

Assisted living for now, the baby boomers, and future generations

by

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This is to certify that the Master's thesis of

Jennifer Rae White

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PREFACE

The main concept throughout this design project is breaking the “typical or standard” stereotype of senior housing projects.

The text of this thesis has been designed to reflect that break with convention.

Text and graphics have been arranged to emphasize the horizontal nature of the building site and designed to highlight important text notes.

Following the appendix I have included an Author’s Note detailing my approach to the design. This thesis was generated by three main concepts: conventionalism, transformation, and daylighting. The three concepts helped me identify the elements of my design and create an assisted living facility that incorporated all three ideas.

INTRODUCTION

The Little Boy and the Old Man

Said the little boy, "Sometimes I drop my spoon."
Said the little old man, "I do that too."
The little boy whispered, "I wet my pants."
"I do that too," laughed the little old man.
Said the little boy, "I often cry."
The old man nodded, "So do I."
"But worst of all," said the boy, "it seems
Grown-ups don't pay any attention to me."
And he felt the warmth of a wrinkled old hand.
"I know what you mean," said the old man.¹

¹ Shel Silverstein, A Light in the Attic, (New York: Harper & Row, Publishers, 1981), 95.

No one will argue that childcare is a major issue for today's working families. But as Baby Boomers age, the focus will shift to eldercare.

Family values of the later twentieth century have shifted from an extensive *internal* family life to an intensive family with emphasis on *external* priorities and individuality. With fewer households able to provide family care for aging parents -- as was typical in past generations -- more families will be faced with choosing appropriate private care for their aging relatives.

This poses several problems.

- First, typical senior housing projects are not seen as desirable places to live because they are sterile, unfriendly places, and because they isolate their residents -- both physically and mentally. Neither adult children nor their aging parents are comfortable choosing typical senior housing options. "Middle-aged Americans today view the nursing home as an unacceptable solution to society's long-term care problems."² And the elderly fear that they will lose their independence, privacy, and -- most importantly -- dignity, if they must move into a senior living facility.
- Next, the physical changes that occur with aging – such as osteoporosis and walking with a cane or walker – are rarely explored in existing senior housing designs.

² Victor A. Regnier, Assisted Living Housing for the Elderly: Design Innovations from the United States and Europe, (New York: Van Nostrand Reinhold, 1994), 38.

- And last, typical senior housing projects are not warm and inviting. They do not incorporate the emotional benefits and energy efficiency of natural daylight into their individual units or overall design.

A welcoming, intriguing, warm facility where elderly people can go to live out their lives is what adult children and their aging parents hope to find when faced with choosing senior housing. Among the many types of senior housing, I believe that place is an assisted living facility, and my thesis is to explore more innovative ways of designing such a facility.

PROBLEM DEFINITION

The problem of designing an assisted living facility is two-fold: how to care for a growing elderly population, and how to design a senior living facility that will break the emotional and physical conventions of traditional senior care buildings.

Since 1996, a Baby Boomer has turned fifty years old every 7.5 seconds, on average. This trend will continue until 2006 when the last of the 78 million Boomers will turn fifty.³ When the last of the Boomers turns fifty, the early Boomers will turn sixty-five -- the traditional age of retirement. What will they do when they cannot live on their own? Where will they go? Since millions of Boomers will turn sixty-five by the year 2011 and consider retirement, the demands for senior housing facilities will overwhelm the current supply of options. I believe the answer may lie partly in an innovatively designed assisted living facility.

William J. Brummett, author of *The Essence of Home: Design Solutions for Assisted Living Housing*, defines assisted living facilities as follows:

...a group-living arrangement for the physically and cognitively frail elderly where a wide range of individualized assistance is available twenty-four hours a day from a professional caregiving staff...residents typically considered semi-independent, often needing assistance with many activities of daily living, but are not long-term bedridden or in need of extended acute medical care....Their rooms are considered private apartments within a supportive, extended family community.⁴

³ About Boomers, <http://boomersint.org/bindex.html>, (Boomers International, 1999).

⁴ William J. Brummett, *The Essence of Home: Design Solutions for Assisted Living Housing*, (New York: Van Nostrand Reinhold, 1997), 3.

An assisted living facility that addresses the physical issues of privacy, semi-independency, and a sense of family community is what comprises my design, as well as the mental issues of dignity, comfort, and aesthetics. By addressing these issues I hope to develop architectural strategies that might begin to challenge the typical conventions and demeanor of traditional senior housing facilities.

LOCATION AND SITE

Old Age – It's Later Than You Think

It's later than you think – everything is farther away now than it used to be. It's twice as far to the corner – and they added a hill. I notice I've given up running for the bus – it leaves faster than it used to. It seems to me they are making steps steeper than in the old days and have you noticed the smaller print they use in the newspapers? There is no sense asking anyone to read aloud...everyone speaks in such a low voice I can scarcely hear them. Material in dresses is so skimpy especially around the hips. It's all but impossible to reach my shoe laces. Even people are changing – they are much younger than they used to be when I was their age. On the other hand, people my age are much older than I. I ran into an old classmate and she had aged so much she didn't remember me. I got to thinking about the poor thing while I was combing my hair this morning and I glanced in the mirror at my reflection and confound it, they don't make mirrors like they used to either....⁵

Aging is more than a state of mind. As the body ages, it *does* take more effort to walk to the bus, go up the steps, carry the groceries, and just visit with neighbors. This extra effort is caused by many physical changes that occur with the body as it ages.

⁵ Alice Gray, Stories for the Heart, (Sisters, OR: Questar, 1996), 227.

While these many physical and mental changes have been addressed to a variety of degrees in existing facilities, I want to examine some unexplored areas that would address them in new ways. It is important to take into consideration where the elderly live and how close they are to daily amenities. As an initial approach to designing an innovative senior housing facility, there should be an accurate study of a site and what its surroundings have to offer.

Location

An assisted living facility should be located within a community that provides many options for its residents. By first addressing location, the design attempts to invoke many of the concerns the elderly have regarding isolation and dignity.

An assisted living facility that has the goal of engaging and accommodating its residents should closely consider the following design criteria:⁶

- proximity to a health clinic or hospital for better accessibility in case of an emergency

⁶ Brummett, The Essence of Home: Design Solutions for Assisted Living Housing, 52.

- walking distance to stores that address daily needs, such as a drugstore, dry cleaners, or grocery store, for residents who do not have access to an automobile
- located in a residential setting to incorporate a feeling of community involvement
- near a park or greenspace to accommodate those who like to be outside and away from traffic
- proximity to a children's day care facility so residents can watch the activity

Locating residents near a variety of places encourages them to go outside and engage in exercise that they may not otherwise attain. In addition, providing the above options can enhance residents' pride and dignity, because their senior housing facility enables them to remain active and independent. Looking back at early senior housing facilities, it seems as though small towns often located them next to cemeteries or nothing at all -- all the more reason to locate them more centrally.

Based on the above site conditions, I chose to site my project in the Minneapolis area. The city was chosen based on demographic demand for such a facility. According to the Metropolitan Council, Hennepin County had the densest population of

Baby Boomers in Minnesota.⁷ Within that county, the 1990 Census of Population and Housing Summary showed that the city of Bloomington had the largest population of people ages 25 to 45 (the age of the Boomers in 1990). Within Bloomington, Tarnhill Park provided one of the best site accommodations to the previously mentioned location criteria (Figures 1, 2, and 3).

The land use map (Figure 2) shows how the proposed building would fit into its surroundings, with the lightest shading representing residential areas, the darkest shading representing retail/commercial, which is located one block to the southwest, and the middle shading representing park and greenspace. This map was important in determining where the facility would be placed and what amenities would surround it. The city map of Bloomington (Figure 3) puts the site into context with other landmarks and the city.



Figure 1: Organizational maps for orientation of the city of Bloomington.

⁷ Twin Cities Metropolitan Area City Level Population, <http://www.metrocouncil.org/metroarea/levpop.htm#hennepin>. (Metropolitan Council, 1998), 5.

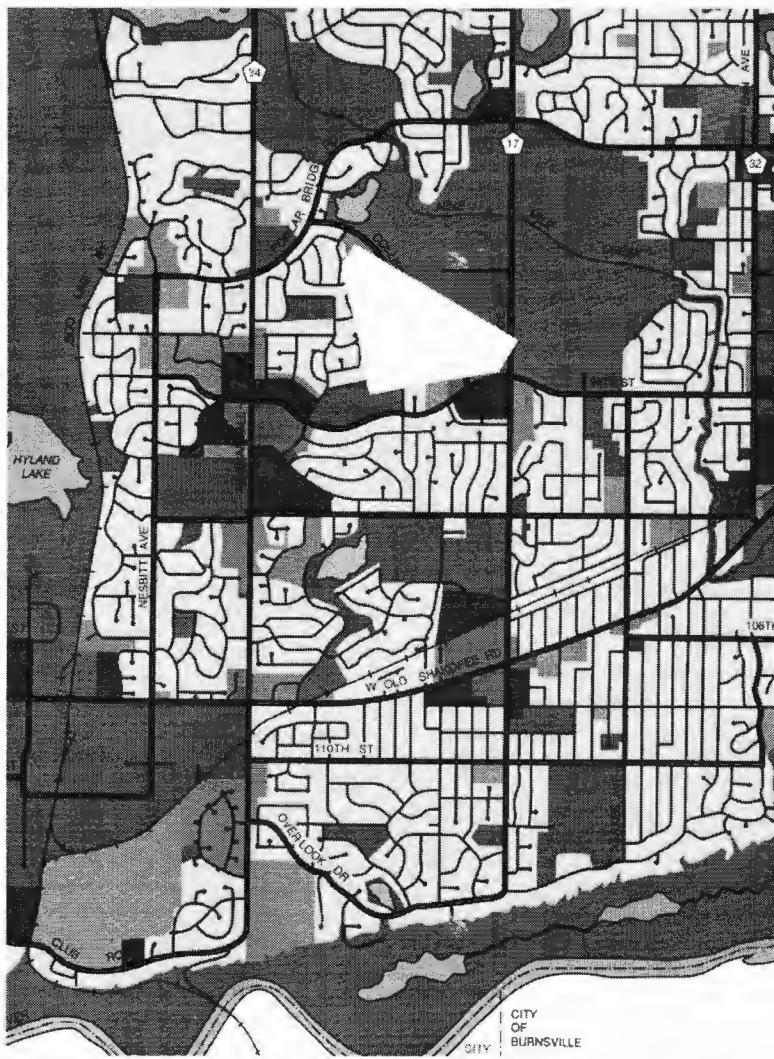


Figure 2: Land use map of Bloomington with an arrow pointing to the site.

City of Bloomington, Community Development Dept., Planning Division, amended 1993.

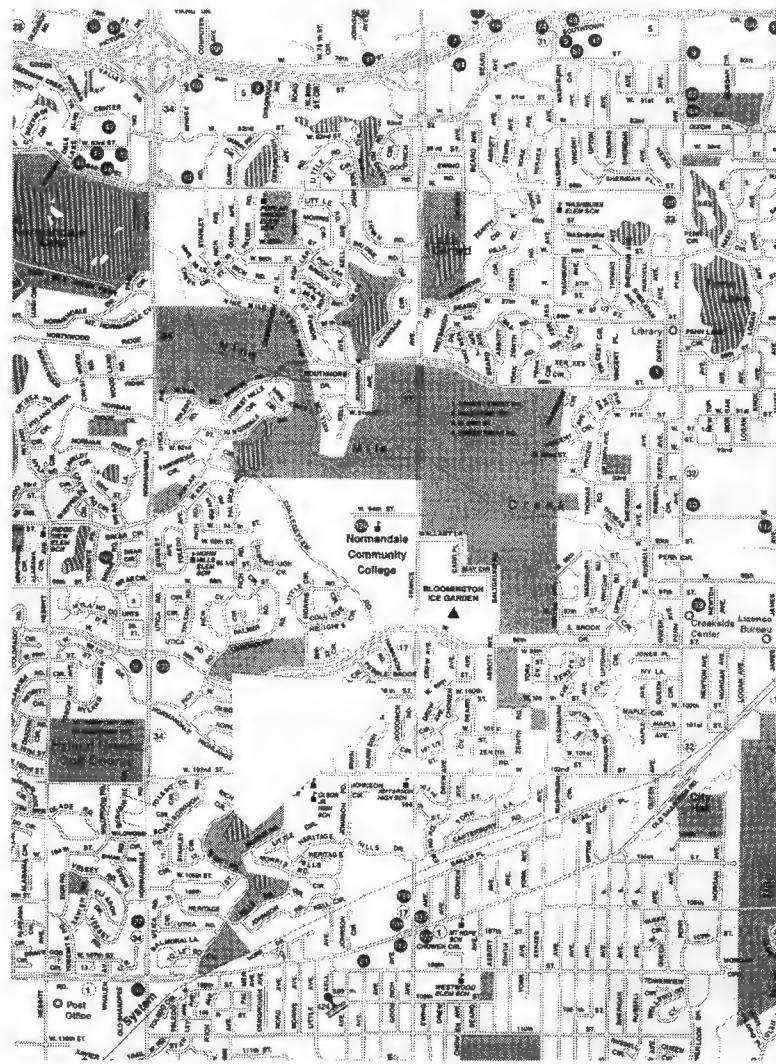


Figure 3: City map of Bloomington with an arrow pointing to the site.

Bloomington Chamber of Commerce, 1998.

Site

The ideal location is found on the west side of “old” (meaning 1950s-1970s) Bloomington, just before the new housing (1980s-1990s) developments begin. It is within walking distance of all the above criteria, plus more. Ironically, there is an existing assisted living facility directly across the street. It is a relatively new construction, built in the early 1990s. Unfortunately, this particular building represents a conventional apartment complex and has no innovative thought put into its design. It is a standard rectangular box with three stories and a double-loaded corridor that separates the units down the middle. That gave me more incentive to design a nontraditional, or progressive, facility in that area.

The site will occupy Tarnhill Park, a public greenspace/park that covers about twenty-one acres (Figure 4). Of the twenty-one acres, the proposed building will utilize about a third of it, leaving enough greenspace for the existing natural park (Figure 5). As seen in the site model (Figure 4), the site is positioned longitudinally east/west; therefore, it is easy to take full advantage of the southern exposure and utilize passive solar as an energy source (Figure 6).

The adjacent surroundings are all single-family homes built in the 1960s and 1970s (disregarding the new construction of the assisted living facility located across the street). To succeed in designing an innovative assisted living facility that fits into the existing surroundings, the appearance of the units is very important. For instance, the design should simultaneously invoke a residential appearance while still being fused as a community in an institutional setting.

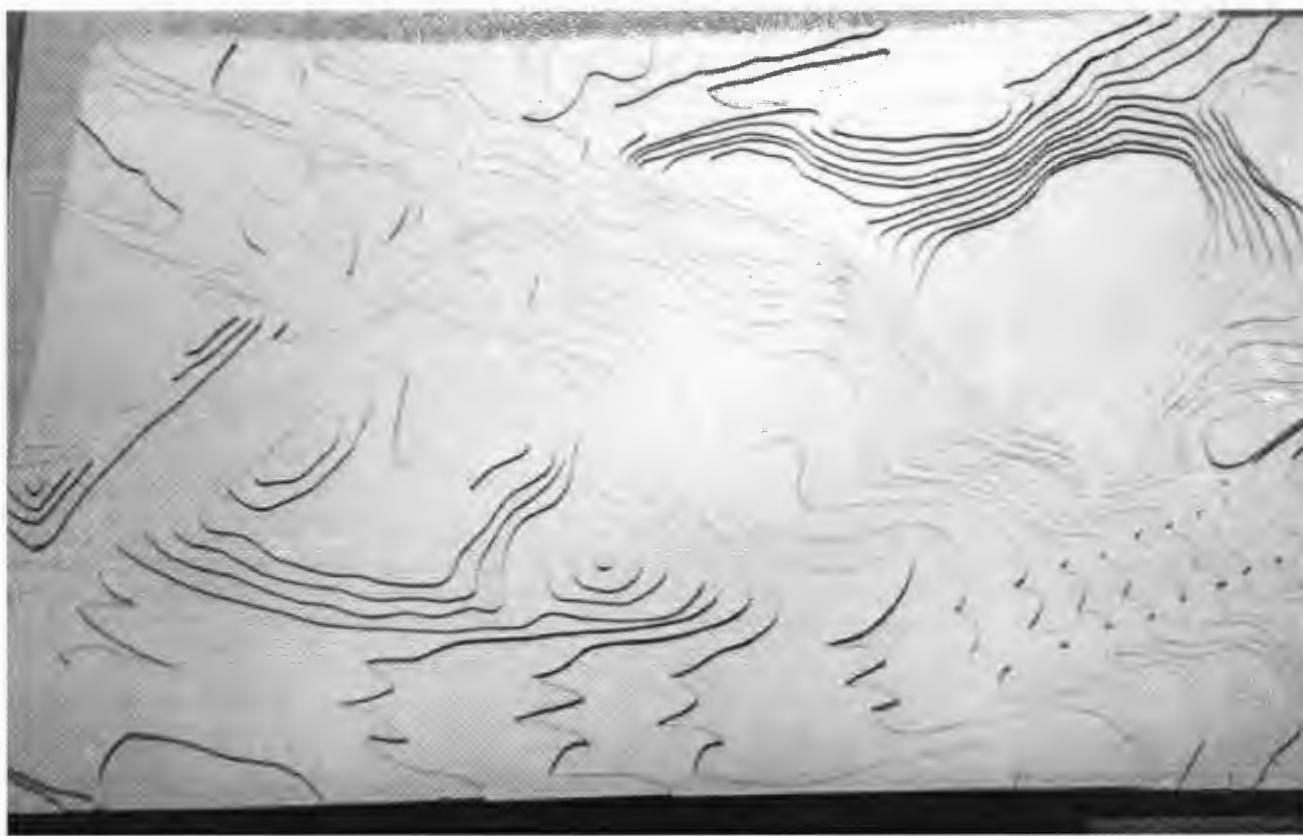


Figure 4: Topography model of site.



Figure 5: Northwest view of site.



Figure 6: Southwest view of site onlooking the main street.

THE DESIGN

The basis of my design began with three main concepts: designed conventionalism, designed transformation, and designed daylighting. A translation of this design is discussed in the following sections.

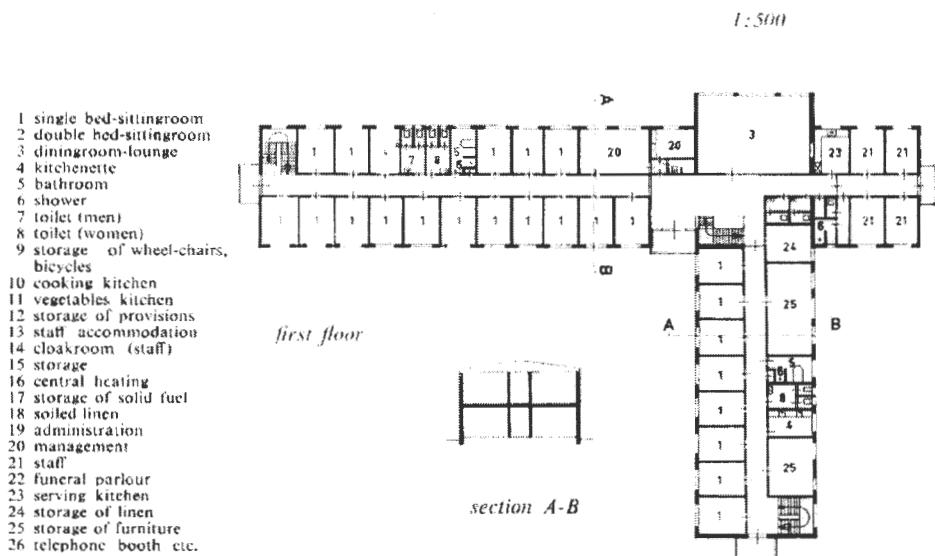


Figure 7: Plan and section of a typical senior home with a double-loaded corridor.

Designed Conventionalism

Many conventional designs of existing senior housing facilities are unimaginative, sterile, and unfamiliar. One example is the double-loaded corridor that is so often used in housing facilities (Figure 7).

The double-loaded corridor houses apartments/units on both sides of a center hallway, which allows for space efficiency. However, the design creates an unattractive

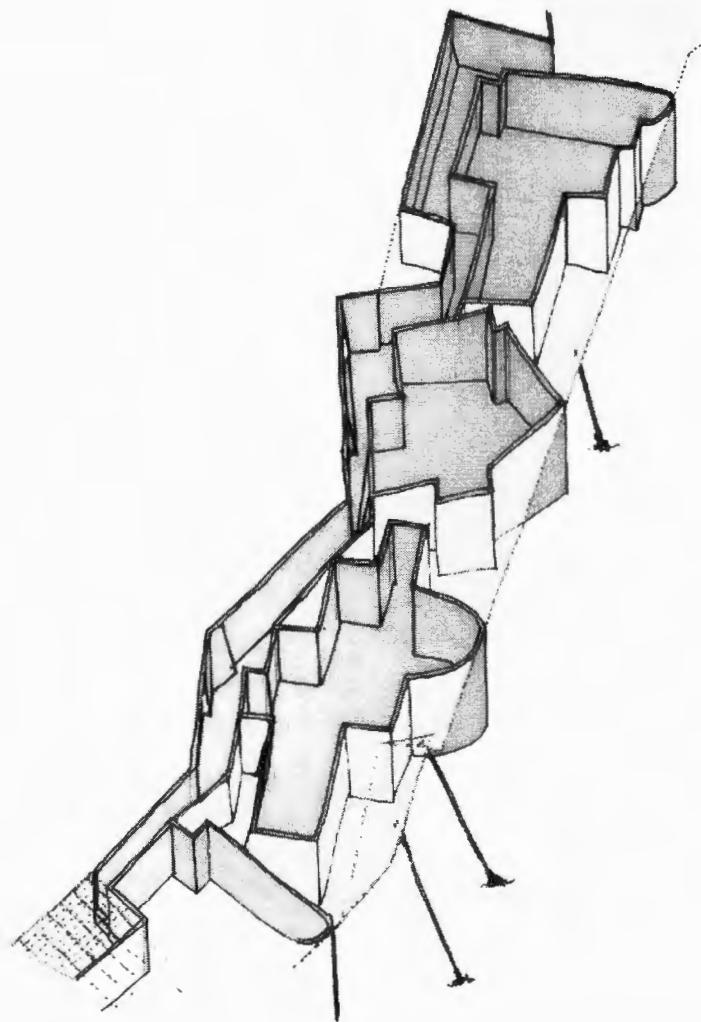


Figure 8: Axonometric drawing of facility showing the single-loaded corridor pushing and pulling through its path.

living environment. Residents are exposed to long, straight, narrow corridors with doors on either side, leading to isolation from other residents. The design does not encourage socialization or employ warmth and intrigue through natural lighting.

As a designer I am attempting to create the opposite effect. The constantly changing pathway of my proposed design creates a dynamic and appealing space, one which helps encourage various forms of interaction.

As opposed to traditional facilities, my design places more emphasis on public/private spaces within the corridor. In some areas the corridor widens enough to allow interior seating, and at other times it narrows to create intimate, personal space for walking and conversing. This is brought about by the interplay of the units' placement to the roof structure (Figure 8).

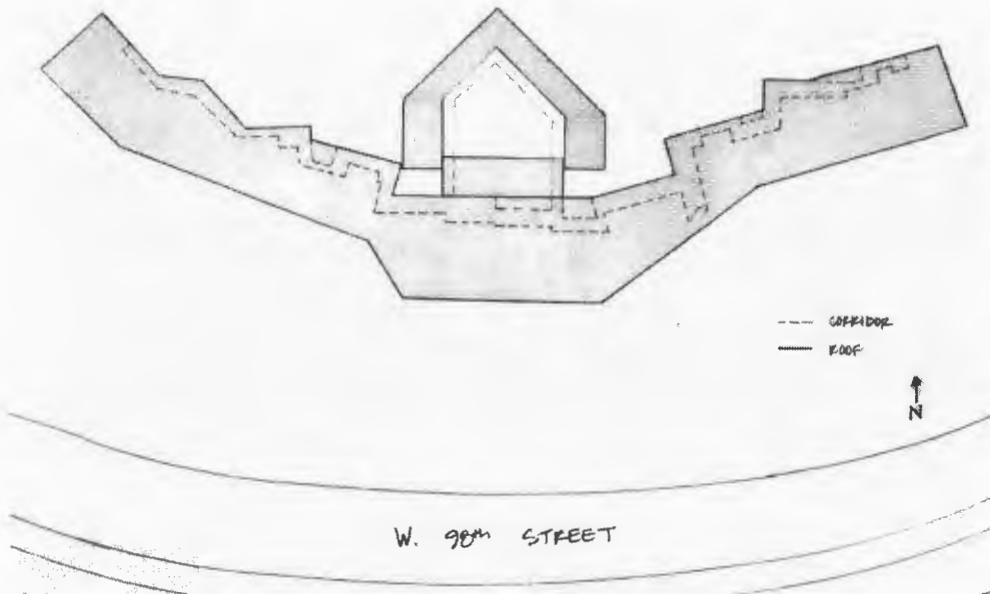


Figure 9: Plan drawing of the corridor showing the widened and narrowed portions of the path and the units' orientation to West 98th Street.

At times the interior corridor hugs the sides of the units to create a feeling of comfort, and at other times it pulls away from the units to capture and support the roof, which creates a larger, more public interior space. In addition, the pushing and pulling of the corridor creates southern exposures through the units, which allows light and activity to filter into the garden (Figure 8).

The units are longitudinally arranged to align with West 98th Street, which is to the south. To accommodate the curvature of the road, the units are placed individually at various angles. The design's curvature incorporates the maximum sunlight for each unit and allows the corridor to follow the units' twists and turns (Figure 9).



Figure 10: Personal display board supplied by a resident in a conventional facility.

The corridor attempts to engage with the interior of the residential units through an association with another designed feature: a public/private “display wall,” which allows residents to personalize their individual units.

This component of my design is in contrast to a conventional senior housing facility in which residents must supply their own display boards in order to exhibit personal memorabilia (Figure 10). In addition, whereas typical facilities sometimes offer public display areas, these boards are left blank or are used only to promote upcoming activities and events, rather than to display residents’ personal items (Figure 11).

The display wall is designed to be mobile and can be moved in front of the window to provide privacy for the resident. The wall is able to accommodate three-

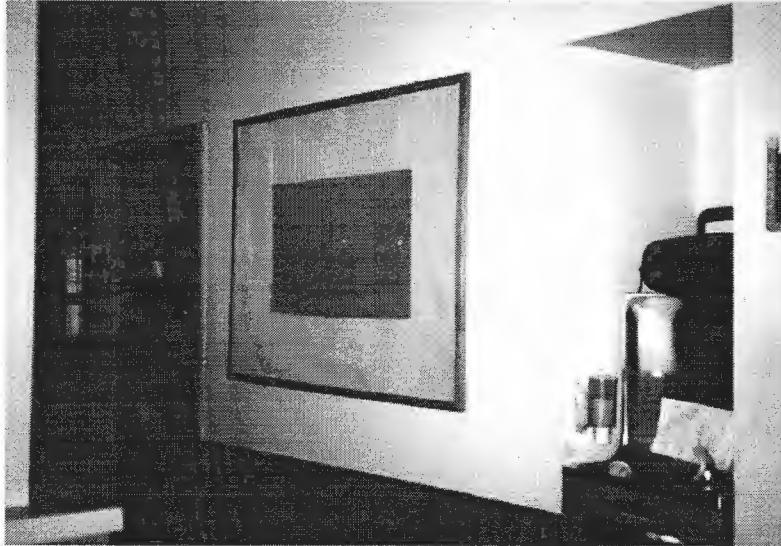


Figure 11: A typical public display board in a senior housing facility.

dimensional items and includes various recessed and protruded niches to display personal memorabilia. There is also a window in the wall that looks into the bedroom desk area. This can act as a live display when someone is seated in the room, and allows for resident interaction and socialization (Figures 12 and 13).

This display wall is located along the single-loaded corridor and can be seen from the single-loaded exterior corridor. The wall itself is tilted to expose the upright window. At the top of the tilted wall is a continuous span of glass, which makes the wall appear as though it is not supported structurally at the top (Figure 14). By tilting the wall, the window is vertically extruded out toward the exterior. This exposes the wall and attracts attention in the corridor. The wall then becomes a unit's display window for pictures, but offers privacy, since the displayed items cannot be touched (Figure 15).

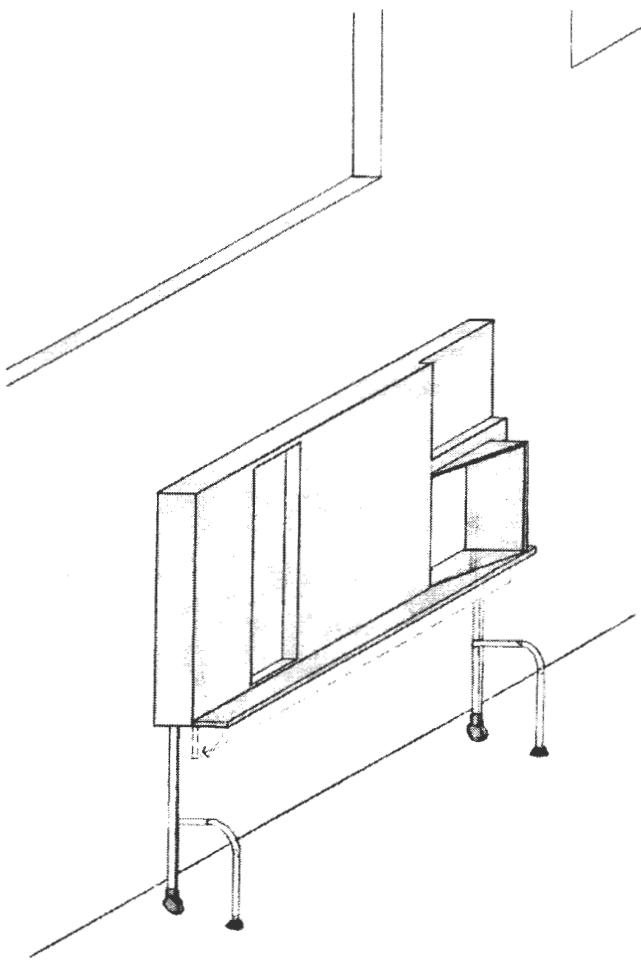


Figure 12: Axonometric detail of the movable display wall on the interior of the unit.

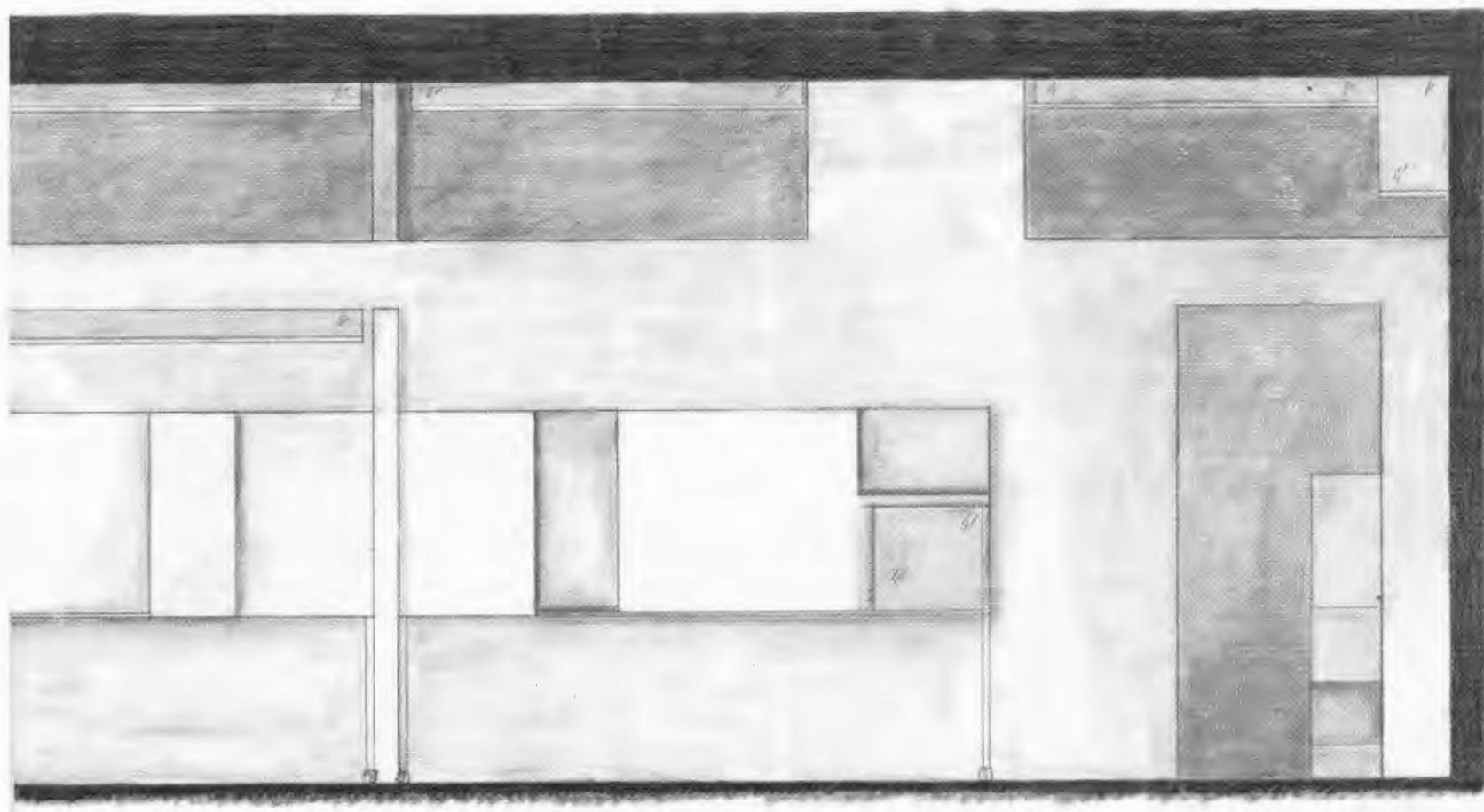


Figure 13: Interior elevation of the corridor within the unit.
Unit showing the display techniques that can be used within the wall.



Figure 14: Model showing relationship between interior corridor wall and corridor.

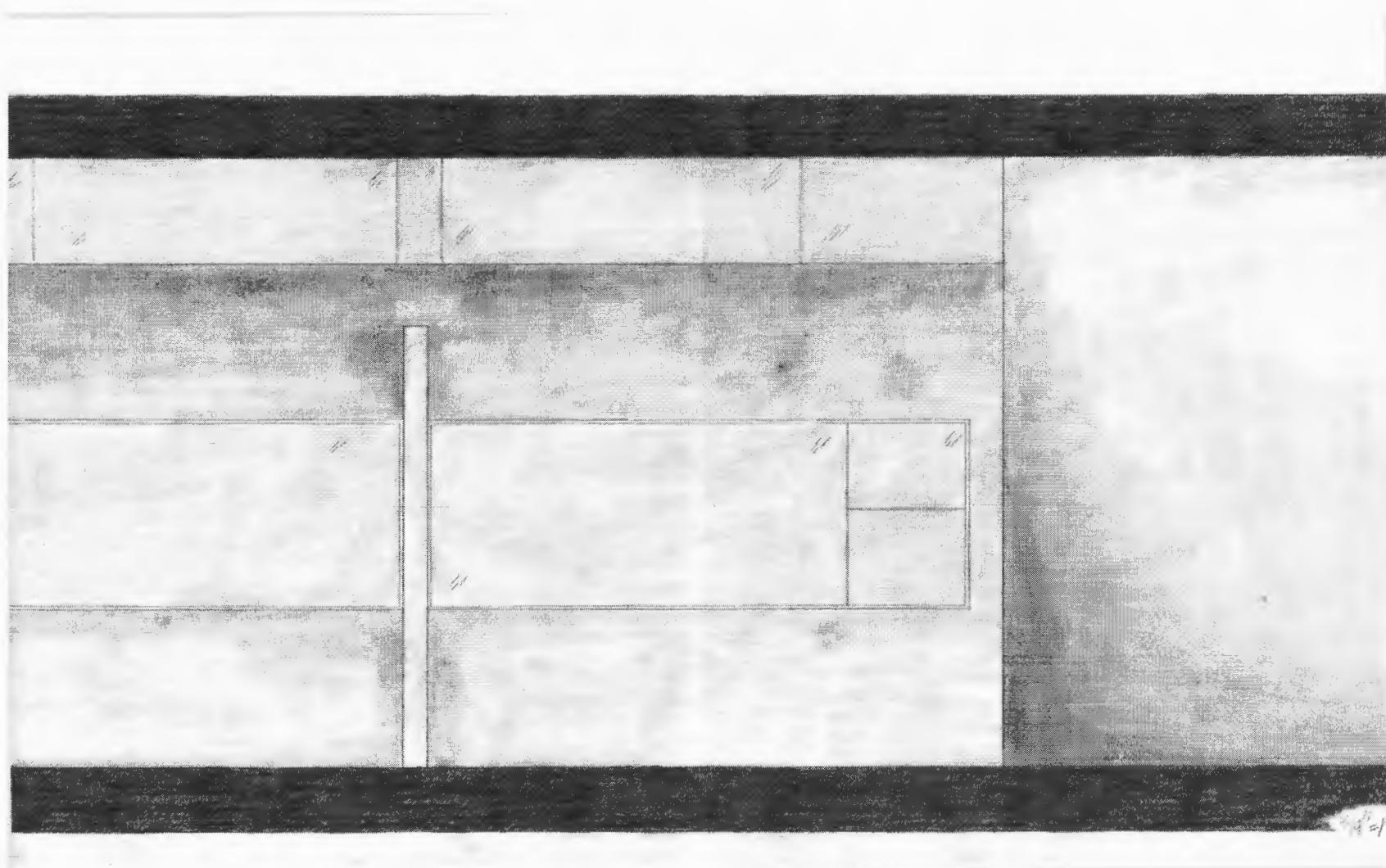


Figure 15: Exterior elevation of the corridor outside of the unit.
Unit showing how the large display window reacts to the interior.

Designed Transformation

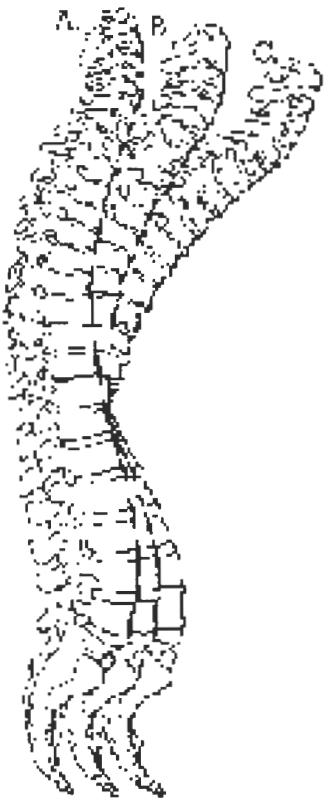


Figure 16: a. Normal spine.
b. Moderately osteoporotic.
c. Severely osteoporotic spine.

As the body ages, the spine compresses and often the body begins to bend, due to osteoporosis, injury, or frailty (Figure 16). Until the age of about 35, the body builds and stores bone efficiently. Then, as part of the natural aging process, bones begin to break down faster than new bone can be formed.⁸ This often results in the need for a cane, walker, or other item to support the transferred weight.

This process is reflected metaphorically in the architecture of my design. The constant force of an element is incorporated in my design through the effects of the roof on the exterior corridor. There is a continual downward slope of the roof, which

⁸ Assessing your bone health, <http://www.nof.org/BoneHealth.html>, (National Osteoporosis Foundation).



Figure 17: Exterior view of a typical low-pitched, gabled roof on a senior housing facility.

occasionally terminates on top of the exterior arcade and begins to show resistance from its load onto the arcade wall. This resistance is accomplished through the materials, designated locations of effects, and design of the arcade. This is in opposition to a typical senior housing facility, where a standard, low-pitched, gabled roof is applied without consideration to what sort of people will be residing in the building (Figure 17).

The roof material in my design is a paneled steel structure, which is perforated at the large overhangs to filter light down to the unit, as a screen would do. Where the roof encounters the corridor wall, its impact is a continuous point load. With the continuous load inflicted on the wall, it is imperative that the wall be constructed with large amounts of

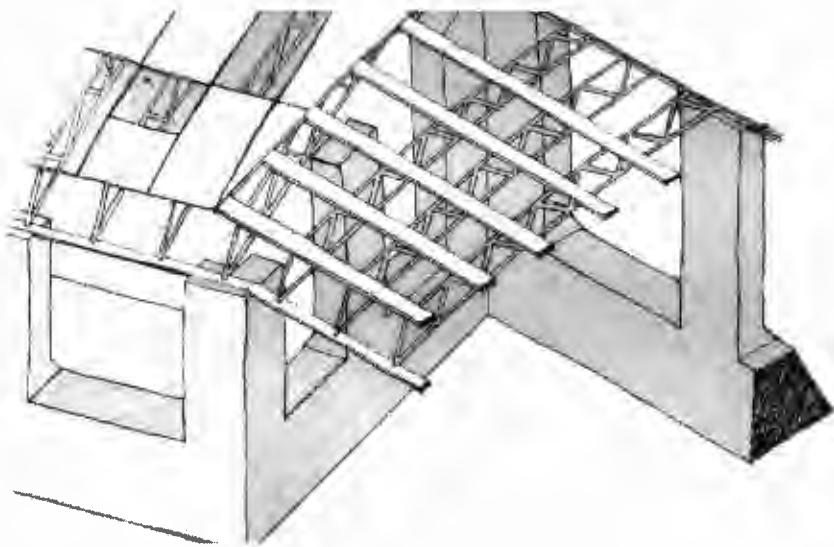


Figure 18: Perforations in the large overhangs, and instances where it deters from the corridor.

mass to absorb the reaction of the force. However, over time deterioration will still occur and to reveal that will engage the viewer.

The transformation that occurs along the corridor varies according to the roof structure and corridor pathway. At times -- when the corridor does not support the roof -- the roof continues to extend outward to create a large screen effect (Figure 18).

As the body ages, it eventually shows the push and pull of everyday life. The corridor wall of my design appears as though it is being pushed into the ground as a result of the roof's force. While pressure is being forced into the ground on the north side of the facility, it is seen on the south, or front end, as a support column that is forced out and

extruded up from the ground to uphold the roof overhang (Figures 19a and 19b). This situation suggests a cause-and-effect reaction.

When looking at typical senior facilities, there is nothing innovative in how the roof meets the wall (see Figure 17). The only similarity is that the typical facility also uses the exterior wall as load bearing.

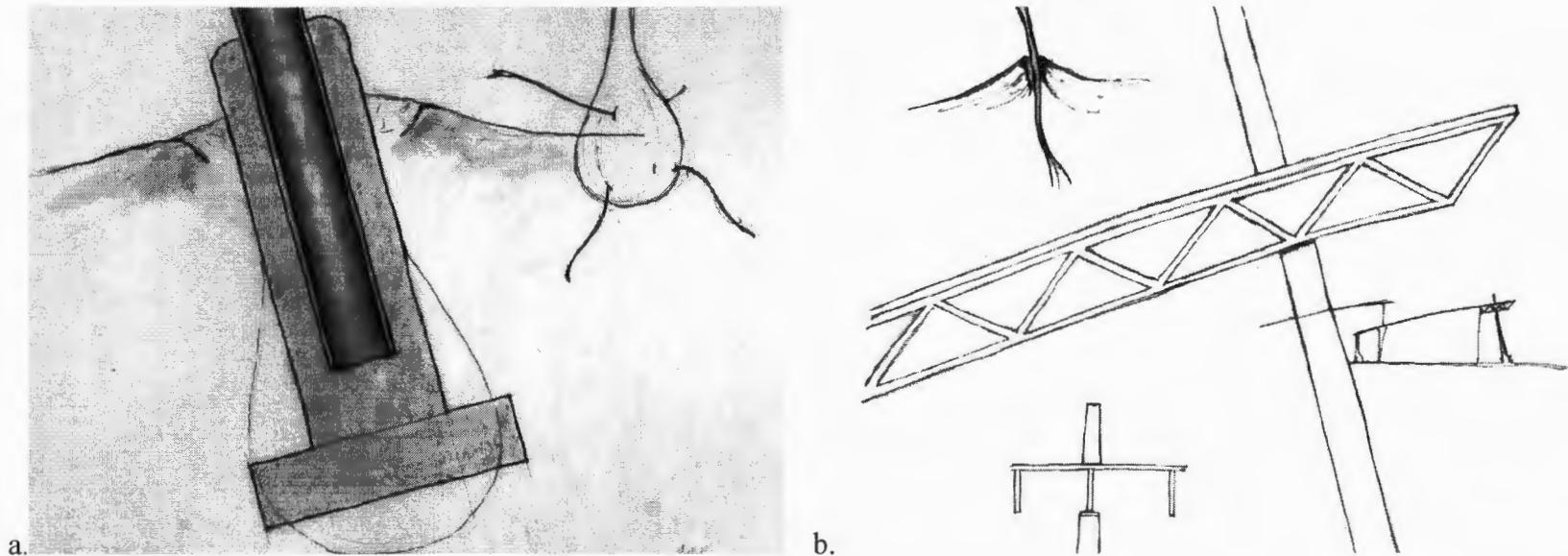


Figure 19: a) Anchor device for the roof support and its relation to the ground.
b) The reaction to the pushing as a supporting device is extruded.

Designed Daylighting

The emotional benefits and energy efficiency of natural daylight have been studied and proven to stimulate the mind and the spirit of the body.⁹ By incorporating natural light into the new design, it not only increases the energy efficiency of the building, but also makes the space more attractive and inviting.

Incorporation of natural light is accomplished in my design through orientation of the facility and through various design effects that make up the interior of the units. A typical senior facility incorporates natural light in the building by adding a window to the door at the end of the long, double-loaded corridor (Figure 20) and single window openings within the various rooms.



Figure 20: View down a typical double-loaded corridor of a senior housing facility.

⁹ Regnier, Assisted Living Housing for the Elderly: Design Innovations from the United States and Europe, 25.

The lack of natural light in traditional design emphasizes the use of artificial light. As indicated in Figure 20, the use of artificial light can pose many problems, such as unbalanced lighting conditions, which would result in safety issues, and a sense of being enclosed in a basement-like setting.

In designing an innovative roof system, I also wanted to incorporate natural light. In various places throughout the facility, my roof design creates a grand perforated overhang that helps to protect the units from vast amounts of direct sunlight. This shading device still allows large amounts of indirect light to penetrate the structure. The perforated overhang creates a variety of conditions when it deviates from the corridor, such as a trellis or awning. When the perforations are found covering the corridor the natural light is entered through

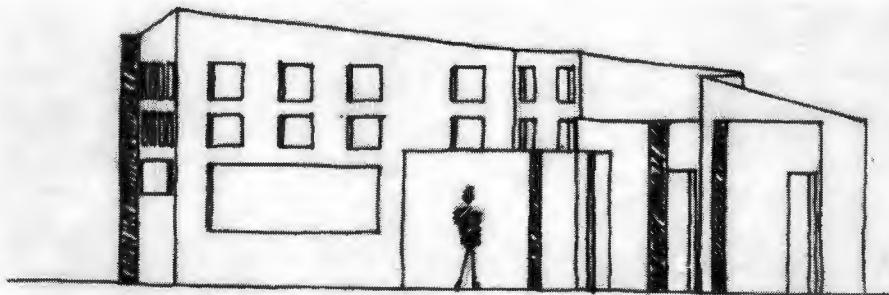


Figure 21: Elevation drawing showing the varying wall heights that help filter daylight to the back of the units.

glass to provide shelter against the weather (see Figure 18).

The slope of the roof purposely opens to the south to capture maximum sunlight. The entire roof is structured to slope down to the north. The southern façade stands at 16 feet in height and slopes to the north to 10 feet in height. This maximizes the daylight to the interior of the units. This, again, is in direct opposition to the conventional, low-pitched, gabled roof found on typical senior facilities (see Figure 17).

Interior walls within the units themselves range from 8 feet to 10 feet in height, and open to the roof (Figure 21). This helps filter natural light to the northern-most parts of the unit and supports the concept of transformation by making it appear that none of the

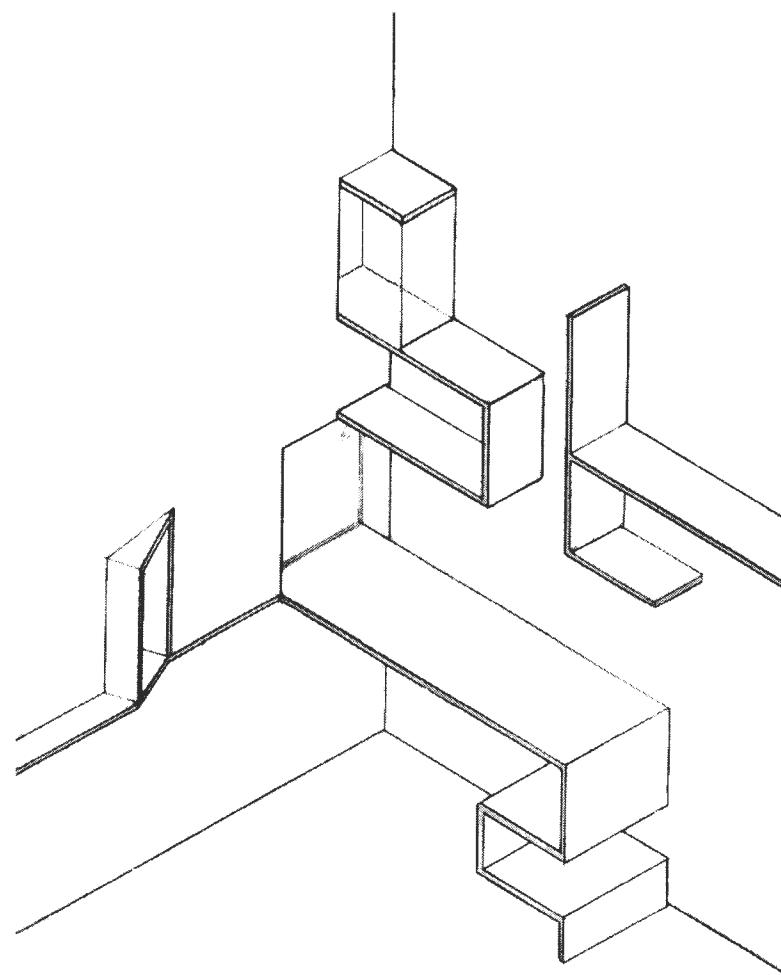


Figure 22: An axonometric of the corner of the bedroom showing the different designs of windows.

interior walls are structural. The roof's load is entirely born by the exterior corridor wall.

The most developed example of natural light optimization is seen in a unit bedroom (Figure 22). In the corner of the bedroom is a built-in desk and shelves. The desk is formed through an extension of the windowsill that continues along the wall. The window is flush against the exterior wall, which accentuates the desk as the sill. The window also acts as a light source for the desk. This addresses another physical change in the body – as aging occurs, brighter light is needed for reading.¹⁰

Above the desk, on the top shelf, is a protruding window that attracts viewer attention and provides a counterbalance to the recessed window below. The

¹⁰ Jon Hendricks and C. Davis Hendricks, *Aging in Mass Society: Myths and Realities*, (Cambridge, MA: Winthrop Publishers, Inc., 1977), 78.

protruding window does not create a direct light source for the desk, but reflects the light indirectly to the desk by bouncing it off a nearby shelving unit.

A person seated at the desk can also utilize a window situated behind the desk. This window is oriented to provide exterior views only for someone seated at the desk (Figures 22, 23, and 24). Incorporating these various window designs into the new facility breaks the standard single window design found in the individual units of conventional facilities.

In a typical unfurnished bedroom of a senior housing facility, the bed is usually placed in front of the window. This forces the chair to be positioned in the corner, where it is obstructed from maximum daylight (Figure 25).

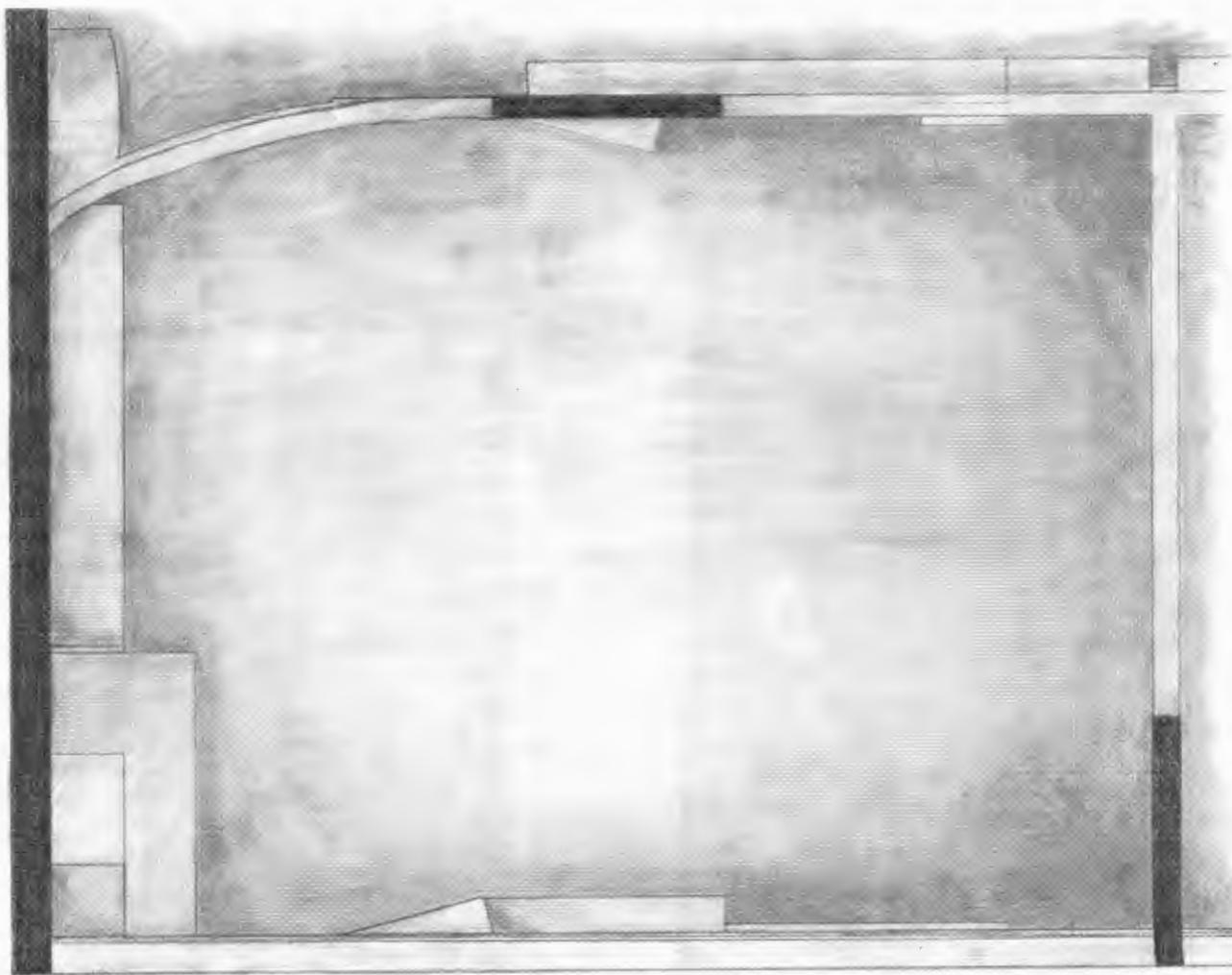


Figure 23: Plan of bedroom.

Unit showing built-in desk with shelves, various wall heights, and recesses and protrusions in the display.

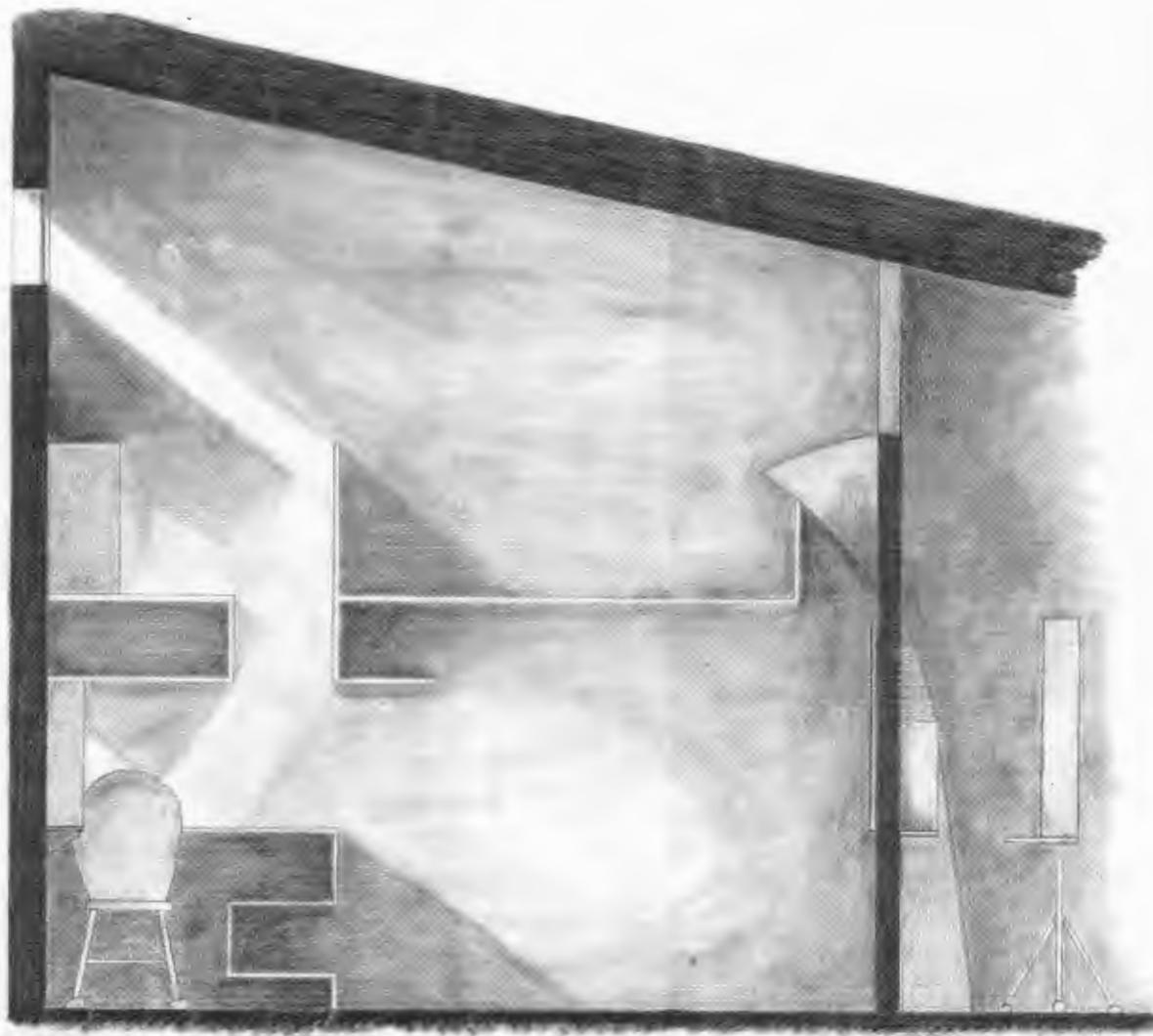


Figure 24: Elevation of the west wall of the bedroom.

Unit showing the lighting effects that are created through the use of windows.

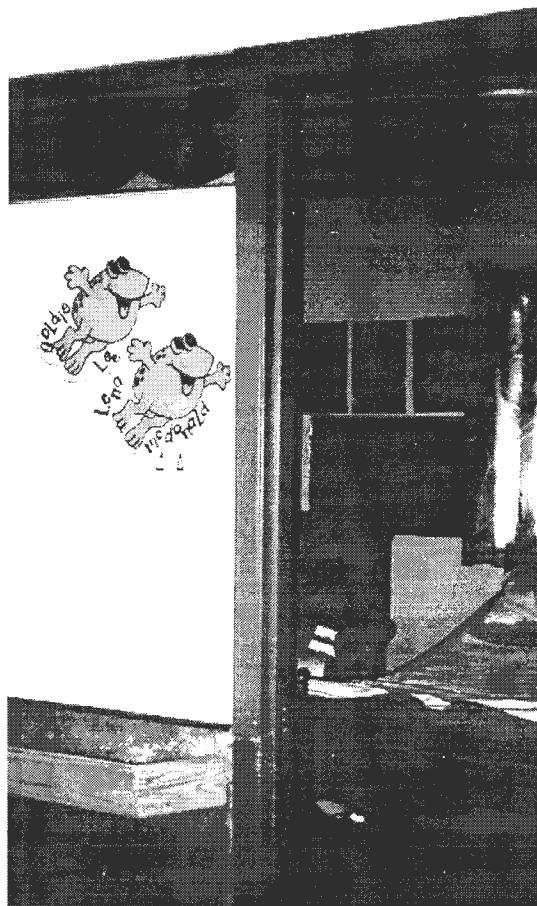


Figure 25: Common position of the bed in front of the window and the chair in the corner in a typical senior housing facility.

Since, typically, residents prefer windows near their beds -- which allows them to wake and sleep with natural light -- my design incorporates a window next to the bed. There, an elongated window can be utilized at bed level. If the natural light is not desired, a shelf above the window can be folded down to block the light (Figure 26).

The folded-down shelf effect can also be used with the clerestory window that stretches the length of the bedroom. This window is designed to capture daylight and moonlight without sacrificing privacy. A shelf located beneath the window can be folded up or down to allow a resident to adjust how much light penetrates the room. If the shelf becomes inoperable for the residents, curtains or blinds can easily be affixed. This, again, is to emphasize the usage of natural light as opposed to excluding it, as in the conventional facilities.



Figure 26: Elevation of the south wall of the bedroom.

Again, a unit showing the lighting conditions that are created from various windows.

CONCLUSION

Until now, families faced with choosing appropriate private care for their aging relatives have faced a dilemma. Neither families nor their elderly parents were happy with the options available to them.

Through the choices I made in designing an assisted living facility, I have attempted to preserve the dignity of the aging population by incorporating three concepts into my design. The three concepts were used to create a more engaging and intriguing living space for the residents.

- First, I attempted to choose a site that would give residents opportunities for socialization and mobility and accommodations that would address their health and locale concerns. And to create a more familiar atmosphere, I attempted to replace typical senior housing design conventions with innovative designs.
- Second, weight shifts in the aging body were incorporated metaphorically through load shifts in the building.
- Third, natural daylight was integrated into the design to maximize southern exposure, creating variations on filtered light through the building and individual units and creating stimulus to the mind and spirit of the body.

By assimilating these three design concepts, my overall design attempted to create a home where the elderly could *live* rather than *die*.

This thesis is just the beginning of many possible ways to look at senior housing for the future. Further development would include research of typical or conventional senior housing facilities and detailed comparisons with the newly innovative design. A more thorough research would allow the innovative design to further attempt to break design conventions by exploring what is lacking in conventional facilities and in what way those insufficiencies can be improved.

APPENDIX

PRELIMINARY DESIGNS

These designs were done early in the design process, so many details have changed, but the shape and style have remained constant. All of the designs are oriented to the south to utilized passive solar energy.

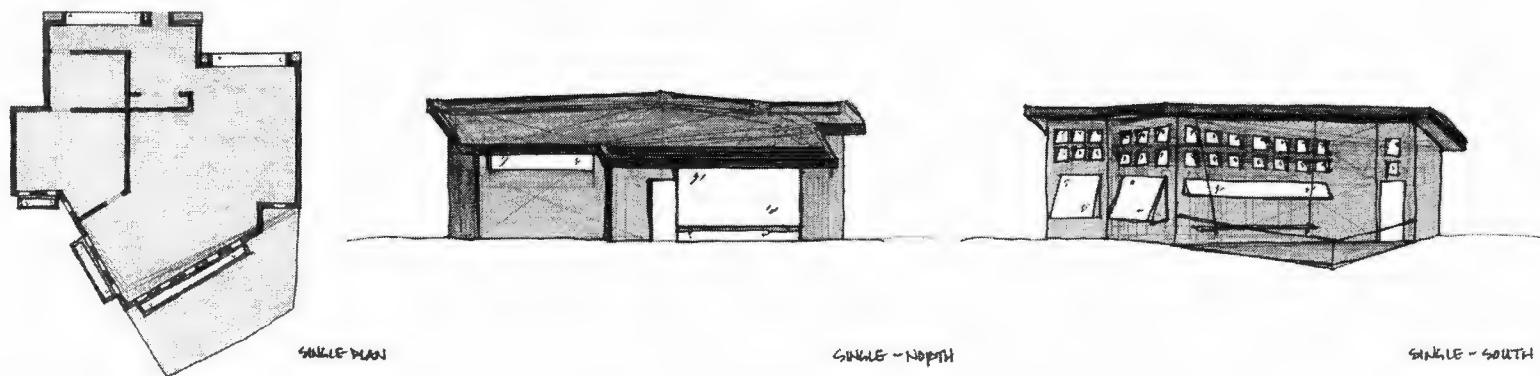


Figure 27: Single unit designs of plan, north façade, and south façade.

Elevations showing the slope of the roof to capture as much southern exposure as possible.



Figure 28: Double unit designs of plan, north façade, and south façade.
The plan showing the interior single-loaded corridor display space.

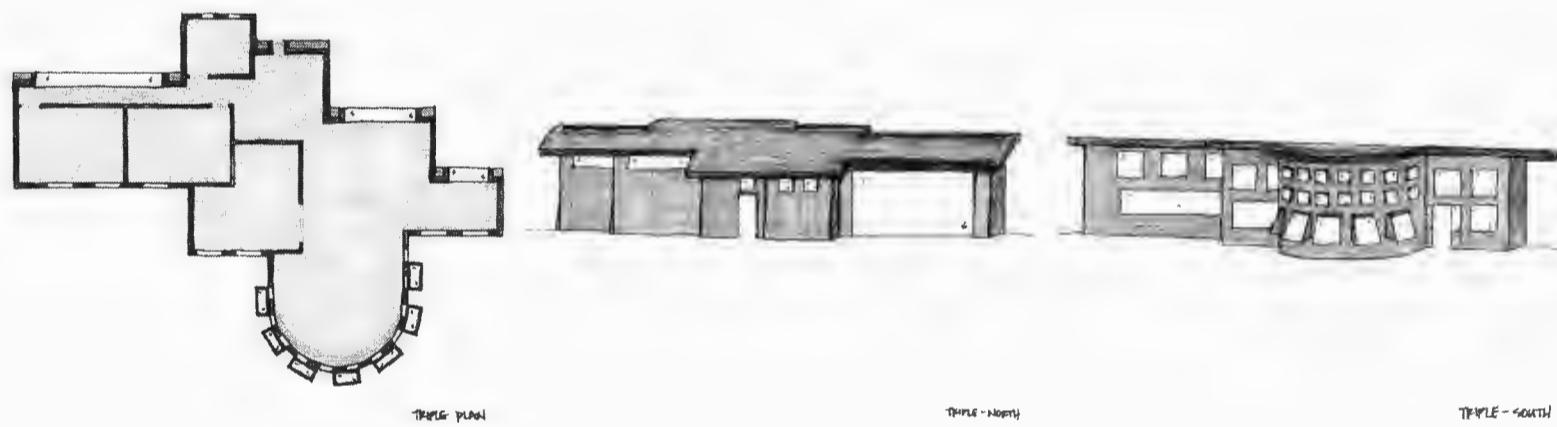


Figure 29: Triple unit designs of plan, north façade, and south façade.

Large window on the north façade showing evidence of a display window from the exterior corridor.

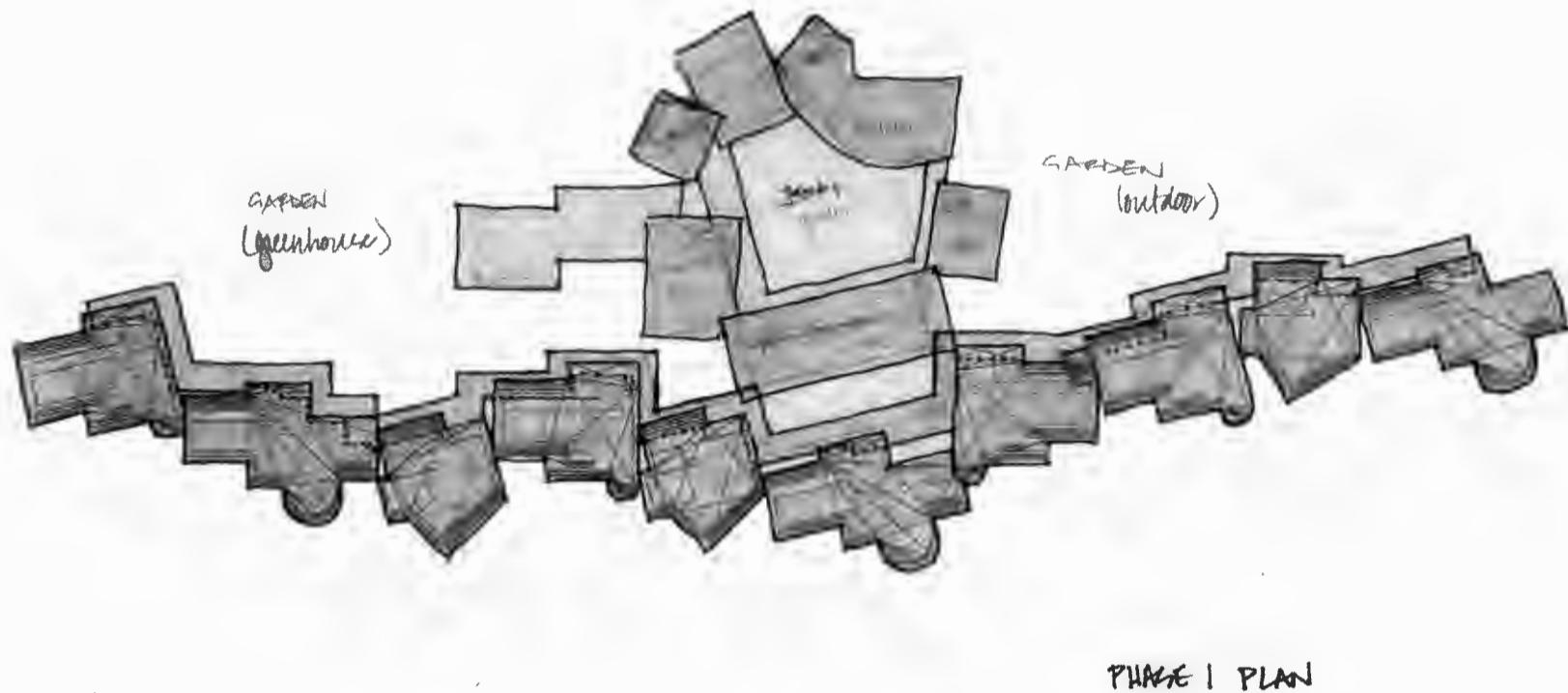
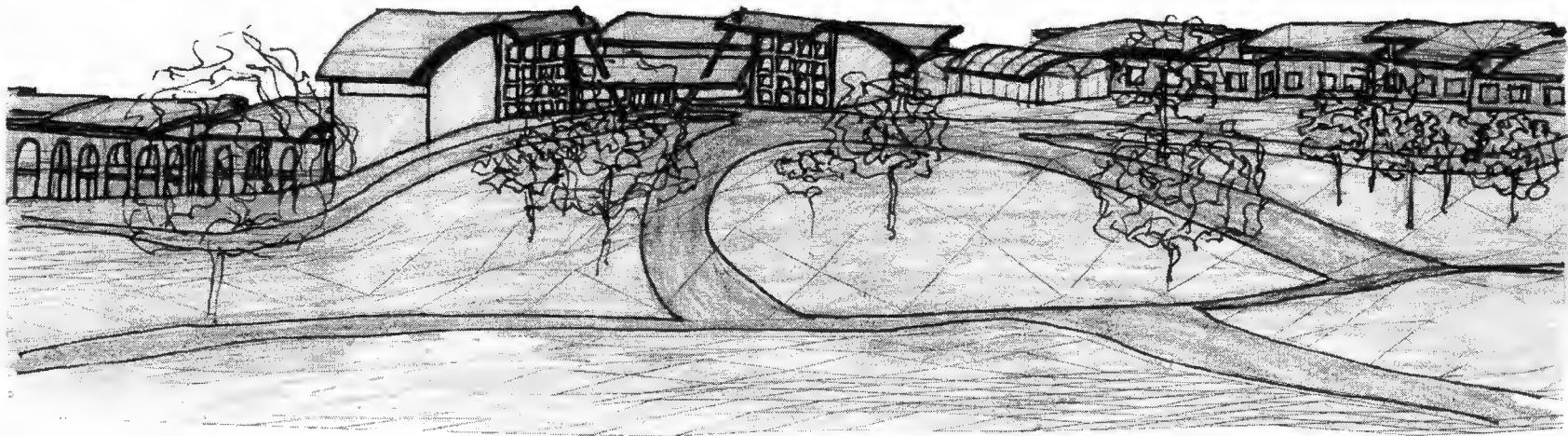


Figure 30: Proposed plan of the facility.

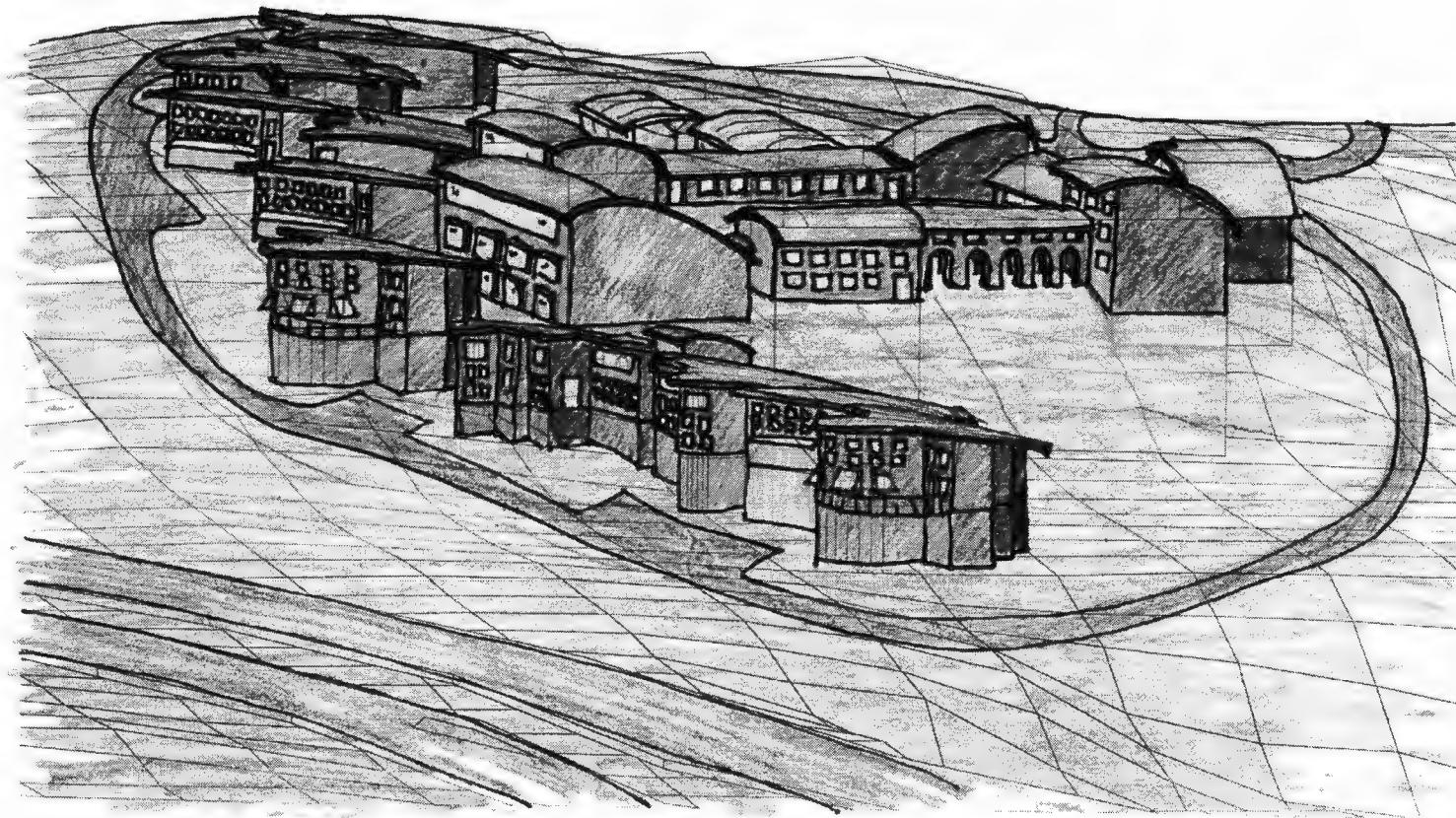
Units showing varying orientations to capture southern exposure and revealing how light can penetrate to the north side through breaks in the units.



VIEW FROM NORTHWEST

Figure 31: View of facility from the northwest.

Angle showing the slopes of the roofs, the exterior corridor, and the changes included when the second floor is added.



VIEW FROM SOUTHEAST

Figure 32: View of facility from the southeast.

AUTHOR'S NOTE**APPROACH TO DESIGN**

Figure 33: Plaster, clay, and glass conceptual model indicating how the three concepts interact with each other.

This thesis was generated by three main design concepts: conventionalism, transformation, and daylighting. These were the impressions, motion, and energy of the design. Each could, and did, affect, complement, and enhance one another, developing my three concepts. All three were needed to make the design idea whole.

The conceptual model (Figure 33) was made early in the design phase to help clarify the relationship between the concepts and symbolize a 3-in-1 idea of my design. The three-part conceptual model was pieced together with materials that best represented each related concept.

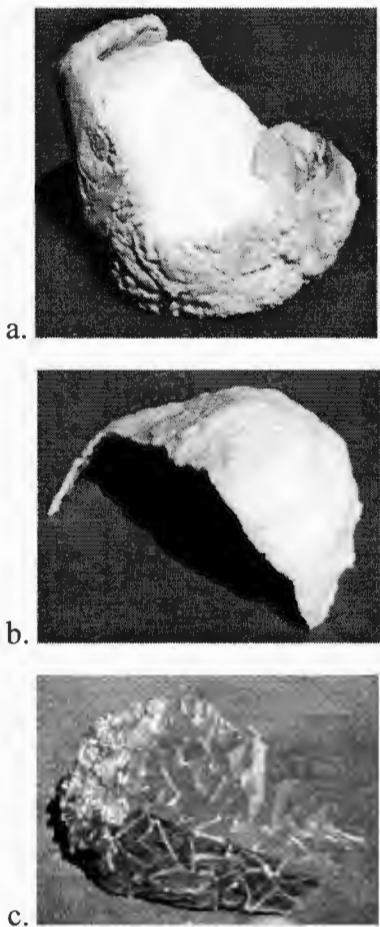


Figure 34: a) Plaster cast in tinfoil to get strong permanent impressions.
b) Clay formed to represent transformation because of its malleability and constantly changing nature.
c) Broken glass shaped to represent energy brought in by daylight.

First, plaster was shown as a strong, solid, rigid form. Plaster reveals impressions made upon it through casting, as stereotypes make unchanging impressions on people (Figure 34a). This was used to represent conventional ideas of the elderly. Second, clay was shown to be an easily transformable material (Figure 34b). As a material, clay is never in a static state; therefore, it requires support through design and weight transfer. This was used to represent the body's transformation through aging. Third, glass was seen as lacking stimulus without the effects from plaster and clay. It was placed on the top and down one of the sides of the model to symbolize the energy of a passive solar building (Figure 34c). This material was used to represent daylighting.

The three concepts helped me identify the elements of my design and create an assisted living facility that incorporated all three ideas.

The individual definitions helped in understanding not only what the words meant, but also how they would be incorporated into my design.

Conventionalism

adherence to or advocacy of conventional attitudes or practices. a conventional expression, attitude, etc. the view that fundamental principles are validated by definition, agreement, or convention.¹¹

Transformation

act or instance of transforming; marked change in appearance, usually for the better; map of one space onto another or self.¹²

¹¹ Webster's Dictionary, (New York: Random House, 1991), 294.

¹² Webster's Dictionary, 1416.

Daylighting

the period of light during a day; public knowledge or awareness – openness.¹³

¹³ Webster's Dictionary, 347.

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This ones for you grandma, I miss you!

(Doris June Peterson, March 1918- July 1996)