

SCHOOL FOR THE BLIND

barbara a. baker

P378
.B1709

LIBRARY
MONTANA STATE UNIVERSITY
MONTANA STATE UNIVERSITY
BOZEMAN

PERCEPTION AND THE INSTITUTION:

A SCHOOL FOR THE BLIND

by

BARBARA A. BAKER

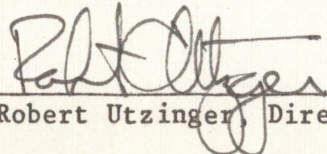
An undergraduate thesis submitted in partial
fulfillment of the requirements for the degree

of

Bachelor of Architecture

Approved by:

David Matthews, Thesis Advisor



Robert Utzinger, Director

MONTANA STATE UNIVERSITY
Bozeman, Montana

June, 1983

~~720.6~~ ~~442540~~
~~476~~ P378
BT69 B1709

In presenting this thesis in partial fulfillment of the requirements for a degree at Montana State University, I agree that the library shall make it freely available for inspection. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by my major professor; or, in his absence, by the Director of the Libraries. It is understood that any copying or publication of this thesis for financial gain shall not be allowed without my permission.

Signed: Barbara Parker

Date: June 27/83

school for the blind

"The meaning of a building is in its purpose; poetry, pleasure, mystery can intensify that meaning. A building becomes alive when it has a presence that can be felt. As the miracle of life, so the miracle of art has presence - a presence so strong that it involves you in an endless dialogue."¹

Arthur Erickson

"If the doors of perception were cleansed everything would
appear as it is, infinite."²

William Blake

CONTENTS

Introduction	
Thesis Statement	1
Objectives	2
Scenario	3
1 The Blind	
Definitions of Visual Impairment	5
Social History and Institution	7

2 Perception	
Definition of Perception	8
The Senses: Vision, Touch, Taste, Smell, and Sound	9
Mobility	12
Perceptual Systems	14
Stages of Sensory Development	15
3 School as Object	
School	19
Philosophy of Education	21
Institution: School as a Place of Learning, School as House, School as an Element Within a Community	22
Qualities of School: Institutional and Non-Institutional . . .	26
4 Site	
Context	31
Selection	34
Analysis	36
5 Design Development	
School as a Learning Environment	39
Site Concepts	40
Building Concepts	40
Ideation	42
6 Program	49
7 Design Documentation	54
Illustrations	55
Footnotes	56
Bibliography	59

INTRO DUCTION

THESIS STATEMENT

The purpose of this thesis is to explore ideas--ideas about architecture that are thought provoking and inspirational, and ideas that may or may not be translated into architectural form. This thesis should be looked upon as a statement, and one that illustrates my sensitivity to the design of architectural space. It is one that is to be evaluated by time although also one that surpasses it, and continues to grow and flourish outside of its limits.

The primary area of study in this thesis involves spatial perception of both the sighted or non-sighted individual. It is my intention to convey that architecture as a three dimensional construct, has presence, and that its presence is experienced simultaneously through all of our senses, and not sight alone. It is for this reason that I have chosen to examine perception through such polar opposites; the sighted and the blind. Through the differences and similarities in their perception of space, we may gain a thorough awareness of the factors that shape our cognition and give meaning to the built environment.

The secondary area of study will involve the understanding of school as object, for I have chosen 'school' as the vehicle in which to convey my knowledge of perception. Pursuing this subject of interest, consequently opened up a myriad of questions with respect to schools for the blind including: definition of school, philosophy of education, imaginability--institution vs. noninstitution, etcetera. Therefore the nature of this thesis is twofold, one will have to confront issues which concern not only our perception of space, but our perception of school as institution.

OBJECTIVES

1. Study of spatial perception of the sighted and visually impaired individual and to create an environment that is aesthetically and experientially sensitive to both.
2. To explore the concept of school; philosophically and visually what it implies. This will include an analysis of institution and how its architectural manifestation affects a school for the blind.
3. To understand the topophilia of the school environment. Topophilia being defined as man's affective ties with the material environment. This would include understanding 'school as place' and how the blind child and instructor interact and give meaning to their environment.

4. To contextually understand how a school for the blind relates to the context of the surrounding neighborhood. Understanding the school as an element of the community as opposed to an isolated element.

SCENARIO

The Canadian government currently advocates total deinstitutionalization of the blind and therefore has abolished all but one, formal school for them. This belief stems from the attitude that it is ideally better to have the blind function in a normal home and school setting as compared to an institutional one and favors their immediate integration into the public school system. Like most ideals, this philosophy is also subject to compromises. In order to accommodate the blind student's special education needs, they are either segregated into separate classrooms or are required to substitute the 'non-academic' subjects such as art, physical education and music for classes in speech, mobility and orientation, and braille.

As an alternative to the present system, I have proposed to design an elementary school for blind children that fosters creative and physical development in addition to purely academic study. The focus of the school will continue to be one of deinstitutionalization with the intent of mainstreaming the blind child into the public school system whenever this personal development deems it necessary. Thus, the visually impaired student is educated in an enriching environment that allows him to explore the full scope of his potentials. With this confidence he then enters the public school system which further enhances his social skills and education.

The school, is to be located in Edmonton, Alberta, and is based on a catchment area that constitutes Northern Alberta. The program will be developed for a student population of fifty and assumes that at least eighty percent of the students will require dormitory facilities which will be provided at the school. For the sake of clarity we will assume that the remaining twenty percent will be

the blind

VISUALLY HANDICAPPED

"The term visually handicapped applies to all persons whose orientation, perception and mobility skills are substantially dependent upon senses other than sight. Eighty percent of a sighted individuals knowledge of his surrounding environment results from his ability to see. Therefore the visually handicapped person must learn to develop his remaining senses, to obtain needed information about his surroundings."

LEGAL BLINDNESS

The diversity of visual disorders necessitates the differentiation between those who are legally blind and those who are functionally blind. The legally blind are considered virtually sightless in terms of mobility and orientation and have a visual capacity of 20/200 or worse after correction and a field of vision of twenty degrees or narrower.

The functionally blind on the other hand, are considered to have some operable sight which enables them to navigate somewhat in their environment. People who fall into this category are considered to have vision of 20/80 or worse after correction. "The ratio 20/80 means that the visually handicapped person will recognize an object at twenty feet that a fully sighted person would recognize at eighty feet."⁴

CONGENITALLY BLIND

The congenitally blind are described as those persons who have acquired blindness at birth up to the age of seven or eight. These people normally don't suffer the trauma and psychological problems that blind people do who have lost their vision gradually through diseases or suddenly through an accident. In addition to this, they rely more on their remaining senses to obtain information about their environment than the formerly sighted person who would rely somewhat on his spatial memory of his surroundings. The congenitally blind represent the ten percent of the blind population who are considered to have no sight at all. Their lack of vision is coupled with a lack of visualization of space and memory of objects that results from the stunted development of certain maturing processes in the brain.

THE BLIND AND RESIDUAL VISION

Most categorizations of the blind are based on their ability to perceive space. Although we normally tend to stereotype all blind persons as lacking any sort of functional vision, the converse is actually true. "Ninety percent of all blind people, in fact have some sort of residual vision."⁵ The ten percent that are entirely

dependent on their remaining sense include the forementioned congenitally blind. Thus, in categorizing the blind from most to least impaired one would include: 1) congenitally blind, 2) adventitiously blind, 3) the partially sighted. Hence, the design of the school must be designed to accommodate the needs of all of these various users.

THE BLIND: SOCIAL HISTORY AND INSTITUTION

The social history of the blind informs us that throughout time the blind have been subject to prejudicial attitudes. The blind were essentially categorized into two groups; the supernatural and the socially inept. Of the first group we find the talented blind, who consist of the gifted or those who through their own personal motivation have become poets, musicians and scholars. In ancient times these people included anything from soothsayer to buffoon and their extraordinary talents were regarded as a compensated gift from the Gods. The second group in comparison, consisted of individuals who were regarded by society as helpless and feeble, unable to attend to their own needs. "Blindness was considered a divine punishment for sin."⁶

Further prejudices towards the blind were, and still are employed in everyday language and behavior. Blindness constitutes a fear in our society and is denoted as, "...deprivation, concealment, incapacitated, deceptive, and abortive."⁷ The adverse emotional loading of the term blindness reinforces our negative preconceptions of what it means to be blind.

In order to correct these commonly held misconceptions of blindness both the Canadian and American Institutes for the Blind have been advocating deinstitutionalization and self sufficiency. They feel that by deinstitutionalizing facilities for the blind and integrating them into society will help us familiarize ourselves with them, and thus breaking down some of the barriers that constitute our naivete.

spatial perception

"Perception is both the response of the senses to external stimuli and purposeful activity in which certain phenomena are clearly registered while others recede in the shade..."⁸ We perceive space and process information about the world through all of our senses simultaneously. Although as primates, we have a highly developed sense of vision which contributes to a very spatial three dimensional construct of our environment. The memory component of perception is of fundamental importance and includes an experiential record of events and generalizations about spatial relationships.

"The visual sense has been exalted for so many centuries that other means of sensing objects have come to be regarded as definitely inferior and less important than the formulation of objects including buildings."⁹

This quotation emphasizes man's dependence on sight to formulate knowledge of his environment. As he comes to rely more on sight, space for him becomes bounded and static, consisting of nothing more than a frame or matrix for objects. Without objects and boundaries space becomes empty.

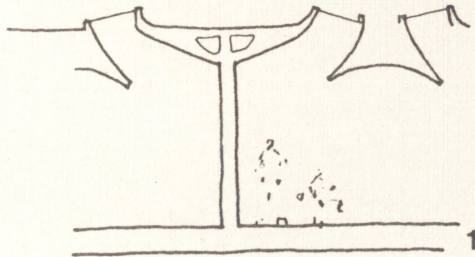
The visually impaired, on the other hand must utilize their remaining four senses to experience the dynamic qualities of space which are resonant with life and energy. To them space is defined through its aura and the invisible energy of matter that is transmitted through sound, smell and touch. The blind individual becomes sensitive to things such as cold stone under one's feet, the sound of winds rushing through grasses and the odiferous qualities of a greenhouse. Together, these sensations reflect the sensuousness of the world around.

THE SENSES

Vision

a. Light

Of the five senses, vision is the only sense that differentiates the perception of space between the sighted and visually impaired. Contrary to common thought, most blind individuals have some residual vision and are able to detect shadows, changes in light intensity, and even shapes depending on the severity of their eye disfunction. "Glare, apparently, is a major source of discomfort and obstacle that hampers the visually impaired's sense of vision. It is caused by extremely high contrasts between the light source and surrounding surfaces and causes contrasting objects to fade or blend into a monochromatic field of vision."¹⁰

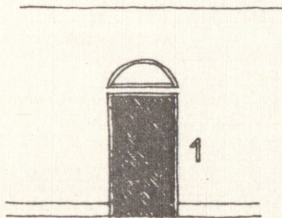


Common causes of glare are: 1) small windows set in walls, 2) strip windows, and 3) direct sunlight on highly reflectant surfaces. Diffuse and indirect lighting are effective in correcting the problem of glare and should be installed wherever possible. Architectural screens, skylights and glass block are just a few examples of mechanisms that can potentially reduce the effects of glare.

Even to the congenitally blind, light can increase their perception of space. Light energy gives off heat which allows the non-sighted person to sense its presence. The heat of the sun through a skylight is indicative of a window and may be important in providing a sensory clue as to where one is oriented within a building.

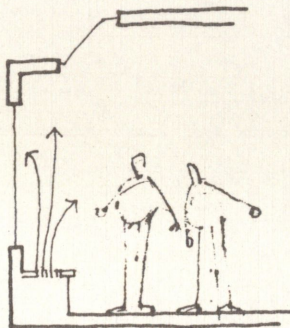
b. Color

High color contrast is perceived by the visually impaired and enables them to differentiate solids from voids in wall surfaces, treads from risers and other intersecting planes. For people with red-green color blindness, colors in the red, brown, and green range should be avoided as they blend together and are a source of visual confusion. If used properly color contrast can emphasize architectural elements which otherwise might prove hazardous.



Tactile sense

The sense of touch "...is the direct experience of resistance, resulting in the direct experience of the world as a system of resistances and pressures that persuade us of the existence of a reality independent of our imaginings."¹¹ Our tactile sense is one that conveys the most information to a blind person about the built environment. Through the touch of a cane, changing textures underfoot, and changing air currents the blind person can compile sensory data that helps specify his location in space and facilitates in directional orientation.



It is still important to keep in mind that we perceive space simultaneously with all of our senses. Therefore our tactile sense may be used in conjunction with other sensory input in order to identify with a space. A skylight for example over top of an

information area might indicate lobby space. The combination of sound of the typewriter, the tile underfoot and the heat radiating from the skylight will simultaneously signify what activity occurs in that area.

Taste

Taste is relatively negligible in spatial perception orientation for both the blind and sighted. Unless one comes into contact with a chemistry lab or kitchen in which certain foods or chemicals give off a taste in addition to a smell--one cannot heavily rely on these sensations as spatial cues.

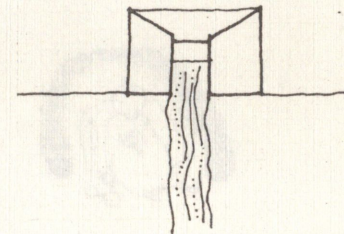
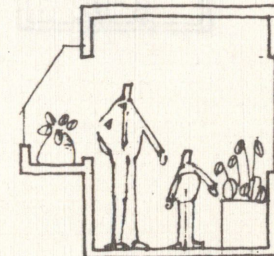
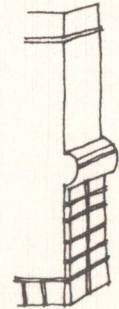
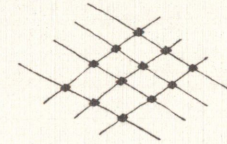
Smell

Stale air, damp earth, fresh flowers are all fragrances we are familiar with and potentially can facilitate our spatial orientation. The problem with odors or smells, is that many of them have a fleeting quality and cannot be relied upon as orientation markers or perceptual clues unless they have some permanency. The smell of fine foods may indicate a kitchen or eating area but once they are consumed, the space no longer indicates its function.

In cases where plants and vegetation retain their fragrance, they can be utilized as orientation devices within a building. If one was to design a building so that major circulation routes were lined with planters, the user would orient him/herself according to the smell and possibly even the humidity of the plants. The absence of that smell would indicate that the individual was travelling along a minor circulation and would facilitate sensory information about the physical environment. Thus the smell and humidity of the plants would become synonymous with primary circulation patterns.

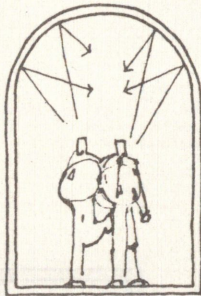
Sound

Running water, blowing grasses, falling rain, scraping forks and lightly playing music are all sounds that the sighted normally associate with background noise. The trickling of water down the face of a cliff can be a very singular statement where nothing interferes with the purity of the sound. It has magical qualities



that intensify the aura of the experience. To a blind person, these sounds are not only poetic metaphors of reality but are also landmarks and auditory cues that further their apprehension of space.

A blind infant recognizes his mother by the sound of her footsteps, smell of her perfume, and briskness of her walk. These sounds can convey information about persons, spaces, and presence. In addition to this the visually impaired child can learn to understand the volume and quality of a space by the echoes and sounds that reverberate off its surfaces.



Sound is also an important factor in determining the volume of a space and the quality of its surface textures. Concrete for example, is harder and denser than cork and would produce greater sound reflectivity. A vaulted ceiling on the other hand, would tend to focus sound, due to the sound reflection off its curved surface. Large open spaces, make sound transmission and mobility difficult to perceive and are largely not desirable.

MOBILITY

Our ability to move through space, is an inherent part of the human ability to perceive space. The variables of time and movement contain a myriad of spatial experiences that are enjoyed by both the sighted and blind user. However, where the sighted person may enjoy the panorama of space and overlapping of planes created by movement, the blind person must confront orienting himself in a world of obstacles. Therefore the abilities of the visually handicapped to accurately perceive space will largely be determined by the degree of mobility that person has.



2

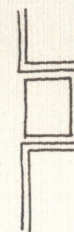
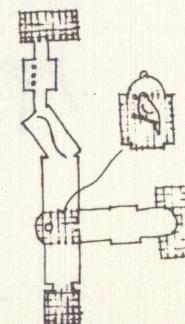
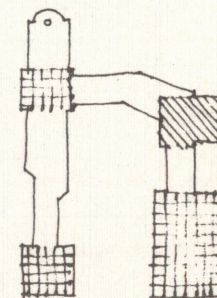
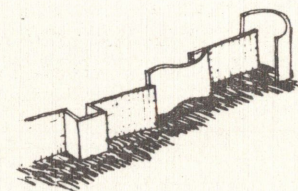
Essentially mobility relies on two components: locomotion and mental orientation. "Locomotion may be defined as the physical act of moving from one point to another, whereas mental orientation is considered to be the mental mapping of one's place in relationship to the surrounding environment."¹² To form an accurate mental map we must learn to correctly perceive the amount of space one's body occupies and its directional qualities.

A mental map is most easily memorized by the visually impaired if it is simple and lacks a high degree of complexity. The most basic of plans would be a lineal one, that indicates both entry and terminus. This may be achieved by applying a larger or rougher textured floor surface at either end of the corridor to indicate entrance, exits, fire stairs, etc. To provide visual interest to sighted users, the path may remain relatively straight yet have spaces flow and wrap around it.

More complicated buildings and floor plans require a greater degree of sensory information in order to construct a mental map of the circulation and ancillary spaces. An 'h' shaped floor plan for example, would require a decision point where the horizontal bar of the 'h' intersects with the vertical bar. A skylight or different floor surface in conjunction with the sound of a singing canary might designate that particular point as a decision area where the user would decide to travel straight or turn a corner. Sensory cues used simultaneously, are often the necessary factor in providing much needed information for spatial orientation and perception.

Because of their handicap the blind are more susceptible to encountering hazards in the physical environment. Open doors, protruding water fountains, open stairs and children's toys are just a few examples of objects that are potential hazards to injury in a blind person's life. Architecturally, we may solve these problems through anticipation and early correction. Water fountains and stairs for example should be enclosed or engulfed by a wall surface in order to prevent someone from accidentally bumping into them. Furniture should be relatively stationary and reorganized only if the visually handicapped user has been previously informed. Many of these hazards may be easily eliminated with a little common sense on the part of the designer, yet will permit the blind to move assuredly within architectural and outdoor settings.

A perceptual skill available to all visually handicapped people, yet acquired by few is facial vision. Facial vision is a quality that is unique to blind people and enables them to anticipate potential hazards in space. It basically involves "...the ability of a subject to detect the changing pattern of sound waves as they are reflected off objects. The change is both felt on the face and



heard."¹³ To apply facial vision, one needs to assert a degree of concentration that is itself limited by ambient background noise.

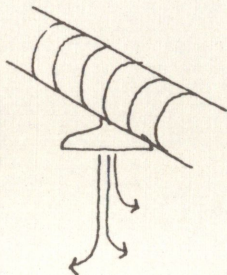
Concepts like time and distance are integral elements of motion and are also pertinent to one's conception of space. "To the visually impaired, the concept of distance is dependent upon previous visual experiences. Instead of visualization the congenitally blind perceive distance in terms of velocity and time in relation to the human body; for example the length of an arm or number of paces."¹⁴

PERCEPTUAL SYSTEMS: HAPTIC AND BASIC ORIENTING

The environmental psychologist J. J. Gibson developed a model of sensory perception which is based on the human ability to interpret our surroundings through sensory systems as opposed to isolated senses. The systems he discusses are the visual, auditory, haptic sense and basic orienting systems. Of these systems the latter two are most important to the blind's perception of space. Together, our sensory systems work towards understanding the architectural experience through our whole body as opposed to putting the eyes and ears at the center of our perceptual experience.

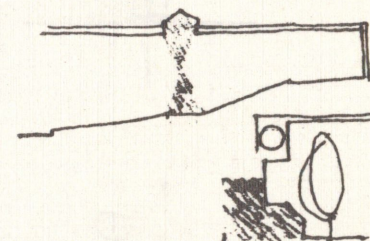
The haptic sense postulates that we become cognizant of space with our entire body rather than merely the instruments of touch such as the hands. "To sense an environment haptically is to experience objects in the environment by actually touching them, for example, climbing a mountain rather than staring at it."¹⁵ The haptic sense is also responsible for registering pressure, pain, cold and kinesthetics. It includes all aspects of sensual detection which involve physical contact both inside and outside the body.

The blind are much more aware of their haptic sense than the sighted, since for the most part it is their sole means of perceiving and orienting themselves within a space. A change in floor texture, coolness of a wall and sensing of a draft all serve as orientation points and markers of space. "No other sense deals as directly with the three dimensional world or similarly carries with it the possibility of altering it."¹⁶



The basic orienting system refers to our postural sense of up and down, which because of its dependence on gravity, establishes our knowledge of the ground plane. This concept, so simple to the sighted is in fact much more complex to the blind child. Without sight one must learn the relativity of up to down, over to under, within to outside, etc. Mobilized orientation involves a greater effort than just body balance and requires the combination of knowledge from the other senses to efficiently propel through space.

Mobilized orientation involves a greater effort than just body balance. By combining sensory cues, the visually impaired are more able to orient themselves within space. A skylight used in conjunction with a level change such as a ramp may be indicative of a special point along a spatial sequence. It not only facilitates in orientation, but creates an anticipation of its presence. The combination of knowledge from other senses is an important mechanism to the appreciation of space and movement through it.

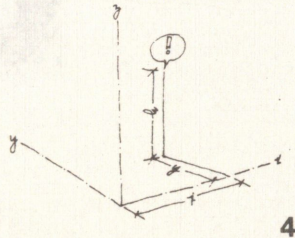
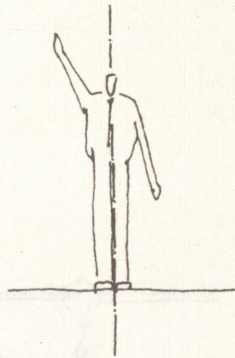


STAGES OF PERCEPTION, MOBILITY, AND ORIENTATION

As adults, we have the full capacity to conceptualize space, although most of us tend not to utilize it. Often we must train ourselves to be visually aware of the elements that compose space such as: light, volume, rhythm, proportion, scale, perspective, time-distance relationships and contrasting elements of solid and void. Our ability to perceive space through our remaining four senses isn't quite as distorted mostly because we rely on vision for almost eighty percent of our spatial awareness.

The visually impaired child, essentially develops his perception of space in a manner parallel to that of the sighted child, excluding the sense of vision. As an infant, the blind child recognizes objects through the sounds they make as opposed to motion they create. Yet in the same token his world is confined to his immediate surroundings.

At the preschool age of five or six the visually impaired child also learns about his body image--and body orientation, but with much more concentrated effort than the sighted child. Spatial



orientation is related to body symmetry and body centrality and is learned through concepts previously mentioned. At this stage the child is taught to trail or guide his way along a path by touching the changing surface textures along a wall.

Another tool used by both the sighted and blind in spatial orientation are compass bearings or cartesian mapping. Our division of the world into north, south, east and west together with the vertical division of space into earth, heaven and the underworld formulate space as a three dimensional grid. Consequently, we are able to orient ourselves through a matrix of psychophysical coordinates. This tool is learned and applied by children normally once they are at the grade school levels. The blind child must learn these concepts through a body centered orientation.

For the most part, our perception of space is learned as well as innate. From birth onward, we learn to develop our sensory perception of our environment. Our awareness of space, grows and becomes more complex with the onset of time, and "...the objects we perceive are commensurate with the size of our body, acuity and range of our perceptual apparatus and purpose."¹⁷

As an infant, one doesn't distinguish between animate and inanimate objects. Our response to moving bodies is consistent and we act as if they are all self propelled and alive. Therefore, the infant's world is confined to his immediate surroundings.

Until a child is five or six years old, his conception of space remains highly unstructured. A young child doesn't conceive space to be an ambience analyzable into distinct dimensions. He is first aware of space through his capacity to fill it with his body and learns concepts such as: left-right, front-back, up-down. Other dimensions like open-delineated, compact-diffuse, acute-obtuse, are conceptualized later. Vast spaces such as landscapes are also understood with later development, for the young child has a tendency to perceive the separate components of space. Thus the young child's world is animated and consists of sharply delineated shapes and colors in a weakly structured space.

By the time a child reaches anywhere from seven or eight to his early teens he lives in a vivid, and dynamic world much of the time. "He is aware of the pungency of the world and freshness of a view after the rain, sharp fragrance of coffee, etc. Unlike the toddler; the older child is not tied to proximate objects and surroundings; he is capable of conceptualizing space in its different dimensions, he appreciates the subtleties of color and recognizes the harmony of line and volume."¹⁸ By this stage of life the child has much of the adults conceptual ability and can complete whole images of reality and appreciate their artful composition. Visually children impaired may use their residual vision to locate the position of the sun in establishing polar relationships.

The next stage of perception and orientation by the blind child involves learning to use a cane. The two methods that are employed in blind orientation involve: the two touch system and sweeping. The former lends itself to orienting oneself indoors and it is used in conjunction with sound reverberation and echoes that provide sensory clues to volume of a room or texture of its surfaces. The latter technique involves moving a cane in a sweeping direction in order to detect obstacles and foreign elements in the much more unpredictable exterior environment.

Once the child has reached his full capacity in perceiving his external environment, he can then make use of what environmental psychologists term cognitive maps. These mental maps are used by both the sighted and the blind in order to organize information about our surroundings. "It is in an internal representation of images, recurring objects and events constituting a basis for knowledge of recognizing objects."¹⁹ This map is used in orientation also by anticipation. We base our activities on previous experience and knowledge of our activity and interactions with the built environment.

The significance of the cognitive map is important in our perception of space but also our ability to comprehend its meaning. For meaning of space is an integral part of the perceptual process and is only arrived at through the linear relationship of perception, cognition, knowing, and meaning. Each contributes to the whole and

culminates without intuitive and intellectual understanding of the meaning of space.

Unfortunately, due to the different physical limitations of the blind and sighted each uses the cognitive maps within his ability and therefore constructs different images and meanings of space. The blind child perceives space in a similar way to the young child. He interprets it as a collection of objects and has to piece together to arrive at their substance. A useful tool called a tactile map is often used to explain large spatial concepts that cannot be understood in one inspection, for example the spatial organization of an intersection. Whether or not the congenitally blind ever gains a true concept of the physics of space is still a question that remains unanswered. Although it is known that they perceive space through their remaining four senses and utilize the combination of cognitive maps and memory to construct their 'vision' of reality.

school as object

3

"I think of school as an environment of spaces where it is good to learn, school began with a man under a tree, who did not know he was a teacher, discussing his realization with a few, who did not know they were students."²⁰

Louis Kahn

The school essentially embodies a house for human growth. It fosters one's personal development which contributes to one's self assurance and respect for life. Without schools, the tradition of education would continue to exist but in a more loosely structured

form. Men created schools as an institution, feeling the necessity of allowing all to partake in the splendors of education.

Schools also may be considered places of gathering, places where man interacts with his fellow man in search of understanding, exploring and questioning his existence and potential to participate in that existence. In the act of gathering one learns social and organizational skills and the ability to express oneself. In this context, the school represents a community of individuals that teach and learn from one another, always aspiring to higher levels of understanding.

Ideally, schools were developed to broaden one's outlook on life and to be able to examine it in terms of a continuum of thought. Although as man became more diverse and complex so did his institutions and schools became places of specific study. The school therefore became a means of passing on traditions and culture specific to a society.

Elementary or primary schools are unique in their ability to sculpt the minds of the young. Their aim is to provide all the raw materials that culminate in a young child's confidence about himself in the world at large. The physical confines of the school should enable him to learn through play as well as through a formal education and cater to his needs of activity and inquisitiveness. The young child is very quick to learn and explore his environment. The school should therefore reflect his eagerness and enable him to explore his full potentials.

The nature of school imaginability is one that has undergone much change in the recent past. A school for the blind, for example constitutes both elementary school, home, and institutional facility. Therefore to arrive at its image will involve deriving its essence, understanding what its meaning is. To be examined are the concepts of school as institutional, non-institutional, and as reflecting the nature of play.

PHILOSOPHY OF EDUCATION

The first and foremost aim of education is to develop one's physical spiritual and intellectual growth. In allowing one to come into the possession of all his powers is especially important in a school for blind children who must rely upon the responsiveness of others to introduce them to aspects of their environment that they do not directly perceive as a result of their handicap.

Probably the most important aspect of a blind child's education is to teach him to become self-sufficient and motivated to learn in a sighted world. To do so, the blind child is taught special skills which enable him to gain confidence of his mobility and perception of the world. Special materials and equipment are employed in combination with the sense of hearing, touch, smell and taste and residual vision in order that a curriculum be designed to effectively meet the special educational needs of the visually handicapped person.

The blind education system is supported by: learning to read and type braille, study mobility and orientation skills, and speech therapy (as blind children are shown to learn how to talk since they lack the ability to visually imitate their teachers). To accommodate the learning of these skills involves a great amount of personal attention which results in student-teacher ratios of 1:1 in most cases and 5:1 in group activities. The specialized nature of the blind's education therefore assumes a more direct relationship between teacher and student, especially during these early years.

Field trips are also a supplementary aspect of a blind children's education. They allow the child to experientially understand new places and concepts. The blind child doesn't necessarily understand basic concepts which the sighted learn visually. Therefore a field trip to the butcher may enable a child to develop sensual associations with the place, yet will also enable him to draw the connection between; live animal, slaughtered animal, packaged and sold meat, to food on the table.

It is also important that an education system for blind children should encourage them to be active. Most blind children, because of

their handicap aren't as active as sighted children. They develop behavioral problems such as rocking, and talking non-stop about one subject in order to expend their physical energy. By providing a gymnasium or room with play facilities specially designed for their use, the child may translate their fixed energy into a more healthy form. The actual school environment may also be designed to encourage activity by providing ramps, small level changes and story play spaces that aren't hazardous to movement, yet allow them to expend energy in their use. The school building therefore becomes an active part of their learning as opposed to a passive backdrop.

With the current emphasis of deinstitutionalizing for the blind, educators are keen in simulating the real world as opposed to overcompensating for the disabilities of the blind. In this light, schools are to be designed almost as if they were for a sighted client, so that the blind children learn to orient themselves, and participate in a real-life situation.

INSTITUTION

"...a building should house the spirit of our institutions even if its immediate users have forgotten it."²¹

Kahn believed that institutions represent the desire to learn, as quality which can only be expressed through the community and through people coming together. To him, the first institutions consisted of the school, street and village. All in their essence serve the will to be, to express and are "...ultimately answerable to the desire of man to find out what forces caused him to be..."²²

Our questioning of institutions has led us to believe that they are large uncontrollable beasts whose prime concern is with their own growth rather than serving human needs. This negative view stems from the fact that our institutions have lost the inspiration of their beginnings. Therefore to remedy this situation we must retrace our steps and attempt to understand the basic fabric of our institutions in order to be able to determine how they should architecturally be manifested.

Taking into account Kahn's definition of an institution, to comprehend what is meant by school is to derive its essence. Fundamentally, a school is considered a place of learning. Hence, to understand the meaning of 'school' is to discover what underlies or constitutes learning. In addition to this, a facility for the blind is also considered a home, as the majority of the students live there on a full time basis. Therefore to further develop our concept of school, one must also examine it as a home and integral element of the community. In this sense alone can we determine what a school for the blind, as an institution, wants to be.

a. School as a Place of Learning

As children our primary mode of learning is through play, mimicry, and social interaction. "...in aimless playing, the infant learns about the world; by moving about, touching and manipulating he learns the reality of objects and the structuring of space."²³ Thus our education at a very young and inquisitive age is developed through the informal activity of play.

Conceptually, it would be interesting to see the school developed as a manifestation of play as learning, as play is such a vital element of the young child's world. Color and variety of spatial experiences would contribute to providing an enriching environment for children and reflect upon play as a constructive activity.

b. School as House

"...the school constitutes the first experience most children have of the greater world outside their homes. The school building is the first experience of architecture which is public rather than private."²⁴

This quote infers the separation between home and school, that a young child recognizes at a very early age. A school for the blind differs from this ideal since it provides dormitories for the children, making the distinction not quite as clear. Therefore in a specialized circumstance such as this it is pertinent to introduce some of the intimate qualities that offer the stability and intimacy of the home.

In order to achieve a homelike charm, the school necessarily need not emulate the imagability of the home. It is probably more important that it recognizes some of the spatial qualities and feelings that it radiates. Given these, we will have a greater comprehension of what gives meaning to school as a place rather than school as an object.

In his book The Poetics of Space, Gaston Bachelard outlines the two basic themes that are responsible for our association with 'house'; stability and verticality. Stability is based on the concept of centrality, whereas verticality is based upon our psychic relationship to the polarization of cellar and attic. Together they form a whole which is integral to our establishing a unity of thought and action with our first environments; the home and in the case of a school for the blind--home and school.

Life begins warm, enclosed and protected in the womb and is then transferred into an analogous environment that we call 'house'. In this sense the house becomes the first architectural environment we contend with. It represents a stability that stems from its centrality and ability to integrate the thoughts, memories and dreams of mankind.

Stability, ensures the house as a concentrated being. It appeals to our consciousness and is a vital ingredient to our concept of house. Without it, we would be disoriented and lacking identity for our desire to establish 'topophilia' (an affective bond with our material environment). This bond is based on our ability to couple human emotion with place.

In a school for the blind, it is most essential to achieve stability as it is central to the identification with it as both home and learning environment. Because the visually impaired child lacks the vision to formulate strong images of centrality, the school environment must provide the sensory stimuli which shapes his joys and ideals.

Verticality is important to the concept of house because it is the vehicle in which we explore our psyche and soul; conscious and unconscious. Verticality is established by dichotomy on two realms;

the underworld, and the sky. The young child becomes aware of his reality in exploration of both.

These two realms are analagous to the polarization of the cellar and attic of a house. Each constitutes a separate reality which is metaphorically important to our perception of the oineric house, which we construct in our memory and imagination. The cellar is representative of a cryptlike environment that emmanates mystery, solitude and even madness. The attic in comparison, is indicative of loftiness, freedom and expanse. These realms are important not only as metaphor, but also in terms of their ability to dramatize the experience of ascent and decent.

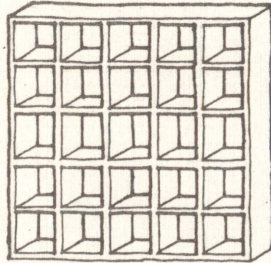
The concept of verticality carries much significance with respect to a school that equally constitutes a home environment. To the sighted child the world isn't planar but is a three dimensional construct which he explores on all levels. The blind child on the other hand isn't immediately as aware of this concept and must therefore be introduced to it in order to complete his image of both illusion and reality.

c. School as an Element of the Community

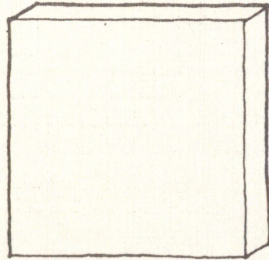
The design of a school for the blind must be especially sensitive to the context of the community in which it is located, as it affects the community's perception of it as an institution. If the school is bleak, impersonal and prisonlike, it will reinforce society's stigma of the blind as feeble and inept people. Whereas, if the environment is one that is favorable and invites intrigue, members of the community are more likely to take interest in the activities of the school.

It is also important that the school maintain some degree of privacy in respect to the students that live there on a fairly permanent basis. This may be achieved by separating living and learning facilities and possibly even creating zones of public, semi-private, and private so that both students and the public may enjoy their own degrees of comfort and social interaction.

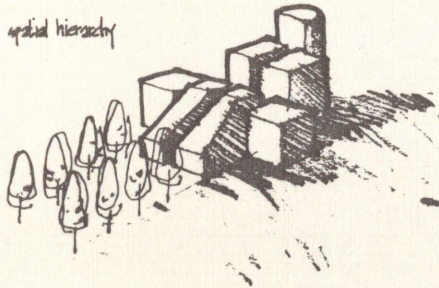
INSTITUTIONAL, NON-INSTITUTIONAL



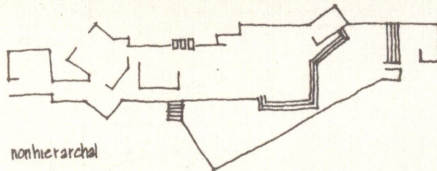
permeability



non-permeability



spatial hierarchy



nonhierarchical

Robert Sommer like Louis Kahn, shares the attitude that our institutions have strayed far from their original intent. Kahn on one hand attributes the failure of our institutions to our negligence towards our original belief systems. To improve our institutions we must acknowledge their essence, and fundamental ideologies. Sommer on the other hand is more interested in improving upon the qualities of institutional space. He examines what constitutes unfavorable institutional environments and seeks to develop a vocabulary of qualities he feels are more humanistic. Regardless of philosophy, both men view flaws in our institutions that they seek to correct.

In his book Tight Spaces, Robert Sommer defines institutional buildings as those whose intent is to increase security, maintain order, discipline and control. They essentially constitute the no-frill public building and consequently have become what he regards as 'hard architecture', or one that is resistant to human imprint; impervious, impersonal, and inorganic. Synonymous with hard architecture is an indestructible architecture, one that is vandal proof and made out of impermeable materials such as concrete, brick, steel and stone. Hard architecture in effect, assumes "...that the public holds little responsibility to anything: it assumes a lack of trust and is best revealed in our housing projects, schools and commercial buildings."²⁵

In our efforts to maintain control and order we create monstrous spaces that are identical in form and leave no room for personalization. Hard architecture therefore assumes an anonymous user and pays no heed to man's needs and identity with a space or locale. "The scale, scope and impermeability of this sort of architecture is oppressive to the human spirit."²⁶

Another characteristic of institutional or hard architecture is its clear differentiation of status levels. It assumes that every activity and person has a specific location and that there is minimal contact across status levels or departments. In a school for example, we would assume that there is no sharing of information between teacher and student. The relationship between them would be considered hierarchal, the teacher taking his place at

the front of the classroom or in the staffroom not being expected to interact outside his given boundaries.

Hard architecture also suggests a lack of permeability between the institution and the community. This may be exemplified by schools for the blind that are walled in, or have few windows that minimize their connection with the surrounding neighborhood. An extreme example of this would be to place the school at the edge of a city or better yet--to remove it totally and situate it in a rural environment where it can enjoy total isolation.

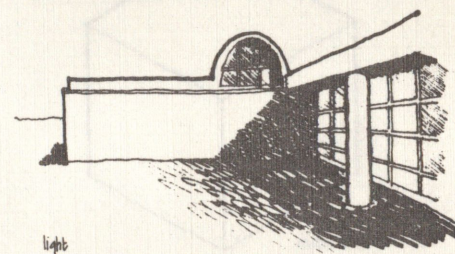
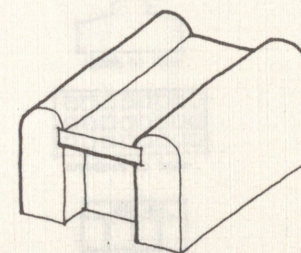
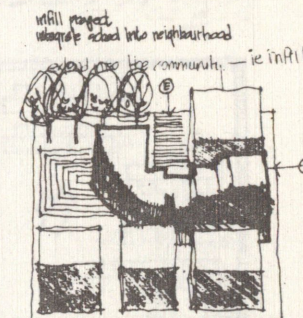
The effects of hard architecture on a children's institution are horrifying. For,

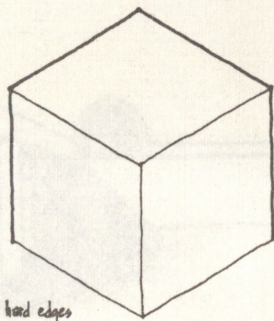
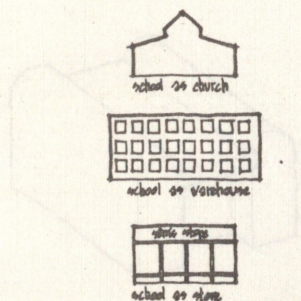
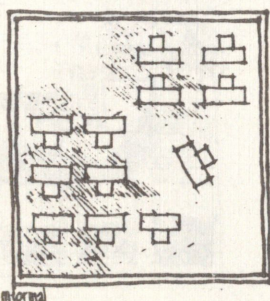
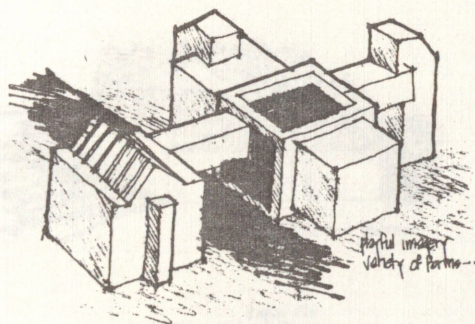
"...institutional life has little relation to the outside world. It usually confines the children's contacts to members of their own sex, teaches them to be dependent on hospital like routines...and teaches them to live on a welfare system rather than to be responsible for their own needs."²⁷

To correct this situation, Sommers suggests that we re-examine the basic premises of our institutions and design with soft architecture that is responsive to human needs.

In contrast to hard architecture, soft architecture has the ability to humanize space. It essentially aims at de-institutionalizing architecture, making it more liveable and therefore resilient of human imprint. To further emphasize the comparative differences between hard and soft architecture we will use the school as a study and thus determine its potential non-institutional qualities that will enable it to become a more responsive environment to the needs of the blind.

Soft architecture may be equated with buildings that have an open, carefree and non-oppressive atmosphere about them. They assume trust in the user of the building to maintain it. Therefore much like Aalto's architecture, they emanate light and reflect the warmth of natural materials such as wood, brick and ceramic tile.





In an attempt to break the monotony of spaces characteristic of institutional architecture, soft architecture introduces variety of form, space, and materials. The variety of spaces we design are responsive not only to flexibility of user, but to the demands of a society based on change and constantly in flux. A special nook in a classroom for example, may lend itself to the personalization of that space--be it for reading, storytelling, or playing. The space remains dynamic as opposed to static, reflecting our need for diversity.

The clear differentiation of status levels found in most institutional buildings may be broken down by challenging accepted or assigned positions in space or by introducing more overlapping of activity. A teacher's desk for example, can be positioned within the classroom, rather than at the front or periphery of it, to promote a closer student-teacher relationship. Zones of activity may be further integrated by implanting softer boundaries between traditionally accepted spatial boundaries. The administration area for example could be connected to classroom spaces through a common atrium rather than a hallway which might induce a better rapport between staff and administration or staff and students.

The lack of permeability of institutional architecture may easily be ratified by introducing more visual and physical continuity between the institution in question and the community. Infill projects are a prime example of how visually a school may integrate itself within a community. An alternative to this, is to give the school a non-school image. By concealing a school within an old warehouse, church, or even old house, we totally remove all preconceived associations with a school's image and must correlate our knowledge of school with its essence as institution.

Permeability may also be achieved by giving the school a character which provokes inviting gestures as opposed to closed and remote. Rather than putting a wall around the school, it would be better to surround it with a screen that allows visual access to the school and its activities. Even fenestration plays a large role in altering the public's perception of what a school entails. The 'solid box' image confines your knowledge of school, giving you no indication what lurks behind its facade. In the case of the school

for the blind, this would contribute to reinforcing negative prejudices towards the blind rather than seeing them as working members of the community.

In conclusion, we may agree that Sommers defines hard and soft architecture as being synonymous with institutional and non-institutional architecture. The essence of his argument states that hard architecture is a result of our bureaucratic efforts to control and maintain order in society rather than to teach and instruct. Our loss of trust in our institutions and the men that support them have therefore resulted in an impermeable architecture resistant to human imprint. The solution of this problem entails softening or deinstitutionalizing the architecture of our day. We as architects must be more responsive to human needs and appeal to the diversity and resiliency of human life and the architecture that houses it.

institutional

non-institutional

interior

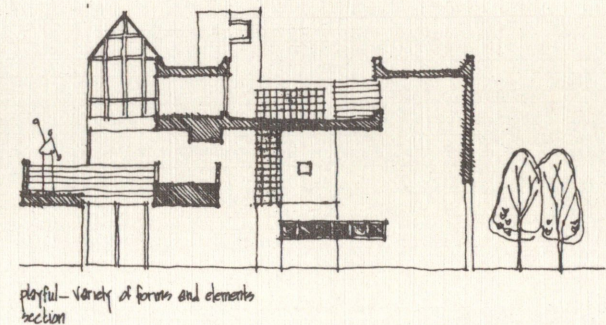
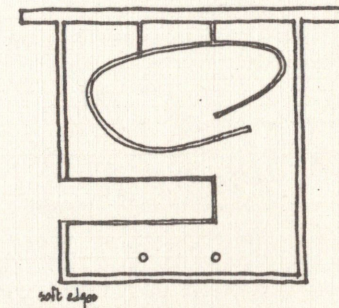
hard materials: concrete, stone, brick
hard edges: angular and rigid
geometric spaces
non-flexible space
hierarchal
static and formal
poor light
stale air
rigid zones of activity
drab and uniform color

soft materials: wood, carpeting
upholstery, ceramic tile
soft edges: curves, serpentine, round lines and spaces
flexible space
non-hierarchal
dynamic and informal
light
fresh air
integrated zones of activity
variety of color, brightness

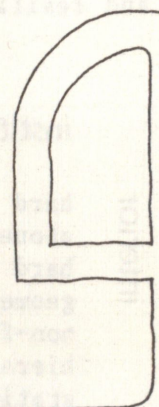
exterior

housing in one building
separate from community
non-permeability
identifiable image

variety of space and form
integrated within the community
visual permeability
variety of images



site



The site for the school is situated in the predominantly residential district of Oliver. Its location is ideal, primarily with respect to its centrality within the city of Edmonton. Close to the downtown core, the site is consequently extremely accessible to major bus routes, enabling staff and visitor alike to easily locate the school.

The school's central location is also advantageous for scheduling field trips, which are a significant aspect of the visually handicapped's education. Opportunities to visit a wide variety of places is greatly increased when they lie in such close proximity to the site.

This in effect decreases travel time to plan such activities, as well as exposes the student to as many new situations as possible.

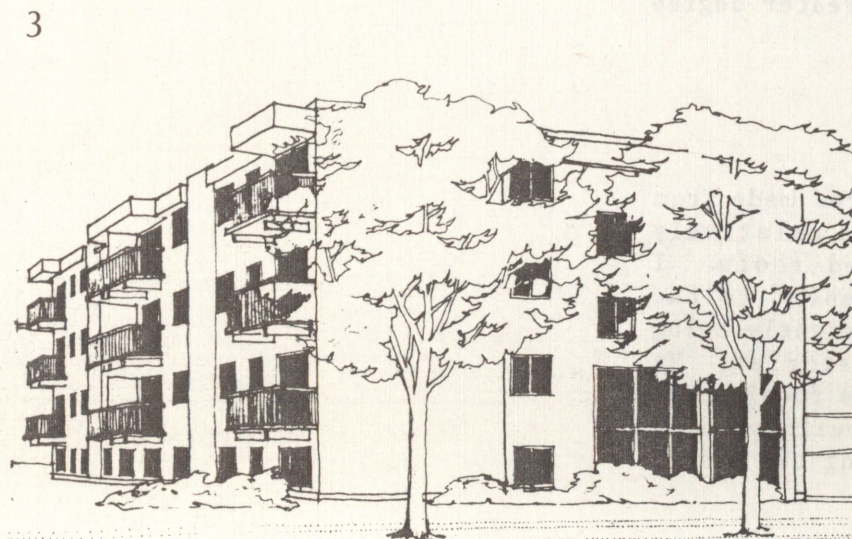
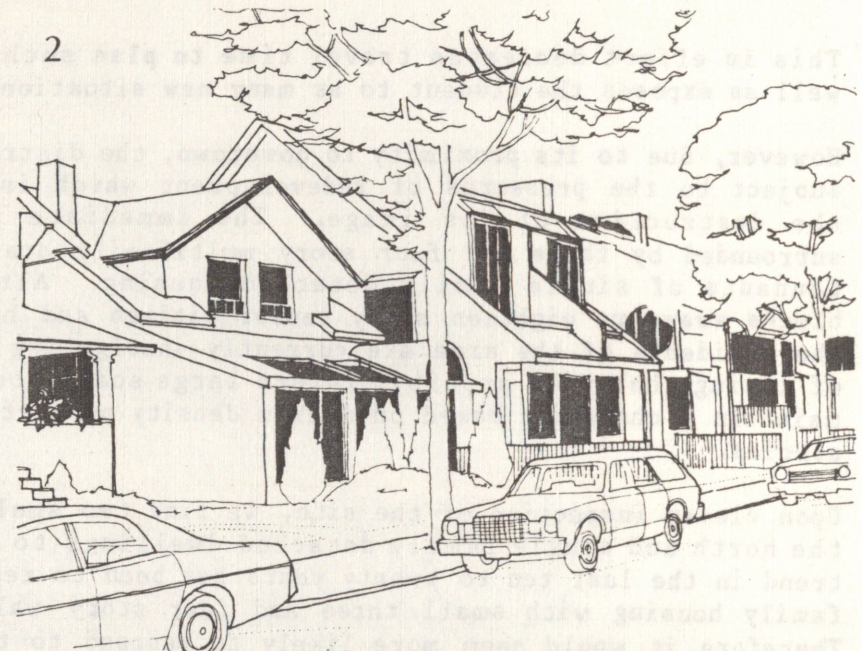
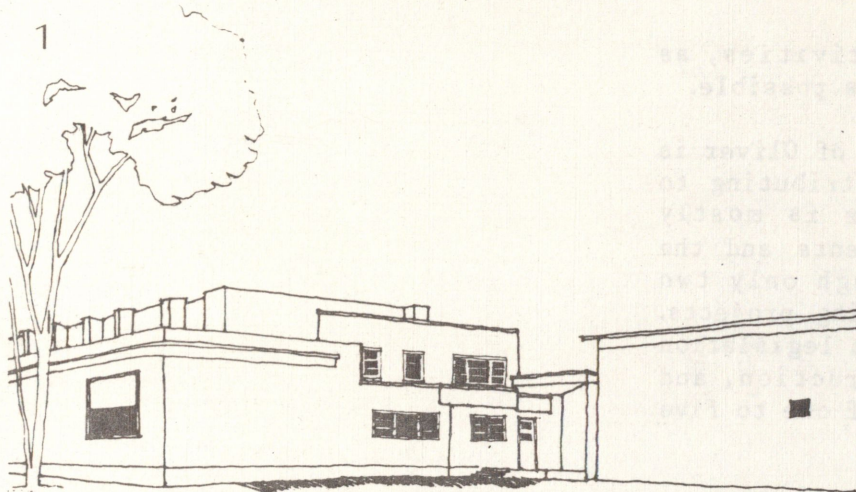
However, due to its proximity to downtown, the district of Oliver is subject to the pressures of redevelopment which is attributing to the destruction of its image. The immediate site is mostly surrounded by three and four story multifamily apartments and the tenants of single family detached housing. Although only two blocks away are eighteen story senior citizen and housing projects. The residents of the area are currently instigating the legislation of zoning that will prohibit future large scale construction, and maintain a character based on medium density projects of one to five stories.

Upon closer inspection of the site, we find two small apartments to the north and single family detached dwellings to the south. The trend in the last ten to twenty years has been to replace the single family housing with small three and four story walkup apartments. Therefore it would seem more likely to respond to the scale of the latter when planning future projects, as they represent the previous building trends in the area and are likely to have a greater degree of permanence.

CONTEXT

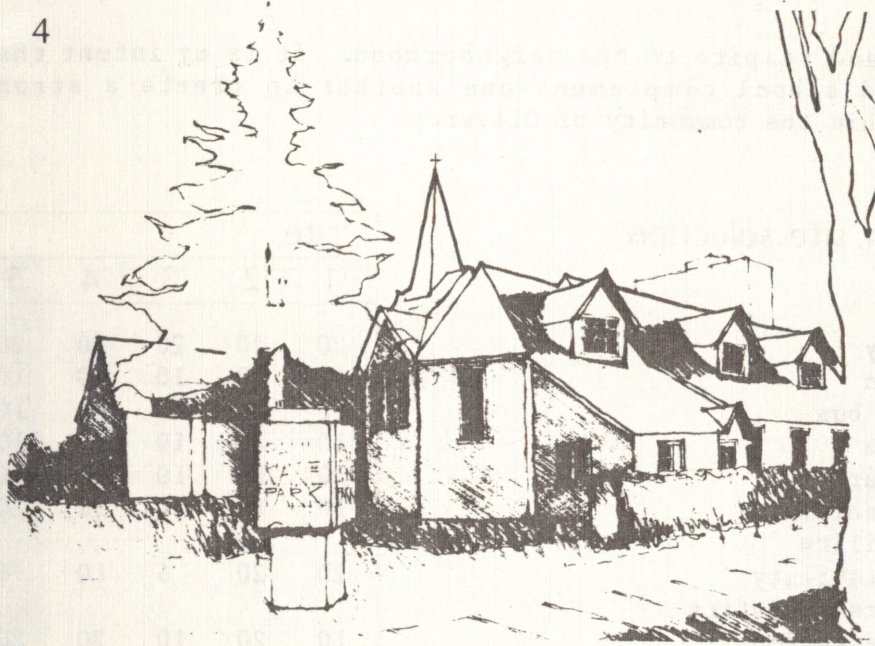
Visually, the district of Oliver is composed of structures made from wood, brick, stucco, and concrete. Building forms are relatively simple and are constructed of either flat or gabled roofs. I personally feel that it is of primary concern to respond to the scale of existing buildings in the area, as they are currently being regulated at an overall scale between three and five stories. My secondary concerns are with establishing the school as a focal point in the community. This may be achieved by contrasting building form and/or materials within the given context, thus enriching the visual interest of the site.

One of the fundamental reasons that the site was selected, was due to its proximity to Paul Kane Park. Fortunately the park functions not only as a place of beauty, but also serves as a place of



1. St. John's Catholic School: Elementary School which is located directly east of the site.
2. Single Family Detached Housing: Renovated wood structures which are slowly disappearing in the district of Oliver.
3. Apartment Block: Located on north boundary of site. Is typical of multifamily housing in the area; having a flat roof and made of brick construction.
4. Church: Constitutes southern boundary of Paul Kane Park. Is a wood structure of residential vernacular (gable roof forms and dormers).
5. Single Family Housing: Picturesque two story dwelling, having gable roofs and made of wood construction.
6. Paul Kane Park: Visually of interest and is potentially a recreation space for school children.
7. Single Family Rowhousing: Renovated wood structures having gable roofs.

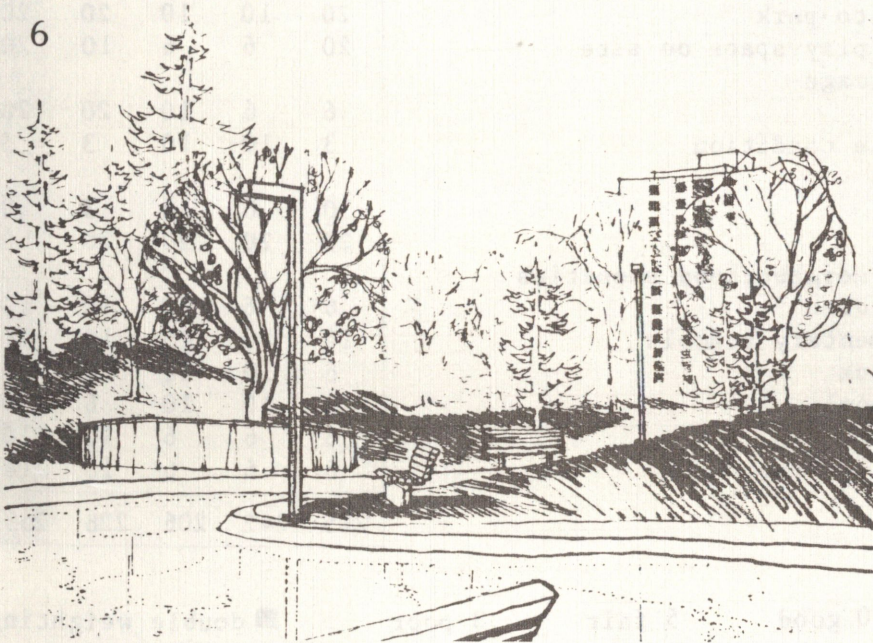
4



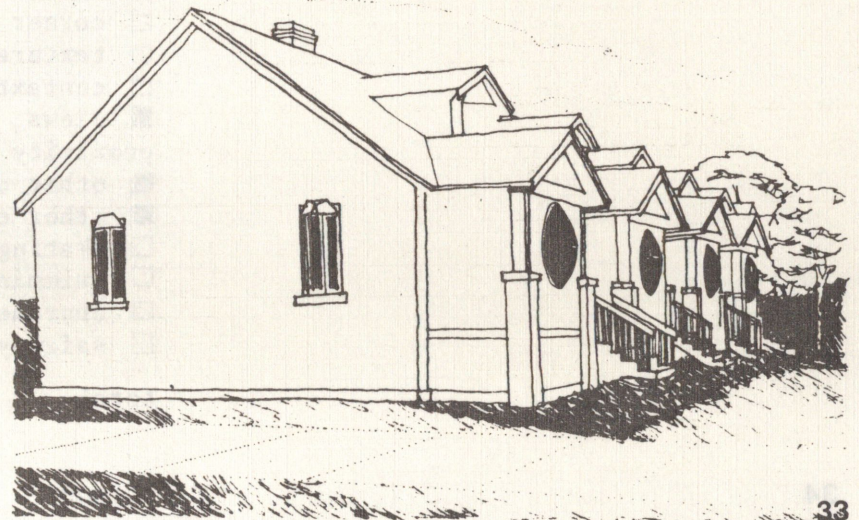
5



6



7

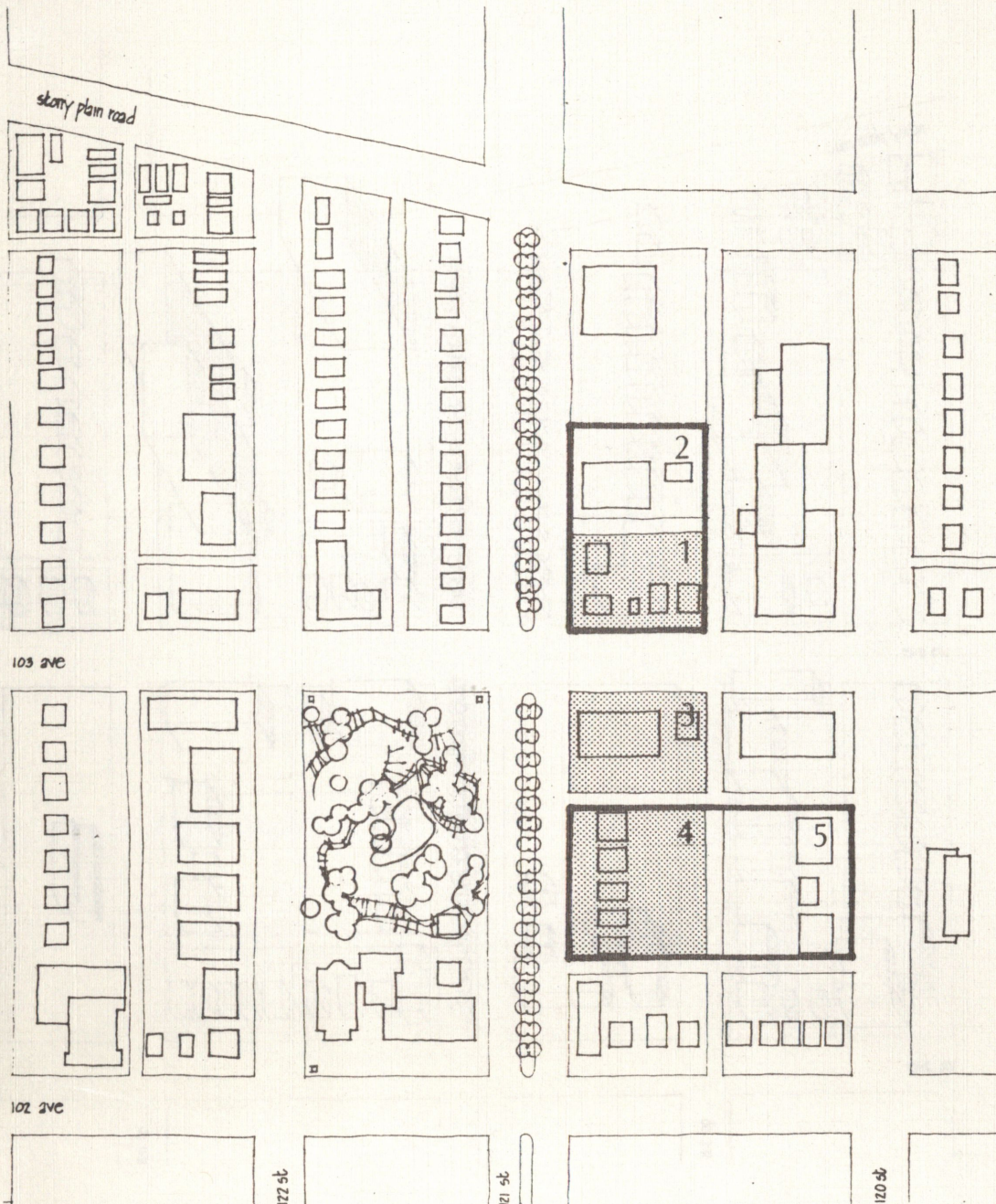


recreation and respite to the neighborhood. It is my intent that the park and school complement one another to create a strong identity within the community of Oliver.

criteria for site selection

accessibility
☒ pedestrian
☒ municipal bus
☐ school bus
☐ private car
☐ service vehicle
 site availability
☒ site availability
 physical characteristics
☒ solar orientation
☒ possibility for future expansion
☒ proximity to park
☒ available play space on site
 quality and image
☒ scale
☐ corner site condition
☐ texture
☐ context
☒ views
 proximity to neighborhood amenities
☒ other children
☒ other elementary schools
☐ skating rink
☐ swimming pool
☐ churches
☐ safeway
 total

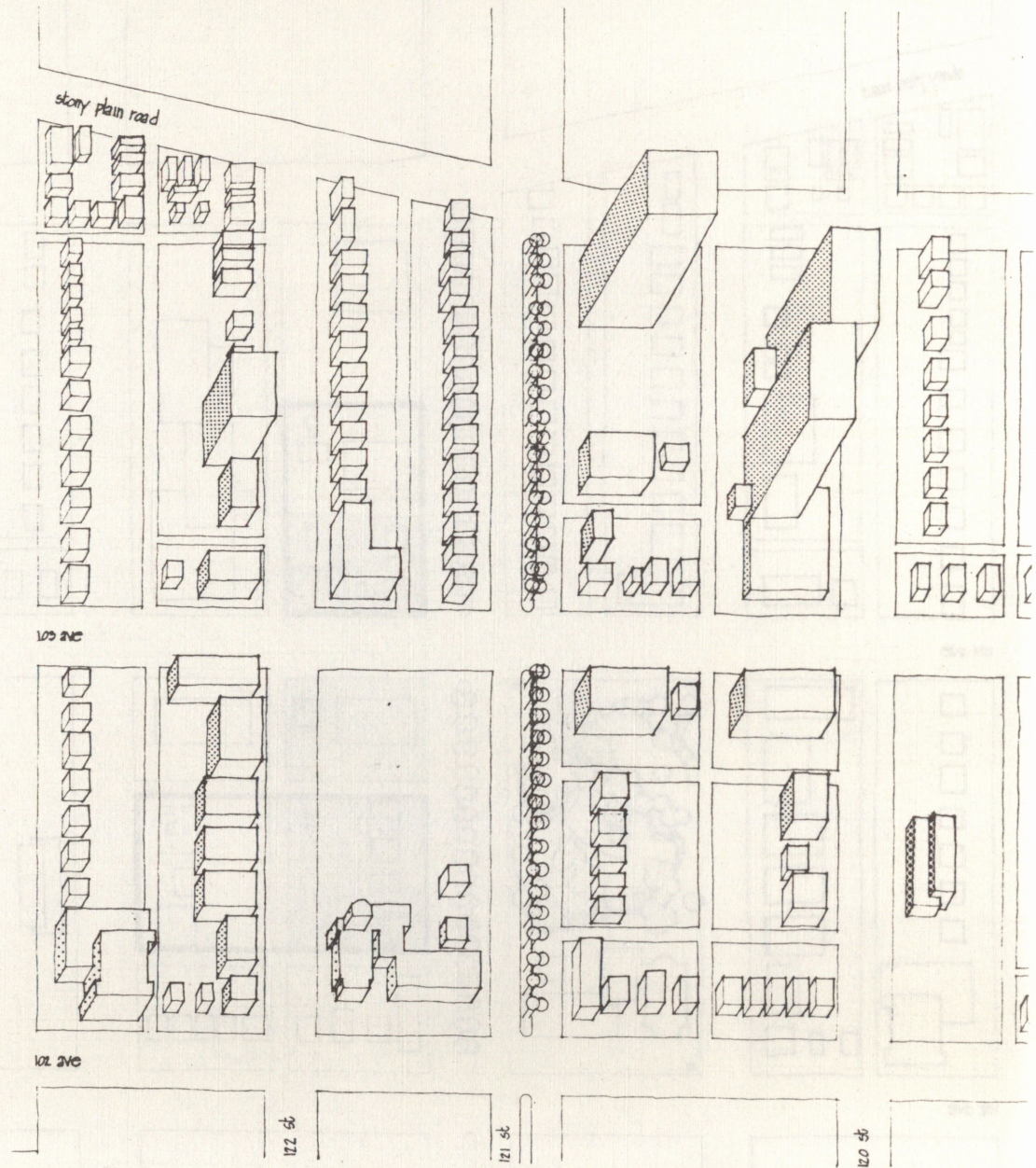
site				
1	2	3	4	5
20	20	20	20	20
10	10	10	10	10
10	10	10	10	10
10	10	10	10	10
10	10	10	10	10
10	10	10	10	10
20	20	6	10	6
10	20	10	20	20
6	20	6	10	20
20	10	10	20	20
20	6	6	10	20
6	6	10	20	20
3	10	10	3	3
10	6	6	3	10
20	20	20	20	10
6	6	10	10	10
10	10	10	10	20
6	10	10	6	6
6	10	10	6	6
6	6	6	10	10
6	6	6	10	10
215	242	206	228	263

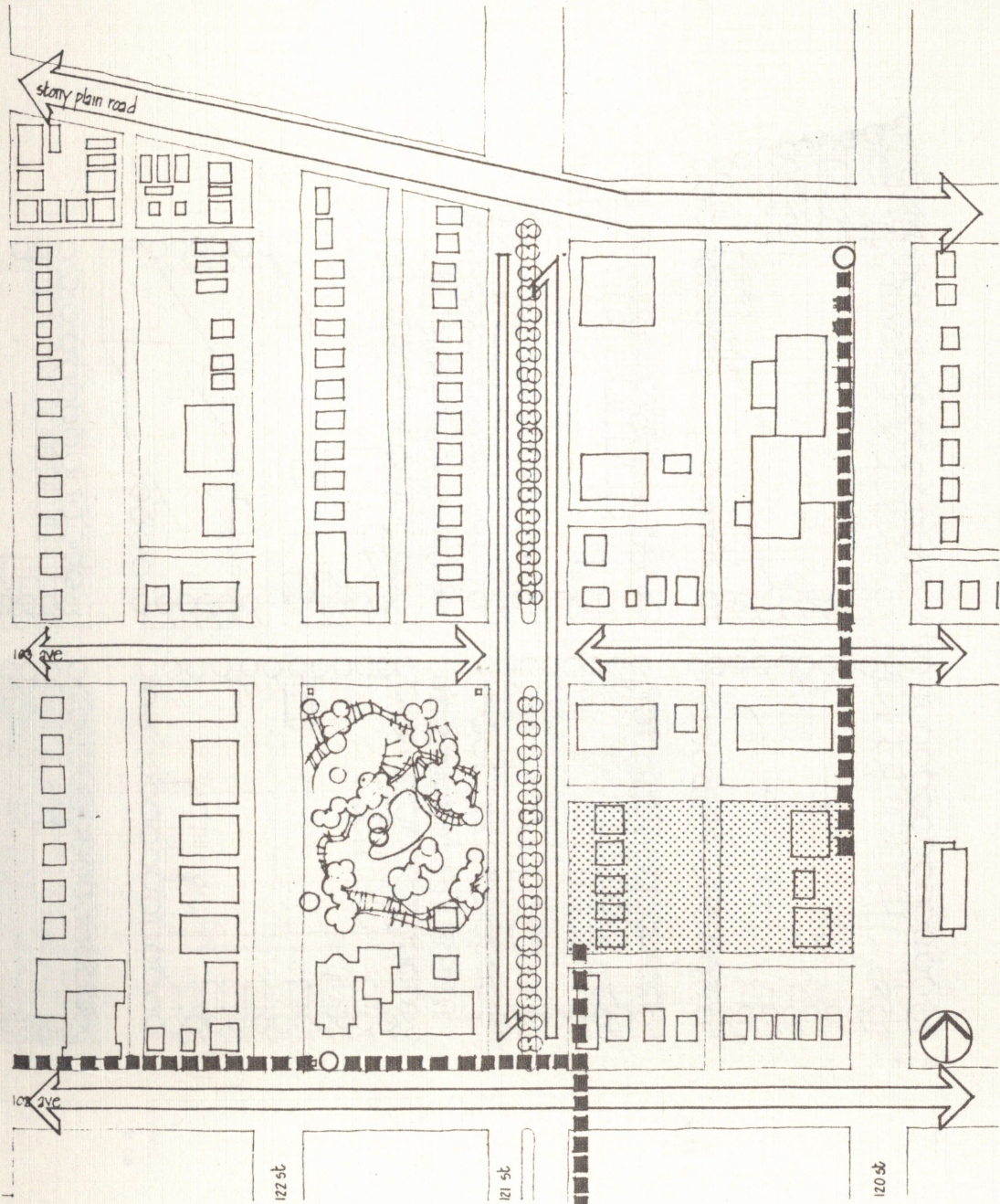


site selection

existing land use

-  schools
-  high density residential
-  low density residential
-  churches

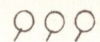




circulation

-  site
-  vehicular circulation
-  bus stop
-  pedestrian circulation from bus stops

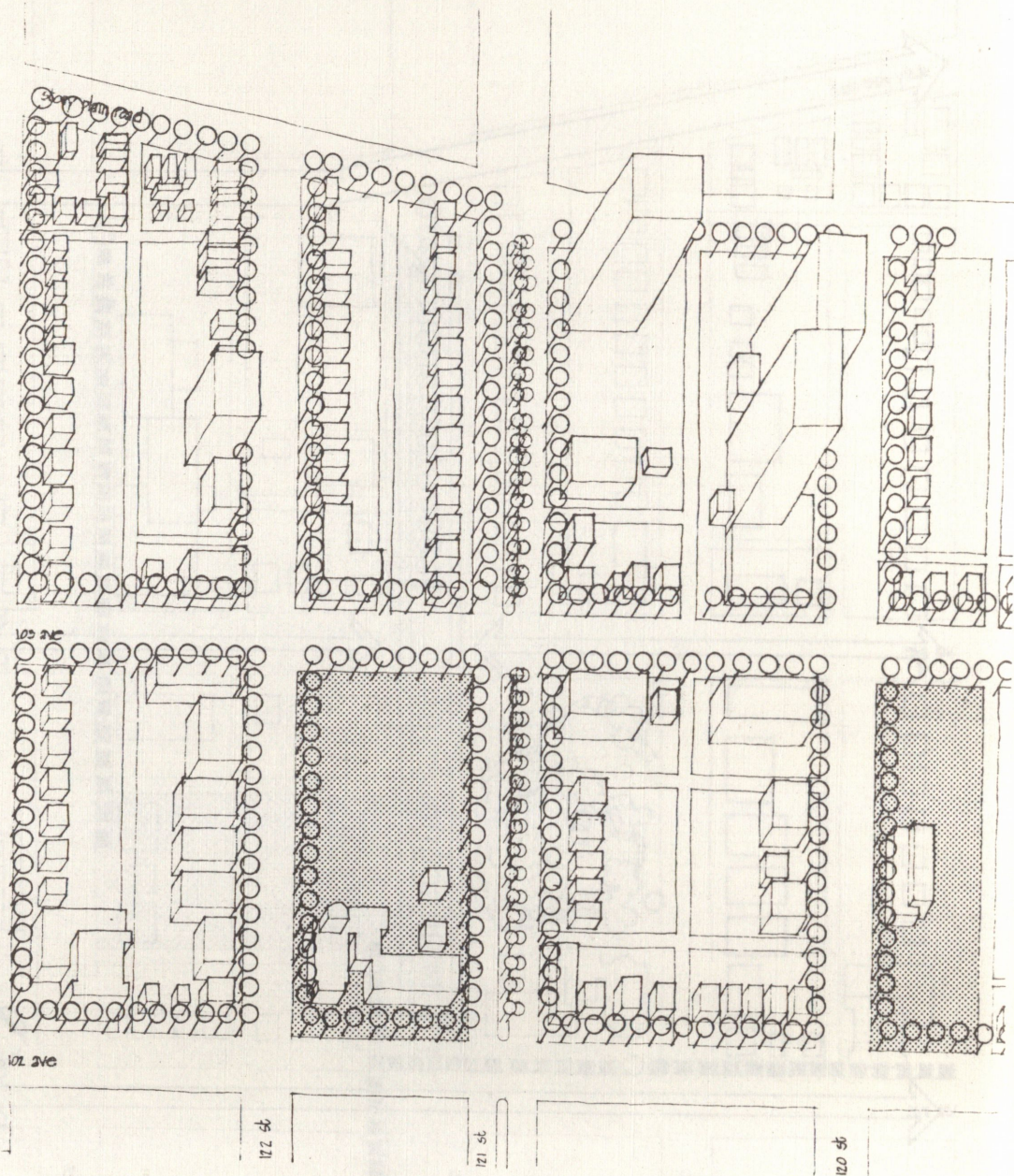
vegetation



trees



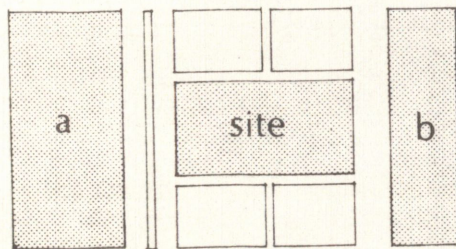
green space



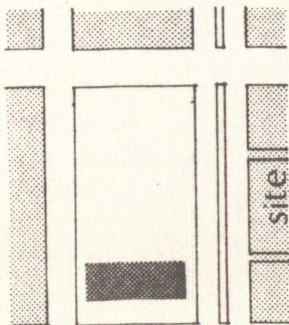
design development

SCHOOL AS LEARNING ENVIRONMENT

In his writing, Louis Kahn emphasized the idea that our institutions are man centered and were originally created to benefit society as opposed to corrupting it. To fully comprehend what is meant by an institution is to reduce it to its essence. Thus, one may interpret it in its purest form when formulating design concepts for buildings of an institutional nature.



1. a. Paul Kane Park
b. Christ's Anglican Church



2.  Christ's Anglican Church
 housing

In lieu of this idea, I have personally come to the conclusion that the essence of a school is to learn. As an activity, learning involves both conscious and subconscious thought processes which occur during both formal education and play. It is one that need not be confined within the walls of a classroom as it involves the limitless bounds of human experience. Therefore it seems to me that the word school be regarded more as a 'learning environment' as it encompasses learning as a continual process and one that extends outside the physical boundary of the school building and includes the school's site, landscaping and ancillary play space.

According to this premise, the spaces in and around school buildings will become just as important learning environments as the school itself. For this reason I have chosen to develop both school and site as one. Thus movement to and from spaces, activities within them, and then physical structure all comprise the activity we call learning.

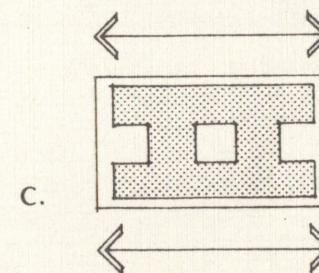
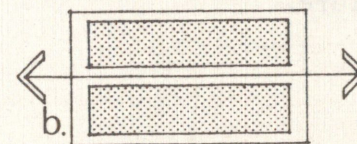
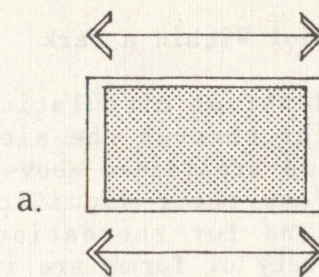
SITE CONCEPTS

1. To create a visual or physical linkage between Paul Kane Park, the site, and the Catholic School. This would involve creating a green space and pedestrian path that would connect all three sites.
2. To create a strong visual boundary to Paul Kane Park. This would involve respecting the existing street wall surrounding the park which is established by the church to the south, apartment blocks to the west, and housing to the north. The street wall being defined by building scale, setbacks, trees and plantings.

BUILDING CONCEPTS

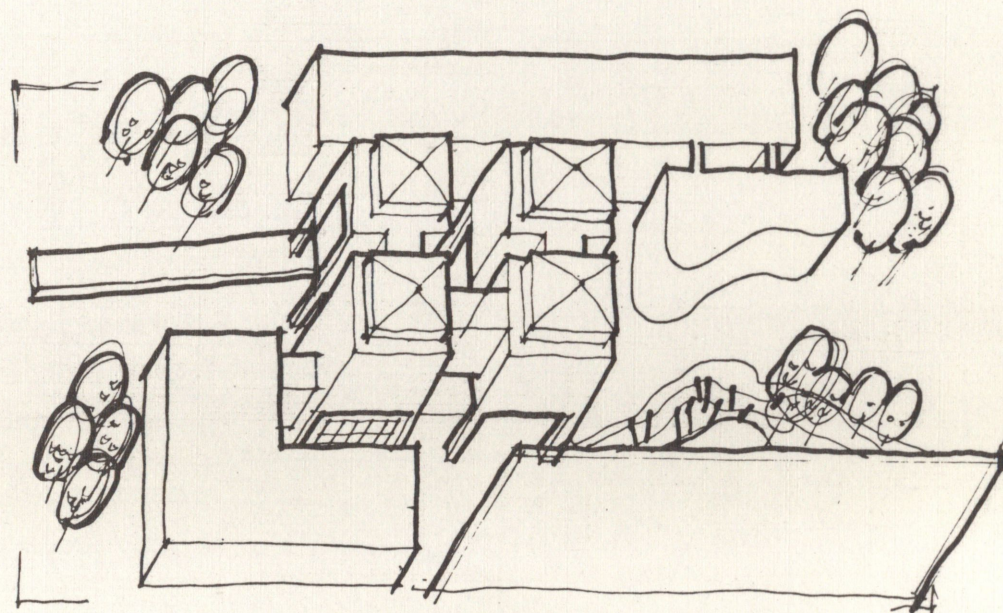
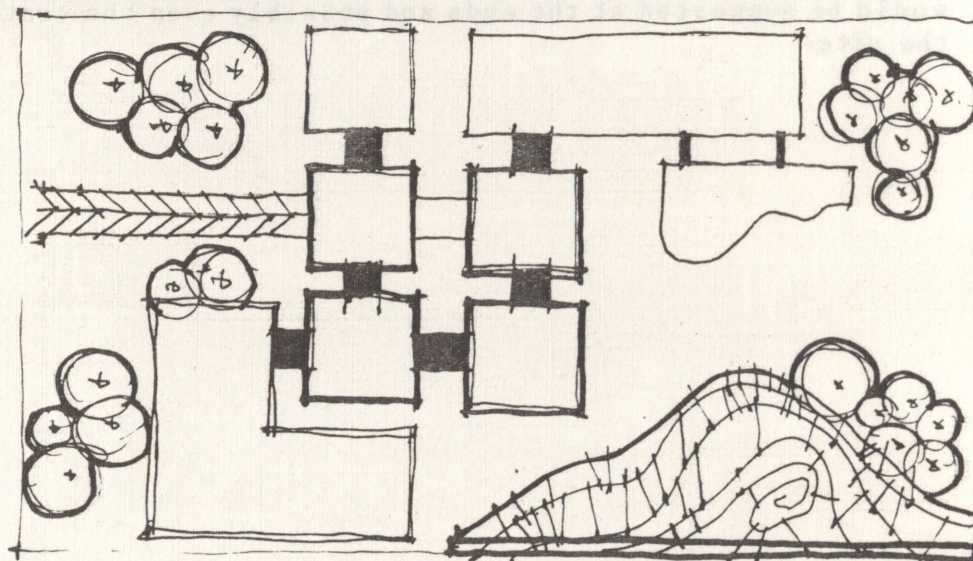
- a. Paths would go around the site.
- b. Paths would continue through the site.

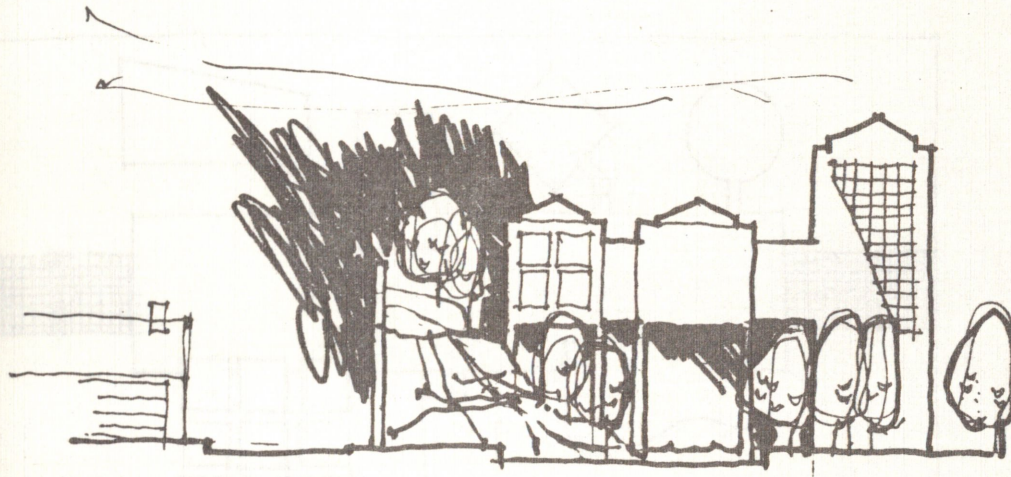
- c. Hybrid solution; paths would go around the site and green space would be suggested at the ends and possibly even the center of the site.



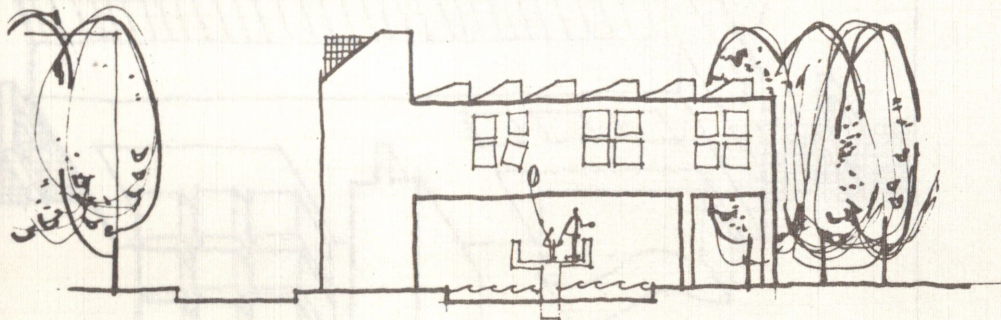
School Within a Park

Pedestrian circulation is encouraged to occur through the site. Special classrooms are raised above grade, in order to stress their significance and free the ground for recreational activity. The variety of forms are intended to contribute to the school's visual interest and thus de-emphasizing its institutional nature.





school situated over small pond
artificial hill grown out of retaining wall



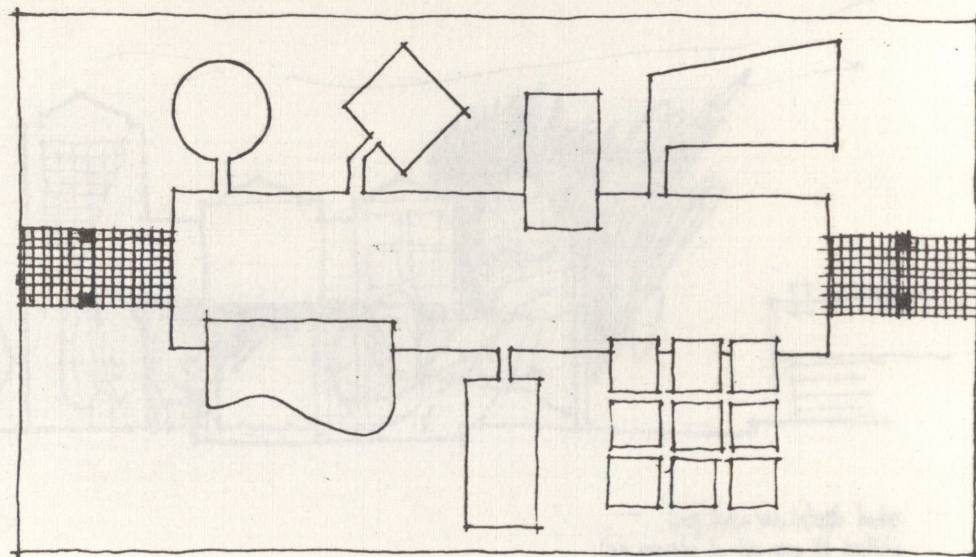
school over a pond - allowing visual access through site

School Straddling a Pond

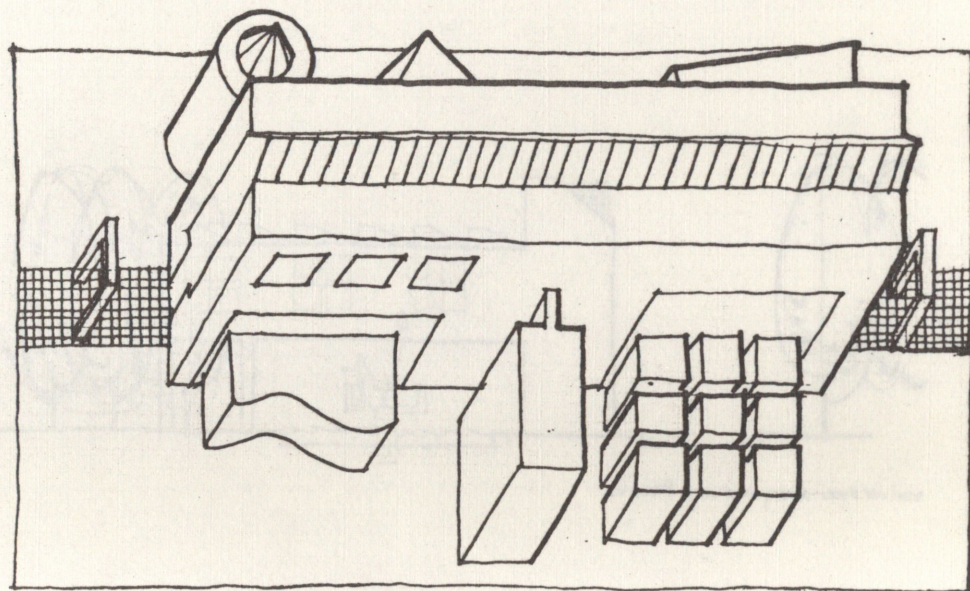
In this example the school building is simply elevated over a pond allowing visual access through the site. Pedestrian activity is maintained via a walking bridge which passes over the pond. The saw tooth roof forms and geometric fenestration are suggestive of children's games and play toys.

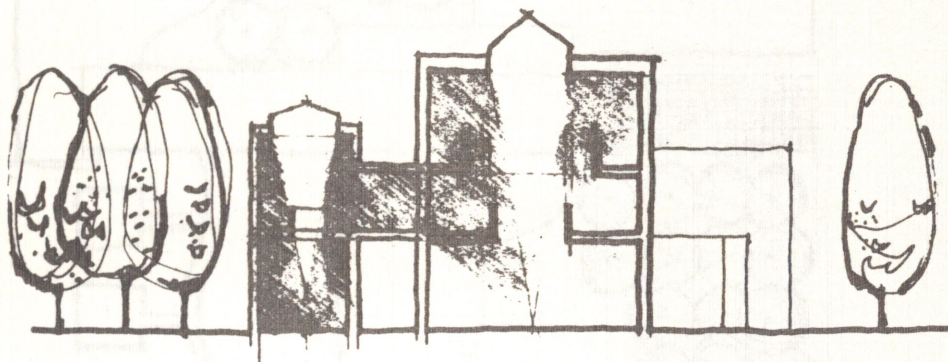
School as an Island

The school building acts as island of play and activity. Additive geometric forms protrude from the learning center, and suggest more important functions such as the library, music rooms, greenhouse, dining and meditation spaces. The strong axial circulation path within the school facilitates ease of orientation and mobility. Exterior pedestrian flow is encouraged to occur on the peripheral alleys, which would be redeveloped for this use.

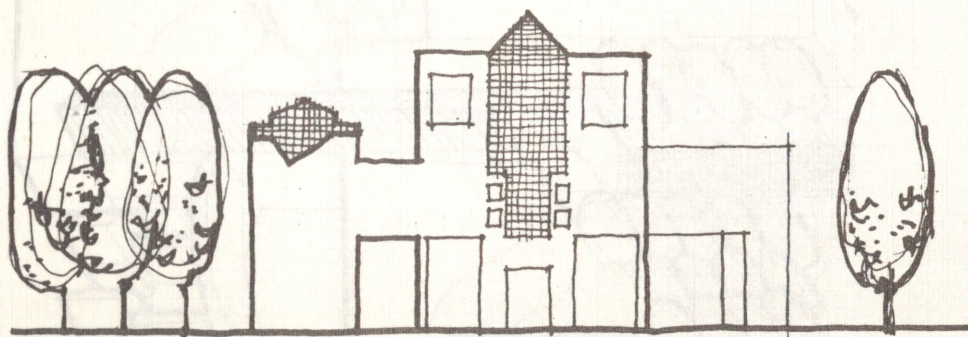


J.





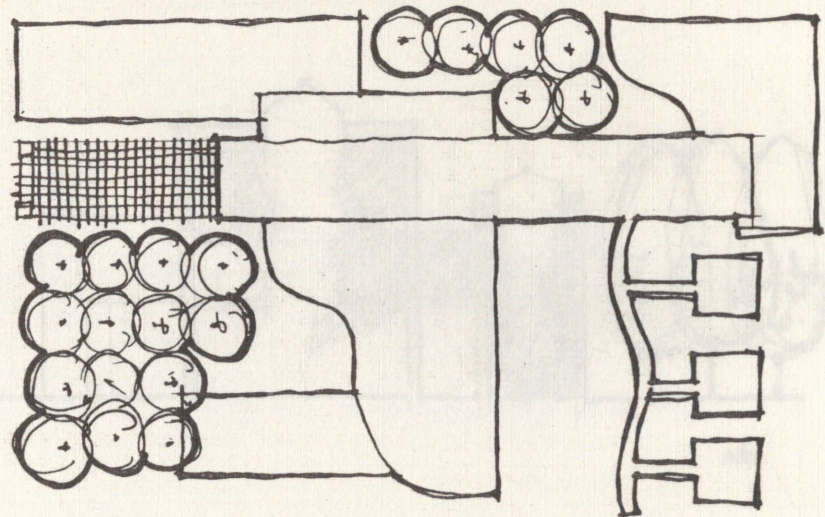
section



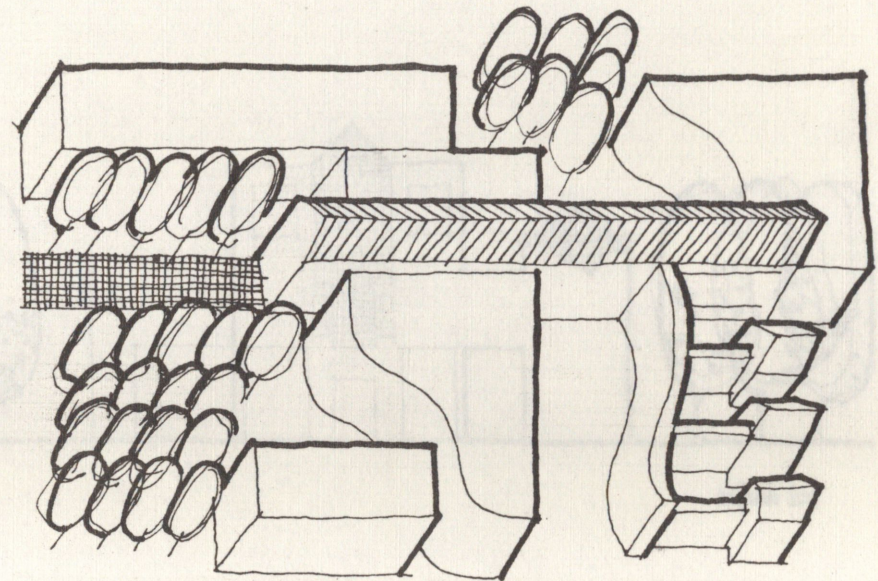
front elevation

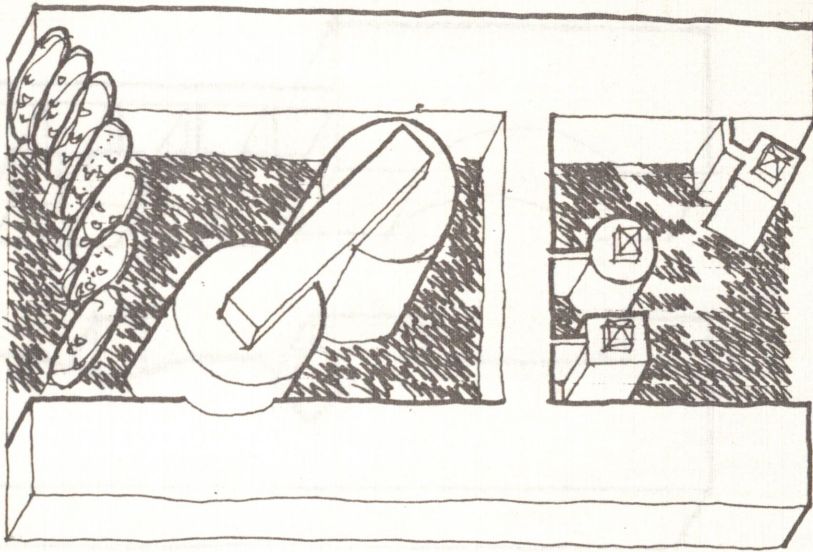
School Creating a Variety of Play Spaces

Internal circulation, for the most part is organized around a linear circulation path. In contrast to the previous example, this scheme tends to create space as opposed to dominate it. Fragmented building translated along an axis provide visual interest and multitude of play and recreation spaces.



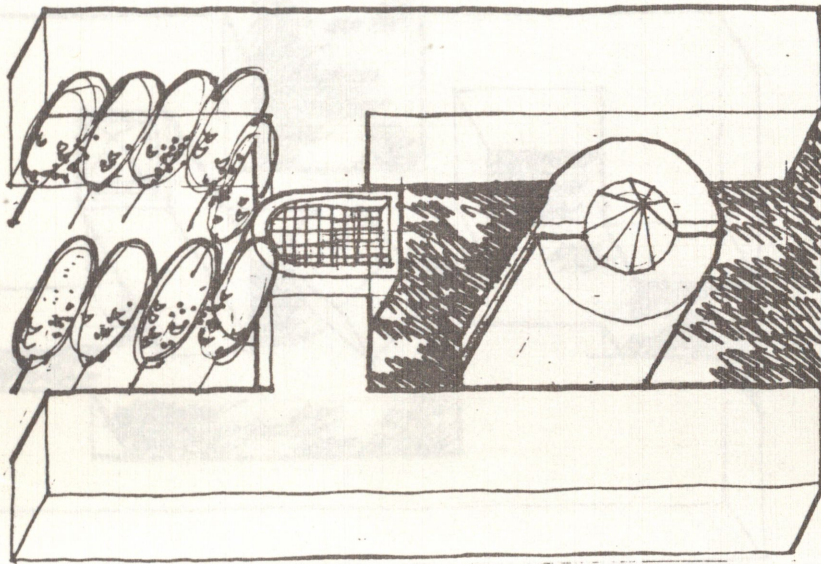
plan





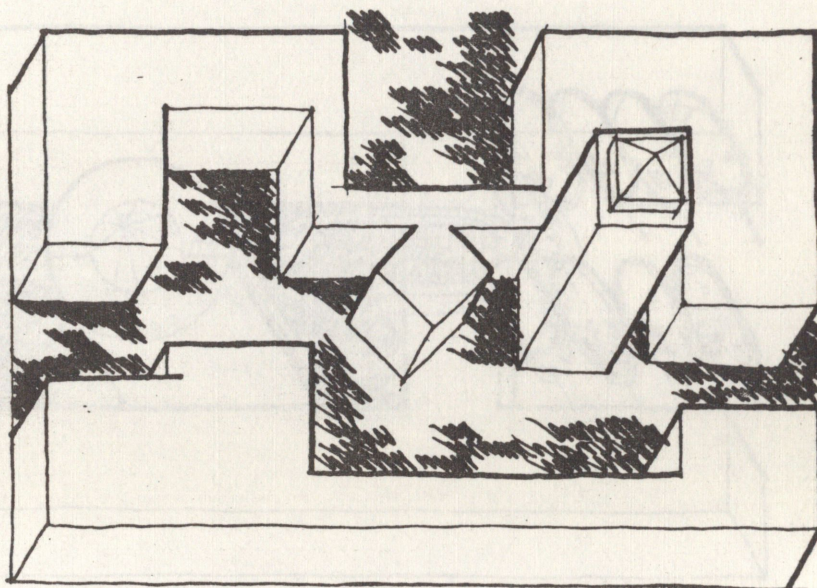
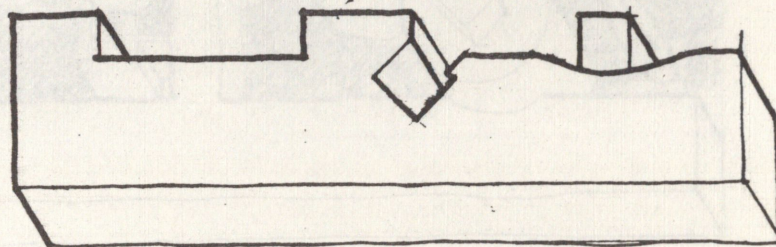
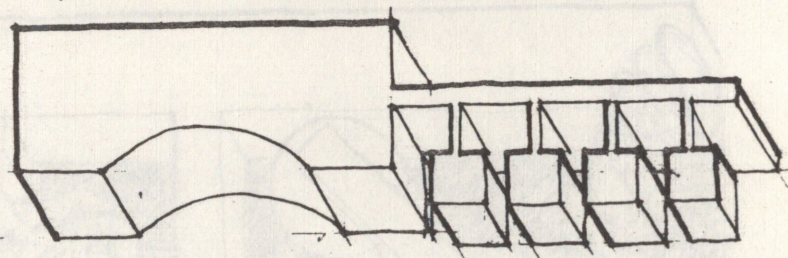
School Enclosing Courtyards

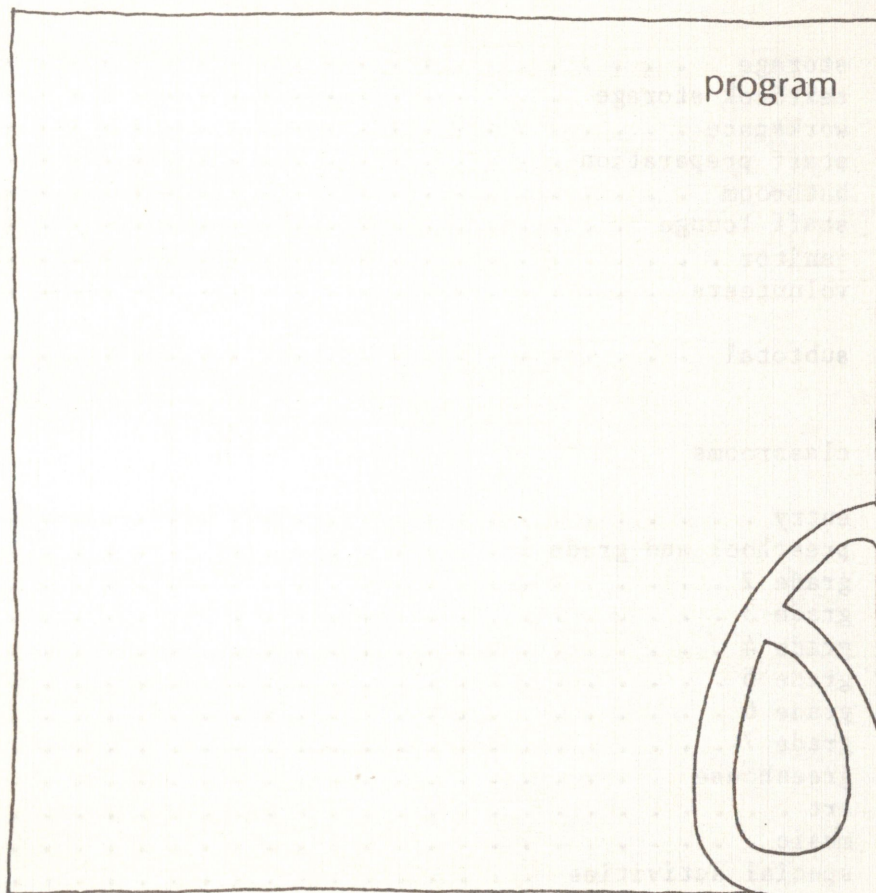
In both these schemes, internal circulation dominates spatial organization. The school proper is comprised of simple linear masses which are visually subservient to a few special spaces of greater significance such as the library or creative arts classrooms. These spaces are further emphasized by their isolation within large courtyards, which serve as transition spaces between the street and school domain.



School as Linkage

These last two sketches strongly exemplify site concept 'a' which stresses linking green spaces of Paul Kane Park and the Catholic School. The school is essentially divided into two halves which undulate, protrude and recess to create an interesting path, and variety of exterior spaces.





space

area (ft²)

administration

entry lobby, waiting area	200
principal	200
counselor	150
secretary	120
conference room	200
vault	50
business manager.	150

storage	100
textbook storage	180
workspace	150
staff preparation	120
bathroom	80
staff lounge	150
janitor	20
volunteers	200

subtotal 2,070 ft²

classrooms

entry	100
preschool and grade 1	1,000
grade 2	900
grade 3	900
grade 4	900
grade 5	900
grade 6	900
grade 7	900
greenhouse	200
art	150
music	150
special activities	900
speech	120
optic testing	150
examining room	120
washrooms 2 @ 110	220
mobility and orientation	120
indoor recreation	2,000
storage	100
washrooms 2 @ 110	220

subtotal 10,950 ft²

library and media center

stacks	1,000
workspace	1,000
washrooms	90
storage and equipment	200
production and work area	120
librarian	100
circulation desk	100

subtotal 2,570 ft²

service

storage	120
janitor	150

subtotal 270 ft²

cafeteria

seating	530
kitchen and food preparation	1,000
service and storage	1,000
washrooms 2 @ 110	220

subtotal 2,750 ft²

dormitories

entry	100
waiting	200
janitors 2 @ 100	200
recreation	800
lounge	700
kitchen	255
laundry	180

storage 2 @ 150	300
house mothers 5 @ 320	1,600
washrooms 2 @ 320	640
25 dorm rooms @ 150	3,750
subtotal	8,725 ft ²

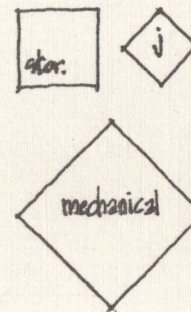
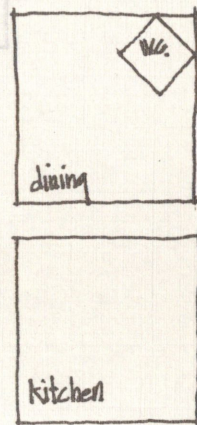
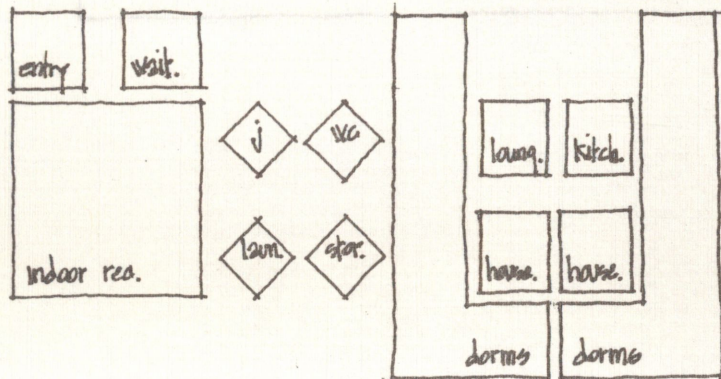
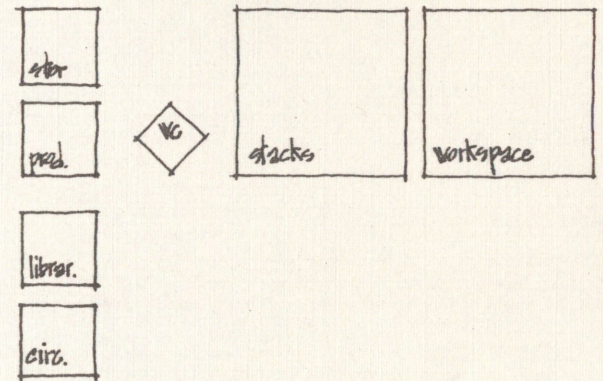
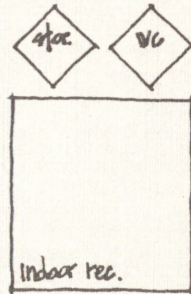
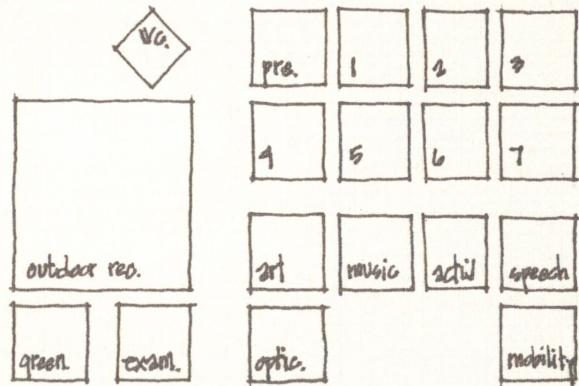
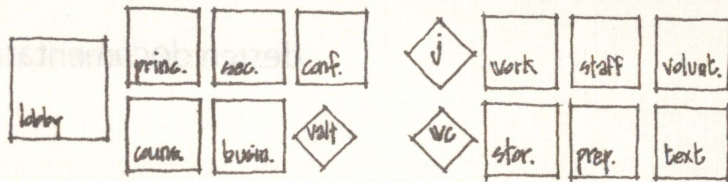
program total	26,655 ft ²
-------------------------	------------------------

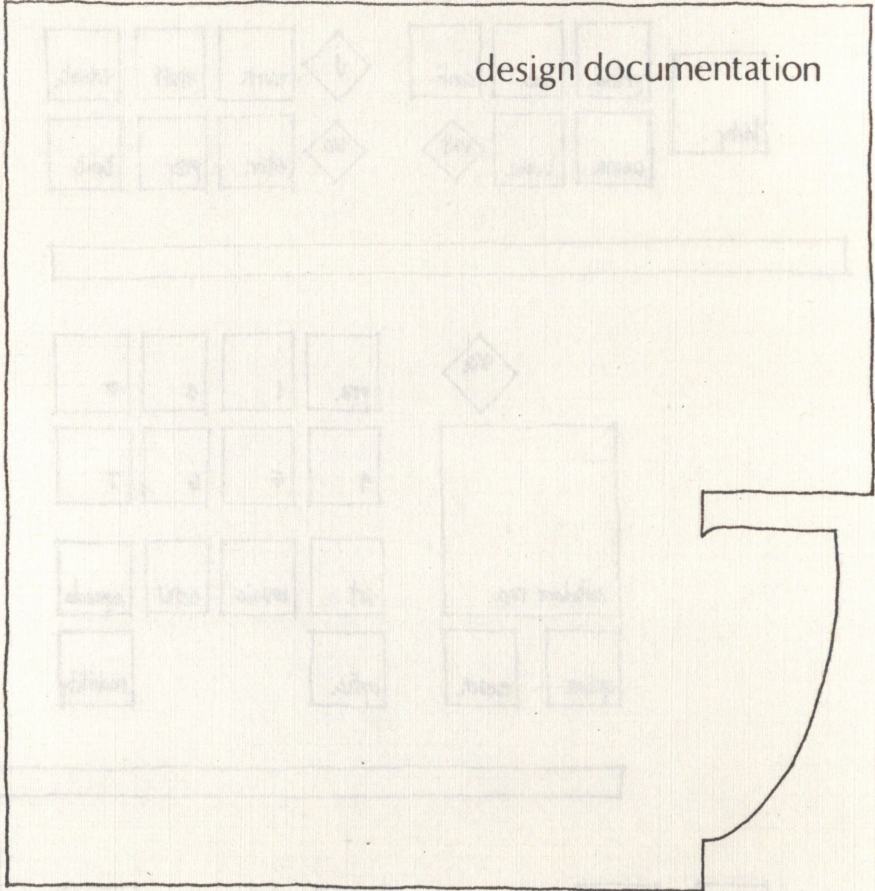
mechanical and circulation

mechanical - 10% of building area	2,666
circulation - 20% of building area	5,331
subtotal	7,997 ft ²

total building area	34,652 ft ²
-------------------------------	------------------------

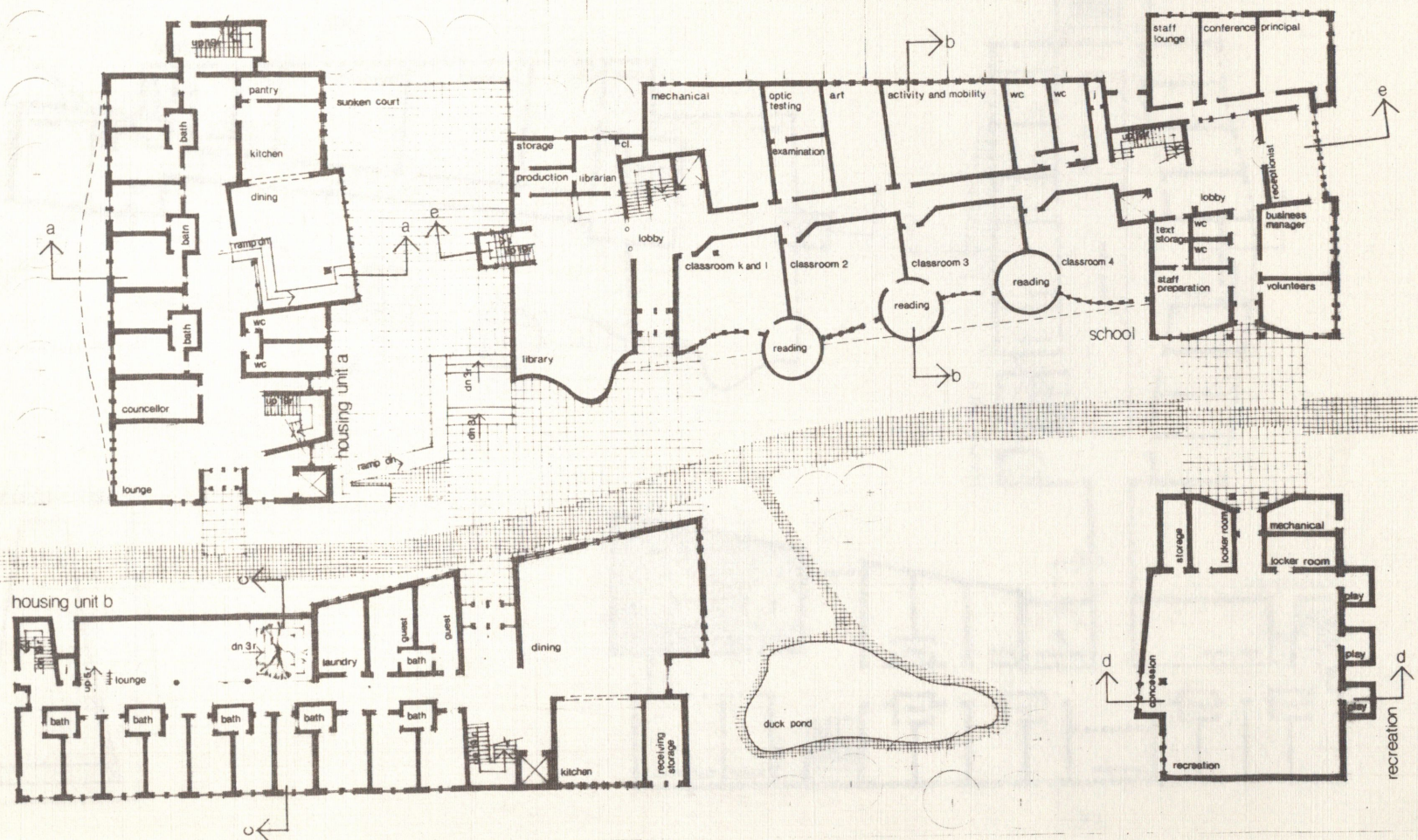
estimated parking area for 14 cars	2,800 ft ²
estimated exterior play space	5,000 ft ²



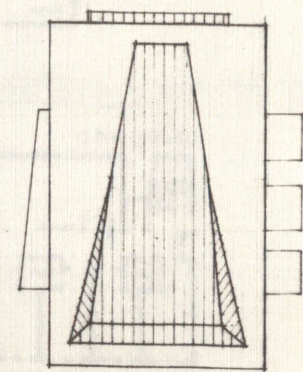
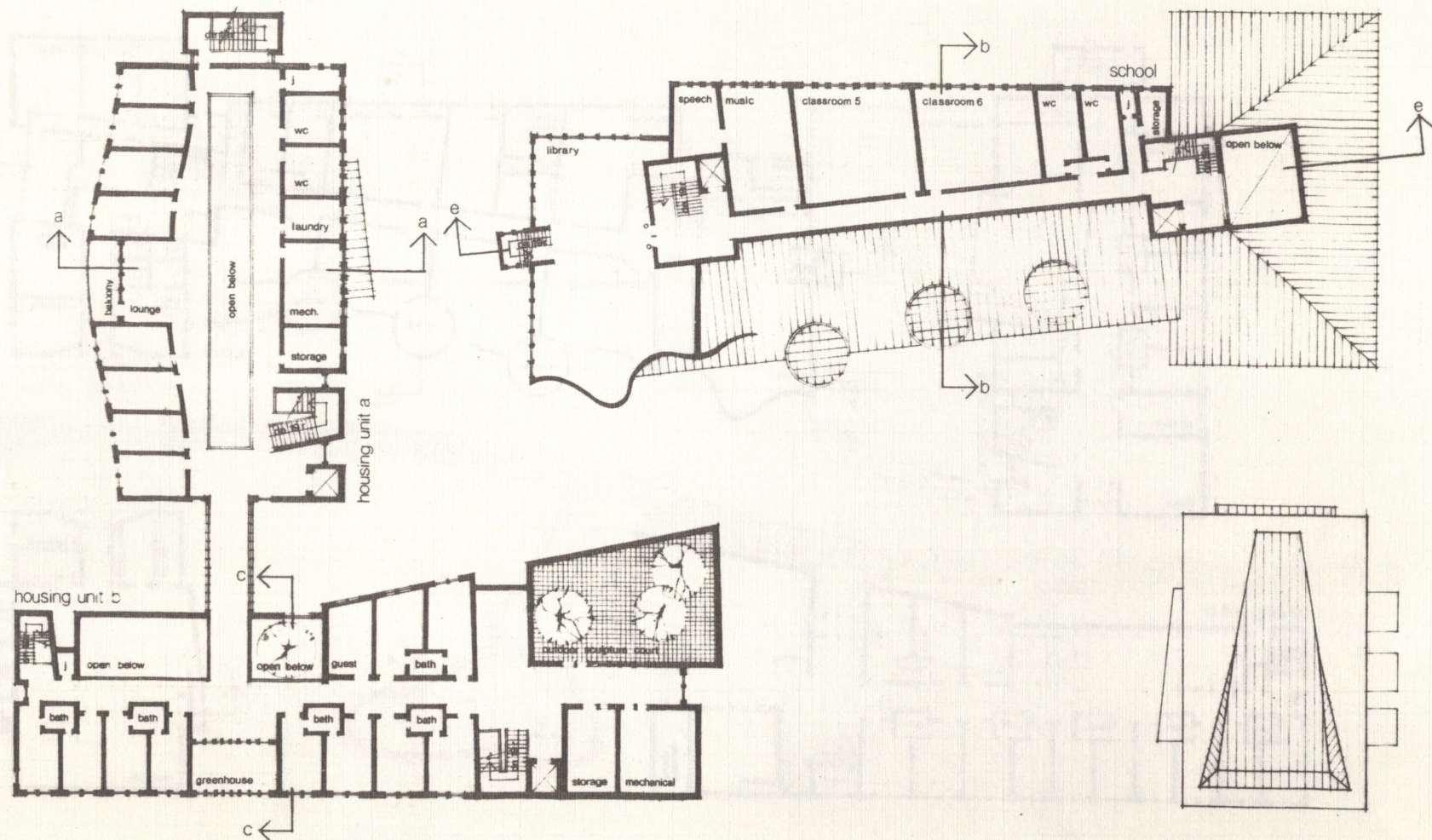


121st street

first floor plan
scale 1/16" = 1'-0"



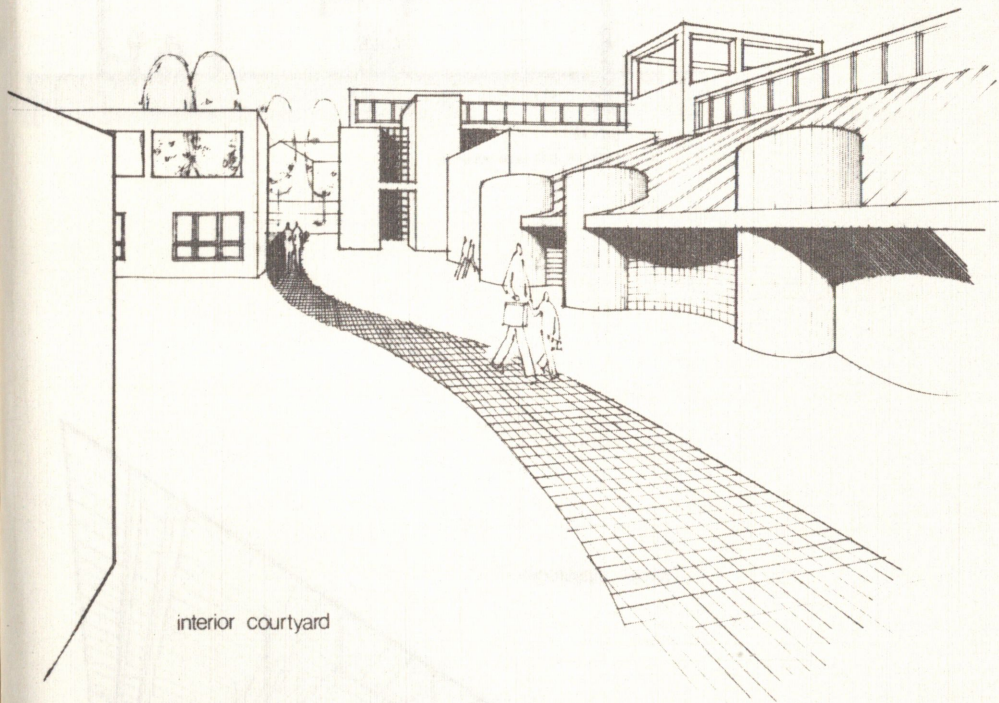
120th street



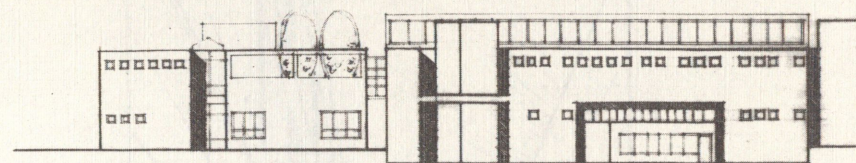
second floor plan

scale 1/16" = 1'-0"

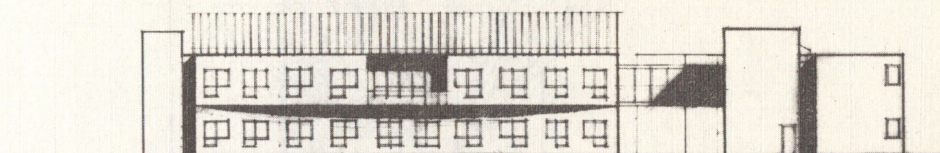




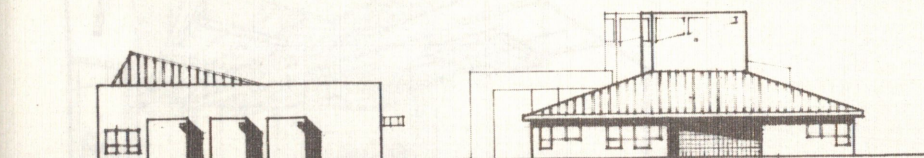
interior courtyard



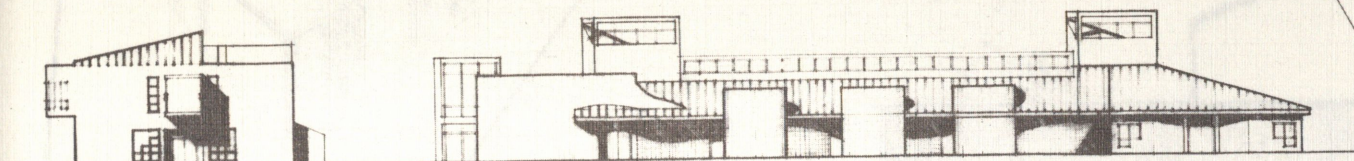
east elevation from courtyard
scale 1/16" = 1'-0"



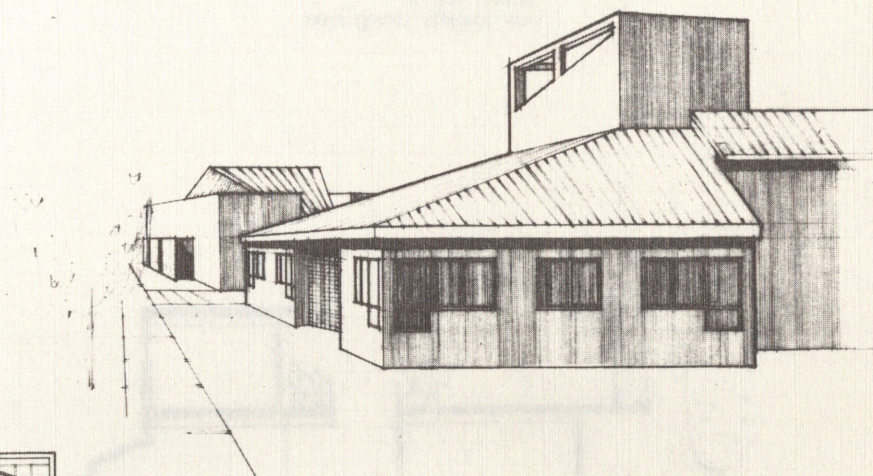
west elevation from 121st street
scale 1/16" = 1'-0"



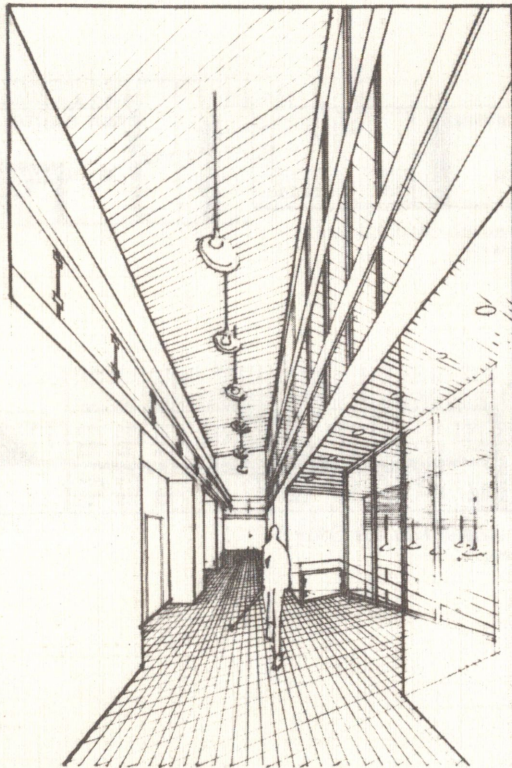
east elevation from 120th street
scale 1/16" = 1'-0"



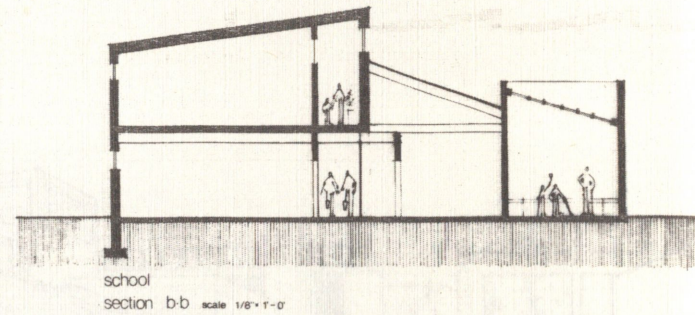
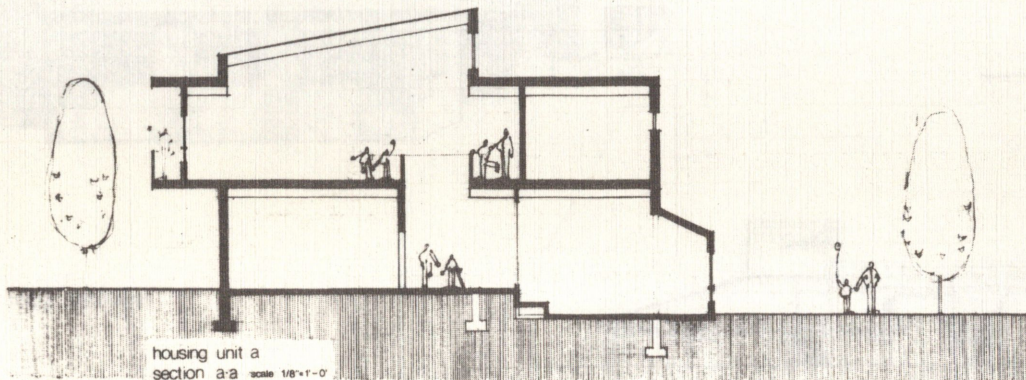
south elevation from courtyard
scale 1/16" = 1'-0"



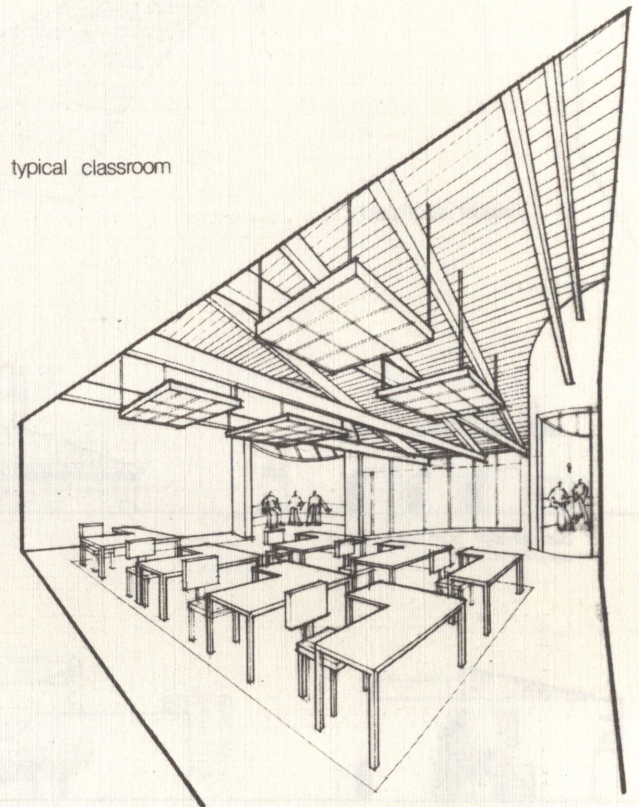
view from 120th street

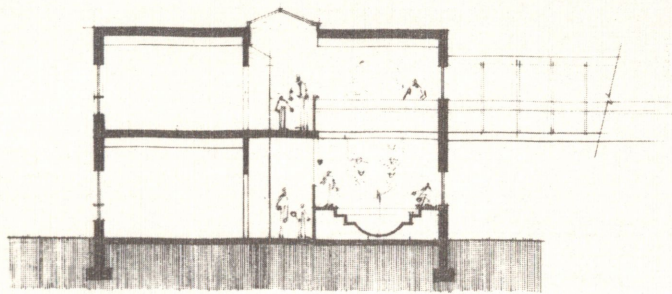


housing unit a
view towards dining area

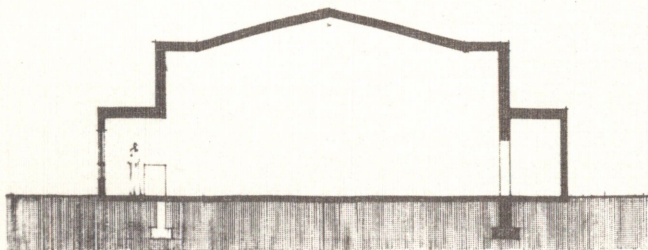


typical classroom

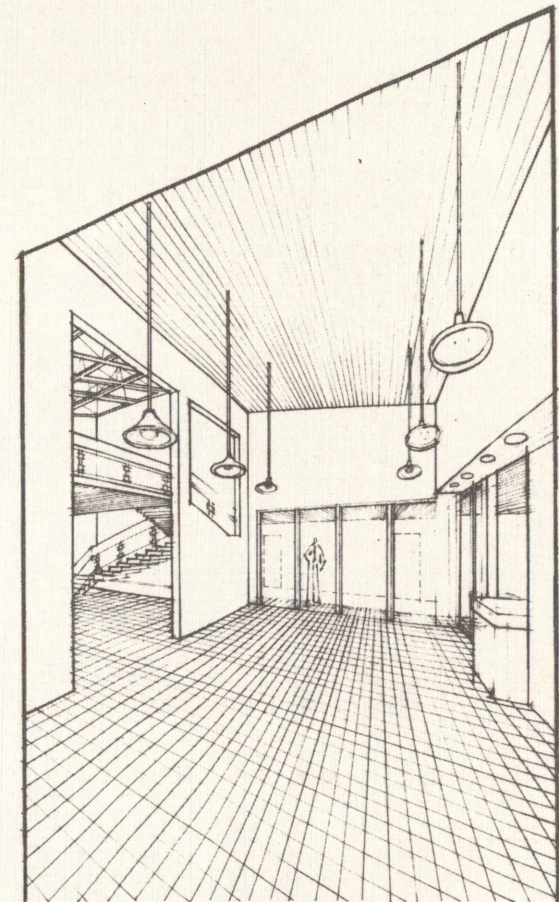




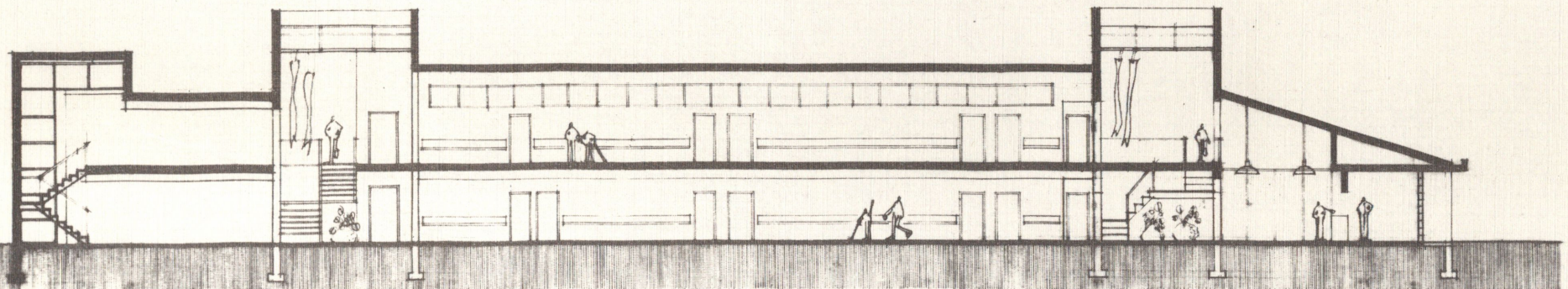
housing unit b
section c-c scale 1/8" = 1'-0"



recreation building
section d-d scale 1/8" = 10'



administration lobby



school building
section e-e scale 1/8" = 1'-0"

ILLUS TRATIONS

1. Aalto, Alvar. Alvar Aalto 1898-1976. Helsinki, Finland: The Museum of Finnish Architecture, 1978, p. 160.
2. Bloomer, Kent C.; Moore, Charles. Body, Memory, and Architecture. New Haven, U.S.A.: Yale University Press, 1950, p. 35.
3. Ibid., p. 1.
4. Ibid., p. 1.

FOOT NOTES

¹Arthur Erickson. Habitation: Space, Dillema and Design, (Ottawa, Canada: Canadian Design Council, 1966), p. 31.

²Aldous Huxley. Doors of Perception, (N. Y.: Harper and Row, 1954), preface.

³Don S. Vandiver. Design for the Visually Handicapped, (Montana: Montana State University, 1976), p. 3

⁴Ibid., p. 3.

⁵Ibid., p. 4.

⁶Donald Kirtley. The Psychology of Blindness, (Chicago: Nelson-Hall, 1975), p. 3.

⁷Ibid., p. 38, 39.

⁸Ibid., p. 12.

⁹Bloomer, Kent C.; Moore, Charles. Body Memory and Architecture, (New Haven: Yale University Press, 1950), p. 28-29.

¹⁰Don S. Vandiver. Design for the Visually Handicapped, (Montana: Montana State University, 1976), p. 17.

¹¹Yi-Fu Tuan, Topophilia: A Study of Environmental Perception, Attitudes and Values, (N. J.: Prentice Hall, 1974), p. 8.

¹²Don S. Vandiver. Design for the Visually Handicapped, (Montana: Montana State University, 1976), p. 13.

¹³Ibid., p. 15.

¹⁴Ibid., p. 14.

¹⁵Kent C. Bloomer; Charles Moore. Body, Memory and Architecture, (New Haven: Yale University Press, 1950), p. 35.

¹⁶Ibid., p. 35.

¹⁷Yi-Fu Tuan. Topophilia: A Study of Environmental Perception, Attitudes and Values, (N. J.: Prentice Hall, 1974), p. 14.

¹⁸Ibid., p. 96.

¹⁹Rachael Kaplan; Michael Kaplan. Humanscape, (Mass: Duxbury Press, 1978), p. 56.

²⁰John Loebell. Between Silence and Light, (Boulder, Colorado: Shambala Press, 1979), p. 47.

²¹John Loebell. Between Silence and Light, (Boulder, Colorado: Shambala Press, 1979), p. 65.

²²Ibid., p. 44.

²³Yi-Fu Tuan. Topophilia: A Study of Environmental Perception, Attitudes and Values, (N. J.: Prentice Hall, 1974), p. 4.

²⁴Eleni M. Constantine. Four Schools With Thought, (Architectural Record, July, 1982), p. 102.

²⁵Robert Sommer. Tight Spaces: Hard Architecture and How to Humanize It, (N. J.: Prentice Hall, 1974), p. 27.

²⁶Ibid., preface.

²⁷Ibid., p. 28.

BIBLIO GRAPHICAL NOTES

BOOKS

Aalto, Alvar. Alvar Aalto 1898-1976, Helsinki, Finland: The Museum of Finnish Architecture, 1978.

Aalto, Alvar. Alvar Aalto, N. Y.: Simon and Schuster, 1971.

Anonymous. Readings in Visually Handicapped Education, Connecticut: Special Learning Corporation, 1978.

- Bachelard, Gaston. The Poetics of Space. Boston, Mass.: Beacon Press, 1969.
- Bloomer, Kent C.; Moore, Charles. Body, Memory and Architecture, New Haven, U.S.A.: Yale University Press, 1977.
- Braverman, Sydell; Chevigny, Hector. The Adjustment of the Blind, New Haven: Yale University Press, 1950.
- Ching, Frances. Architecture: Form, Space and Order, N. Y.: Van Nostrand Reinhold Co., 1979.
- Coats, Gary. Alternative Learning Environments, Pennsylvania: Dowden, Hutchinson, and Ross, 1974.
- Cousins, Norman. Human Options, N. Y.: W. W. Norton and Co., 1981.
- Foulke, E.; Schiff, W. Tactual Perception: A Sourcebook, Cambridge: Cambridge University Press, 1982.
- Huxley, Aldous. The Doors of Perception, N. Y.: Harper and Row, 1954.
- Ittleson; Proshansky; Rivlin; Winkel. An Introduction to Environmental Psychology, N. Y.: Holt, Reinhart and Winston, 1974.
- Kaplan, Rachael; Kaplan, Michael. Humanscape, Mass.: Duxbury Press, 1978.
- Kirtley, Donald. The Psychology of Blindness, Chicago: Nelson-Hall, 1975.
- Loebell, John. Between Silence and Light, Boulder, Colorado: Shambala Press, 1979.
- Lowenfeld, B. Our Blind Children, Illinois: Charles C. Thomas, 1964.
- Mazeria, Edward. The Passive Solar Book, Pennsylvania: Rodale Press, 1979.

Norberg-Schultz, Christian. Meaning in Western Architecture, N. Y.: Rizzoli, 1981.

Orlansky, Michael. Mainstreaming the Visually Impaired Child, Boston, Mass.: Teaching Resource Corp., 1977.

Scholl, Geraldine; Schnur, Ronald. Measures of Psychological, Vocational and Educational Functioning in the Blind and Visually Handicapped, N. Y.: American Federation for the Blind, 1976.

Sommer, Robert. Tight Spaces: Hard Architecture and How to Humanize It, N. J.: Prentice Hall, 1974.

Tuan, Yi-Fu. Topophilia: A Study of Environmental Perception, Attitudes and Values, N. J., U.S.A.: Prentice Hall, 1974.

Von Sender, M. Space and Sight, Illinois: The Free Press, 1932.

PERIODICALS

Ambercrombie, Stanley. "The Plan as Determinant of Movement," AIA Journal, (October, 1982), p. 72.

Anderson, Grace. "A New Fashioned Schoolhouse," Architectural Record, (October, 1981), p. 90.

Anonymous. "Back to Basics in School Design," Architectural Record, (August, 1982), p. 34.

Anonymous. "Education: More or Less?," Progressive Architecture, (February, 1971), p. 80.

Anonymous. "Hands on Design for the Handicapped," Architectural Record, (August, 1982), p. 98.

Anonymous. "Heimschule in Baar/CH," Deutsche Bauzeitschrift, (November, 1981), p. 1649.

Anonymous. "Office Building of the Finnish Central Association for the Blind," Arkitehti, (April, 1982), p. 48.

Buchanan, Peter. "School as System and Symbol," Architectural Review, (July, 1980), p. 19.

Constantine, Eleni, M. "Four Schools with Thought," Architectural Record, (October, 1981), p. 90.

Davey, Peter. "High School in Sonderborg Denmark," Architectural Review, (July, 1982), p. 34.

Filler, Martin. "Extrasensory Perceptions," Progressive Architecture, (April, 1978), p. 82.

McKinnel, N. M. and Kallman, G. M. "Movement Systems as Generators of Built Form," Architectural Record, (November, 1975), p. 105.

Miller, Nory. "Fanciful and Functional," Progressive Architecture, (April, 1978), p. 76.

Stephens, Suzanne. "Deinstitutionalizing for the Blind," Progressive Architecture, (April, 1978), p. 92.

Stephens, Suzanne. "Up From Institutionalism," Progressive Architecture, (February, 1971), p. 82.

PAMPHLETS, PUBLICATIONS, THESIS

Alberta Building Code 1981. Edmonton, Alberta, Canada: Alberta Labour - General Safety Services Division, 1981.

Committee on Architectural Environmental Concerns of the Visually Impaired, 2454 S. Place, Fullerton, California.

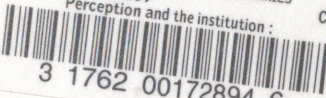
Duncan, J.; Gish, Calasha; Mulholland, M. E.; Townsend, A. Environmental Modifications for the Visually Impaired: A Handbook, N. Y.: American Foundation for the Blind, 1977.

Erickson, Arthur. Habitation: Space, Dillema and Design, Ottawa, Canada: Canadian Design Council, 1966.

Odell, John. Barrier Free Design, Montana: Montana State University, Undergraduate Thesis, 1976.

Page, Werner and Partners. Montana School for the Deaf and Blind - Long Range Master Plan, Montana: Page, Werner and Partners, 1968.

Vandiver, Don S., Design for the Visually Handicapped, Montana: Montana State University, Undergraduate Thesis, 1976.

MONTANA STATE UNIVERSITY LIBRARIES
stks 720.6.M76B169
Perception and the institution : CA

3 1762 00172894 6

~~NA 2540~~
~~720.6~~
~~M76~~
~~B169~~

