. INDIRECT CIRCULATION
3. SEPARATION REQUIRED: BEDROOMS

FURNISHINGS REQUIRED:

LIGHTING
ARTIFICIAL

STORAGE
GENERAL

SPECIAL REQUIREMENTS:

1. Possibility of stair lift installation.

UNIT ACCESSIBLE

ROOM: LIVING

AREA:

FUNCTIONAL CRITERIA:

- Through traffic should be separate from activity centers
- Provide enough wall space for varied furniture arrangements

RELATIONSHIPS:

1. DIRECT: Dining
2. INDIRECT Kitchen, Entry
3. SEPARATION REQUIRED: Sleeping

FURNISHINGS REQUIRED:

Moveable furniture
Telephone

LIGHTING

Natural Direct

STORAGE

Remote

SPECIAL REQUIREMENTS:

1. May be combined with dining so as to allow either area to expand
2. Carpet
3. Consider relationship to outdoor private area, south exposure and landscaping.

UNIT ACCESSIBLE

ROOM: DINING

AREA: 9 x 11

FUNCTIONAL CRITERIA:

- Adjacent to kitchen
- May be part of living to allow expansion
- Suitable for family size
- Ease of clean up

RELATIONSHIPS:

1. DIRECT: Kitchen
2. INDIRECT Living, Entry
3. SEPARATION REQUIRED: Bedrooms

FURNISHINGS REQUIRED:

Moveable

LIGHTING

Artificial / Natural

STORAGE

Fixed or moveable for dishes, etc.

SPECIAL REQUIREMENTS:

1. Carpeted
2. View to exterior if possible.

UNIT ACCESSIBLE

ROOM: KITCHEN

AREA:

FUNCTIONAL CRITERIA:

- Functional triangle movement layout
- Suitable counter heights and storage spaces
- Possible supervision of children's outside play

RELATIONSHIPS:

1. DIRECT: Dining, Entry
2. INDIRECT Living, Washroom, Basement
3. SEPARATION REQUIRED: Sleeping

FURNISHINGS REQUIRED:

Fixed cupboards
Double sink, fridge, stove, dishwasher

LIGHTING

Natural if possible

STORAGE

flexible upper and lower units pantry

SPECIAL REQUIREMENTS:

1. may be compact so as to allow larger living area
2. eating area if possible
3. pantry
4. cheerful atmosphere
5. laundry may be part of kitchen
6. cushion flooring
7. Natural view

UNIT ACCESSIBLE

ROOM: LAUNDRY

AREA: VARIES

FUNCTIONAL CRITERIA:

1. To provide for the immediate needs of the family.
2. To provide suitability for handicap use.
3. To be in handicapped units, in or adjacent to the kitchen.
4. Stacked washer and dryer in a closet location is suitable.

RELATIONSHIPS:

1. DIRECT: KITCHEN
2. INDIRECT BEDROOMS
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

N.A.

LIGHTING

INDIRECT FLUORESCENT

STORAGE

SHELVING FOR SOAPS ETC.

SPECIAL REQUIREMENTS:

1. Plumbing connections.
2. Accessibility.

UNIT ACCESSIBLE

ROOM: CORRIDORS

AREA: VARIES

FUNCTIONAL CRITERIA:

1. Repeat as for handicapped units since handicap access is a requirement.

RELATIONSHIPS:

1. DIRECT:
2. INDIRECT
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

LIGHTING

STORAGE

SPECIAL REQUIREMENTS:

UNIT ACCESSIBLE

ROOM: STORAGE

AREA: VARIES

FUNCTIONAL CRITERIA:

1. To provide for the general storage needs of the unit.
2. Linen, general, miscellaneous.
3. Suitable in location to needs and use.

RELATIONSHIPS:

1. DIRECT: Kitchen, Bathroom, Entry.
2. INDIRECT Bedroom, Living/Dining.
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

1. Adjustable shelving.

LIGHTING

1. Artificial

STORAGE

SPECIAL REQUIREMENTS:

UNIT ACCESSIBLE

ROOM: MASTER BEDROOM

AREA: 12m² min.

FUNCTIONAL CRITERIA:

- Suitable for double bed and dressers
- Ease of access to bathroom

RELATIONSHIPS:

1. DIRECT: Hall
2. INDIRECT Bathroom, Other bedrooms
3. SEPARATION REQUIRED: Living, Dining, Kitchen

FURNISHINGS REQUIRED:

LIGHTING
Natural

STORAGE
Closet(s) Rod & Shelf

SPECIAL REQUIREMENTS:

- Carpeted
- View to exterior
- Sunlight and orientation

UNIT ACCESSIBLE

ROOM: BEDROOM (SECOND AND THIRD)

AREA: VARIES

FUNCTIONAL CRITERIA:

To provide sleeping facilities for single adult or child or several children

RELATIONSHIPS:

1. DIRECT: Hall
2. INDIRECT Bathroom
3. SEPARATION REQUIRED: Living, Dining, Kitchen

FURNISHINGS REQUIRED:

LIGHTING

Natural

STORAGE

Closet - Red & Shelf

SPECIAL REQUIREMENTS:

COMMUNITY

ROOM: MULTI-PURPOSE

AREA: 126m²

FUNCTIONAL CRITERIA:

1. To provide flexible space for community and co-op use.
2. To be able to be divided into two separate rooms.
3. Use as meeting, games, film and party space.
4. May serve as emergency centre.

RELATIONSHIPS:

1. DIRECT: Entrance, Lounge, Exterior.
2. INDIRECT Washrooms, Solarium.
3. SEPARATION REQUIRED: Activity areas.

FURNISHINGS REQUIRED:

1. Moveable chairs.
2. Tackboards, Chalkboards.

LIGHTING

1. Recessed fluorescent
2. Natural

STORAGE

1. Chair/Table storage.

SPECIAL REQUIREMENTS:

1. Views to exterior.
2. Access to exterior.

COMMUNITY

ROOM: DAY CARE

AREA: 72m²

FUNCTIONAL CRITERIA:

1. To provide space for day care.
2. To provide possible alternate uses.
3. Access to exterior playground.
4. Special play/library area.

RELATIONSHIPS:

1. DIRECT: Entrance/Lobby
2. INDIRECT: Washrooms, exterior.
3. SEPARATION REQUIRED: Activity areas.

FURNISHINGS REQUIRED:

1. Moveable chairs, tables, play equipment.

LIGHTING

1. Recessed fluorescent
2. Natural

STORAGE

1. Moveable storage units.

SPECIAL REQUIREMENTS:

1. View to exterior play area.
2. Cozy atmosphere.
3. Conducive to controlled play.

COMMUNITY

ROOM: CHANGE ROOMS/SHOWERS (MEN & WOMENS)

AREA: 50m² each

FUNCTIONAL CRITERIA:

1. Change room for 25 adults.
2. Lockers and bench seating.
3. Washroom facilities.
4. Gang showers with 3 shower stalls.
5. Drying areas.
6. Provides access to activity areas.

RELATIONSHIPS:

1. DIRECT: Entrance/Lobby; Activity Areas.
2. INDIRECT Solarium/Exterior.
3. SEPARATION REQUIRED: Multi-purpose/Day Care

FURNISHINGS REQUIRED:

1. Lockers
2. Benches
3. Dryers, etc.

LIGHTING

1. Recessed fluorescent.
2. Pot lights.

STORAGE

1. Janitorial

SPECIAL REQUIREMENTS:

1. Handicap use and access.
2. Suitable finishes.
3. Control of moisture and humidity.

COMMUNITY

ROOM: EXERCISE

AREA: 100m²

FUNCTIONAL CRITERIA:

1. Includes office, storage space.
2. To provide area for exercise equipment and various classes.

RELATIONSHIPS:

1. DIRECT: Change rooms, Therapy, Sauna.
2. INDIRECT Exterior, Solarium, Entrance.
3. SEPARATION REQUIRED: Multi-purpose.

FURNISHINGS REQUIRED:

1. Loose equipment and mats.

LIGHTING

1. Recessed pot lights.
2. Natural.

STORAGE

1. Separate storage area.

SPECIAL REQUIREMENTS:

1. Handicap access and use.
2. Access to exterior for summer use.

COMMUNITY

ROOM: SAUNA/JACUZZI

AREA:

FUNCTIONAL CRITERIA:

1. Provide net type functions.
2. Jacuzzi suitable for wheelchair.
3. Therapy use.

RELATIONSHIPS:

1. DIRECT: Change rooms, exercise.
2. INDIRECT Entrance.
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

1. Bench seating.

LIGHTING

1. Pot lighting
2. Accent lights
3. Special
4. Natural

STORAGE

N.A.

SPECIAL REQUIREMENTS:

1. Suitable for handicap use.
2. Alarm system for assistance.
3. Suitable finishes.

COMMUNITY

ROOM: THERAPY

AREA: 60m²

FUNCTIONAL CRITERIA:

1. Provide additional exercise space.
2. To provide for special needs of handicap for physical therapy, life skills training, special assistance.

RELATIONSHIPS:

1. DIRECT: Exterior.
2. INDIRECT Exercise
3. SEPARATION REQUIRED:

FURNISHINGS REQUIRED:

1. Special equipment.

LIGHTING

1. Recessed fluorescent
2. Natural

STORAGE

1. Separate storage room.

SPECIAL REQUIREMENTS:

1. Space flexible for mixed use.
2. Suitable for training and therapy.
3. Views to exterior.

COMMERCIAL TYPICAL

ROOM: OFFICES (MAXIMUM 8 UNITS)

AREA: VARIES

FUNCTIONAL CRITERIA:

1. To provide rentable office spaces.
2. Handicap access.
3. Residential scale and setting.
4. Separated from mercantile.
5. To service needs such as support groups, medical and professional type services.

RELATIONSHIPS:

1. DIRECT: Exterior, walkways, parking.
2. INDIRECT Residential.
3. SEPARATION REQUIRED: Mercantile.

FURNISHINGS REQUIRED:

1. Provide white box standard for tenant design.
2. Washrooms, storage areas.

LIGHTING

1. Recessed fluorescent
2. Special accent and task lights

STORAGE

1. Provide suitable space.

SPECIAL REQUIREMENTS:

1. Accessible throughout.
2. Relate to residential atmosphere.
3. Views to exterior.
4. Access to main walkways.
5. Corner site location desired.

COMMERCIAL (TYPICAL)

ROOM: MERCANTILE (MAXIMUM 8 UNITS)

AREA: VARIES

FUNCTIONAL CRITERIA:

1. To provide rentable retail spaces.
2. Handicap access.
3. Mall enclosed atmosphere.
4. Access from exterior and interior.
5. May be mixed with residential.
6. Provide suitable service spaces.

RELATIONSHIPS:

1. DIRECT: Mall, Parking
2. INDIRECT Residential
3. SEPARATION REQUIRED: Noise, fire between residential

FURNISHINGS REQUIRED:

1. Provide white box standard for tenant design.
2. Washrooms.

LIGHTING

1. Natural
2. Recessed fluorescent

STORAGE

1. Provide space for possible storage.
2. Service storage.

SPECIAL REQUIREMENTS:

1. Accessible throughout.
2. Relationship to residential atmosphere and landscape.
3. Maximum area 20% of total development.
4. Consider protected parking.
5. Views to exterior.
6. Access to exterior events.
7. Provide seating/rest areas.

2.0 PROGRAM DEVELOPMENT

2.1 Design Philosophy

The solution to the problem of providing accessible housing within a inner city area may be met only through a fully integrated response. This is to say a response to the needs of the inhabitants of the new development as well as to the needs of the established neighbourhood into which this development is to be placed.

The solution presented is based upon this philosophy and is dedicated to indicating that a viable approach exists which can reasonably answer the numerous demands placed upon such a program by the clients, financing agency, building codes and the city administration.

It should be mentioned that this philosophy although taking into account the particular needs of handicapped individuals does not promote the philosophy that these individuals are somewhat different and should therefore be set apart from the main stream of society. It is proposed very much the opposite that any development should as a normal course of design enable these and any other individuals to become a part of that development and be unrestricted in the use of the options provided within that development.

The main issue of the philosophy dictates that the development enables individuals, as their life style develops and changes, to remain a part of the development and to have a choice within these solutions for appropriate space and use. A co-operative is perhaps one of the best structures of development to allow for the evolution of an individual and family life and therefore should be flexible enough to accommodate the many varied needs of the family cell.

2.2 Site

Once the initial site location has been determined, it becomes important to develop an approach to the site development which is conducive to the needs of the individuals at the project scale, as well as to the needs of the existing community fabric and immediate neighbourhood.

With this development it has been determined as important to promote, as part of the integration philosophy, movement through and around the site by not only the inhabitants of the co-operative but also by the neighbourhood at large. In order to accomplish this the natural flow which is felt to be diagonally across any

site when one is unrestricted, has been reinforced and enhanced through the developed form and pattern of movement. As well, the structured and adhoc activity spaces along these paths further promote the movement desired. The four site corners have been identified as key nodes at which people determine to either bypass the site or to pass into and through the site. The development therefore takes advantage of these two approaches to movement and allows for interaction with the development with each selection and path. The movement through the site has been developed on the basis of ease of access, interest and casual movement. Thus an internal pedestrian street has been created which enables a repetition of the existing street quality of the neighbourhood at the interior of the development.

Since this area is well established and heavily landscaped with mature trees, the design promotes the retention of the existing growth and establishes within the site reflection of the surrounding neighbourhoods' maturity. As well through the development of various landscaped levels and meandering and ramped paths and walks, the interest that is developed within the internal street enhances the potential for integration and the interaction with the neighbourhood.

The interaction with the existing community is most important and must involve not only adults but children as well. For this reason the nodes of activity space developed along the internal street and paths allows for the spontaneous use by children. While not structured, subtle use of constructional elements such as retaining walls, sloped walks and rock out crops, are used as a natural setting for children's use.

Within the street development, plazas have been placed in strategic locations which will promote community gathering and both planned and spontaneous activities. As well these plaza areas provide appropriate demarkation points for movement throughout the site. By the introduction of somewhat monumental sculptural elements, it is intended that these locations will in themselves become focal points to the development and the neighbourhood.

The site development in it's use of landscaped levels and the particular massing and scale of the buildings, intends to enhance the climatic factors to create contained microclimates which are available to all residences and will extend the period of use for the outdoor facilities.

From the internal street flow, there are numerous possibilities for more relaxed movement and the potential for activity and/or rest areas. These secondary routes have been developed and located in such a manner so as to provide a number of options given the numerous requirements of varied age groups as well as handicapped and non-handicapped individuals.

The site then is seen as a cohesive development which provides for the immediate needs of this co-operative development but more importantly a thread by which the existing community may be drawn together.

2.3 Housing Form

Human nature normally creates a reluctance to change. Within a well established inner city neighbourhood, this reluctance is perhaps more apparent than it would be towards the fringe of the city. For this reason any development must pay particular attention to this reluctance and must overcome this potential situation in every facet of the design solution.

The form and aesthetics of the development is probably the most obvious area of design by which one may overcome neighbourhood opposition. This particular solution takes into account the existing neighbourhoods' history and its people and establishes a form and language which although new in construction, is somewhat old and appropriate to the existing fabric of the community. Being primarily a relatively low density single family neighbourhood, it was felt important not to promote a high density solution. This was felt inappropriate not only to the neighbourhood but also in response to the human scale desired within this development. For these reasons a medium density solution has been identified.

It was decided that in order to be sympathetic to the single family neighbourhood, this solution must present an impression of a single unit development. This has been accomplished through the use of block developments as well as the introduction of various level combinations and unit types. As well it was felt important and appropriate to retain a number of the existing single family homes and to incorporate these within the development. This approach not only aided the establishing of the language but also provided additional options to the residents of the co-operative.

It had been noted through discussion with seniors in the area, that while they could not maintain the large lots associated with their homes, due to their long

established residence in the neighbourhood, they would gladly reduce their lot size for the option of retaining their home. This in itself provides an additional option to the co-operative and enables another mechanism for establishing an appropriate site development scale and economic base.

With the retention of selected existing homes, the development becomes partially an infill problem which has proven to be better received than a wholesale change to a neighbourhood. With the development of the entire city block, the new development has a better capability to establish itself as a part of the existing community as opposed to a smaller development which is immediately thought of as the exception to the established fabric.

In terms of general massing it was decided to provide the higher density development to the north and northeast portion of the site. Not only does this relate to the higher density development surrounding this area of the site, but also provides appropriate shelter to the internal core of the site. In addition with the location of Gyro Park directly north of the site, the higher massing and associated shadows will not have a detrimental effect upon any adjacent residential areas.

The housing units themselves have responded to the needs of the various types of individuals expected to inhabit the co-operative. This is to say the flexibility requested by not only the handicapped individuals but other inhabitants has been respected and has been responded to in the form of varied types of units. These units considering the various needs, of those who will inhabit the development, include the range from single family homes to townhouse, stacked townhouses, three storey walk-up type apartments as well as apartment units which are serviced by elevators.

In order to accommodate the accessibility which is mandatory within this development, and to reinforce the street quality felt necessary to all units, a raised walkway has been developed on several levels to link the higher density units. This walkway has been developed so as to provide nodes of activity and rest areas similar to that of the ground level walks. These walks enable handicap access to the upper most units as well as providing a potential at all levels of the development for interaction.

The housing design response reflects the language of the neighbourhood through its use of various elements and further respects the particular needs of a community and the varied life styles and peoples which exist within that community.

2.5 Commercial

The commercial development for this project is most important not only for the previously noted economic reasons but for it's ability to promote the integration and interaction with the surrounding neighbourhood and its people. The development of the commercial spaces has been based upon a residential atmosphere and has taken into account the need to establish a language which promotes and enhances the existing established language. The commercial spaces are directly adjacent to 109 street and therefore form a buffer to the noise and pollution of 109 street and the interior quiet atmosphere of the project.

With the location of the main entrances to the commercial spaces directly off 109 street, it insures that all public and traffic flows has the opportunity to utilize and be drawn to these spaces.

The commercial spaces have been developed into two segments. One, a large retail type facility which provides exterior street and walkway access as well as providing an interior mall type environment. The second area of commercial space is more related to service spaces such as a medical centre, professional offices etc. and is subtly separated from its counterpart.

These commercial developments have been integrated with the residential in such a manner so as to provide a cohesive response and one which it is felt respects the needs and desires of the community. The solution intends on inviting pedestrians and motorists into the development and allow for various casual and structured involvements with the development and therefore the community.

Not only will these commercial ventures provide for the immediate needs of the development and the immediate neighbourhood, but will provide a somewhat centralized location within the community for these facilities.

2.6 Community Centre

There is an immediate need in a development of this scale, particularly one which houses handicapped individuals, to provide certain activity spaces for their use. These types of multi-use spaces as well as physical activity spaces are felt to be most important in providing for the immediate needs of the development.

It is also possible to utilize these amenity spaces to promote the integration with the immediate neighbourhood. This is intended to be accomplished in a number of ways. It is intended that a daycare centre will introduce a needed function to the neighbourhood as well as promoting involvement with children and the family. It is interesting to note that a daycare facility will also provide an income to the community segment of this development.

As well, this community facility provides for physical activities which will be utilized by the development and the immediate neighbourhood. For the handicapped individuals, for special requirements that might arise, a therapy area is being provided which is in itself multi-functional.

The flexibility within this development is important and is expressed within the multi-purpose areas which are usable by the entire community. The location of this facility has been selected on the basis of ease of access as well as location related to the existing park which provides a exterior playground and field spaces. Internally the community space provides a large solarium which may be utilized throughout the year to advantage. As an extension to the centre and protected by berming and landscaping, a large exterior courtyard and plaza has been developed which will be used for relaxation, structured activity and general community activity functions.

Thus, as with the commercial development, the community development portion of this design greatly enhances the potential for the development to integrate with the community and to involve the community at large with the activities and people who inhabit the co-operative.

2.7 Parking

Presently with 80th avenue and 79th avenue being one way streets, on street parking is utilized to a great

extent. Although this design solution intends to allow on-street parking, it does intend to reduce this on-street parking as much as possible. Although this restriction is not physically accomplished thereby allowing for unusual circumstances demanding this density of parking, it does intend to promote the reduction of this parking via the use of underground parking and developed specific parking areas.

Two underground parking areas have been developed, one beneath the community space, the other beneath the central commercial space. Since the theme of this development is to reduce the vehicular movement through the site, there has not been developed on the site, apart from emergency vehicle access via the main walkway, any allowance for vehicles. There is however a need for vehicles associated with the residential units not only as a normal family requirement but more particularly with respect to handicapped individuals requiring covered vehicle access.

The use of underground parking enables controlled and enclosed parking for the numbers of individuals who require this type of convenience. As well location of these parking areas is associated with the elevator movement thus enabling handicapped access to the development.

While one realizes the cost of providing underground parking, this design has undertaken to offset these costs by eliminating basements to the residential units. Apart from selected existing and new units which will retain basements in order to provide for service distribution points, the elimination of basements will provide the economic potential for the development of underground parking.

Visitor parking and parking associated with the commercial and community spaces has been provided at the perimeter of the site and outside of the main development. As well, service vehicle access ie. garbage pick-up etc. is also located at the periphery of the site. This theme of development further promotes the usage at a pedestrian scale, of the development and reduces concern of movement through the site by handicapped individuals as well as children and the elderly.

2.8 Landscaping

The maturity of the landscaping in this area of the city is well known and must be respected and retained. This design promotes the retention of as much of the existing quality of landscaping as possible. As well it promotes the establishing of a landscaping theme which is conducive to the existing fabric of the community and reinforces the development of extensive landscaping.

With the pedestrian theme of this development landscaping becomes very important in that it will enhance and allow for better acceptance and better usage of the site by the inhabitants and the neighbourhood.

Rather than structuring all activity spaces the design subtly suggests and flexibly provides for the varied requirements of a community of this scale. It is intended that once one enters the inner site, a more natural setting and therefore a more relaxed feeling may be established. This is intended to create more interaction due to the casual movement and a lack of urgency which is difficult to find within an urban area. Both hard and soft landscaping have been utilized so as to create interesting nodes at various levels where people may rest in sun or shade, may partake in formal activities or take casual walks, picking fruit from an apple tree.

The textures and materials utilized respect not only the need for ease of maintenance but also provide varied areas of interest and texturally provide guides to those who may have some impairment of vision or movement.

As well as providing the appropriate atmosphere to the development, functionally the landscaping has responded to the needs to control climate, to provide shade and shelter at appropriate times of the year and to help control the extremes of weather

In a development such as this, the importance of landscaping cannot be over emphasized. It is one of the major elements necessary to successfully respond to the needs of people and therefore must be handled with great awareness and sensitively.

2.8 Structural

The buildings as designed involve several types of structural design. The implications of single storey to multi-level construction involves several approaches to structural design criteria. This combined with the National Building Code Requirements for fire separations between various types of usage of facilities, impacts upon the structural requirements and materials utilized.

A review of the existing geotechnical information for this area indicates a generally soft silt and clay till foundation strata. For lightly loaded residential type construction, poured concrete foundation walls and footings are proposed. For four and five storey areas such as the community centre and lower level parkade, a concrete pile foundation would be utilized. In the interest of economy and following the criteria of residential design, grade supported slabs are to be used wherever possible.

All structures would be designed to meet the requirements of the National Building Code of Canada, 1980, the Alberta Building Regulations, 1980 and specific requirements of local and municipal bylaws where applicable.

Design Criteria

The design loads for the various aspects of the building are outlined as follows:

- o roofs - ground snow load - 1.8 kPa
- o basic roof load = $0.8 \times \text{ground snow load}$
- o snow build-up to NBC 1980
- o wind loads - 1 in 30 probability for wind loading
- o earthquake - R factor = 0
- o floor loads
 - underground garage - 6.0 kN/m^2
 - commercial areas - 4.8 kN/m^2
 - mercantile type areas - 4.8 kN/m^2
 - community spaces - 4.8 kN/m^2
 - residential - 1.9 kN/m^2
 - raised walkways - 4.8 kN/m^2

The structural system proposed for the subgrade parking levels would be poured concrete with a poured concrete waffle slab utilized in the ceiling area. Dewatering of these areas would be necessary and would be accomplished by means of a weeping tile and pump system.

The structural system proposed for both the commercial block A and the community block F would involve a poured concrete structural slab combined with concrete block bearing walls. These are utilized not only for economic structural reasons but also to comply with the building code requirements for fire separations and non-combustible construction.

The foundation system for all facilities would involve a poured concrete foundation wall and suitable concrete footings as well as reinforced concrete slabs on grade or in the case of basement areas, a basement slab would be utilized. Apart from the aforementioned block A and block F, residential construction for the balance of the development would utilize wood construction. Typically roof framing would be comprised of wood trusses; exterior frame walls would consist of 25 x 150 studs; while floor construction would involve wood joists throughout the development. A platform framing technique would be utilized for the wood construction which enables the various types of units to be erected within the minimum amount of time and with the minimum usage of materials.

2.9 Mechanical

The mechanical systems are designed to meet the program requirements, the National Building Code Requirements and will conform to the requirements of Alberta Building Standards Branch requirements.

Energy efficiency has been noted as a desirable requirement for the mechanical system. In achieving this goal, it is essential that the system be cost effective, taking capital and operation and maintenance relationships into consideration.

In addition to energy considerations, it is important that a system of good quality and reliability be presented, one that offers flexibility to provide acceptable conditions within all of the various types of spaces within the development.

Given the economic considerations as well as programming requirements, the solution proposed for the mechanical system identifies segmented key central plant areas within basement spaces of the development which service the various localized blocks with mechanical service. A gas fired furnace system which varies with the number of residential units accommodated, is located within the lower level basements and at specified locations of the parkade levels. The distribution of the appropriate piping is via underground concrete encased service ways which conveniently and economically distributes to the selected units.

The general commercial areas, as well as the community complex will be serviced from a medium pressure central variable volume air handling system located within a service space within the lower parkades. The system will be complete with supply and return fans driven by variable speed electric motors; air economizer fresh air/return air mixing plenum; replaceable media filters (80% efficiency) a glycol heating coil; chilled water cooling coil; wetted media humidifiers; and sound attenuators. Specific office and commercial spaces will be zoned with independent temperature controls.

The residential units as well as the commercial and community spaces will utilize a distribution system with hot water radiation elements. Air will be supplied to the commercial and community spaces by variable volume terminal units sequenced with the radiation heat to prevent simultaneous heating and cooling.

It is intended that the residential units apart from mechanically vented exhaust from kitchen and washroom areas which are discharged directly to the outdoors at roof level, will utilize natural ventilation. The furnace system will incorporate a summer cooling mode which will engage forced air movement via a fan.

Special ventilation for a specific area such as the transformer room, mechanical room and electrical telephone rooms would be provided.

With respect to the plumbing systems, domestic cold, hot and recirculating hot water services will be extended to all plumbing fixtures and kitchen equipment. Hot water will be generated in gas fired hot water heaters and storage tanks located within the basement level and service spaces.

It is intended that an emergency generator capable of providing minimum power for lighting and mechanical needs would be located within the parkade level of Block F. This emergency generator room would be serviced via an underground fuel oil storage tank, piping and transfer pump to a day tank located within the emergency generator room.

There would be incorporated in subgrade levels as well as on grade parking and the interior walkway system, a system for storm drainage which would be extended to connect with the main city storm sewer system.

Both the commercial levels of Block A and Block B as well as the community space level of Block F will be protected by an automatic wet sprinkler system. Hand held fire extinguishers would be distributed throughout each of the residential units and throughout the commercial and community spaces. Outside hydrants will be provided in appropriate locations for exterior coverage.

Within the commercial and community spaces, toilets, kitchen and locker room exhaust fans would be interlocked with the main air system to be shut down when they are not in operation. Perimeter radiation and air terminal boxes will be sequenced in operation to prevent simultaneous heating and cooling.

2.10 Electrical

The electrical design for this project is based on the latest applicable codes, including the Canadian Electrical Code, Part 1 (1978) and the National Building Code (1980).

Underground service for power and telephone will be provide from the existing utility distribution system in the neighbourhood. Distribution throughout the development will be handled via duct banks located within the underground service spaces distributing to the units from selected basement locations. Separate duct banks will be constructed of PVC schedule 40 duct, reinforced and concrete encased, with spare ducts for future expansion included.

Primary service voltage will be 13.8 kV from the existing services within the neighbourhood. Additional pole transformers will be necessary to service the development. The main service will terminate in a high voltage switch gear cubical located within Block A containing a 5 kV "mini-oil" service breaker, voltage metering and fused 5 kV load break switches.

From the load break switches, 2 - 5 kV feeders will be run to substations located in the parkade level of Block F. From the primary and secondary locations current metering and circuit breaker distribution to secondary basement locations will be handled.

Dry type transformers will be provided for 600-120/208 volt, 3 phase, 4 wire distribution throughout the development. Distribution into the residential units will be handled within the common basement distribution centres and transferred via the service duct work.

Due to the size of the project it is recommended to install a self contained diesel fired 50 kW emergency generator plant located in the parkade level of Block F. The unit would operate at 347/600 volt, 3 phase, 4 wire and be complete with voltage sensing and controlled to provide automatic start-up on loss of normal power supply. Emergency power will be provided to all safety equipment and exit lighting including fire alarm system, exit lights, mechanical equipment in accordance with National Building Code Requirements as well as selectively located site lighting.

Within the commercial and community spaces, 310mm by 1,220mm, 1 x 40 watt warm white lamp, recessed fluorescent luminaires with K12 acrylic lay in lens and metal end filler pieces to increase luminary length to 1500mm to fit the standard ceiling module will be utilized. This specific type of system is utilized in order to minimize visual discomfort caused by direct glare, for a possible reduction of approximately 40% of the total number of lamps required thereby reduced operating and maintenance costs, and the fact that this system is very flexible and is compatible with an application of overhead or built-in task lighting.

In speciality areas such as multi-purpose rooms, main entrances and mall areas, incandescent and HID luminaires will be used.

Exterior lighting will be provided to each block and at each separate unit. Selectively located walkway lighting and site lighting would be utilized for safety as well as aesthetic purposes.

In addition a programmable time controller will be installed to provide automatic control of interior and exterior lighting of the site and commercial and community spaces after normal working hours. As well this master time controller would monitor the timed and cycling control for car heater outlets and for specific mechanical systems.

It is intended that a closed circuit, supervised, non-coded, single stage, annunciated fire alarm system will be provided in the main commercial and community blocks. This system will be arranged such that on operation of any manual station, heat actuated detector, sprinkler flow valve or products-of-combustion, the associated window of the zone activated will be illuminated on each annunciator panel and a fire alarm signal device would be sounded throughout the building and via telephone connection would inform the local fire station. The fire alarm boxes requiring manual operation would also be strategically located at various stations throughout the residential portion of the development so as to provide a safety system for those with a handicap.

A complete empty conduit distribution system will be provided in accordance with the requirements of Alberta Government Telephones for the entire facility. A main telephone room and a main telephone panel location would be located within Block A and Block F of the development.

3.0 COSTING STUDY

3.1 Budget

PART I CAPITAL COSTS

1. Land

Total Lots = 22
 Existing Retained = 7 (Donated)
 Lots Purchased = 15

Average cost per lot = \$80,000.00

Total purchase cost = 15 x \$80,000.00 = \$1,200,000.00

2. Servicing Costs = \$ 0.00
 (included in purchase cost)

3. Legal Fees = \$ 2,455.00

4. Mortgage Registration = \$ 1,200.00

5. Building Costs = \$2,946,587.00
 (See 3.2)

6. Interest (at 13 1/2% over 12 months construction)

o Additional working capital = \$ 60,000.00
 Available at 10 1/2%

o Draw down mortgage toward completion
 of project (4 months) = \$ 80,000.00

7. Architects Fee = \$ 58,000.00

o Negotiated on basis of providing
 rent free office space within
 co-operative for 5 yr. period.

o Architect member of co-operative

8. Development Costs

o Insurance = \$ 700.00

o CMHC Fee = \$ 100.00

o Communitas = \$ 50,000.00 (negotiated)
 \$ 50,800.00 = \$ 50,800.00

9. Miscellaneous

o Lender's Fee = \$ 2,900.00

o Utility Hook-up = \$ 4,000.00

o Final
 Certificates = \$ 2,000.00

Total \$ 8,900.00 = \$ 8,900.00

10. Landscaping
(included in project cost) = N.A.

11. Rehabilitation of Existing Units
(included in project cost) = N.A.

TOTAL = \$4,407,942.00 (A)

PART II OPERATING EXPENSES

1. Taxes (Mill rate .025) = \$ 72,500.00

2. Insurance = \$ 15,000.00

3. Maintenance
Salaries, supplies, equipment, repairs = \$ 50,000.00

4. Utilities (members responsibility) = \$ N.A.

5. Administration
Legal, printing, memberships, general = \$ 20,000.00

6. Replacement Services (per year) = \$ 12,000.00

7. Mortgage Payments (10%) = \$ 294,000.00

8. Contingency = \$ 9,270.00

TOTAL = \$ 472,700.00 (B)

Mortgage Rate at 2% = \$115,188.00

CMHC Assistance = \$294,000.00 - \$115,188.00 = \$ 178,812.00 (C)

Approximate Assistance Per Unit = \$178,812.00 ÷ 65 units

= \$ 2,750.00

PART III PROPOSED C.M.H.C. SUBSIDY

<u>UNIT SIZE</u>	<u>STOREY HEIGHT</u>	<u>NO. OF UNITS</u>	<u>CMHC SUBSIDY</u>	<u>HANDICAP SUBSIDY</u>
1 Bed	(Over 3)	[2]	= \$133,000	(2) \$19,950
2 Bed	(Over 3)	[4]	= 302,000	(4) 45,300
3 Bed	(Over 3)	[4]	= 322,000	
4 Bed	(Over 3)	[1]	= 85,500	(1) 12,825
1 Bed	(3 <)	[3]	= 153,000	(3) 22,950
2 Bed	(3 <)	[8]	= 464,000	(4) 34,800
3 Bed	(3 <)	[5]	= 315,000	(3) 47,250
4 Bed	(3 <)	[4]	= 278,000	(4) 41,700

ROW HOUSING

2 Bed	-	[3]	= 184,500	
3 Bed	-	[20]	= 1,350,000	(6) 60,750
4 Bed	-	[8]	= 588,000	

TOTAL CMHC SUBSIDY

=\$4,460,475.00 (D)3.2 Construction EstimateELEMENTBUDGET

1. Substructure

a) Normal Foundations	\$ 50,000.00
b) Basement Excavations	25,000.00
c) Parking Levels	191,000.00

2. Structure

a) Commercial Level 1	50,000.00
b) Commercial Level 2	50,000.00
c) Community Level 1	40,000.00
d) Community Level 2-4	80,000.00
e) Community Roof	60,000.00
f) Residential	100,000.00
Single Family	
Townhouse	
Stacked Townhouse	

3. Exterior Cladding

a)	Roof Finish	100,000.00
b)	Walls below ground floor	40,000.00
c)	Walls above ground floor	150,000.00
d)	Windows	90,000.00
e)	Exterior Doors & Screens	50,000.00
f)	Balconies, Walkways	65,000.00

4. Interior Partitions

a)	Concrete Block	122,000.00
b)	Wood Stud	100,000.00
c)	Steel Stud	50,000.00
d)	Doors	60,000.00

5. Vertical Movement

a)	Stairs	20,000.00
b)	Elevators	100,000.00

6. Interior Finishes

a)	Floor	53,666.00
b)	Ceiling	53,666.00
c)	Wall	53,666.00

7. Fittings & Equipment

a)	Fittings & Fixtures	49,833.00
b)	Equipment	99,666.00

8. Services

a)	Electrical	225,400.00
b)	Plumbing & Drainage	124,200.00
c)	H.V.A.C.	243,800.00
	subtotal =	<u>2,496,897.00</u>

9. Overheads & Profit 249,690.00

Net Buildings Cost = \$2,746,587.00

Landscaping Allowance = 200,000.00

TOTAL PROJECTED TENDER COST = \$2,946,587.00

(1984 dollars)

3.3 FEASIBILITY STUDY

3.3.1 PROJECTED INCOME

1. Maximum Occupancy Charges

- o 1 Bedroom = \$250. x 12 x 5 = \$ 15,000.00
- o 2 Bedroom = \$300. x 12 x 15 = \$ 54,000.00
- o 3 Bedroom = \$400. x 12 x 29 = \$ 139,200.00
- o 4 Bedroom = \$550. x 12 x 13 = \$ 85,800.00

2. Commercial

- o Rental = 1,130 m² x \$64.60 = \$ 72,998.00

3. Community

- o Day Care = \$ 4,000.00
- o Special = \$ 10,000.00
- \$ 14,000.00 = \$ 14,000.00

4. Parking

- o Rental = 15 stalls x \$600.00 = \$ 9,000.00

TOTAL PROJECTED INCOME = \$389,998.00

3.3.2 FEASIBILITY DATA

A. Project Capital Cost

- 1) Maximum Capital Cost available
based upon MUPS for units\$4,460,475.00 (a)
- 2) Total Capital Cost of project
as per budget estimates\$4,407,942.00 (b)

If (b) exceeds (a), then the project is probably not feasible without modifications or additional financial assistance. If (b) is equal to or less than (a), then the group can proceed to determine whether or not the project is economically feasible.

B. Relationship of Income to Expenses

- 1) Total annual project operating
costs (exclusive of interest
and principal payments)\$ 169,500.00 (c)
- 2) Total annual interest and
principal payment\$ 294,000.00 (d)

- 3) Total annual projected income from all units assuming all units pay the maximum project occupancy charge, less 3% for vacancy loss. Only include that portion of the maximum project occupancy charge that is paid directly to the co-operative\$ 389,998.00 (e)
- 4) Amount of funds available from the members for interest and principal payments. To calculate:
 $(e) - (c) = (f)$ \$ 220,488.00 (f)
- 5) C.M.H.C. Section 56.1 Assistance available: To calculate, determine the difference between the annual mortgage payments at the actual interest rate and the annual mortgage payments at an interest rate of 2%. (If R.R.A.P. grant available, calculate on total costs assuming R.R.A.P. grant repayable)
.....\$ 178,812.00 (g)
- 6) Total funds available for mortgage payments. To calculate:
 $(f) + (g) = (h)$ \$ 399,300.00 (h)
- 7) Relationship between mortgage payments and funds available for mortgage payments. To calculate:
 $(h) - (d) = (i)$ \$ 105,300.00 (i)

If (i) is (0) then the group will require all of C.M.H.C. funds to bring the units down to the low end of market, no funds will be available to assist low income members.

If (i) is a minus number, then the project is not economically feasible without modification, or budget or housing charge adjustment.

If (i) is a positive number, then the group will have additional funds to assist its members with low income.

4.0 SUMMARY

Based upon the financial studies, this project is not only viable but will generate a minimum income after expenses of \$105,300.00 toward the subsidy of low income families. Even with a reduction of this amount due to vacancies, higher maintenance costs etc. it is obvious that this venture is an ideal vehicle by which to provide accessible housing within the inner city of Edmonton.

This outline and project approach has not varied from the current C.M.H.C. guidelines nor from existing National, Provincial or Municipal codes or bylaws. It has however not included various other options available for additional working capital such as an initial C.M.H.C. development subsidy of \$75,000.00.

As well, it would be proposed that the main reason for the failure to provide inner city housing has been the cost of land. This project is viable primarily due to its scale; the involvement of existing residents with the development and the introduction of a commercial revenue generating component. Realistically these options are not typically available and therefore some mechanism must be put in place which will assist in reducing the inflated prices of inner city property. For this to be possible it is suggested that the City of Edmonton would become the prime motivator of this policy.

It is hoped that this project has defined and explained an approach whereby it is possible to provide the required and requested housing standards for both handicapped and non-handicapped citizens within our inner city area.

5.0 APPENDIX

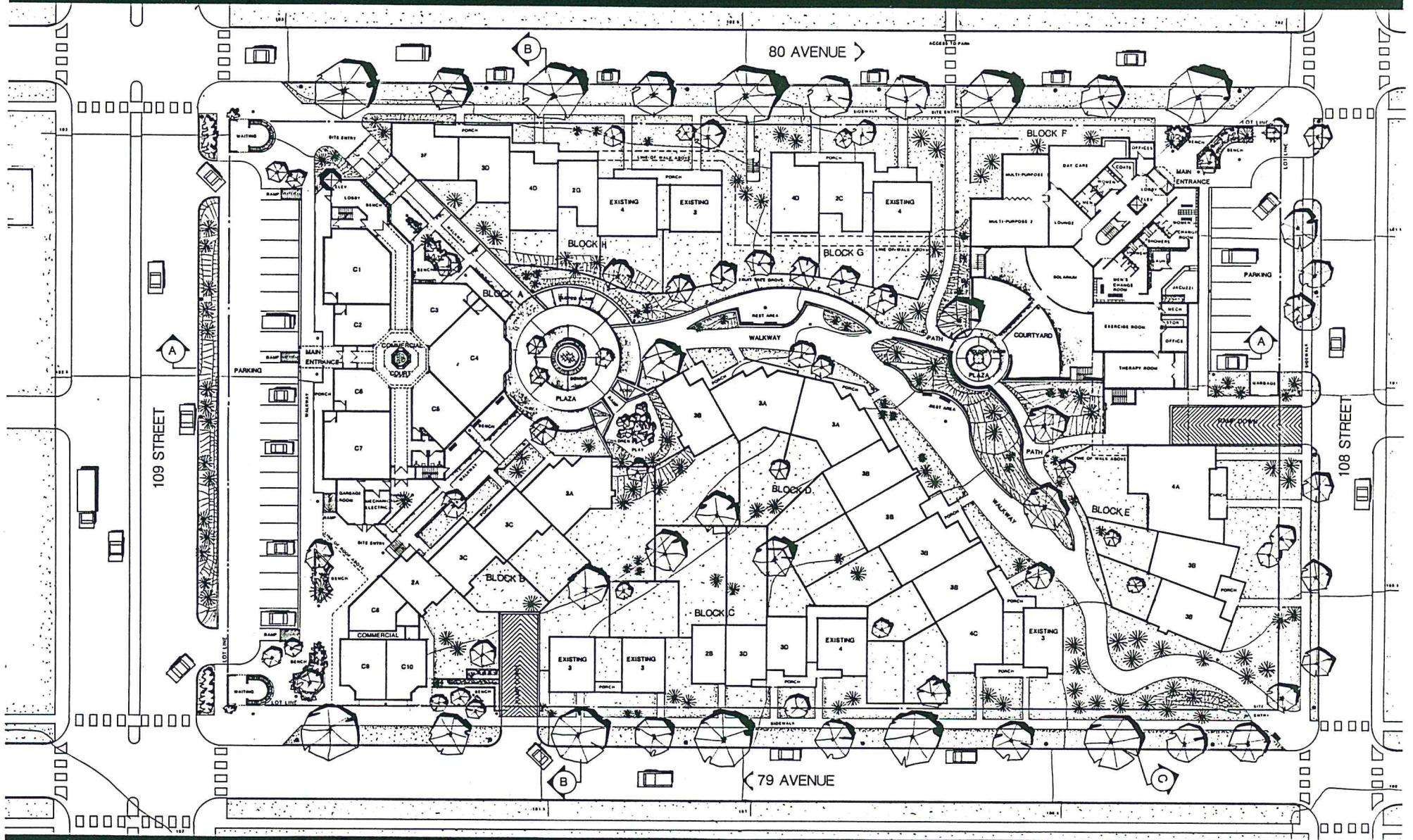
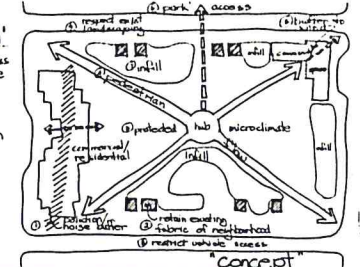
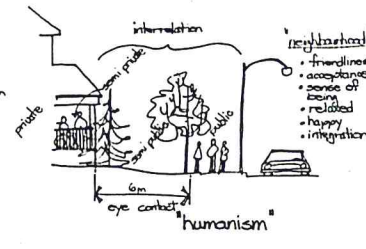
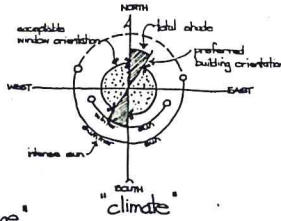
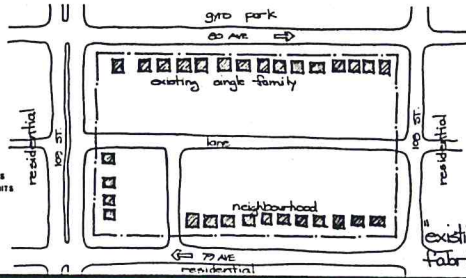
DATA
 SITE AREA - 1.555 AC (67,193)
 COMMUNITY SPACE - 760 M²
 COMMERCIAL - 1130 M²
 RESIDENTIAL - 2900 M²
 AMENITY - 1316

TOTAL PARKING
 - 127 SURFACE
 - 23 SUBGRADE
 - 47 STREET Mkt.

RESIDENTIAL
 1 BEDROOM - 8
 2 BEDROOM - 15
 3 BEDROOM - 19
 4 BEDROOM - 13
 TOTAL UNITS - 55

COMMERCIAL - 13 SPACES

ACCESSIBLE UNITS - 26 UNITS
 HANDICAPPED UNITS - 25 UNITS

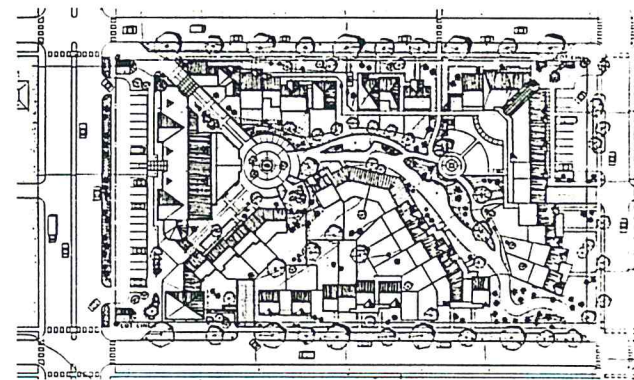
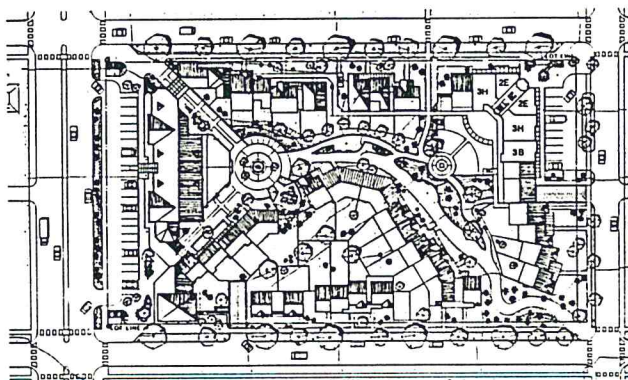
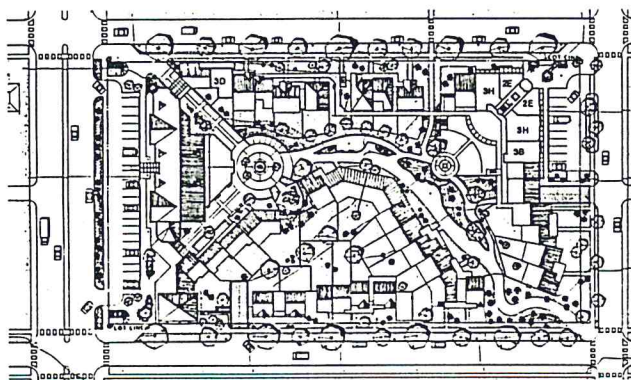
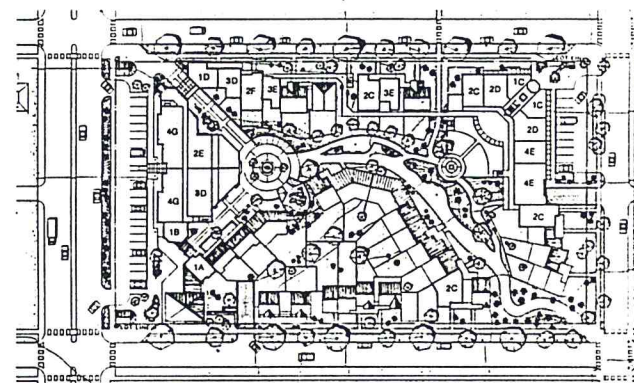
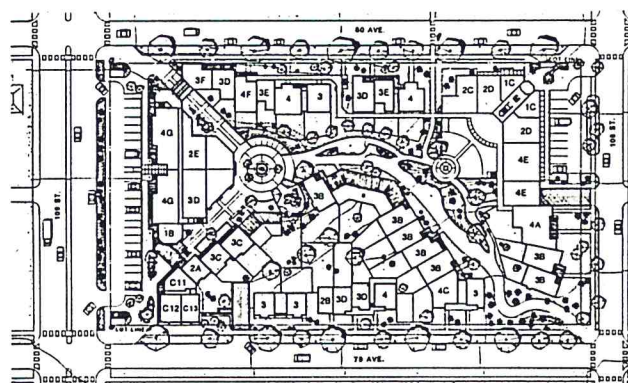
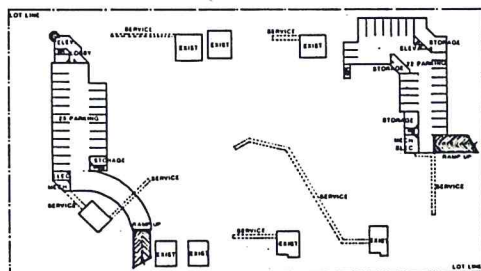
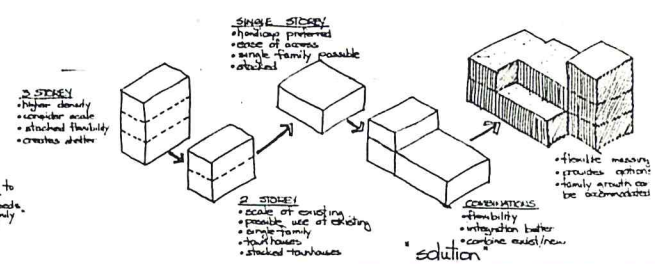


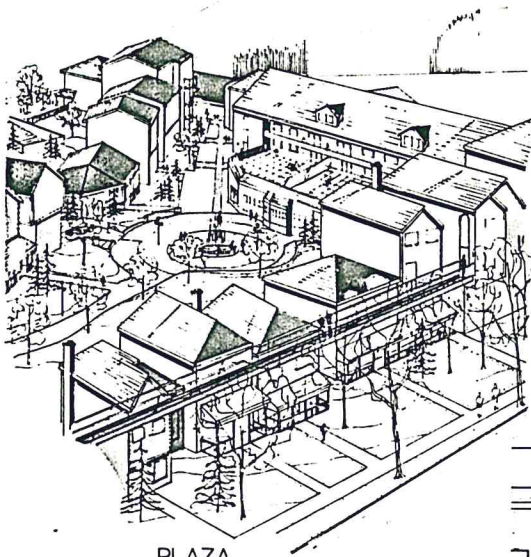
ACCESSIBLE HOUSING

SITE / MAIN FLOOR PLAN

DAVID W. RYDER APRIL 1984







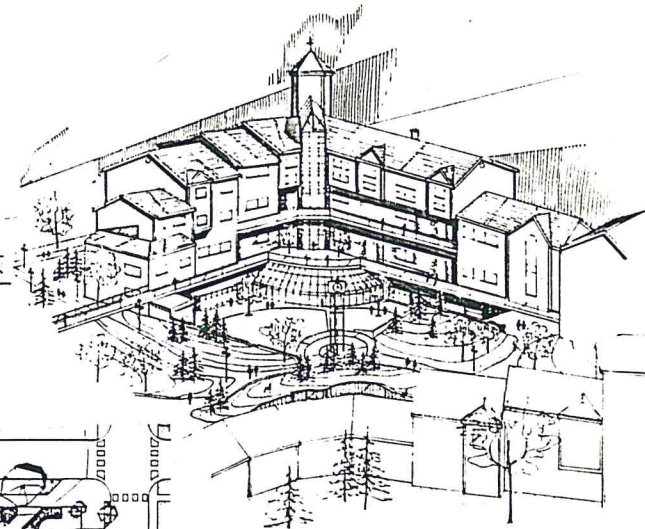
PLAZA



WALKWAY



NEIGHBOURHOOD STREET

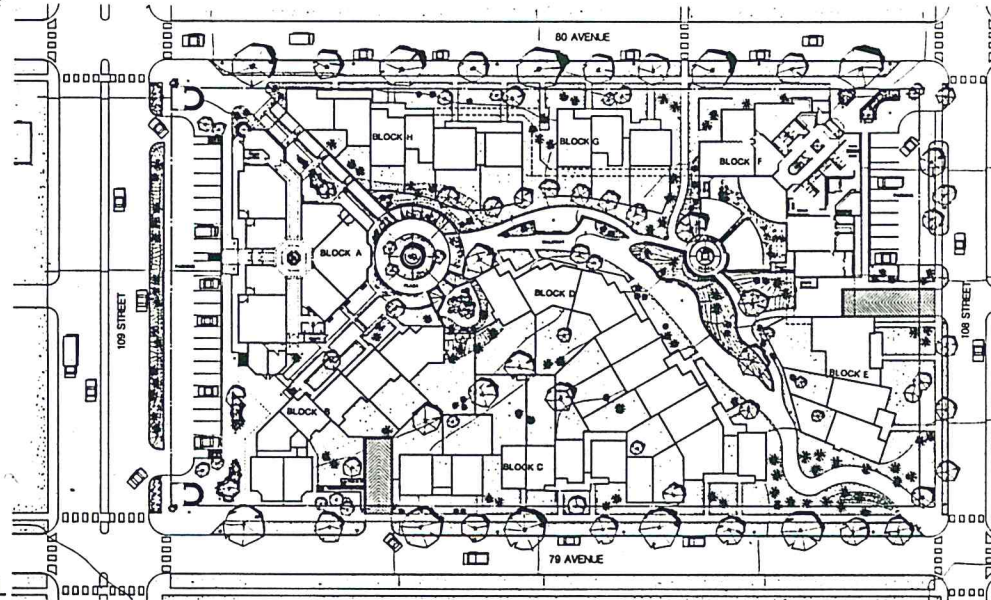


COURTYARD



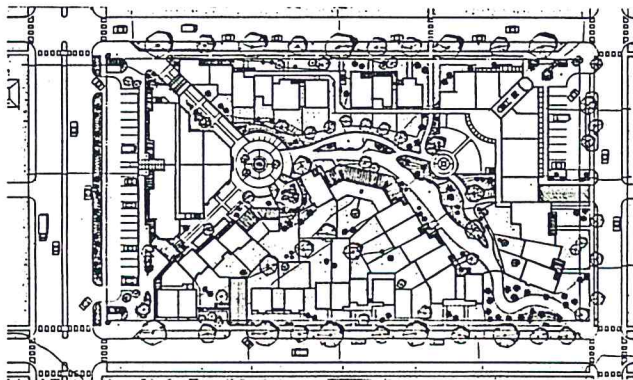
PARKING

MAIN LEVEL

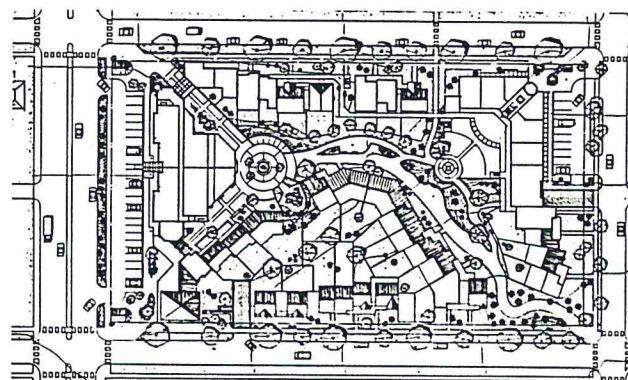


REST AREA

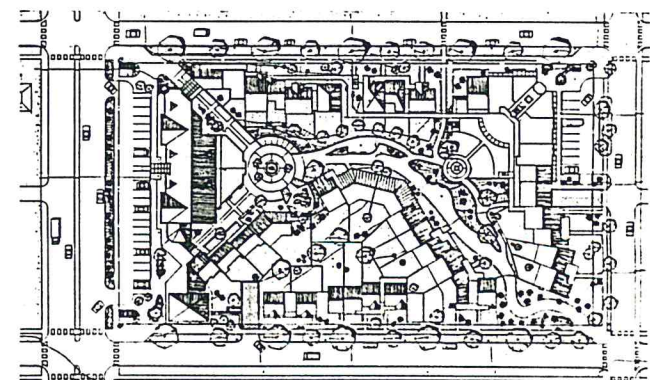
- | | | | |
|--|-----------------|--|-----------------|
| | PEDESTRIAN FLOW | | GARBAGE PICKUP |
| | FIRE LANE | | REST AREAS |
| | ACTIVITY AREAS | | HANDICAP ACCESS |
| | ELEVATED STREET | | |



LEVEL 2



LEVEL 3

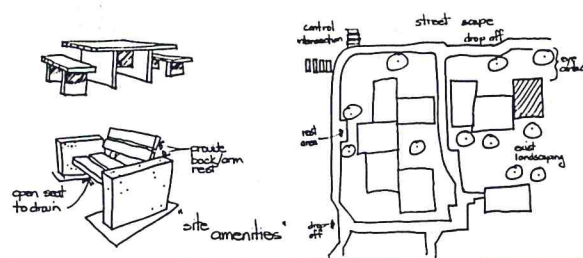


LEVEL 4
LEVEL 5 GROUND

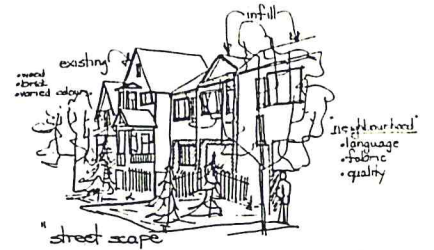
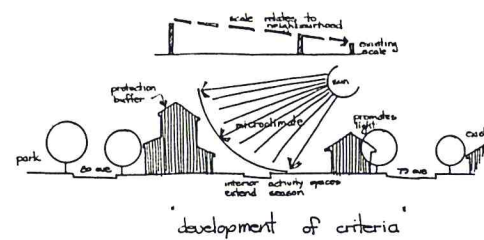
ACCESSIBLE HOUSING

CIRCULATION





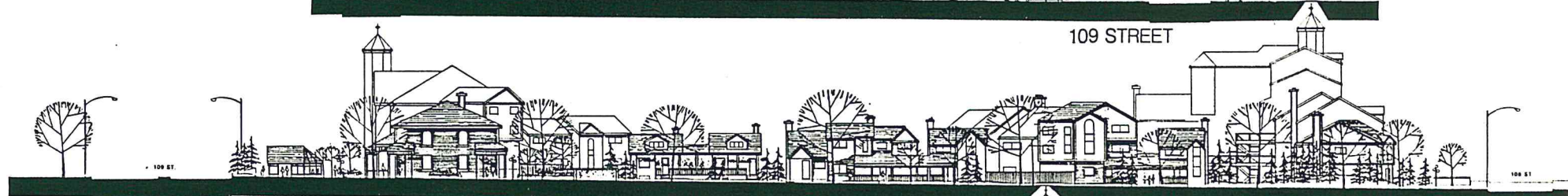
- 'approach'**
- choice of unit type
 - choice of location
 - street
 - interior - privacy
 - easy public interior street provides interaction
 - making compliments exist
 - retain exist selectively
 - allow people to remain
 - identify to individual unit
 - draw to interior
 - admit neighbors/children
 - advantage of climate
 - better integration



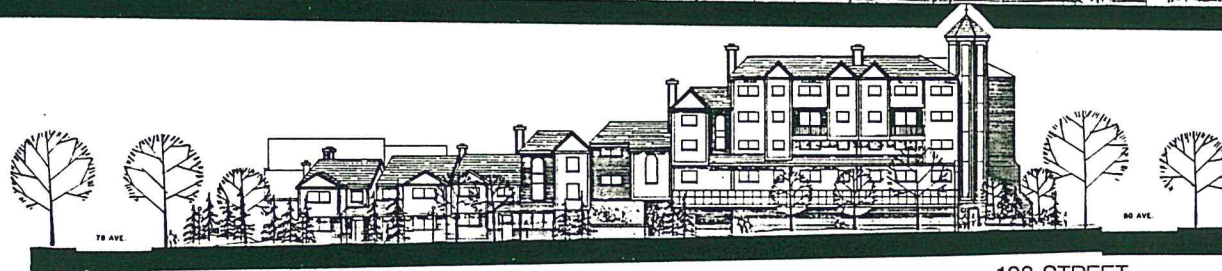
80 AVENUE



109 STREET



79 AVENUE



108 STREET

EXISTING 80 AVENUE