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"Barrier-Free Design for the Blind"

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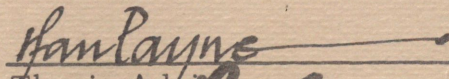
John Keith Odell, jr.

Submitted in partial
fulfillment of the
requirement for
the degree

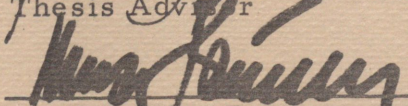
of

Bachelor of Architecture

Approved:



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Table of Contents

Thesis Statement	1
Introduction	6
thoughts	
definition of blindness	
why barrier-free design for the blind?	
Part I	
Design Considerations for the Blind	16
provide a clear path	
special design features	
conclusion	
comments	
Part II	
Design - The Training Center	41
program	
analysis	
synthesis	
solution	
Footnote	93
Bibliography	93

THESIS STATEMENT

statement

"Establishing a balance between the goal of normalization and the necessity of incorporating adequate and often special methods for training is a challenge to architectural design for the handicapped."

subject

The subject of this thesis is the isolation of special design considerations for the Blind and the development of a training center for the adjustment to blindness of the adventitiously blind - those blinded later in life, usually in old age, disease, or accident.

clarification

- normal - standard (the norm) freedom from physical or mental disorder (Webster)
- goal of normalization - the blind have an expressed desire to live as closely as possible to a normal way of living - close to their life style before blindness, and free from gimmicks.

- handicapped - disabled or crippled. A deficiency, especially an anatomical, physiological, or mental deficiency that prevents or restricts normal achievement. "American Heritage"

A handicapped person, in this context of buildings and adjacent spaces, is anyone who is hampered in his mobility or functioning (as compared with an able-bodied person) as a result of obstacles put in his way by the design of a building, the choice of hardware and equipment, and the arrangement of outside spaces. The following list provides a general overview of three broad categories of individuals, who at one time or another, come under this definition.

Temporary condition:

fracture
pregnancy
movement of large or heavy loads
convalescence from operation

Characteristic condition:

childhood
dwarfism
frailty due to old age
frailty due to physical size or build
gigantism
obesity

Long-established condition:

* sight disabilities

hearing disabilities
non-ambulatory disabilities which confine the individual to a
wheelchair
semi-ambulatory disabilities due to which an individual walks,
climbs, bends or stoops, reaches, waits, or carries
modest loads with difficulty

coordinating disabilities due to brain, spinal or peripheral
nerve injury

-disability - a weakening or destruction of the normal physical or mental
abilities of; to cripple, incapacitate. "American Heritage"

"We form our environment and our environment forms us."

Winston Churchill

INTRODUCTION

thoughts

"Many of the nation's physically handicapped are unable to take advantage of the economic and social opportunities of their communities even though they may possess valuable vocational skills, an ability to learn, and a full human capacity for the enjoyment of social and personal relationships. For the nation as a whole, this is a waste of its most valuable resource - people."¹

My interest in architectural barrier - free design for the handicapped grew from the recent concern and recognition of the topic by both the architectural and the design professions. It became apparent that the physical design of our environment is the greatest single obstacle to the integration of the handicapped into active community life.

This is an important concern because every human being has a basic desire to exist in a normal society.² Yet, we have segregated the

handicapped - institutionalized the handicapped. This unnecessary segregation is neither physically or psychologically good for the handicapped nor for those with whom they associate.³ Therefore, I believe the integration of the handicapped into our communities should be an underlying goal of all architectural barrier-free design. (It may seem paradoxical in light of this that I am proposing a special building for the training of the blind; but temporary segregation with special training may be one of the ways that result in normal integration later. The center should be thought of as a tool for achieving active integration.)

This would obviously have profound implications for design. Design for the handicapped presents the architect and the designer with a need to create from a more sensitive understanding of human factors. With the incorporation of human factors we can begin relating our built environment to the individual, rather than relating the individual to the environment as is so often the case.

This will hopefully lead to a better integration of the handicapped into out communities. For the better the handicapped become incorporated into the community, the less visible as a separate group they will become.

* For my thesis I have chosen to pursue the study of architectural barrier-free design for the blind. This is because in most cases, barrier-free design for the handicapped has ignored or just superficially touched on the needs of the blind.

Research on the topic was very difficult because there is no consolidation of handicapped material. Fortunately, however, my student internship position put me near the Saskatchewan Center of the Canadian National Institute for the Blind. This provided the opportunity to begin my research with personal interviews and observations which led to very helpful information.

definition

By definition, "blindness"; the impairment or the lack of the sense of sight, does not designate only the totally blind. The definition includes those with residual sight who see at 20 feet what the fully sighted see at 200 feet. It also includes those who see fully but with a field of vision restricted to less than 20 degrees.⁴ From the given definition, this thesis has been written with two groups in mind: the totally blind and the partially sighted.

In the United States today there are 275,000 registered blind persons;⁵ 29,550 registered blind persons in Canada.⁶ Of this population it is estimated that nearly one-third are over age eighty-one, and more than one-half are over age 65.⁷ Old age is responsible for more blindness than any other cause; but blindness due to diabetes is growing at what

some officials of the Canadian National Institute for the Blind call an epidemic rate. During the past ten years in Canada, one in every ten registered blind persons was diabetic. This is up from almost nothing ten years ago.⁸ Because of these facts, this thesis has been written primarily considering 'blindness' as a single impairment. Additional consideration has been given for the blind-elderly and the blind-wheel chair restricted person.

barrier-free?

In the United States today it is estimated that one out of every ten persons has some form of limited mobility due to a temporary or a permanent physical handicap.⁹ These numbers are increasing and becoming more apparent for the following reasons: first, due to improved medical techniques which are providing some mobility where none was possible in the past; second, due to new rehabilitation philosophies which are concerned with making the handicapped person an integrated member of the community; and third, due to an increasing population of older persons. It is also estimated that within ten years, one-half of the population will be categorized in one or more of the following groups:

1. people living with a permanent handicap
2. people living with a chronic disease
3. people over age 65.¹⁰

Yet, despite these facts, our physical environment is most often designed to accommodate only the able-bodied. The able-bodied population, however, is only a huge pool of potentially disabled and handicapped persons. Sooner or later in life, nearly everyone will experience a physical disability which denies him or her independent mobility.

Those fortunate enough to escape the trammings of a physical disability will still have to cope with the handicaps of mobility which are imposed by such factors as loads: a shopping cart, a heavy suitcase, a baby carriage, a state of pregnancy, etc. The list is unlimited.

Increasingly, therefore, we have acknowledged the development of barrier-free design. All states now have statutes on architectural barriers but these deal most specifically with those barriers which prohibit wheel-chair mobility. Barrier-free design, however, should not be limited to considering only wheel-chair mobility. It should also consider the other degrees of the handicapped - including the Blind.

"Blindness", being a sensory loss, is medically a disabling condition but the condition is not one, in itself, which handicaps those affected from overcoming most architectural barriers. It is therefore necessary when considering the Blind in 'design', to concentrate on hampered mobility and functioning resulting from obstacles occurring in the circulation path and from the design of specific building components.

For these reasons, the architectural design considerations for the Blind, which have been isolated by this thesis, have been divided into two parts: the first, 'Providing a Clear Circulation Path for the Blind', the second, 'Special Design Considerations for the Blind'.

It is believed that by considering special design considerations for the Blind, the designer is also increasing the safety factor and the well-being of all - handicapped and non-handicapped alike:

"Although the physical incapacities of disabled people sometimes are extremely severe they do not - with the important exception of those people confined to wheel chairs - pose new problems to the architect but only more extreme degrees of existing problems.

The able-bodied person is liable to fall on a polished floor, trip over a threshold, has limitations of reach, and can see clearly only over a limited distance... what would otherwise be regarded as a refinement now becomes a necessity:

non-slip floors
low level shelves
accessible windows
intelligently planned spaces

For when the architect designs for the disabled he is most often designing for the betterment of all. "11

Selwyn Goldsmith

It is this thought on which I based my desire to explore this topic for my thesis.

PART I

DESIGN

CONSIDERATIONS FOR THE BLIND

criteria

The criteria used in this thesis to isolate and evaluate the design considerations for the Blind follow:

1. Design considerations for the Blind should be viewed as aids to achieving public areas which are safe, fear-free, and offer convenient mobility for the Blind.
2. Design considerations for the Blind should also strive for the 'goal of normalization'. In no case should they create a state of dependency. For example, supplying electronic-audible signals under carpeting to alert a blind person of a specific area is not only creating a situation which is not normal but it also could create a state of dependency or spoiling.

Using these two concepts as criteria, the design considerations have been isolated for review. The list is not complete in itself and should be considered only as a starting point for safer design for the blind.

provide a clear path .

exterior



- Ideally, doors should not open directly onto a pedestrian walkway.

When opening onto a walkway, the door can easily collide with a passerby, blind or sighted. Doors that must open onto a pedestrian walkway due to codes (i. e., emergency exit), or due to waterproofing, security, etc., should be recessed one door width so they are not a pedestrian hazard.

- "NO PARKING" signs, parking meters, containers and all other sidewalk obstructions should have rolled edges to prevent injury to anyone stumbling against them.

picture from AIA publication, Into the Mainstream, by Stephen A. Kliment.

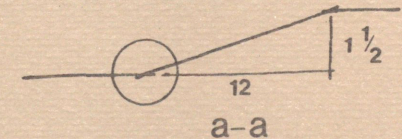
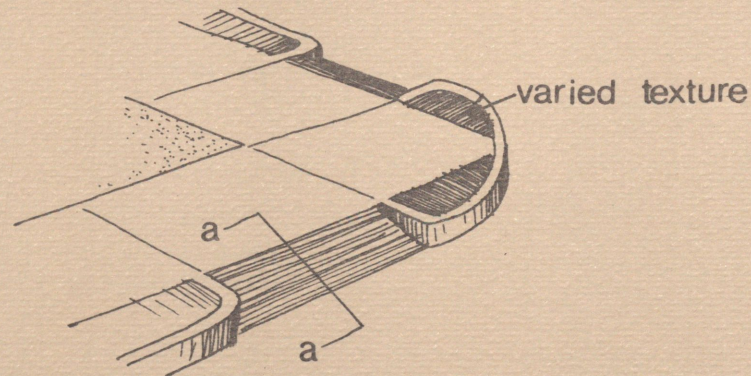
- Groupings of newspaper dispensers, waste containers, mail boxes,

postal storage boxes, telephone booths, etc., which are typically located on sidewalks, should be positioned off the main walkway to provide a continuous circulation path which is free from obstructions. The bottom of these containers should not be more than six inches above the ground. When higher, the white cane goes under the container and the blind pedestrian collides with it - possibly at full walking speed.

- Telephone pole guy wires should be removed from sidewalks. They are a general nuisance because pedestrians must maneuver about them. They are a danger because they cause the blind pedestrian and even the inattentive sighted pedestrian severe cuts and bruises.
- Glass telephone booths (externally and internally), located in a pedestrian walkway, should have color contrasting glass in order to be more easily seen by the partially sighted.
- Overhanging obstacles: awnings, signs, branches of trees and shrubs, etc., should allow a minimum clearance height of 7'-0". This is high

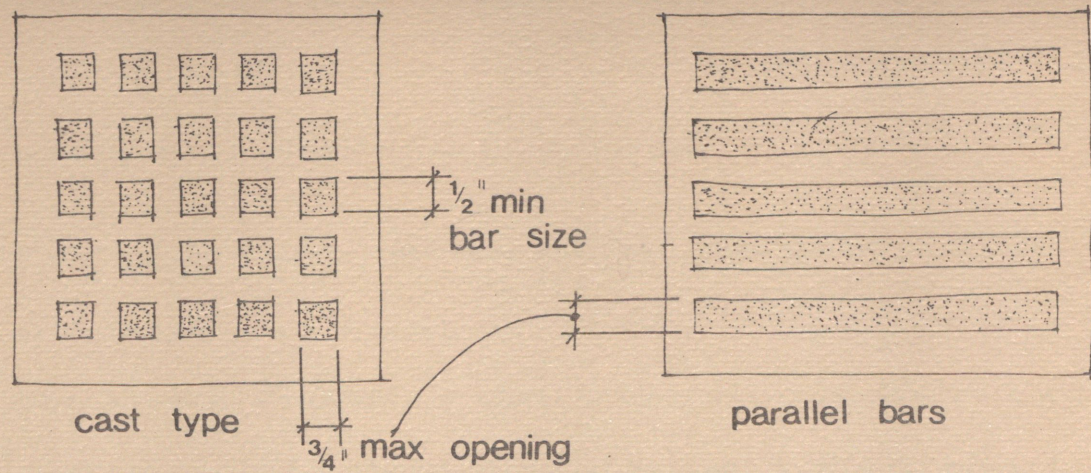
enough to allow a pedestrian to pass by without interference.

- Sidewalk curbs, ramped for wheel chairs, should have at least a $1\frac{1}{2}$ " drop per foot or a varied surface texture so the blind pedestrian is warned of the incline. Otherwise, he expects a curb and may walk out into traffic.



CURB CUT

- Storm grates should not be located in a pedestrian-walkway. They hinder travel by wheel chairs and are cane grabbers to the blind person - not to mention heel grabbers of high-heeled shoes. Drain grates which must be so located should meet the following design requirements:



STORM GRATES

interior

- Recess groups of drinking fountains, telephone booths, garbage cans, etc., off the circulation path. Those that jut out from the walk are a collision danger. Again, when not possible to recess obstacles, they

should be what is called "friendly obstacles" = free from sharp edges and built to within 6 inches of the floor. "Friendly obstacles" may be used by the blind pedestrian as landmarks.

- Floor mounted electrical boxes and door stops should be avoided. They are a danger due to tripping for both the blind and the sighted person. They are also a nuisance to wheel chairs, crutches, furniture arrangement, etc. Electrical outlets should be made flush with adjoining surfaces. Door stops should be hinge or wall mounted.
- Carpets and mats should be fixed and flush with adjoining surfaces. Loose carpets not only slide but also tend to fold over and trip the blind pedestrian. They are also a hinderance to canes, crutches, wheel chairs, and the inattentive sighted person.
- Avoid slippery floor surfaces in public areas. Entrance doors opening onto slippery floor surfaces should be provided with a recessed floor mat for moisture absorption as an added safety measure.

- Use of strong floor patterns should be avoided. They can cause perceptual difficulties, visual confusion, and loss of balance. This is because they seem to vary the depth of the floor. The results are falls and serious injuries. (It is often a combination of the floor pattern and other factors, such as lighting.)

special design features

"The problems of the physically handicapped are not going to be eliminated by design modification alone but the stress factor can be reduced so that their environment does not become one more barrier to independent living."¹²

signs

- Signs should be located at eye level, 4'-6" to 5'-6", or slightly higher. This height provides readability not only for those persons walking but also for those persons restricted to wheel chairs.

- Signs should be flat against a wall. Projecting and overhanging signs can cause injury due to collision. Signs not conforming to this regulation should observe the minimum 7'-0" clearance height for obstacles.
- Lettering on signs should be black or dark blue on white/or reverse. This provides a high contrast which is needed to be legible by the partially sighted and also provides readability for most cases of color blindness.
- Minimum lettering size is dependent on each individual application; but it should be remembered that lettering should be of sufficient size to be readable from a distance by the sighted and the partially sighted person.

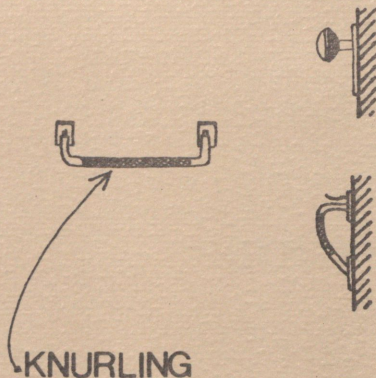
doors

- When double doors are provided, both should open. Pseudo (false) doors should be avoided. It is frustrating to the blind person to locate a set

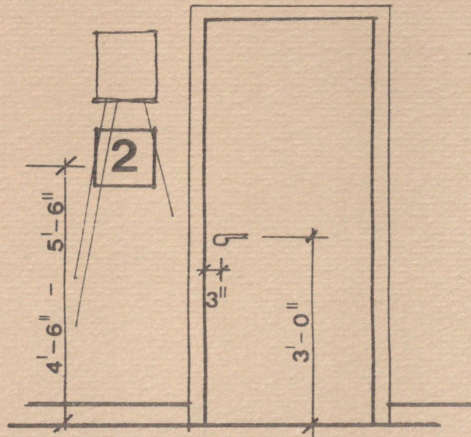
of doors to find the one located to be locked or inoperable.

- Entrance doors should be provided with a window. This is to reduce the hazard of a double approach.
- Door windows should be of non-breakable glass. Many door accident injuries result not from the door, but from broken glass resulting from collision.
- Plate glass doors, large display windows, and window walls are a serious danger to the partially sighted as well as the fully sighted person. They should be patterned or decorated in some way to indicate their presence. Numerous pedestrians have walked into and even through the clear plate glass door or window and have been seriously hurt.
- Thresholds should be a maximum of one inch high. The recommendation is not to exceed 3/4 inch and to provide bevelled sides. This is to prevent tripping and to permit wheel chair access.

- Door edges which are rounded or cushioned are safer than sharp or squared edges. They reduce scissor cutting and smashing of fingers.
- Doors which open onto stairways should allow a minimum of 6 feet (including the door swing) before descent begins. This precaution would add a considerable safety factor for the blind person and also allows for maneuverability of other handicapped individuals; crutches, wheel chairs, the elderly, etc.



- Alarm doors and doors to danger areas should be identified by a knurling texture on the door knob. This is an understandable signal to the blind person.
- Location of door knobs should be standardized with a maximum distance of three inches from the edge of the knob to the door edge. If the knob is located further in from the door edge, the opening door can strike the blind person's face.
- Door/room identification in public areas should also be standardized.



DOOR IDENTIFICATION

It is recommended that door identification be located beside the doorway on the side nearest the door handle when the door is closed. The identification should be located at eye level (4'-6" to 5'-6") and well lit for easy readability. The identification should be notched or raised letters and numerals. This is for tactile identification by the blind. It is estimated that approximately only 10-20% of the blind can read braille.

Lettering should again be black or dark blue on white/or reverse. This would make identification standard and easy to read for the blind and the partially sighted.

stairs

FOR GENERAL SAFETY, STAIRS SHOULD BE:

- *built of non-skid materials. Most stair accidents are caused by slippery treads
- *built of solid risers. Open risers can cause shin injuries, tripping, and falls.

*absent of squared-projecting nosings. Such nosings can cause tripping and are a barrier to people with leg braces, crutches, and perception problems. (See the diagram.)

*edged with a contrasting colored nosing. This aids the partially sighted by removing much of the visual confusion.

*equipped with a varied floor surface texture at the top and the bottom of the stair. This is a danger warning to the totally blind that they are approaching a stairway.

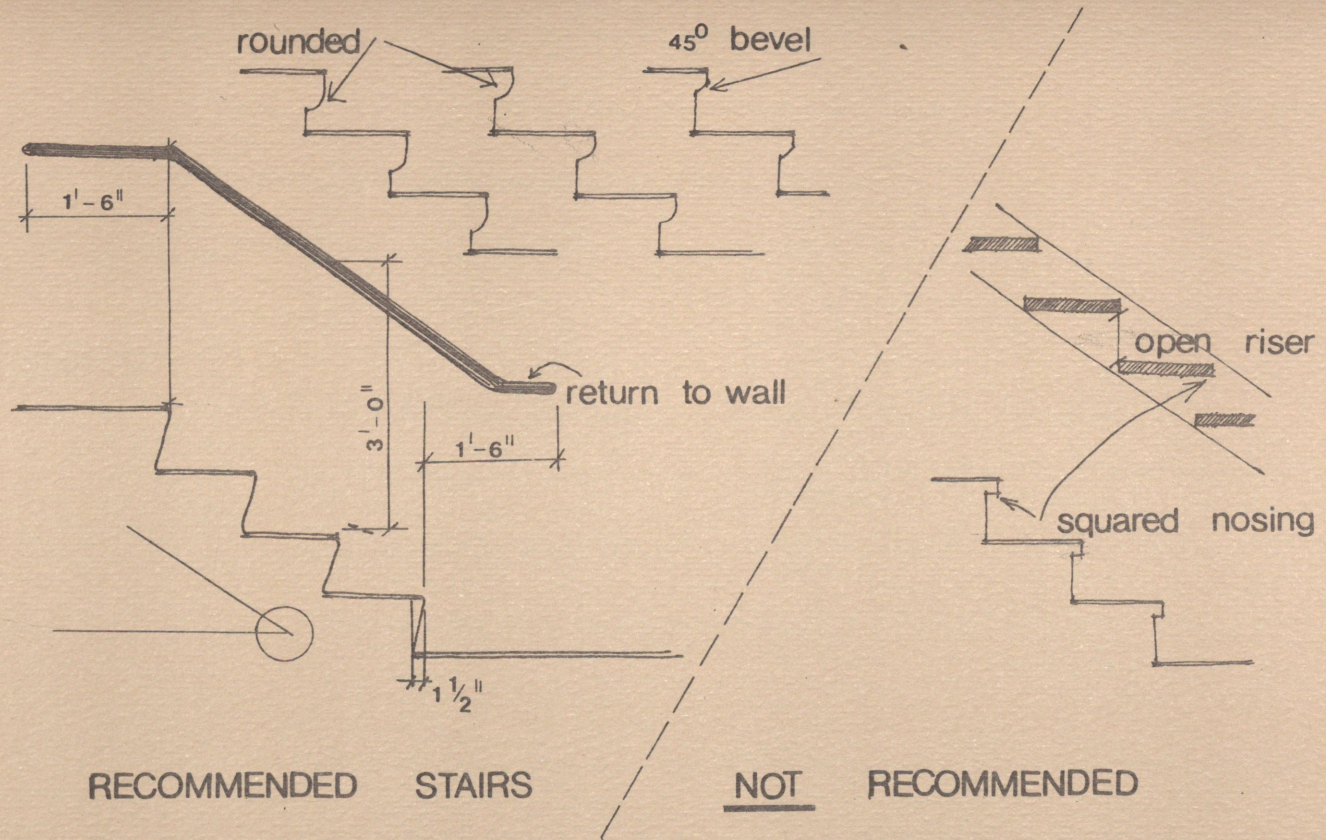
*continuous. When steps are spaced in groups of two or three with distances between each group, blind persons experience difficulty in finding the next set of steps. (Alternative suggestion under 'Continuous Handrails'.)

*well lit. This is essential for the partially sighted. (A minimum of 35 fc per tread is recommended when designing for the partially sighted.)



picture from AIA publication,
Into the Mainstream, by
Stephen A. Kliment.

varied floor texture



- Double width steps, which hinder continuous ascent, should not be installed. They are a safety hazard to the blind.
- Avoid the use of single risers. Perception difficulties make it necessary to provide a recommended minimum of three risers per flights of stairs.

- Wide expanses of stairs should be provided with intermediate handrails for every 6'-0" of width. Another leading cause of stair accidents is the lack of adequate handrails.

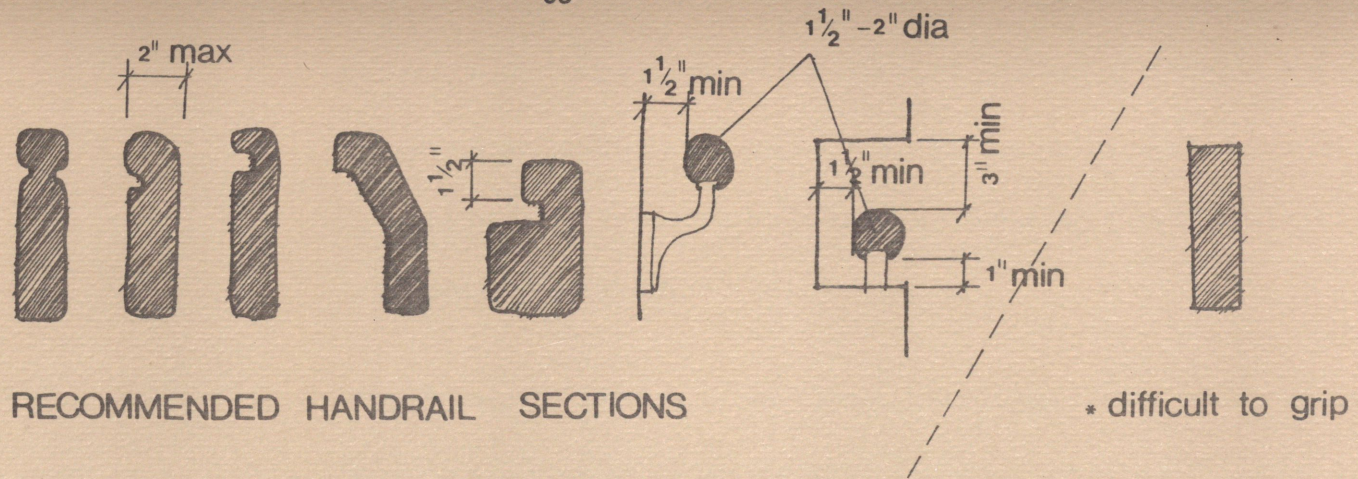
handrails

- FOR GENERAL SAFETY, HANDRAILS SHOULD BE:

- *a contrasting color to the wall to which they are attached or to the stair themselves (depending on the particular circumstance).

- Contrasting colored handrails are more easily seen and more convenient to reach.

- *smooth and rounded with a recommended diameter of between $1\frac{1}{2}$ inch to 2 inches. Slippery and oversized handrails should be avoided. Supply handrails which are comfortable and allow for a firm grip.



RECOMMENDED HANDRAIL SECTIONS

* difficult to grip

*rounded at both the top and the bottom of the stairs for easy handhold and withdrawal. Also, those handrails which are rounded as well as those which return to the wall are preferred because they are less likely to catch clothing.

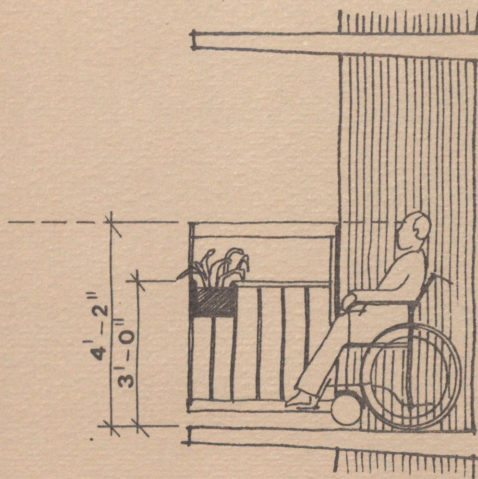
*extended beyond the top and the bottom of the stairs a minimum of 1'-6". This is an aid to the blind as an alert of the end of the stairs.

*continuous. When sets of stairs are broken by intermediate landings, the handrails should be continuous to lead the blind

person successively from one flight to another. Handrails which dead-end on landings cause confusion. In addition, handrails need to be continuous on both sides of the stairs and landings, irrespective of width.

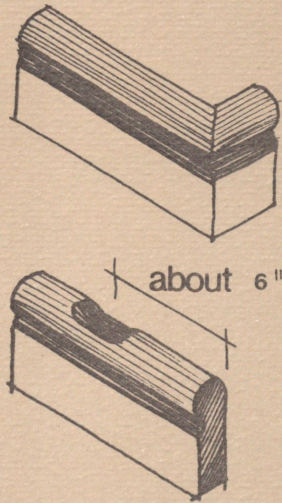
This is necessary for those persons with paralysis which restricts the use of one side of the body.

*capable of withstanding a lateral force of 200 pounds. This is for support in the event of a fall.



- Handrails around balconies (including open stairs, interior balcony courts, etc.) should supply a support at a height of 42 inches. This is above a person's center of gravity and it is an important safety factor for the blind in preventing toppling over the rail. (Solidity of the rail should also be considered for if a rail is solid to the 42 inch height, it is blocking the view of a seated person.)

return to wall



- Handrails may also be used as warning devices for the blind when handrails are interrupted by a doorway or opening, a stairway landing, a hallway intersection, etc., they should return to the wall before terminating or have some form of tactile warning about 6 inches from the ends. A notch is not only a recommended warning signal but is also an excellent place to locate special location identification plates - i.e. raised lettering on a plate alerting of an exit door; also i.e., raised numbers alerting the blind of a floor number in a stair tower.

washrooms

- Avoid locating protruding soap dispensers, towel dispensers, and shelving, directly centered over sinks. The blind person strikes his head on these when he bends forward to use the sink.
- The type and location of the flushing lever on the toilet should be standardized. When the lever is located in different positions, the blind person must grope for the lever and frequently has considerable difficulty

in finding it.

elevators

- Elevator buttons in and outside the cab should be equipped with tactile identification for use by the blind. Again, raised figures are preferred to braille indicators.
- Elevator buttons should be positioned at a maximum height of 4'-0" and should be horizontal. This is also an aid for the short, the elderly, and those persons restricted to wheel chairs.
- An audible elevator signal is requested to identify each floor and to announce if the arriving elevator is travelling up, or down.

conclusion

The isolation of special design considerations for the blind was a major part of this thesis. I have shown the highlights of a movement towards architectural barrier-free design for the blind by showing, with the use of slides, the problems and issues faced by every blind person.

It is hoped that this will become a starting point for future research in the hope of updating existing building codes and promoting design sensitivity into a new area. It is offered as a challenge the goal being the gradual deletion of architectural barriers.

"... We must remember that standards remain nothing more than words and phrases, unless they are translated into action to serve the purpose for which they were created, they must be adopted. They must be put into use in designing new public building and in remodeling old. The

acceptance and adoption of these standards now become the business of citizens and governmental authorities everywhere. I am sure they will rise to the challenge."

John F. Kennedy, November 5, 1961

- * Part two of this thesis is the incorporation of the design considerations into a building - a training center for an adjustment to blindness program.

comments

■ A survey of MSU's facilities for handicapped students done by WAMI student **Richard Holm** is being used as a model for similar studies now being done on the five other Montana University System campuses. Holm did the survey two years ago with the help of the Spurs and Fangs as a project for **Del Samson's** medical sociology class. Holm's report led to several campus improvements for handicapped students, including the Library ramp. Earlier this year, Commissioner of Higher Education Lawrence K. Pettit appointed a task force to examine facilities for handicapped students on all system campuses. The task force was so impressed with the Holm's survey it decided to use his basic method of approach and some of the forms he developed. Holm explained the project to students on the Eastern, Northern, Western, Montana Tech and UM campuses. Student groups on each campus are now conducting surveys. Later this spring, they will report to the task force, which use the surveys to make its recommendations to the Board of Regents.

The initial design considerations which were isolated first quarter thesis were sent out to key people for criticism and comment. The criticisms were considered in rewriting the design considerations for final presentation. These additional comments were received:

- * It's excellent and I'm looking forward to seeing the final project. I hope you're able to project your concern into your work - it will make the world a little better for all of us. Rich Holm
- * A. OK. Bob Deming, Principle, Montana State School for the Deaf & Blind
- * Only one thing I might add: you give a good understandable definition of blindness, but maybe you should give some statistics for the number of visually impaired people you are considering in the architectural design considerations. What is the population figure? I like it. Ron Darcy, Montana State School for the Deaf & Blind

* Good - I'll use your thesis for my anthropometrics 305 course.
Jan Van Aulstyne, School of Art, MSU

PART II

DESIGN - THE TRAINING CENTER

program

The goal of the program is independent mobility of the blind so they may return to an active community life. To achieve this goal, the program must focus its attention on the maximum realization of the potentialities of each individual. Their physical, intellectual, social, vocational, and economic capabilities must be considered and developed to their fullest. This requires a combination of experiences for which the center should be established: to evaluate, adjust, motivate, and train (re-tool).

"The one thing that is so wonderful about the vocational rehabilitation program is the emphasis on the positive. It's not what you can't do that counts, it's what you can do. And those things that you can do, and do well, will remove the aura of the handicap." **13**

Adrian Levy

A typical adjustment to blindness program begins with a medical evaluation.¹⁴ This is to assess the degree of blindness. How much can a person see? Even a little can mean an awful lot. Some merely have to learn to re-see - they may have no peripheral vision, or only peripheral vision.

From here, the blind trainee begins a course to develop his skills.

One suggested program involves the following:

- 60 hours mobility training
- 60 hours cane work
- 60 hours typing
- 60 hours braille

further training includes personal and household management, vocational training, hobby training, recreation, and counseling.¹⁵

It should be understood that adjustment to blindness rehabilitation, as any other rehabilitation, is individually oriented. Because of this, it is not possible to establish a fixed curricula.

The program must be flexible to meet the requirements of each individual.

Course completion time is estimated to average 3 to 4 months per individual.

The following is the building program which I have adopted for the center. It's recommendation is from Oklahoma State University, in the publication; The Blind, Space Needs for Rehabilitation.¹⁶ It is based on a live-in enrollment of 20 trainees.

* Building Program

1. Administration

lobby

waiting area

general office

director's office

secretary/receptionist

conference

2. Medical
 - medical exam/consultation
 - optical aids clinic
 - audiometric exam
 - psychological testing
 - social worker's office
3. Staff
 - staff lounge
 - volunteers' room (2)
 - research offices (2)
 - staff offices
4. Training
 - a. Orientation and Mobility
 - model/map room
 - mobility orientation room
 - b. Communication
 - braille/script writing room
 - typing/transcribing room
 - c. Management
 - homemaking/daily living
 - household mechanics
 - personal hygiene
 - d. Vocational
 - vocational evaluation
 - sewing center/crafts
 - occupational therapy
 - power shop
5. Resource
 - library
 - talking book distribution/storage/a.v.
 - meeting rooms (2)
 - study rooms

6. Recreation
 - physical conditioning room
 - recreation room
7. General
 - central lounge
 - assembly room
 - canteen
 - storage
8. Residence Hall
 - single rooms (20)
 - living/lounge
 - resident advisor apartment
 - food service

analysis

In designing a building, an architect would normally be expected to design to conserve human energy and motion. This is not the case in designing for rehabilitation. The facility should be sufficiently challenging to exercise muscles and wits for conditioning the blind trainee to the ups and downs of daily living.

- * There are two types of locomotion in space, one exploratory through a new environment, the other habitual through a known environment. In the first the architecture is prominent, new and strange: one is exploring, open and receptive, moving and experiencing new things, investigating. In the second the architecture is in the background, hardly noticed: one moves without awareness of the surroundings. Because of

this, there should be structured paths of travel to instil a sense of up, down, left, right, and later north and south relating to a perceived horizontal plane, e.g. the horizon. But simplification results from continued interaction with the environment. Options for more challenging paths of varying degrees should be offered for use by those capable of further development. As the individual develops through training, environmental support should be reduced and demands on his inner strength increased. 17

- * We must be aware that the physically handicapped do not travel as fast as a normal person. So slow the building down with detailing, plants, something the trainees can relate to - finishes. Provide an interest in materials. Avoid an institutional atmosphere.
- * The image of the building is very important. It is not enough for the designer to view the blind as normal. There is a need for the public to see them as normal: the building should become a symbol of normality. (However, it must still cater to the special needs of the people it houses.)

AREA ADMINISTRATION
SPACE LOBBY

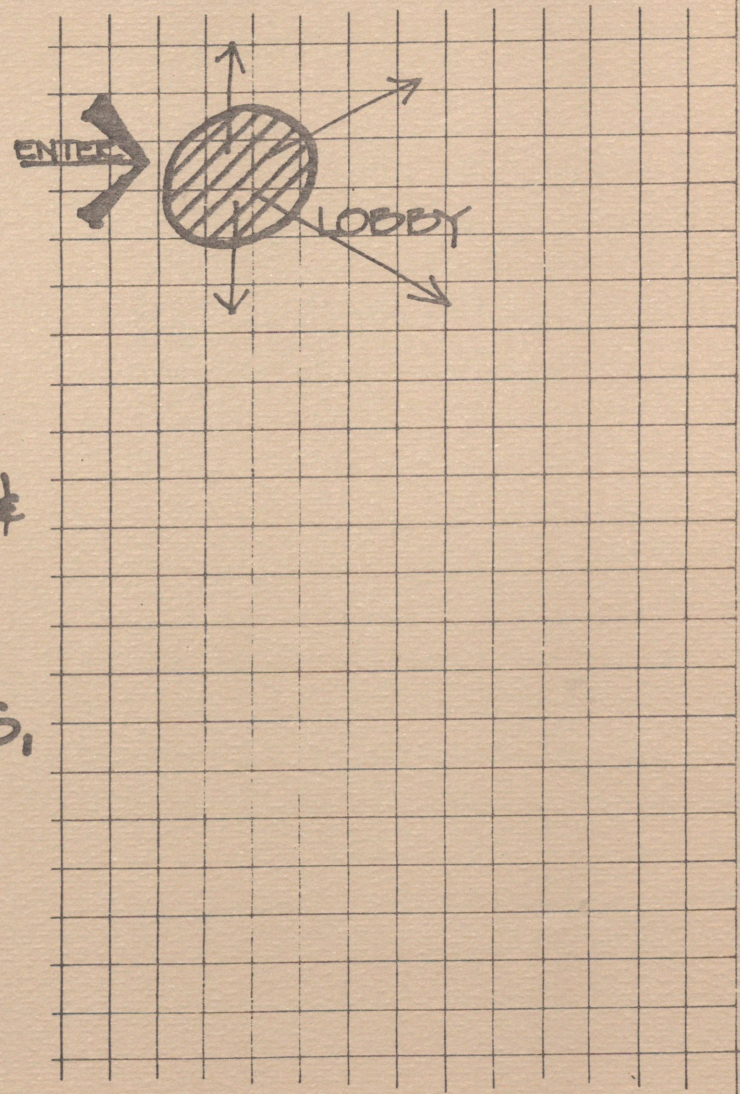
FUNCTION CONTROL
STATION FOR SEC., OR
RECEPTIONIST

DIRECTIVE AREA

PROXIMITY - MAIN OFFICE &
WAITING - PRIN. ENTRY
COMMENTS / EQUIP.
READILY IDENT. BY
VISITORS, NEW CLIENTS,
FAMILIES & PUBLIC

mood area req. 150 Φ
OPEN - INVITING

relation / schematic



AREA ADMINISTRATION
SPACE WAITING AREA

FUNCTION

PUBLIC TELEPHONE
COAT ROOM
LOCKER ROOM - NON-RES
CLIENTS
VISITOR REST ROOM

PROXIMITY LOBBY

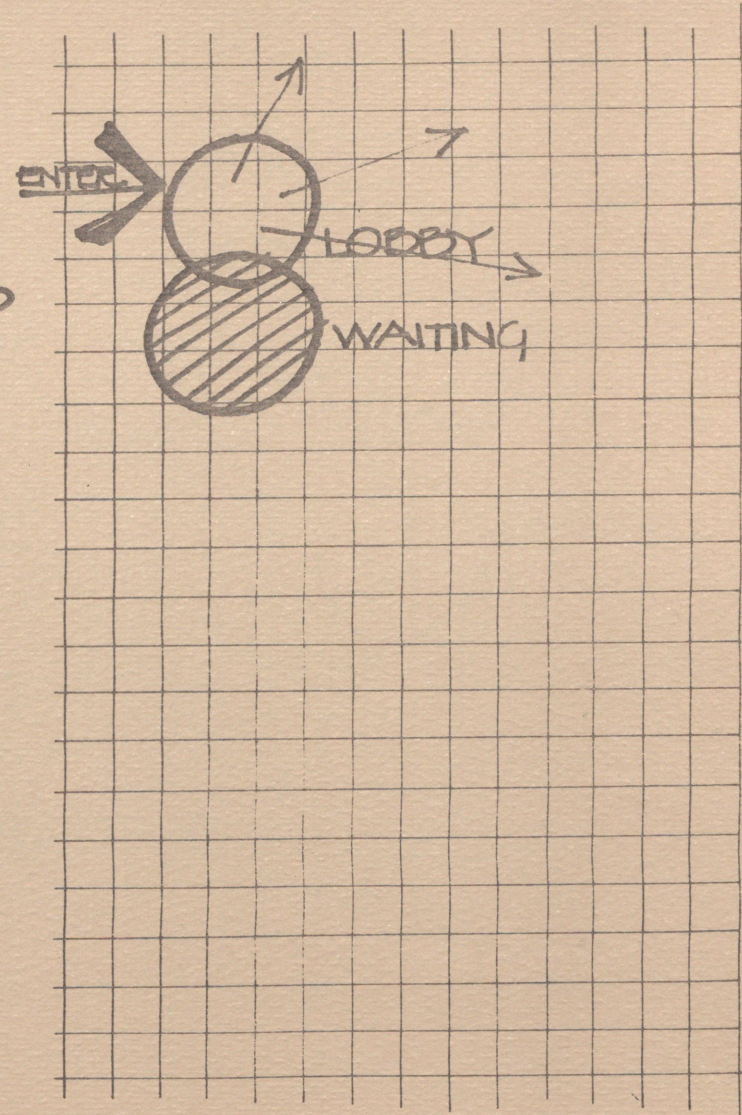
COMMENTS / EQUIP.

COMFORTABLY &
STURDILY FURNISHED

mood
RELAX

area req. 250 ϕ

relation / schematic



AREA ADMINISTRATION SPACE GENERAL OFFICE

FUNCTION

BOOKKEEPING, CLERKS,
CASE RECORDS,

PROXIMITY - ADMINISTRATIVE
CORE

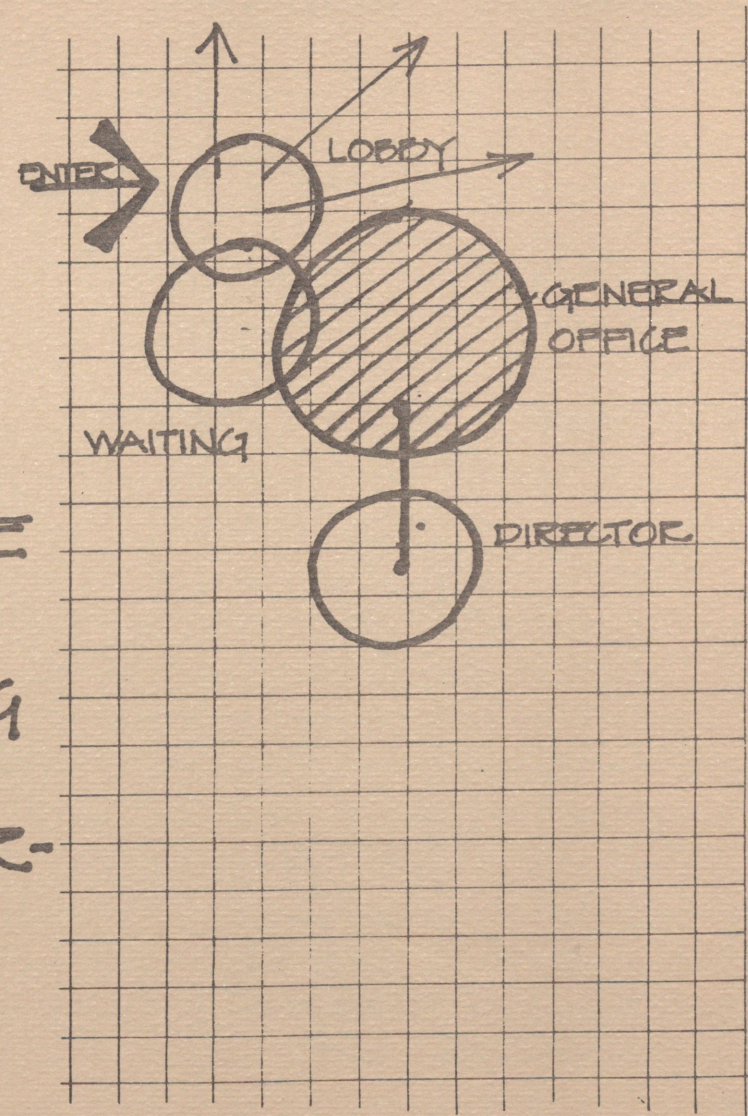
COMMENTS / EQUIP.

DESKS / CHAIRS, SEATING
TELEPHONE EQUIP.

COMMUNICATIONS CENTER -
INTERCOM., CENTRAL
CLOCK, EMER. PANEL

mood area req. 300 sq ft +
BUSINESS

relation / schematic



AREA ADMINISTRATION
SPACE DIRECTOR'S OFFICE/
SECRETARY
FUNCTION

ADMINISTRATIVE HEAD
INTERVIEWS, REVIEWS,
CORRESPOND., GEN
OFFICE WORK

PROXIMITY GEN OFFICE

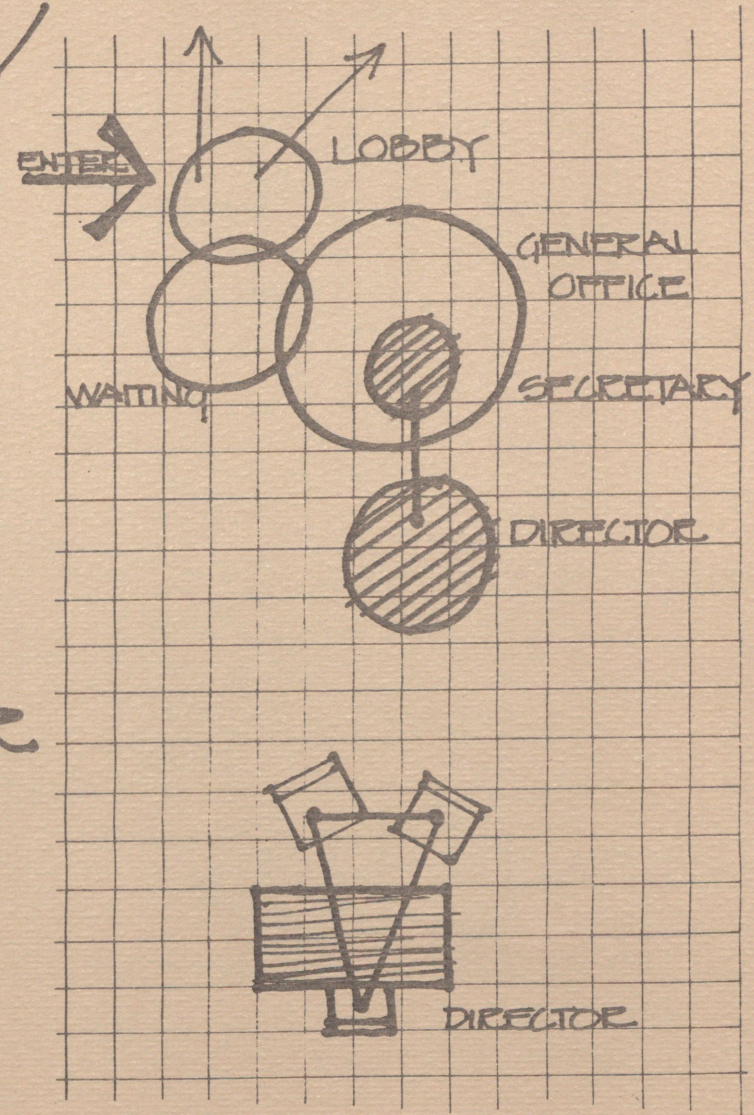
COMMENTS / EQUIP.

CONFERENCE DESK / CHAIR
2 CONFER. CHAIRS
BOOK STOR., COAT STOR.,
FILES

mood
EXECUTIVE

area req. 180/
140 #

relation / schematic



AREA ADMINISTRATION
SPACE CONFERENCE RM.

FUNCTION
MEETINGS

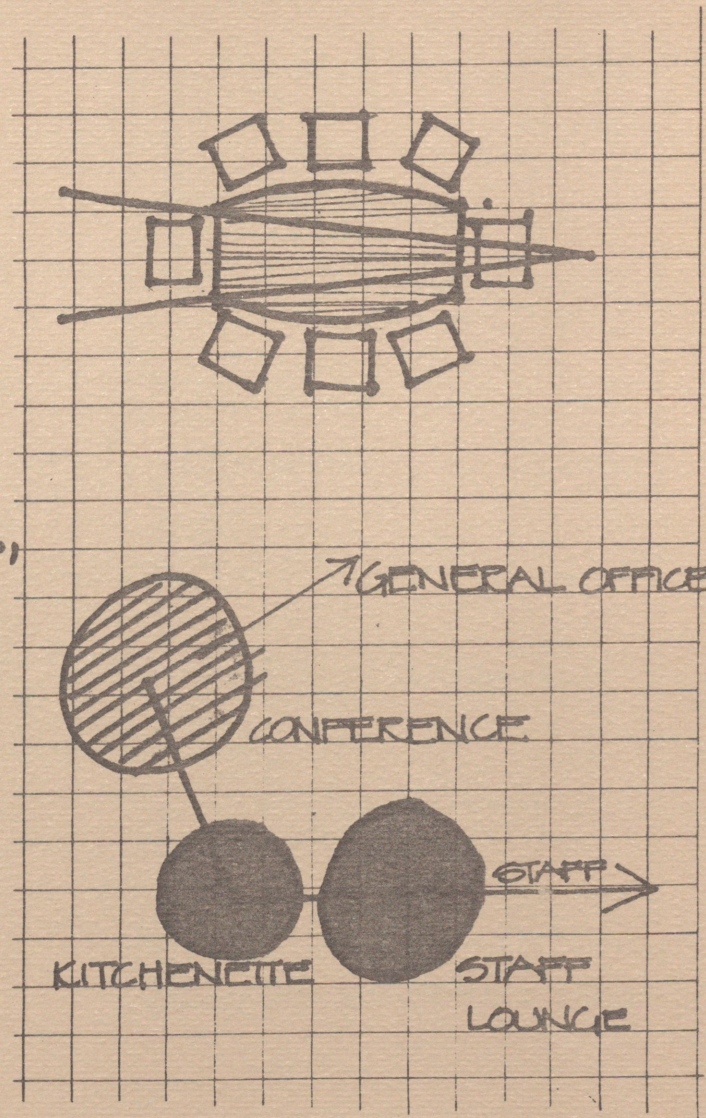
BOARD ROOM

PROXIMITY. STAFF, KITCHEN.,
ADMIN.

COMMENTS / EQUIP.
TO ACCOMMODATE ENTIRE
PROFESSIONAL STAFF
& OCCAS. CONSULTANTS
OR AGENCY REPS.

mood area req. 350 sq ft
BOARD RM.

relation / schematic



AREA HEALTH & DIAGNOSTIC
SPACE MED. EXAMINATION &
CONSULTATION

FUNCTION

TO ASSESS PHYSICAL
CONDITION & LIMITATIONS

MEDICAL HISTORY

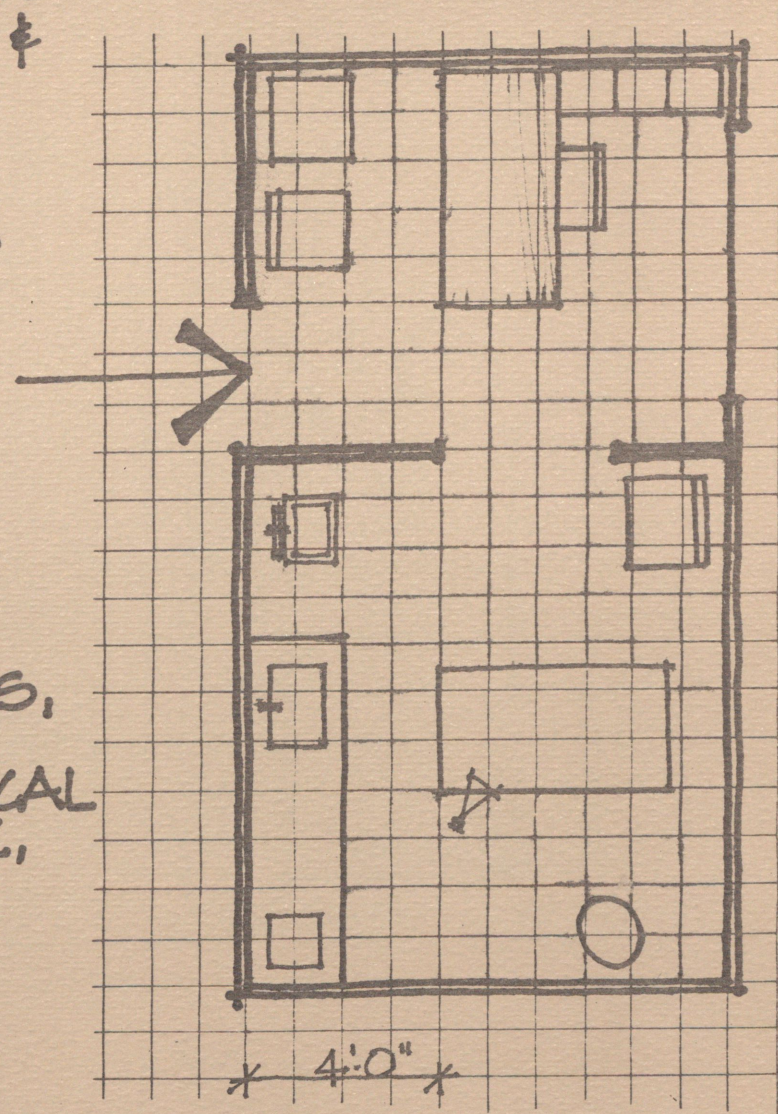
PROXIMITY EXAM RM ←
→ CONSULT. RM (OFFICE)
COMMENTS/EQUIP.

OFFICE - DESK, SUIT. CHAIRS,
FILES

EXAM - EXAM TABLE, CLINICAL
SCALES, SINK W/ MIRROR,
INSTR./SUPPLY CAB.,
STERILIZER, EXAM.
LAMP.

mood area req. 240 #
ACOUSTICALLY PRIVATE

relation / schematic



AREA HEALTH & DIAGNOSTIC SPACE OPTICAL AIDS CLINIC

FUNCTION DETERMINE IF MED.
OR SURGICAL TREAT. WILL
IMPROVE VISION / PRESCRIBE
RESTRICTIONS TO CONSERVE
VISION.

- DETERMINE DEGREE OF
BLINDNESS.

PROXIMITY LOCATE IN
MED. AREA
COMMENTS / EQUIP.

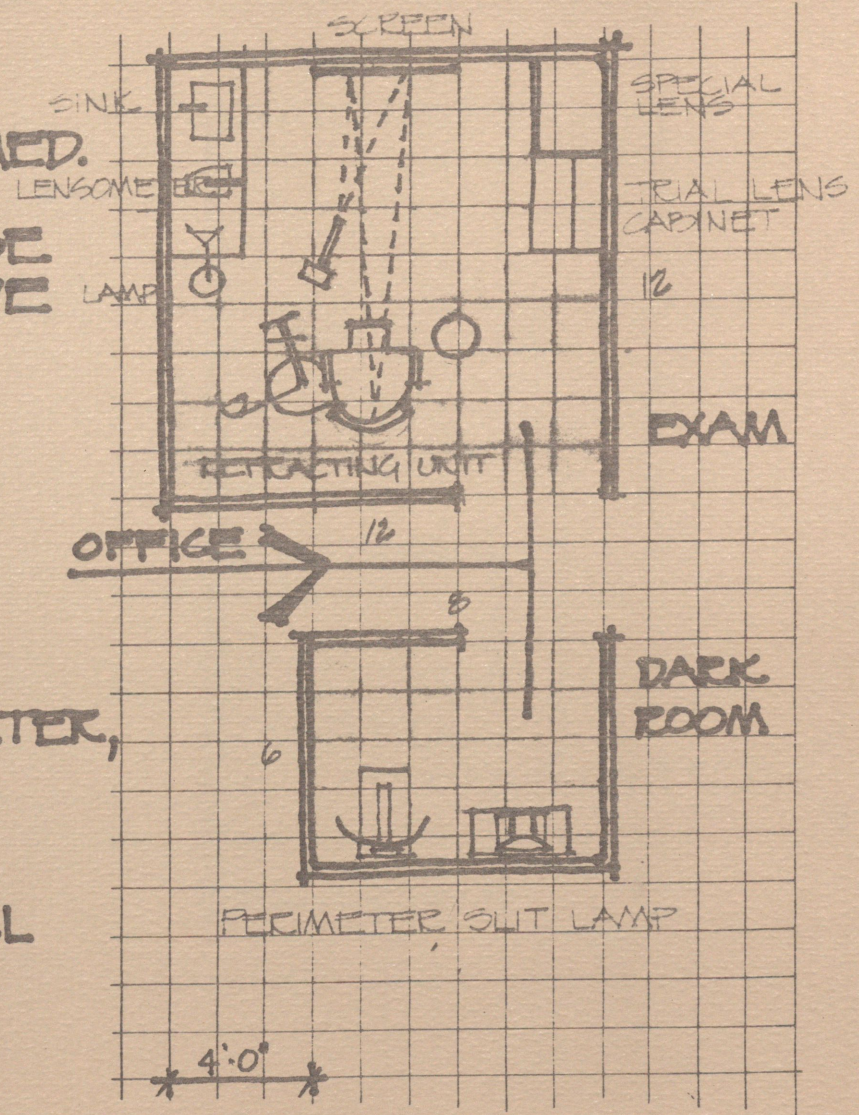
SHOWN —

NOT SHOWN — OPHTHALMOMETER,
DIAGNOSTIC SET, CHARTS,
PROJECTOR, PROJECT. MAG.

PAINT MATT FINISH / NEUTRAL
VALUES GRAY-GREEN

mood area req. 400 #
LIGHTING UP TO 60 FC.

relation / schematic



AREA HEALTH & DIAGNOSTIC
SPACE AUDIOMETRIC
EXAM & TESTING
FUNCTION

TO DETERMINE LEVEL OF
HEARING
[20% BLIND HAVE HEARING
PROBLEMS]

PROXIMITY

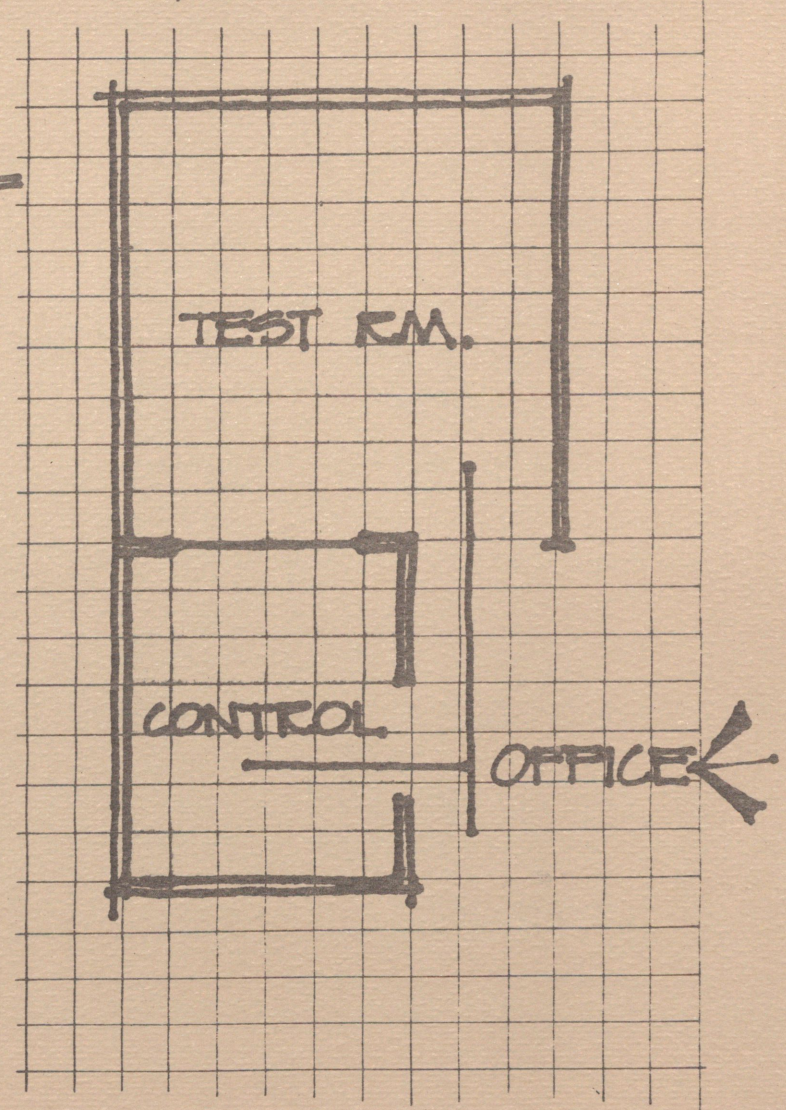
COMMENTS / EQUIP.
SOLD AS A PREFAB UNIT

FLOATING TEST RM.

mood

area req. 300 Φ

relation / schematic



AREA HEALTH & DIAGNOSTIC
SPACE PSYCHOLOGICAL
TESTING
FUNCTION

EVALUATE INTELLIGENCE,
INTERESTS, ABILITIES, &
ATTITUDES
BATTERY OF PSYCH.
TESTS

PROXIMITY

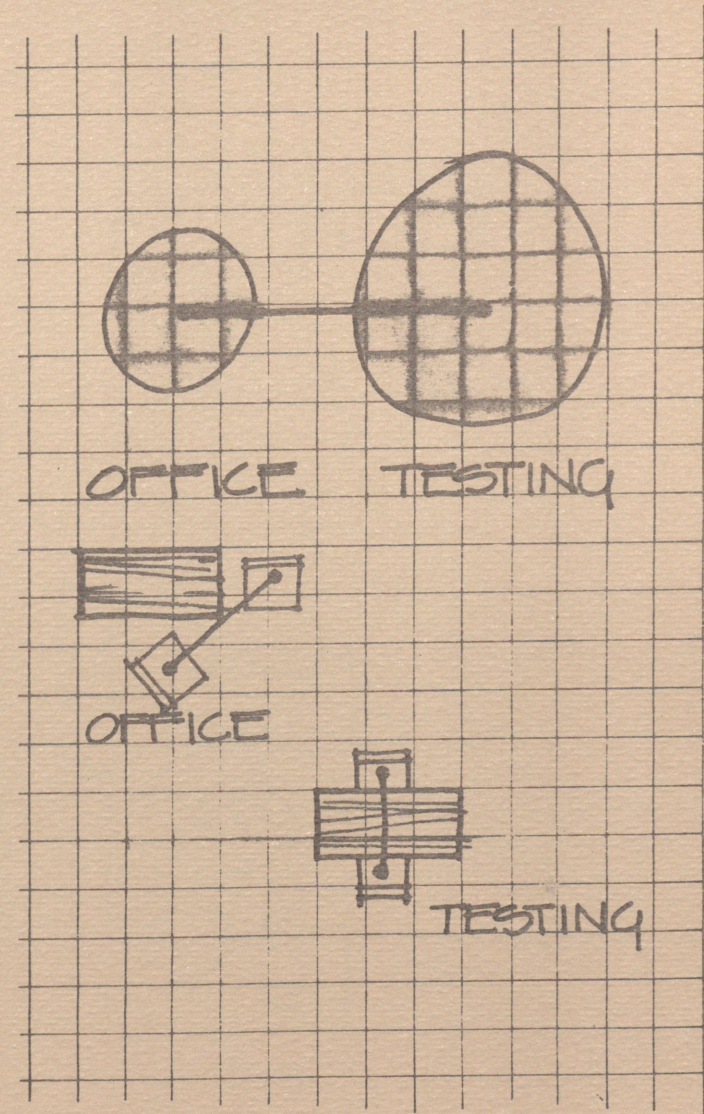
COMMENTS / EQUIP.
GROUP SES. - GEN. LOUNGE

OFFICE - DESK & CHAIRS
FILES

TEST RM. - WORK SURFACE
STORAGE FOR TESTS &
KITS

mood area req. 140 sq
RELAXED ATMOS.
ACOUSTIC PRIVACY

relation / schematic



AREA HEALTH & DIAGNOSTIC
SPACE SOCIAL WORK
OFFICE

FUNCTION

INTRODUCES CLIENT
TO CENTER.
FORMULATE INDIVID.
PROGRAM - FOCUS ON
POTENTIALITIES.

PROXIMITY

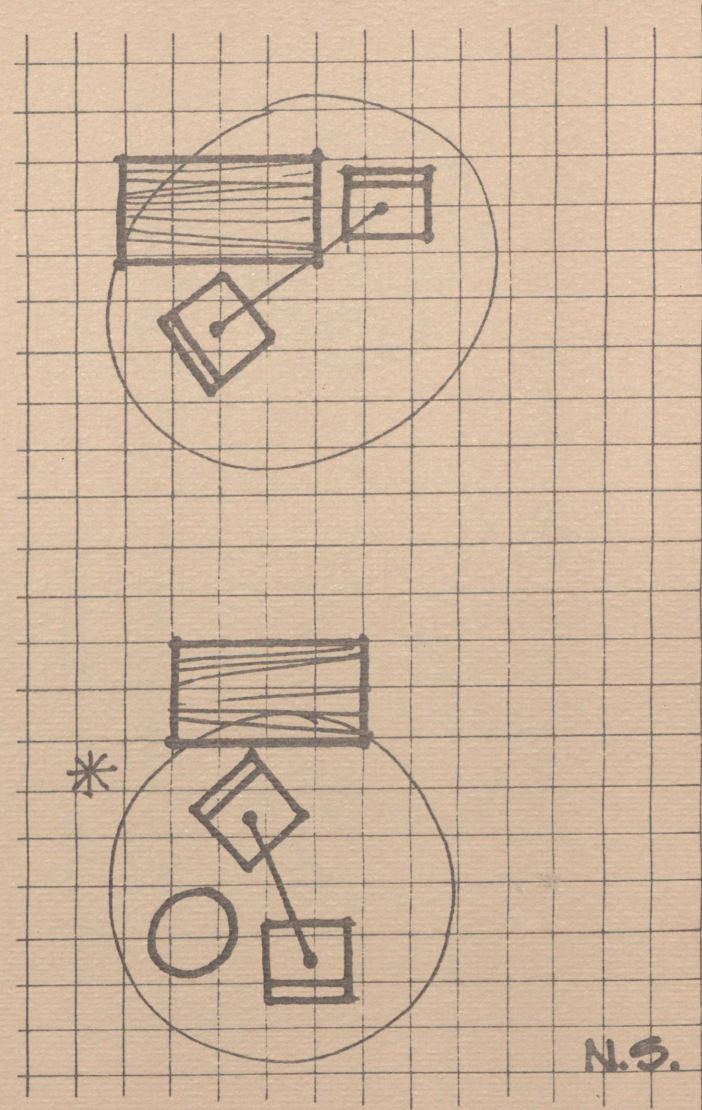
COMMENTS / EQUIP.

SOCIAL GROUP - GEN LOUNGE

OFFICE - DESK, FILES,
COMFORTABLE CHAIRS

mood area req. 140 ϕ
INTIMATE
PRIVATE / CONFIDENTIAL

relation / schematic



N.S.

AREA STAFF
SPACE STAFF LOUNGE

FUNCTION
ESCAPE - COFFEE
LUNCH

PROXIMITY - IN ADMIN, BY
KITCHENETTE & CONF.
COMMENTS / EQUIP.

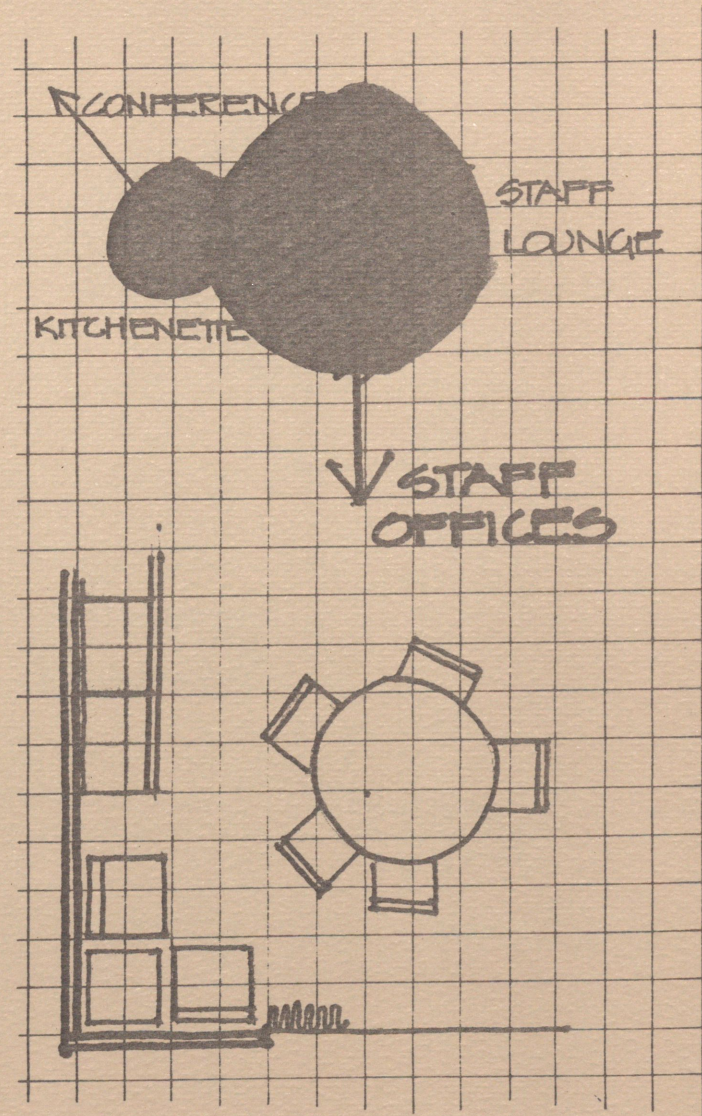
REMOVED FROM CLIENT
ACTIVITY

COMFORTABLE FOR 6-8
PERSONS

mood
RELAXED

area req. 200 sq ft

relation / schematic



AREA STAFF
SPACE VOLUNTEER
OFFICE
FUNCTION TRANSPORT
CLIENTS. ASSIST IN
CLERICAL WORK. SERVE
AS SIGHTED READER.

PROXIMITY - CLOSE TO
ADMIN. & STAFF
COMMENTS / EQUIP.

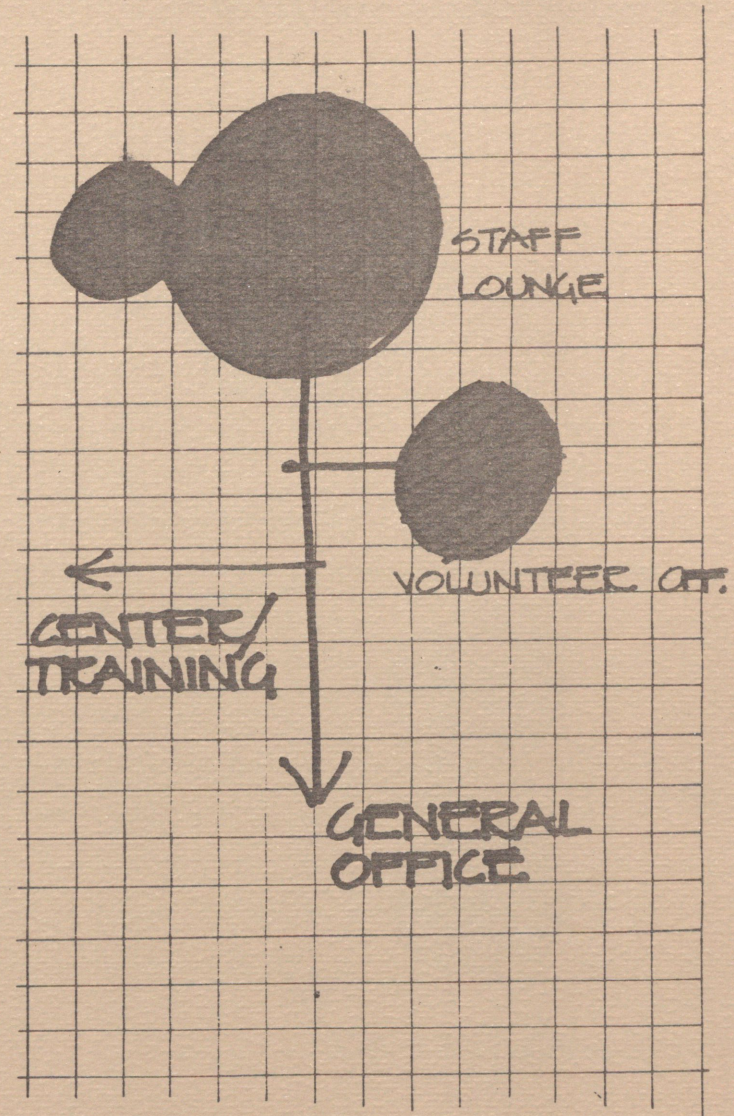
ATTRACTIVE - BRIGHT

MAY SHARE 1 AREA
FOR ALL VOLUNTEERS

mood
BRIGHT

area req. 200 sq

relation / schematic



AREA STAFF
 SPACE PROFESSIONAL
 TRAIN. & RESEARCH
 FUNCTION
 TRAINING OF STAFF
 METHOD RESEARCH

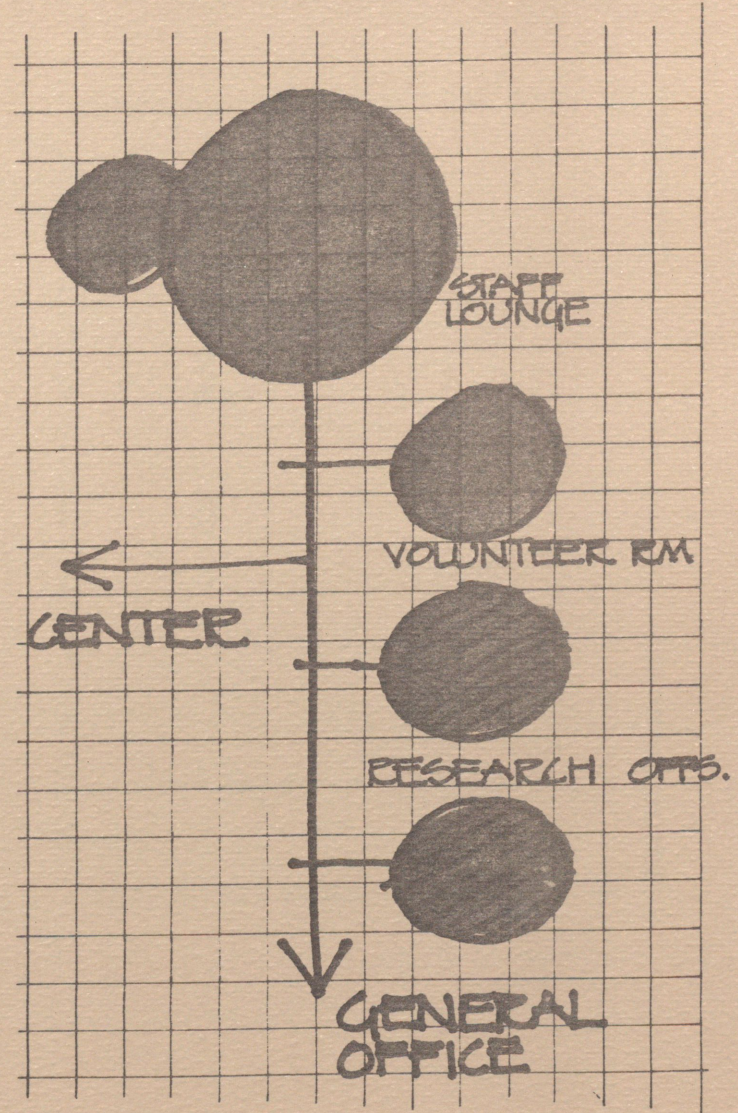
PROXIMITY — ADMIN. &
 STAFF AREA
 COMMENTS/EQUIP.

INDIVIDUAL OFFICES —
 2 REC.

mood
 OFFICE

area req. 240 #

relation / schematic



AREA MOBILITY
SPACE MODEL & MAP
ROOM

FUNCTION

ORIENTATION TO CENTER,
COMMUNITY, ETC..

INDOOR TRAVEL
TRAINING

PROXIMITY .

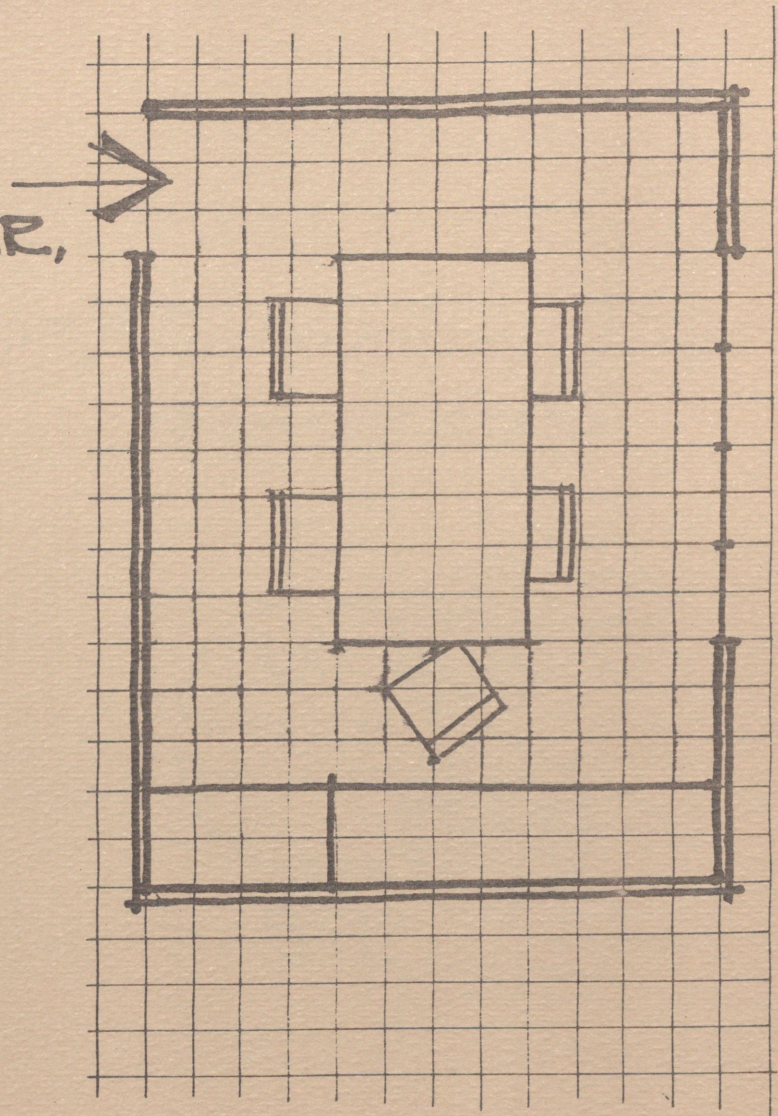
COMMENTS / EQUIP.
2-4 TRAINEES

TABLE / CHAIRS
SHELVING FOR 3-D
CHARTS & DIAGRAMS
3-D ROAD MAPS
SCALE MODELS

mood
CLASS

area req. 220 sq

relation / schematic



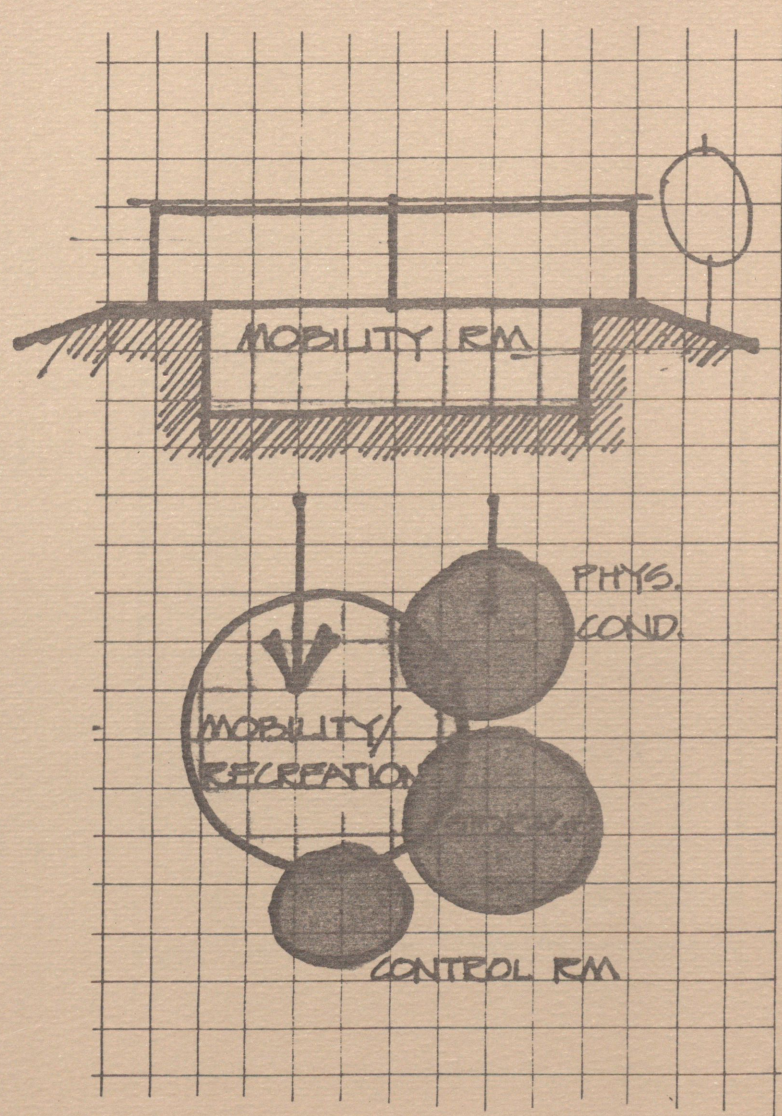
AREA MOBILITY
 SPACE MOBILITY &
 ORIENTATION RM.
 FUNCTION
 OBSTACLE COURSE W/
 SUPERVISION

SIMULATE VARIOUS
 ENVIRON. CONDITIONS

PROXIMITY - PHYS. COND.
 AREA / RECREATION
 COMMENTS / EQUIP.
 STIMULI -
 PHYSICAL BARRIERS
 HEARING
 SMELL
 ALL SENSES

mood
 VARIABLE area req. 1200 $\pm$

relation / schematic



AREA COMMUNICATION
SPACE BRAILLE &
SCRIPT WRITING
FUNCTION

3 DEVICES TO RESTORE
COMMUNICATIONS THROUGH
WRITING : BRAILLE
TYPING, HANDWRITING

MIN-TEACH TO SIGN OWN
NAME

PROXIMITY AWAY FROM
NOISES
COMMENTS/EQUIP.

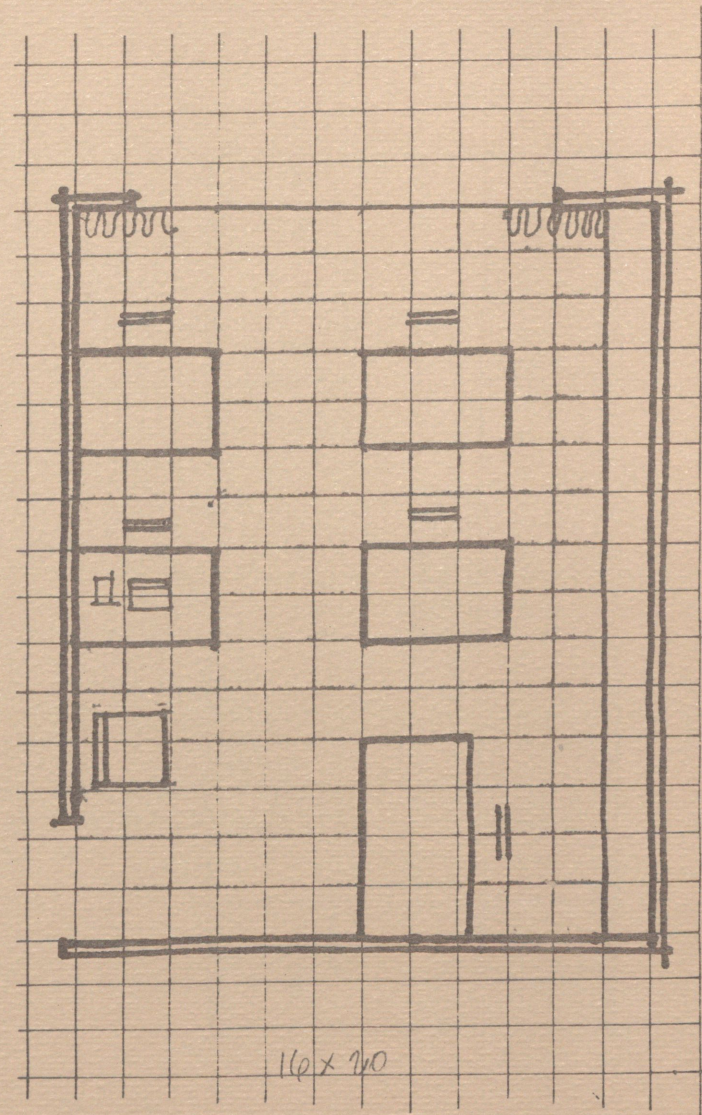
2-6 STUDENTS / 1 INST.
L SHAPE DESKS

STORAGE / BRAILLE EQUIP.
PAPER, BRAILLE
WRITERS

mood
CLASS

area req. 320 $\pm$

relation / schematic



AREA COMMUNICATION
SPACE TYPING ROOM/
TRANSCRIBING
FUNCTION
OFFERED TO ALL

TO RESTORE WRITTEN
COMMUN.

PROXIMITY

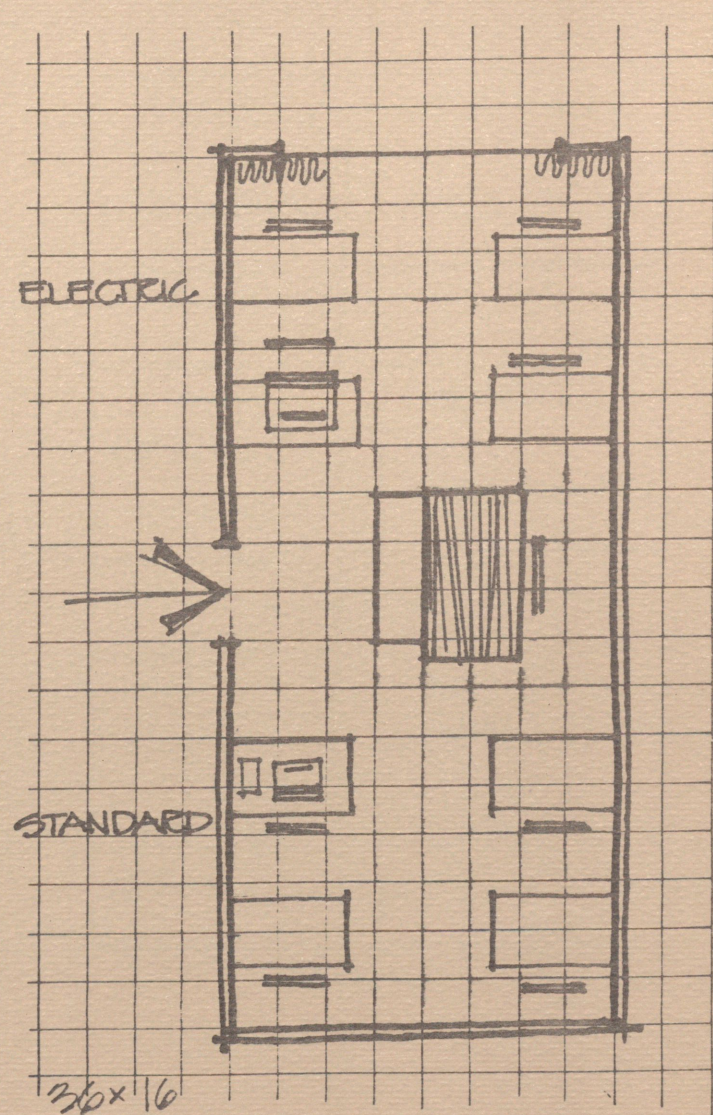
COMMENTS / EQUIP
ELEC. & STANDARD TYPE
USE DICTATION & RECORDS
TO AUGMENT VERBAL
INSTRUCTION

4-6 STUDENTS / 1 INST.
TYPE SURFACE, ELEC.
OUT. STORAGE FOR
PAPER

mood
CLASS

area req. 576 #

relation / schematic



AREA MANAGEMENT SPACE HOMEMAKING/ DAILY LIVING FUNCTION

TO TEACH - KEEP NEAT
ORDERLY, ATTRACT. HOUSE.
TO WASH, IRON, MEND.
IDENTIFY FOOD PACKG'S.,
PREPARE & SERVE
DINNERS

PROXIMITY-ALT. USE DORM RM.
LAUNDRY, DINING RM.

COMMENTS/EQUIP.

PROVIDE A HOUSEHOLD
SET-UP - LIVING, DINNING,
KITCHEN, BATH, LAUNDRY.

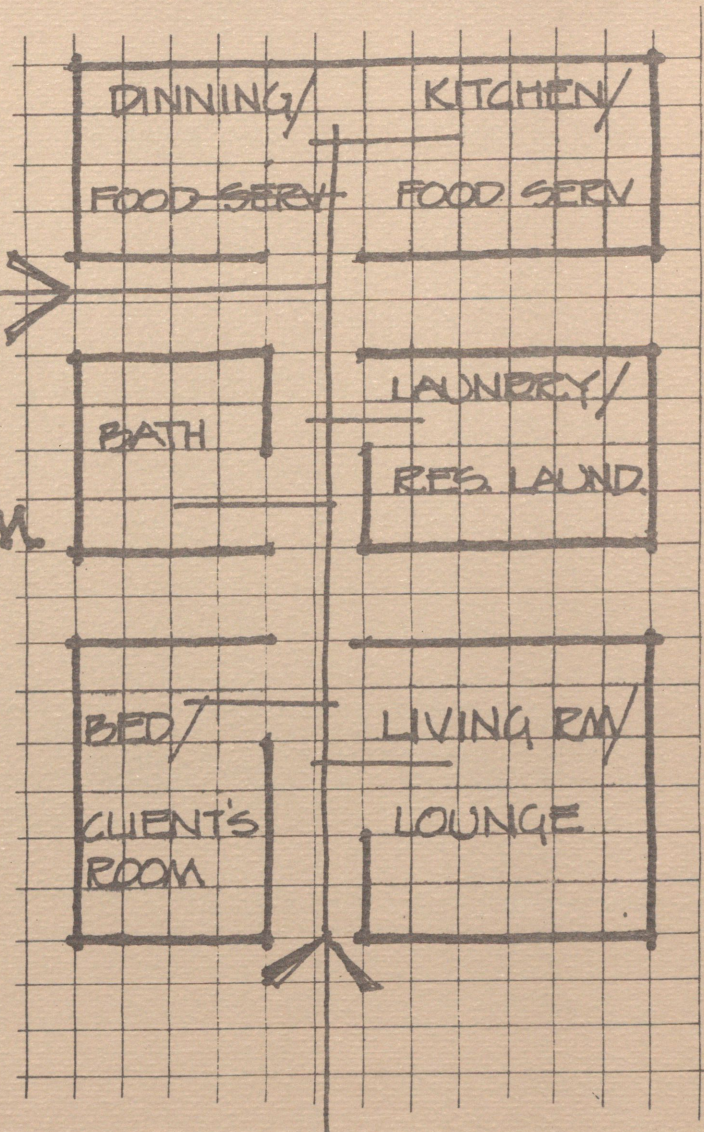
GADGET BOARD - AIDS

RATIO 2 CLIENTS/1 INST.

mood

area req. 700 Φ

relation / schematic



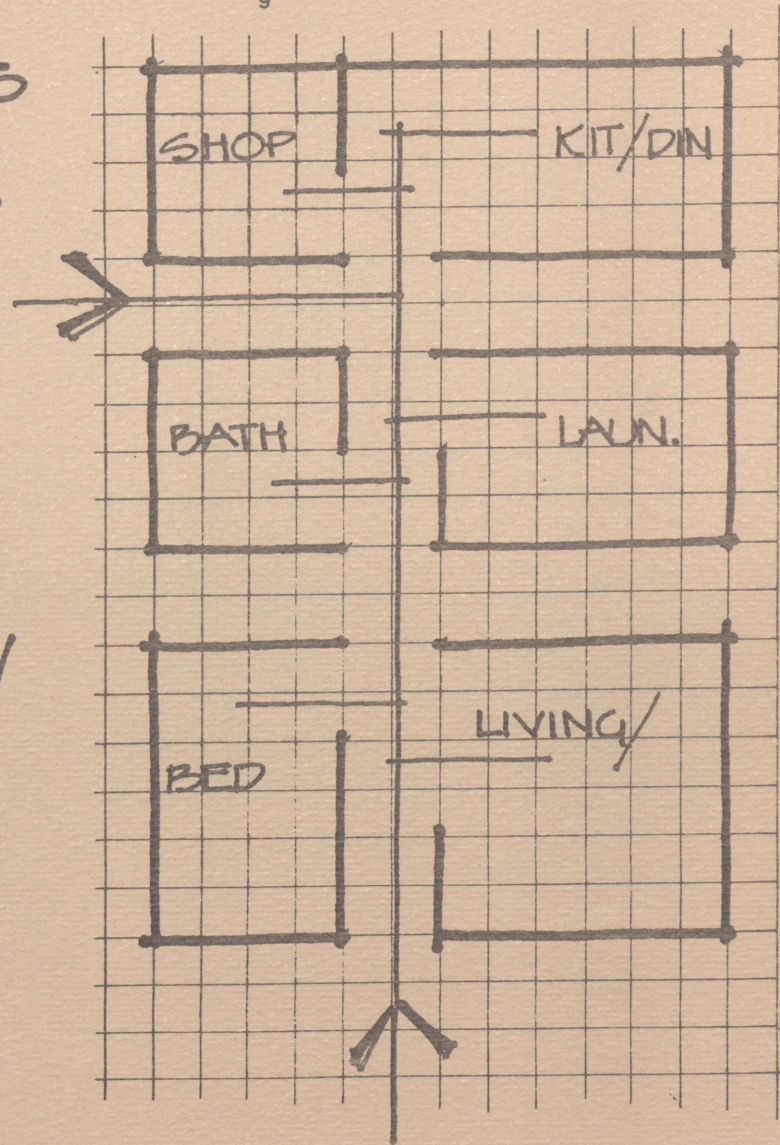
AREA MANAGEMENT
SPACE
HOUSEHOLD MECHANICS
FUNCTION
TO TEACH THE SKILLS
REQUIRED FOR SIMPLE
REPAIRS, PROPERTY
MAINT.

PROXIMITY - HOMEMAKING
or/ VOCA.
COMMENTS/EQUIP.
LIKE A HOME SHOP W/
MOCK-UP MODELS.

mood
SHOP

area req. 200 ft^2

relation / schematic



AREA MANAGEMENT SPACE

PERSONAL HYGIENE
FUNCTION
MANAGEMENT - HIGHLY
IMPORTANT AREA OF
TRAINING FOR MAX.
INDEPENDENCE

PROXIMITY USE CLIENT'S
RM., MEETING RM., RESOURCE
COMMENTS / EQUIP.
SKILLS - SHAVING, APPLY
COSMETICS, DRESSING,
CARING FOR CLOTHES,
HANDLING MONEY,
TABLE ETIQUETTE

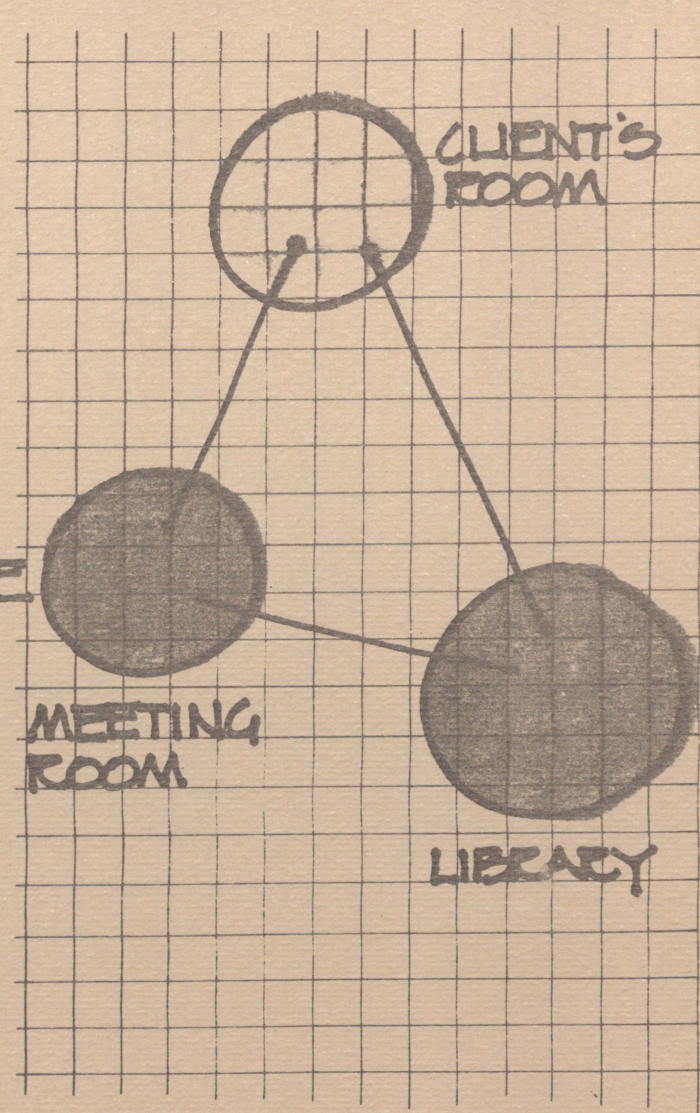
mood

—

area req.

—

relation / schematic



AREA VOCATIONAL
SPACE
VOCA. EVALUATION
FUNCTION DEVELOP
BIMANUAL SKILLS, MANUAL
COORDINATION, HAND-
FOOT COORD., FINGER
DEXTERITY, TACTUAL
PERCEPTION, REACTION &
ADAPTABILITY

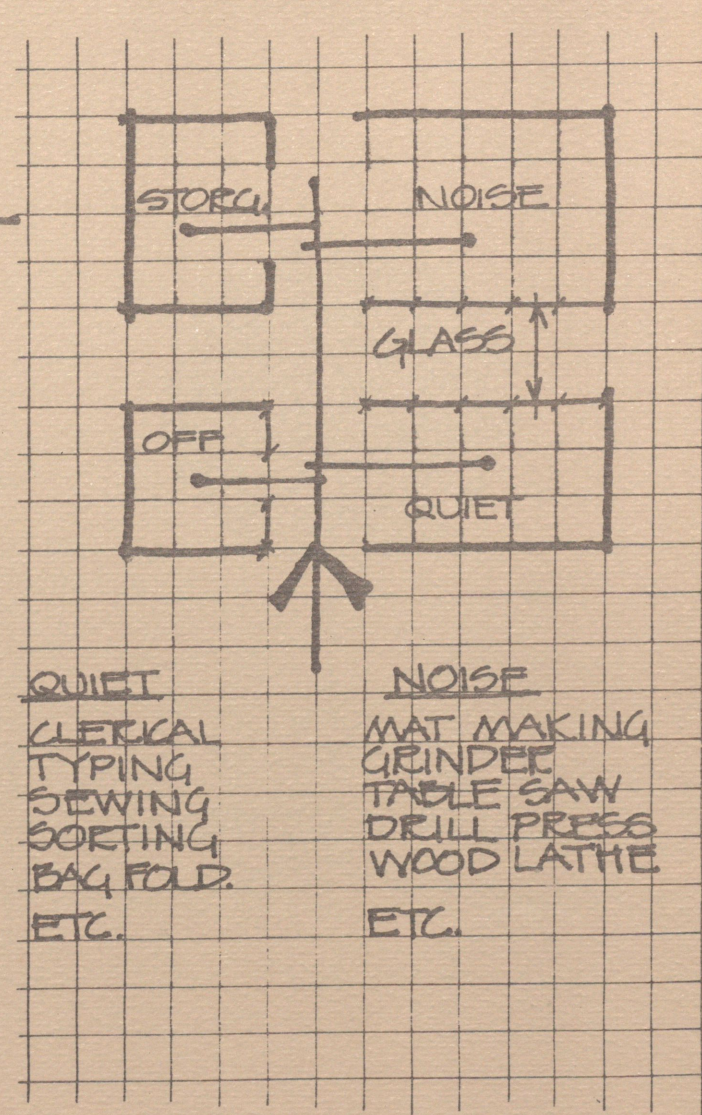
PROXIMITY

COMMENTS / EQUIP.
GEAR TO EMPLOYMENT
IN AREA
SEPARATE SHOP & COMM.
WORK FOR NOISE
POWER TOOLS - SHUT-OFF
IN OFFICE

mood
SHOP

area req. 800 sq

relation / schematic



AREA VOCATIONAL
SPACE SEWING CENTER/
VENDING
FUNCTION

SAME/
HANDLE CHANGE
IDENTIFY OBJECTS.
REMEMBER LOCATION

PROXIMITY

COMMENTS / EQUIP.

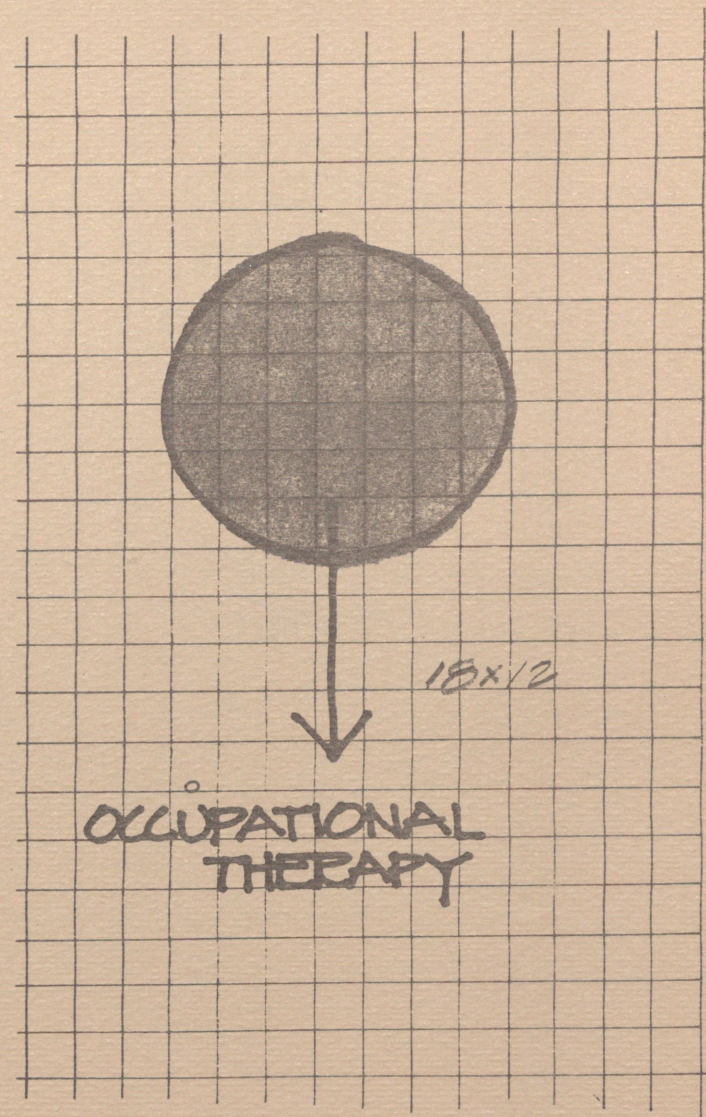
SOCIAL CONTRIBUTION -
COMMERCIAL ASPECTS.

ALSO - TELEPHONE
SW. BOARD., PLANTING

mood

area req. 216 #

relation / schematic



AREA MOBILITY
 SPACE OCCUPATIONAL
 THERAPY
 FUNCTION
 DEVELOP BASIC SKILLS
 & MANUAL DEXTERITY

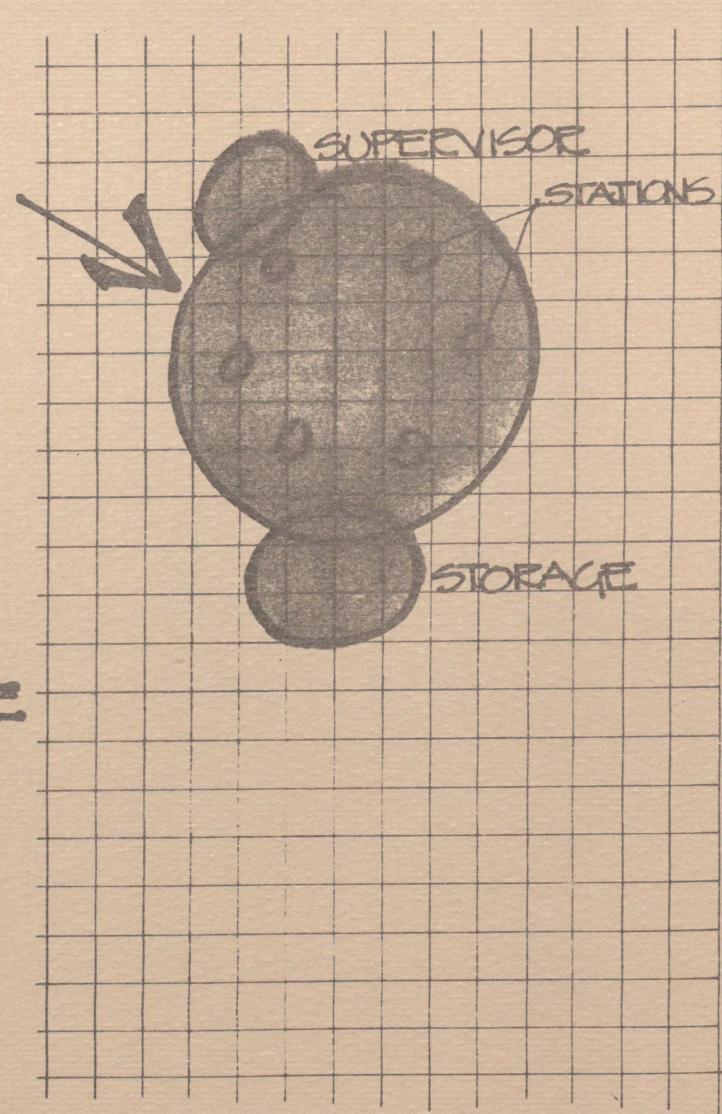
PROXIMITY • VOCATIONAL
 EVALUATION
 COMMENTS / EQUIP.
 SIMPLE LOOP MATS, TABLE
 & FLOOR LOOMS, SEWING
 BASKETS

WORK SURFACES, CRAFTS
 EQUIP. ; STORAGE

OFFICE
 mood
 FUN

480 #
 area req. 600 #

relation / schematic



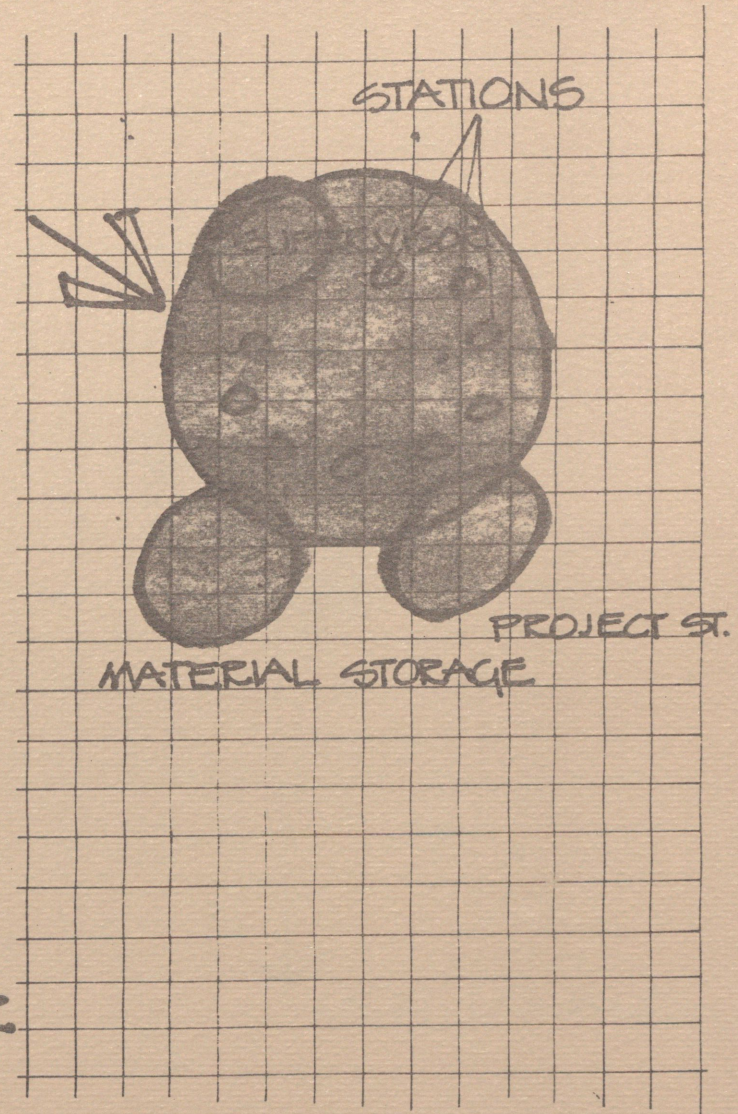
AREA VOCATIONAL
SPACE POWER SHOP

FUNCTION

SAME

PROXIMITY SEP. SHOP &
COMMERCIAL FOR NOISE
COMMENTS / EQUIP.
DIFFERENT STATIONS
SIMPLE HAND TOOLS
SIMPLE MACHINES
DRILL PRESS / SANDER
COMPLICATED
LATHE
HAZARDOUS
CIRCULAR SAW / PLANER
mood
SHOP area req. 1280 #

relation / schematic



AREA RESOURCE
SPACE LIBRARY

FUNCTION - "BULL PEN" OF
MATERIAL, CENTRAL
CORE OF CENTER.

BRaille BOOK STORAGE
CLASS ROOMS

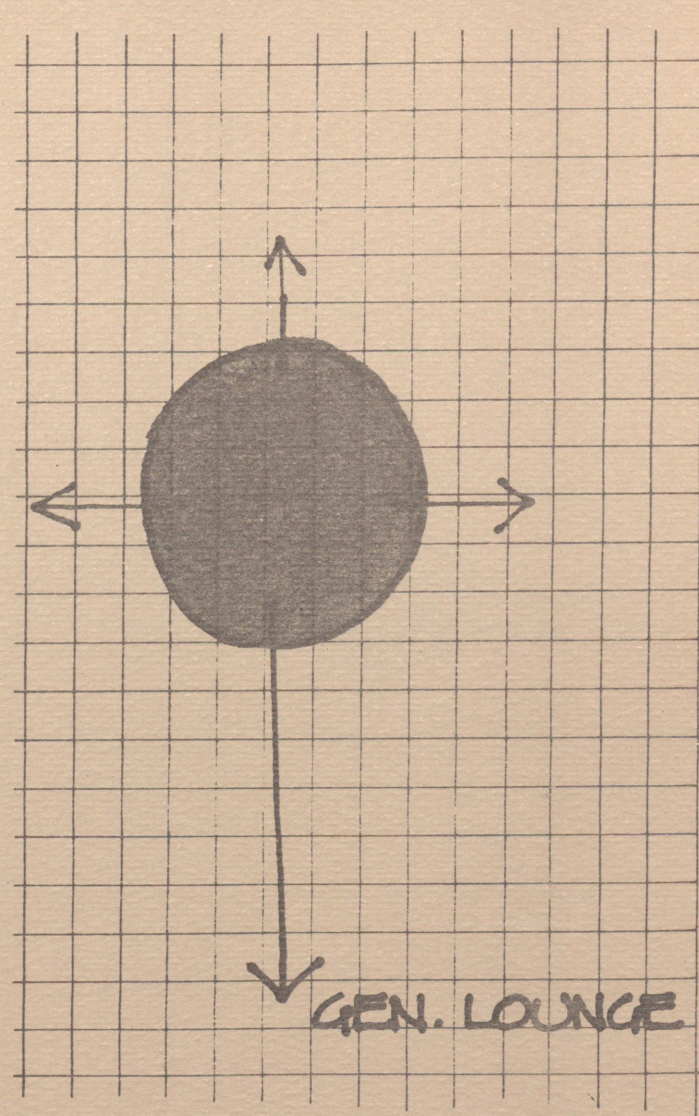
PROXIMITY CLASS ROOMS
CENTRAL CORE
COMMENTS/EQUIP.
BRaille BOOK STORAGE
CARRELS FOR STUDY

TALKING BOOK

mood
LIBRARY

area req. 450'±

relation / schematic



AREA RESOURCE
SPACE TALKING BOOK
DISTRIBUTION
FUNCTION

STORAGE & DIST. OF
TALKING BOOKS

REPAIR OF PLAYERS

PROXIMITY LIBRARY

COMMENTS / EQUIP.

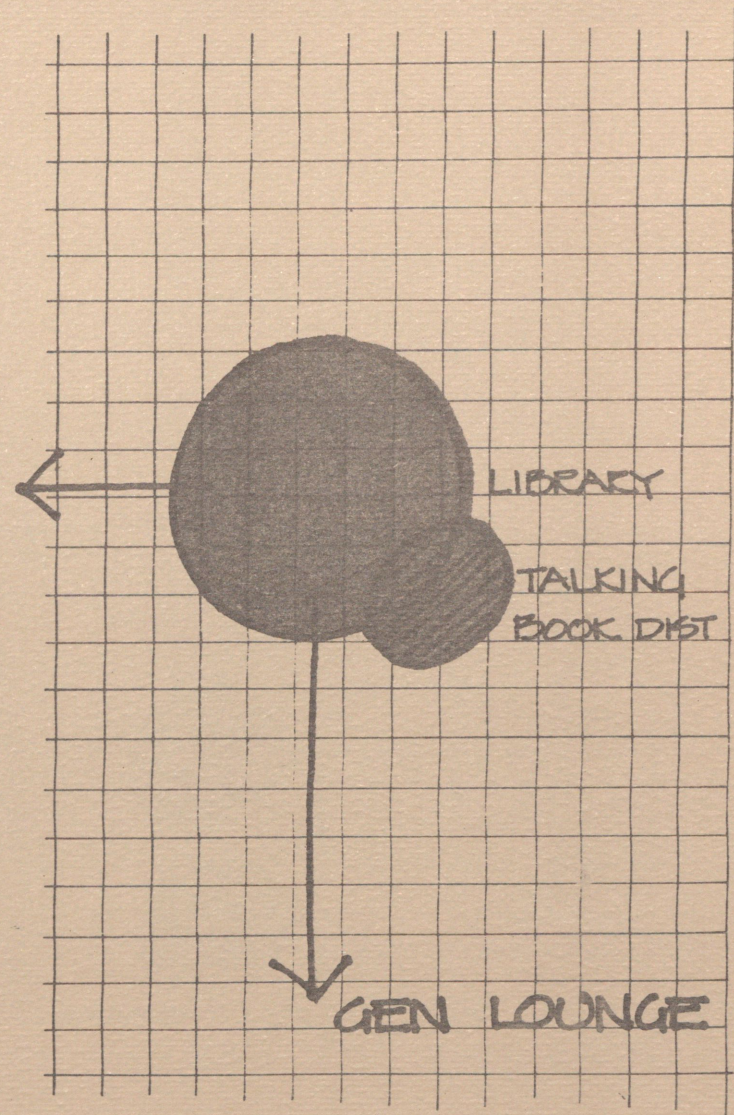
STORAGE - RECORDS/
MACHINES

REPAIR-SHOP
SHIPPING DOCK

mood

area req. 400 ϕ

relation / schematic



AREA RESOURCE
SPACE MEETING ROOMS

FUNCTION CLIENT
GROUP DISCUSSION
LECTURES - GRAMMAR
SPELLING, MATH, USE
OF MONEY, MENTAL &
PHYSICAL HYGIENE
GROUP THERAPY

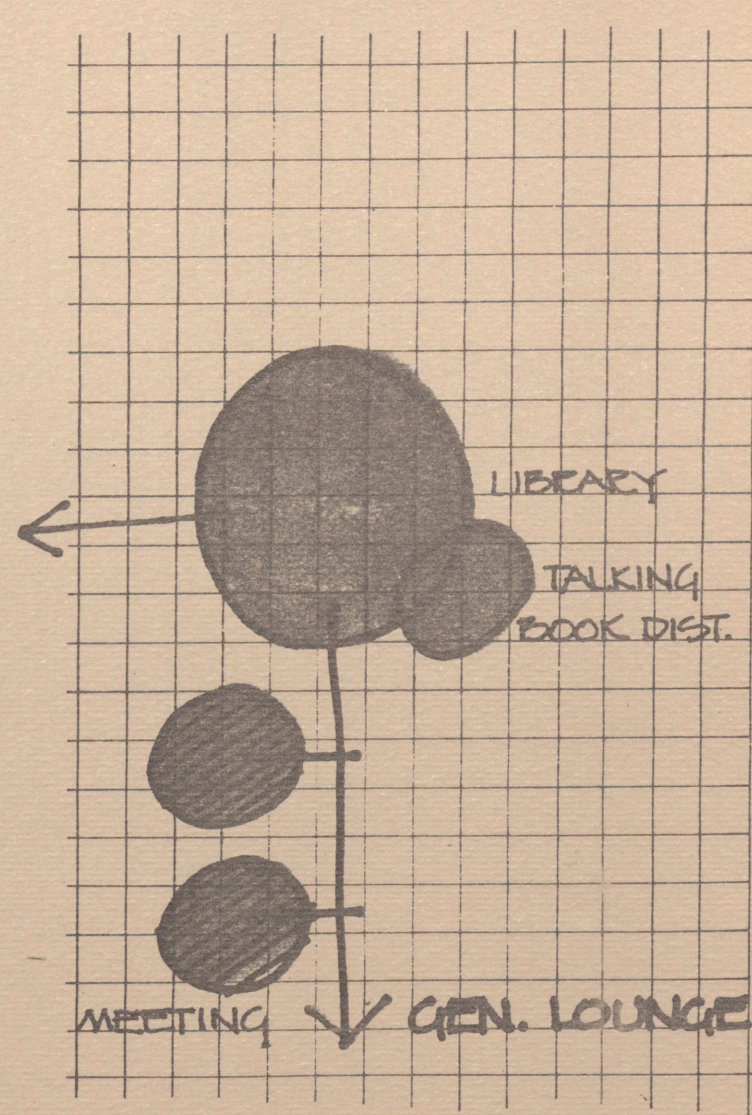
PROXIMITY BY RESOURCE
CENTER (LIBRARY)
COMMENTS/EQUIP.

6-8 CLIENTS / 1 INST.

mood
CLASS

area req(2) 400 Φ

relation / schematic



AREA RESOURCE
SPACE STUDY RMS.

FUNCTION
NON-RESIDENT STUDY
RESIDENT STUDY &
PRACTICE

PROXIMITY LIBRARY

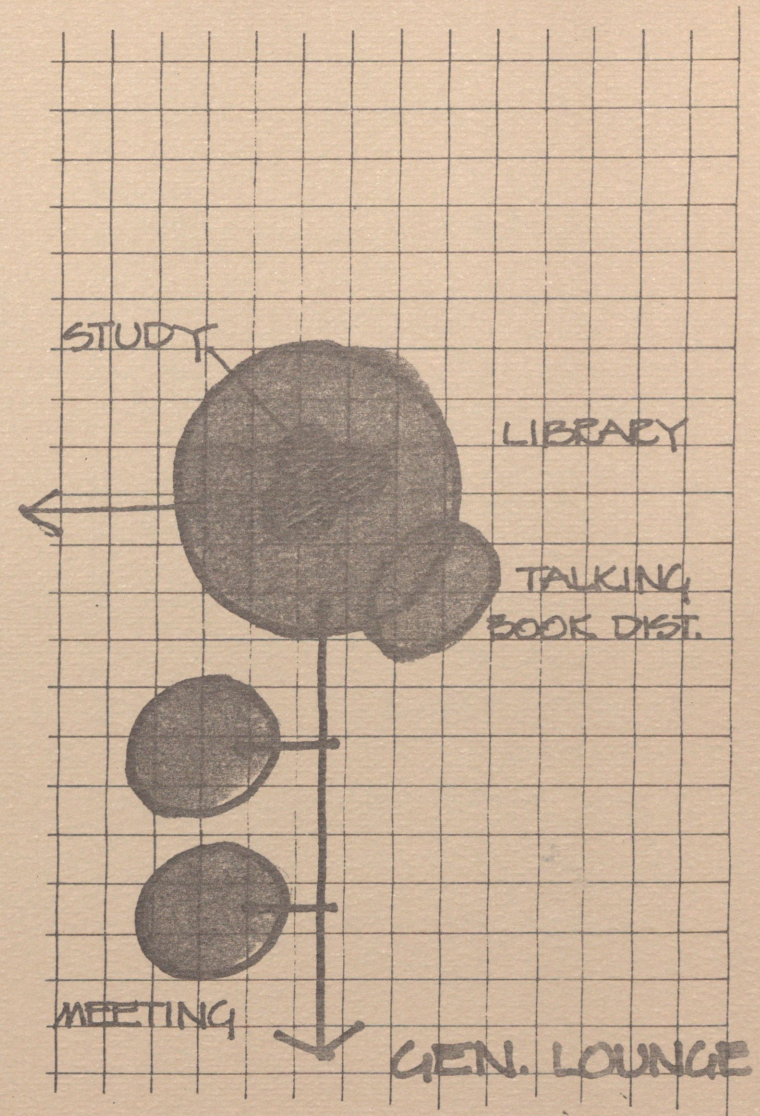
COMMENTS / EQUIP.

CARRELS

mood
STUDY

area req. 400 #

relation / schematic



AREA RECREATION
SPACE PHYSICAL
CONDITIONING

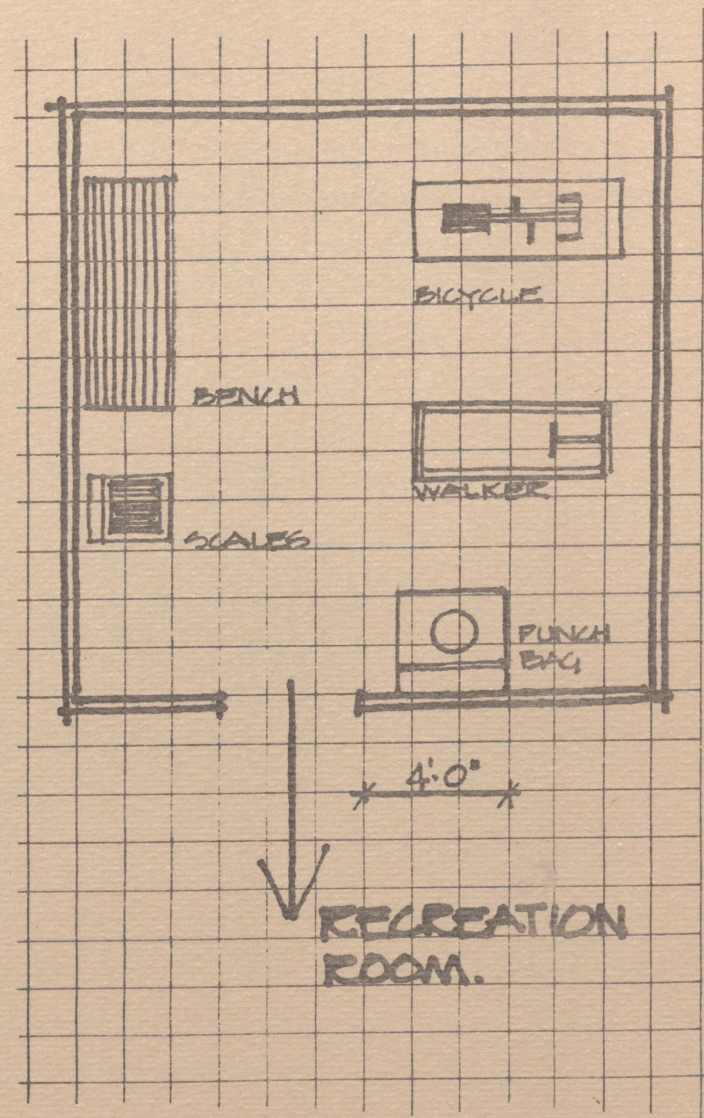
FUNCTION
CORRECTIVE THERAPY
IMPROVE GEN COND.
INCREASE PHYS. CAPACITY
POSTURE, TONE,
STRENGTH
COORDINATION

PROXIMITY MOBILITY/
RECREATION
COMMENTS/EQUIP.

SCALE, PUNCH BAG,
HEALTH WALKER, WALL
PULLEYS, BICYCLE,
MATS, STALL BARS

mood area req. 250 $\pm$
HIGH LIGHTING

relation / schematic



AREA RECREATION
SPACE RECREATION RM.

FUNCTION

RECREATION/ SOCIAL
LEARN NEW SKILLS

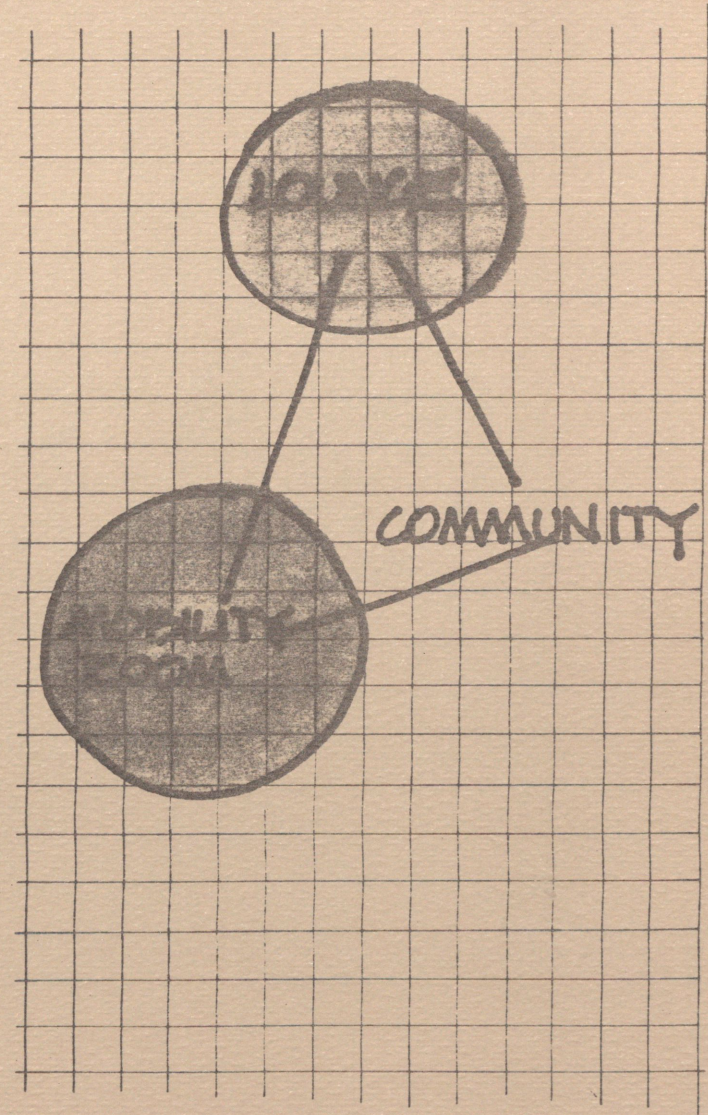
PROXIMITY USE LOUNGE
MOBILITY RM. - COMMUNITY
COMMENTS/ EQUIP.

CARD PLAYING, DRAMATICS,
DANCE, YOGA, MUSIC,
BOWLING, SKIING, RADIO
& TV LISTENING, TANDEM
BIKE RIDING, SKATING,
ETC.

mood

area req. 1000 #

relation / schematic



AREA GENERAL SPACE CENTRAL LOUNGE

FUNCTION

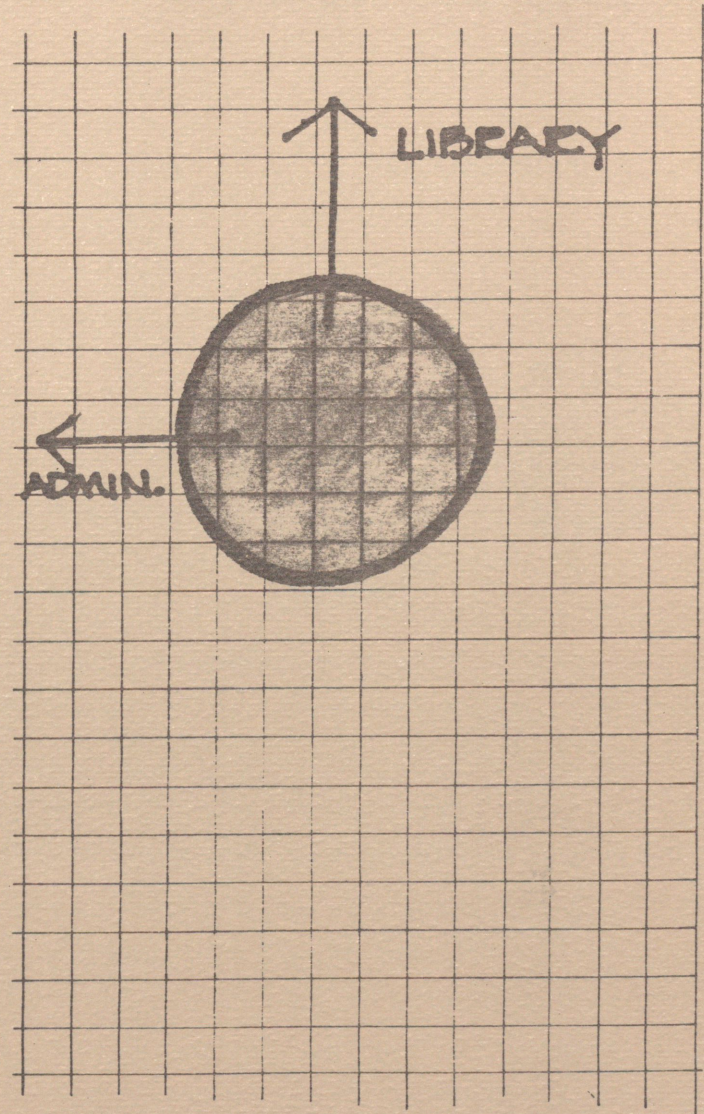
INFORMAL MEETING
FOR ALL
GROUP PSYCHOTHERAPY
SOCIAL GROUP WORK
RECREATION
NON-RESIDENT CENTER

PROXIMITY AWAY FROM
QUIET AREAS

• COMMENTS / EQUIP.
FURNISH COMFORT. BUT
STURDILY - SOFAS,
CHAIRS, COFFEE TABLE,
WRITING DESK, CARD
TABLE, RADIO, TV, PIANO

mood area req. 1000 $\pm$
RESIDENTIAL / INFORMAL

relation / schematic



AREA GENERAL
SPACE ASSEMBLY RM.

FUNCTION MEETING RM.
SOCIAL AREA, MULTI-
PURPOSE CLASSROOM,

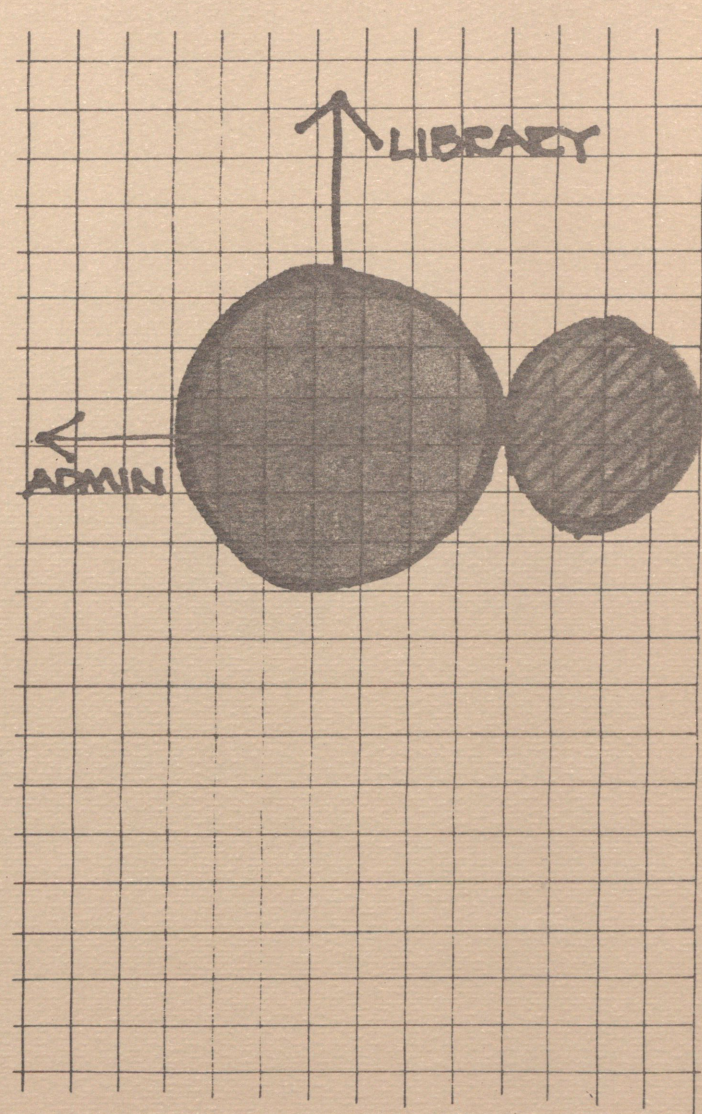
PROXIMITY GENERAL

COMMENTS / EQUIP
TO ACCOMMODATE ENTIRE
PROFESSIONAL STAFF &
CLIENTS.

STORAGE FOR CLEARANCE
OF SEATING & TABLES

mood area req. 600 sq ft
RELAX - GATHER

relation / schematic



AREA GENERAL
SPACE CANTEEN

FUNCTION
COFFEE BREAKS/
SNACKS

PROXIMITY NEAR LOUNGE

COMMENTS / EQUIP.

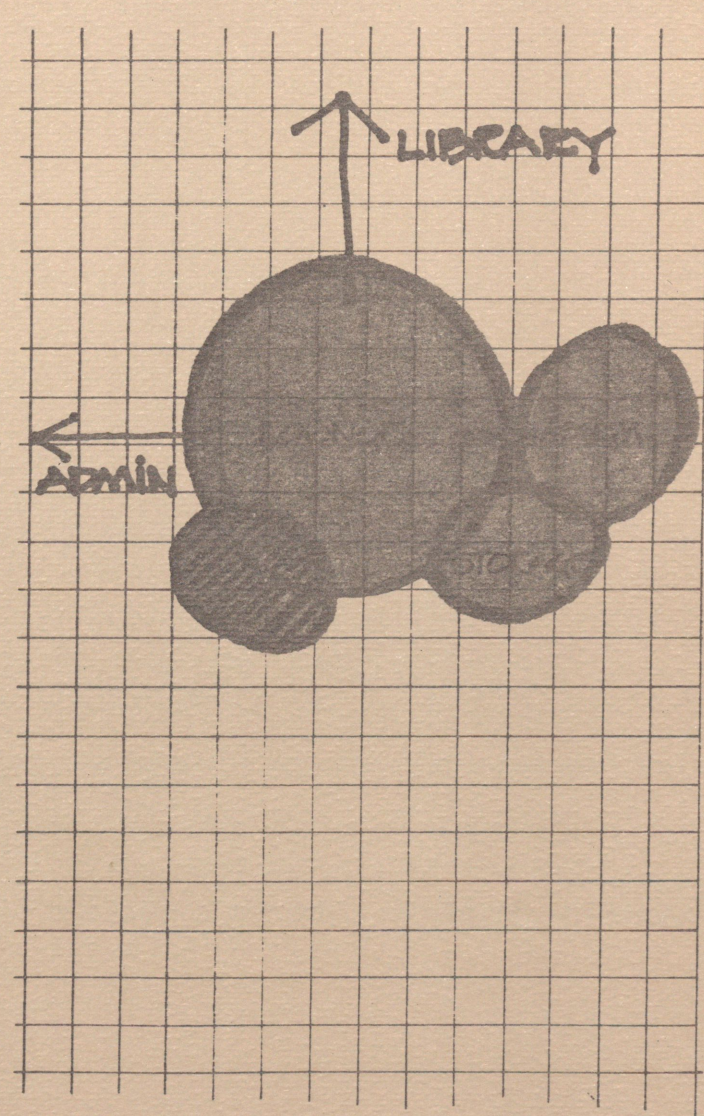
BOTH STAFF & CLIENTS

VENDING MACHINES

mood
BRIGHT

area req. 120 $\pm$

relation / schematic



synthesis

The building took its final form from following the path of obtaining independent mobility. The person starts from a point and must grow out from this point in a series of concentric circles. The point in this case became the resource center where the person begins his re-tooling. From here he moves to the more advanced skills - all of which must be added to what was previously learning. Final training, and also the furthest point from the center in the final design, is vocational training. From here the blind person is ready to return to an active-productive community life.

FOOTNOTES / BIBLIOGRAPHY

footnotes

1. U. S. Department of Transportation, "Travel Barriers", p. 3.
2. Bayes, Kenneth, FRIBA, FSIA., Francklin, Sandra, "Designing for the Handicapped", p. 5.
3. Ibid., p. 5.
4. Canadian National Institute for the Blind, "Recommendations re. Supplement #5 to the National Building Code of Canada", p. 1.
5. Ibid, p. 1.
6. DeVilliers, Marq, "Dark Passage", p. 11.
7. Ibid., p. 11.
8. Ibid., p. 11.

9. Voigt, Dennis, "Designing for the Handicapped", p. 21.
10. Ibid., p. 23.
11. Ibid., p. 23.
12. Klimet, Stephen A., "Into the Mainstream", p. 12.
13. State University of New York, "Making Facilities Accessible to the Handicapped", p. 27.
14. DeVilliers, Op. Cit., p. 12.
15. Ibid., p. 12.
16. Salmon, Cuthbert F., Salmon, Christine F., "The Blind, Space Needs for Rehabilitation", p. 78.
17. Bayes, Francklin, Op. Cit., p. 20.

bibliography

Anonymous, "Construction Details: Planning for the Handicapped",

Westchester, NY, Easter Seal Society.

Anonymous, "Housing the Elderly", Central Mortgage and Housing

Corporation - Canada, 1975.

Anonymous, "Housing the Handicapped", Central Mortgage and Housing

Corporation - Canada, 1974.

Anonymous, "Making Facilities Accessible to the Physically Handi-

capped", State University of New York, 1967.

Anonymous, "Recommendation RE Supplement #5 to the National Building Code of Canada", The Canadian National Institute for the Blind, 1973.

Anonymous, "Travel Barriers", U.S. Department of Transportation, 1970.

Bayes, Kenneth; Francklin, Sandra, "Designing for the Handicapped", London, George Godwin, Ltd.

Braverman, Sydell; Chevigny, Hector, "The Adjustment of the Blind", New Haven, Yale University Press, 1950.

DeVilliers, Marq., "Dark Passage", in "The Canadian", The Regina Leader Post Newspaper, October 25, 1975.

Dreyfuss, Henry & Associates, "Human-Scale 1/2/3", Mass., M.I.T. Press, 1974.

Hopf, Peter S., "Designer's Guide to OSHA, A Practical Design Guide to the Occupational Safety and Health Act", McGraw-Hill Book Co., 1974.

Kliment, Stephen A., "Into the Mainstream", AIA, The Rehabilitation Services Administration HEW, 1975.

Norley, Dolores, "Design as a Nonverbal Language", "AIA Journal", August 1973, p. 38.

Salmon, Cuthbert F.; Salmon, Christine F., "The Blind, Space Needs for Rehabilitation", Oklahoma State University, Stillwater, Oklahoma, 1964.

Worsley, John C., "Check List and Graphic Illustrations", California AIA

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