

Designing for Adaptable Living: Creating Places for Home and Community

by

Lindsay Nesbitt

A Thesis submitted to the Faculty of Graduate Studies of

The University of Manitoba

in partial fulfilment of the requirements of the degree of

MASTER OF INTERIOR DESIGN

Department of Architecture

University of Manitoba

Winnipeg

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Acknowledgments

I am grateful to many people for the help they have so graciously given throughout this process. I owe a great deal to the guidance and knowledge all my committee members have provided. I especially want to thank Kelly Beaverford for her continuous inspiration and mentorship. Kelly's innovative teaching style and unique course content have provided a stepping stone to this practicum and enriched my design philosophy and knowledge. Due to the lengthy practicum process I was unable to have Kelly as my advisor through the entire process, but Lynn Chalmers seamlessly stepped into her role. I would like to thank Lynn specifically for her thoughts on my millwork design and encouragement until the end. Susan Close and Peter Sampson also provided direction during the course of the practicum. Susan provided guidance and encouragement to my written work, whereas Peter was influential at the design phase. My group of colleagues have truly been amazing. I am so lucky to have had such a supportive group of classmates and friends. They have provided endless resources, from books to inspire, to an ear to listen, thank you all.

I am fortunate to have friends outside the faculty, to provide perspective. Especially, Kate and Steph, you are astounding people and friends. Thank you for everything. I would also like to thank my partner Robin, thank you for your warmth and understanding. Finally I would like to thank my family. Jamie, your humour and creativity never goes unnoticed. Mom you have been a constant supporter in everything I have done. Both you and Les have given me so many opportunities, and I am forever thankful. I am very proud of my accomplishments which are in large part to my overwhelmingly supportive friends and family.

ABSTRACT

Emerging demographics and evolving lifestyles in Canada indicate a need for a shift in housing design. Presently, there are numerous potential homeowners who could benefit from a new housing typology, yet large suburban homes continue to flood the housing market. This practicum responds to the current disparities in Canadian housing with analysis of literature and precedents and ultimately a responsive design solution.

My study includes the following section, Home and Community, Adaptable Living, and Affordable Living. Jane Addams' Hull House, Hubert Bird and Green, Blankstein, and Russell's Wildwood Park, Truus Schröder and Gerrit Rietveld's Schröder House, along with Avi Friedman's Grow Home are precedents that are critically examined for their significance to this project.

Using the maisonette style apartments (1914) located in the downtown core of Winnipeg, Manitoba, compact and flexible living environments are created based on four fictional case studies. These case studies have been selected based on growing trends in population, demographics of the surrounding area, and diversification. In addition, to living units this project has created a sense of community. The design of common areas provides residents the opportunity to take ownership and pride by asserting their identity into the environment.

Interior design facilitates pragmatic solutions to the challenges in the current Canadian housing market. Adaptable and affordable living is a necessity now, one that will grow in demand and significance for the future.

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Introduction

The composition of Canadian families is changing (2001 Census). Avi Friedman & Krawitz emphasize this change by stating that, "...homes are no longer a product of pure design but a response to forces beyond the control of the designers...evolution of the home through elements of the human condition and changing society" (2002, p.11) . The diversification of Canada's population challenges the way Canadians are living. Smaller household sizes, unique family composition, along with varying social values, have led to the need for innovative housing.

More specifically this practicum project is a result of an interest in Canadian demographic trends. Canada's 2001 Census data highlights many interesting factors that are influencing the way Canadians are living, such as: Canada's population growth is slowing due to decreasing fertility and death rates (Statistics Canada, 2001). Logically this would suggest a decrease in housing need, while the opposite is true. There are groups or types of individuals within Canada who require unique types of residential environments. These include, but are not limited to, single people looking for independent housing and immigrant families. Changing household needs are directly indicated by statistics such as: the household size fell from 3.9 people in 1961 to 2.6 in 2001. While this drop in household size is partly due to the drop in population, people are also deciding to live differently. One-person households are the fastest growing household type, followed by lone-parent families and couples without children¹. Other contributing factors are lifestyle choices: many Canadians are choosing to dedicate

¹ There has been an increase from 9 percent of single-person household in 1961 to 25 percent in 2001(Statistics Canada, 1961 and 2001, Analysis Series)

themselves to their careers instead of starting families (Statistics Canada, 2002b).

Although statistical data was an impetus for the project, my design education and personal experiences have also been motivations. In our undergraduate degree theory classes, we often discussed the problems associated with suburbia, which provoked investigating potential solutions to urban decay. As a young designer hoping to plant roots with the purchase of a home, I began to think about the type of accommodation I could not only afford, but would like to live in. With further research I discovered that single young professionals like myself were not the only demographic in need of a unique housing typology. I became convinced that everyone should have the privilege of owning a home. This vision may be somewhat utopian, but I felt strongly that this project should undertake a social agenda, coupled with a compelling design problem.

The project addresses the need for the creation of flexible, adaptable and distinctive living environments that reflect current Canadian residential trends. The study is informed by theories, concepts and building case studies impacting contemporary living environments. The key areas of investigation are: the meaning of home; personalization, belonging and identity in living spaces; the formation of community in urban dwellings; and adaptability and efficiency for evolving living spaces. The theoretical framework establishes an educated platform for the design investigation which supports four distinct demographic profiles — single male, common-law couple, single mother with child, elderly woman— to express the lifestyle and spatial needs of a cross section of Canadian home-buyers. The design implications resulting from the analysis of the theory and user profiles reveal the need for efficiency and adaptability in the interior design of the living environments. The design strategy illustrates an urban residential

space that caters to a diverse demographic and evolving lifestyles. I have chosen to locate this practicum in the downtown Winnipeg at 440 Assinaboine Avenue, the former Chelsea Court Apartments. This site has been chosen based on a set of guidelines further explained in the site section. The rationale was based on the building's flexibility, location to services, and to further promote the rejuvenation of the downtown.

This project expands beyond interior design, and moves from the macro scale of the urban environment to the micro of furniture design. The information for the project has been pulled from various disciplines of study including statistics, sociology, psychology, city planning, architecture, interior design, and industrial design. As explained above, statistics were a starting point to discover the gaps in the current Canadian housing market. Sociology and psychology contribute to my understanding of why people live the way they do, and more specifically how human interaction takes place in the home. City planning has provided this project with tools for creating a successful community, while architecture has suggested the importance of creating a seamless transition from community to interior. Various interior environments have been studied to inform the best solution for flexible and affordable interiors. Finally, this project also draws on industrial design practices which have informed compact efficient furniture.

Information relevant to the project has been collected from a variety of sources, including Statistics Canada, educational journals, design based literature, and some internet sources. Each source has been examined firstly for its relevance to the theoretical methodology and secondly for its design contribution. Other methods of inquiry include speaking with individuals and organizations, for example Habitat for Humanity. These

conversations have not been formally recorded but rather have led to further data collection and literature analysis.

Critical theory such as semiology has been studied as a way of understanding how meaning is constructed within the home. Semiotics helps explain how humans perceive space, and also how designers can improve space by invoking meaning and belonging. Phenomenology was also used as a means of understanding the underlying human condition and the significance of dreams and the unconscious.

Other areas of research such as urbanism were studied to establish a connection between home and community. Urban decay is one of the possible factors which contribute to the lack of meaning and identity in the home. By gaining the knowledge of the effects of sprawl, rejuvenation of the urban core has become an important objective to this study. Housing concepts such as adaptability and affordability have been researched based on the targeted users for this practicum. Design theory such as Friedman's 'add-in' or 'add-on' methods, and Brand's shearing layers explain the significance of flexible environments and the potential methods of executing the design of adaptable space. The research has led to many linkages and discoveries, and ultimately a set of design strategies which inform the design intervention. From the beginning I have struggled with the liminality of this project, which is positioned between the disciplines of interior design and architecture. The progression of ideas brought forward in this project demonstrated the project is more than a design problem, it encompasses many disciplines that ultimately influences the way we live as a society.

The outcome of this interior design practicum project is a conceptual residential design solution that responds to contemporary lifestyles and the spatial needs of a

changing Canadian population. The project ultimately seeks to instil a sense of meaning and 'home' by illustrating notions of personalization, identity, adaptability, and community in the design of multi-family, urban living environment. The wide applicability of my conclusion leads to the driving question of this practicum: How can designers create meaning in a home with a variety of occupants with ever changing needs?

Literature Review

The literature review serves to provide background for the discussion surrounding the selected topic. The relevant Literature has been compiled into three sections: Home and Community, Adaptable Living, and Affordability. These topic areas have been selected based on their relevance and importance to the design problem. Each section highlights thoughts by key authors and establishes a point of argument for this project. This information and analysis is the background to formulating an appropriate design solution.

The Home and Community section of the literature review investigates the constantly evolving meaning of home and its implications on space, personalization as a way of instilling identity and belonging, and the effects of community on the interior environment. Next, the Adaptable Living section of the literature review discusses adaptability as a design strategy. The analysis of this section is formalized by Friedman both an educator and an architect, who investigates flexible environments. His methods of adaptability have been built upon here to provide residents with the opportunity to adapt space to meet their evolving needs. Lastly, the Affordability section investigates affordable design methods on the basis that the emerging demographic studied through this project requires housing that is cost effective.

The outcome of the literature review and the precedent review is the developed design criteria, along with a design program, which support a responsive solution that addresses housing for a changing population. Finally, I will review the work to reflect on possible further investigation, as well as strengths and weaknesses of the process.

Home and Community

When creating a living environment most people strive to create a sense of belonging, and ultimately a sense of home (Leach, 2002). Many people are qualified to build a home, but creating a connection between the occupants and the structure requires careful consideration and consultation.

The Meaning of Home

Evolving demographics means the way homes are designed and built needs constant review. Consequently the meaning of home must also be re-examined. In the past the nuclear family fostered a concrete sense of home, on account of many families having the same home for most of their lifetime. Retaining meaning in the physical environment is difficult because of changing lifestyles, broken homes, new household configurations, and transient lifestyles. Toby Israel's book *Some Place like Home: Using Design Psychology Create Ideal Places* (2003), argues "people's housing needs change depending upon their external situation including the composition of their household and their economic situation" (p. 113). This issue begs the question, how can designers create meaning in a home when the occupant's lifestyle or needs are constantly changing?

By definition, interior designers have a responsibility to improve quality of life; therefore the interior designer needs to understand what is important to their clients today and in the future². Although the needs of homeowner should not be generalized there are some significant trends in the way our society is increasingly choosing to live. These trends are discussed by Clare Cooper Marcus in her books and articles. Most specifically

² Interior design is a multi-faceted profession in which creative and technical solutions are applied within a structure to achieve a built interior environment. These solutions are functional, enhance the quality of life and culture of the occupants, and are aesthetically attractive (NCIDQ, 2004).

she examines how people relate their emotions to their physical surroundings, and to what degree people's environments affects their behaviours. Marcus suggests that, because North American society is constantly evolving, we attach more meaning to objects rather than place (1995). If Marcus is correct in assuming that we are more connected to objects than place, designers may consider space as a vessel for belongings, whereas in the past, the home was a vessel of memories and experiences.

Gaston Bachelard's book *Poetics of Space* (1958) challenged the current thoughts about architecture with his philosophical interpretation of the home. The period of late modernism with emerging structuralism and formalism was distant from the phenomenological understanding Bachelard was pursuing. His work is significant to the design community because studies individual's experiences and memories within space. Mid- twentieth century architecture was based on precedent or prevailing beliefs, not unlike the architecture of today. The suburban home is based upon a deep-rooted family structure of the past rather than the diverse demographic³ of today. I believe this has caused society to be distanced from the emotions and feelings associated with space, because the home is most often not a reflection of the individual but merely based upon an almost outdated understanding of need. Although I do not know if we can return to the nostalgic notion of home that Bachelard writes about, I do agree with some of his antipathy towards 20th century urbanism.

It is important to differentiate between "Home" and "The Home". In the article by J. Macgregor Wise *Home: Territory and Identity* (2000), the author explains while,

³ 'Diverse demographic' is used to describe the targeted population of this project. They have been chosen base on emerging demographics along with demographics of the area. They are diverse in age, gender, culture, and lifestyle but all require adaptable and affordable living.

“The Home” may change, home will remain a territorialized space. The above section suggests that because of societal changes, such as transient living, broken homes, or changing lifestyle, The Home is changing. Conversely, Wise explains the process of creating territory, rather than a societal generalized meaning of a space. This process is a progression of marking and shaping space, and ultimately creating a milieu. The territory of home is an expression; this expression has been created with fragments from many milieux. Home is more unique than other territories because it generates identification. Wise writes: “It was not the space itself, not the house, but the way of inhabiting it that made it a home...” (Wise, 2000, p. 394.). The person experiencing the space ultimately determines whether they claim that territory as their home. Wise describes home as a “site of resistance” because it does not need to conform to the typical structure of domestic space. With these thoughts, it is important to differentiate between single family dwellings and apartment style living. Apartment living is often thought of as rentable temporal space. For this study multi-family living has been selected for reasons such as affordability and community. This practicum will create small living units and common space for a variety of individuals and groups, who bring varying cultural and social norms. Working from Wise’s theories in my design solution, residents will use the process of territorialization or identification as a means of creating space that can easily mould to different ways of living.

. In the text *The Architecture of Happiness* (2006) author Alain de Botton explains the connection between “human” and “home” by stating:

We seem divided between an urge to override our senses and numb ourselves to our settings and a contradictory impulse to acknowledge the extent to which our identities are indelibly connected to, and will shift along with, our location. (p.12)

This practicum proposes housing that can change with people, instead of the current static housing model that forces people to adapt to the accommodation or move, losing all sense of home and community. Regaining control of one's space can help develop a sense of belonging and meaning.

Personalization

Today, most suburban residential house designs can be described as “cookie cutter”, because they seem to lack opportunities for personalization. The home is the milieu in which people should feel most comfortable to express their identity. Neil Leach, architect and theorist, says architecture “offers a potential mechanism for inscribing the self into the environment,” and continues by saying that “it may facilitate a form of identification, and help engender a sense of belonging” (2002, p.292).

Most buyers, however, do not have the privilege of building their own home and are left with previously owned or pre-manufactured dwellings. Personalization is a way to regain meaning and belonging in the home. If the homeowner feels that they can adapt the space to suit their needs, then they are more likely to stay in the home long term, creating greater environmental experiences and memories.

Current housing in Canada allows little flexibility. The typical suburban home or “model home” has been created around a set of beliefs about the nuclear family and leaves little room for accommodating difference. Many homes have similar or identical design features, yet diverse homebuyers' possess very different needs and identities. More specifically, the house lots are often small, which makes renovation difficult. Further, after paying for the home, there is often little money left for renovation.

The suburbs encourage a superficial sense of belonging with the assurance that your neighbours' homes have similar design features, rather than celebrating differences. The suburban home has not been designed with the room for personalization, but rather has been fabricated based on budget and economical use of materials. The faster the building is erected, the sooner builders can move onto the next project. The suburban home is often devoid of design elements that cultivate identification, meaning and attachment. Rather it is a generic representation of our society's idealized sense of home, what is deemed to be fashionable or accepted. At the end of the Second World War, the need for housing, coupled with the popularity of the automobile created the possibility of suburban communities. Media, consumerism, and technology influenced home life. "Keeping up with the Jones"⁴ became the norm of that era, but that the nuclear family is in a minority now. Friedman states "As time progresses, the factors and decisions that shaped the original design (of the home) become increasingly dated" (2002, p.4). This practicum will concentrate on designing for homes that create opportunity for change and personalization.

Community

Canadian cities provide evidence of a society living in the moment, as a large amount of our population is living in the suburbs. In their book *Peeking Through the Keyhole: Evolution of North American Homes*, Avi Friedman and David Krawitz (2002) explain that higher income families have moved away from the downtown core into the suburbs, consequently leaving inner city neighbourhoods to deteriorate. Rather than using urban vacancy as affordable housing community, many cities are catering to the demand

⁴ Strive, especially beyond one's income to socialize and spend like others in the same neighbourhood (specialinvestor.com, 2005).

for high end condominiums for single professionals. The urban core's has potential to house the targeted population of this practicum.

The "diverse demographic" are suited to the downtown because of its diverse housing stock, as well as its potential to improve our urban development. Sprawl to the outskirts has changed the life of many Canadian cities; there is less variety of occupants in the center of the city creating ghettoization⁵. In the (1961) text *The Death and Life of the Great American Cities* author Jane Jacobs argues that modernist urban planning (suburbs) has over-simplified living. Jacobs advocates for a dense, mixed-use urban fabric that preserves the uniqueness inherent in individual neighbourhoods. She states that in order to create successful community "There must be sufficiently dense concentration of people, for whatever purposes they may be there. This includes dense concentrations of people who are there because of residence" (1961, pg.151). Many oppose Jacobs' ideas, mostly real estate developers and politicians that support suburbia. Suburbia is the livelihood of many developers, and business owners. In larger metropolitan cities it is less affordable to own a downtown business; therefore the creation of a "new city" on the outskirts enables the business owner to continue to operate. In reality the suburbs are making our city unliveable. In keeping with Jacobs' argument in favour of density, this practicum has chosen a site in downtown Winnipeg (see Site section). This site has been chosen based on a number of criteria: one of the criteria was its ability to create a dense community with the belief that density contributes to a greater sense of meaning and pride within its residents. Another criterion for creating a successful urban community is common space. There are various types of

⁵ Definition: To think of (a group of people or things) as being confined to a specific restricted function or area of activity; to pigeonhole. (www.allwords.com)

common space; the following outlines the importance of green space. The article *Fertile Ground for Community: Inner-City Neighborhood Common Spaces* suggest that the best type of common space is green space.

Greener common spaces appear to attract people outdoors, increasing opportunities for casual social encounters among neighbors and fostering the development of neighborhood social ties. Ultimately, the outcome of community based greening efforts might be physically and socially more supportive places to live (Kuo, Sullivan, Coley, and Brunson, p. 26).

The site selected for this practicum has interior courtyards which will promote interaction between clustered residences. The article *The Social Consequence of Housing* (2000) by Glaeser and Sacerdote also explain the benefits of multi-family dwelling and community connection. This practicum will create an interior living environment that, together with the urban context, supports a successful and unique community by drawing on current theories concerning the benefits of common space.

Conclusion

The meaning of home is personal to every individual. This section has referred to the work of Israel and Marcus who provide different viewpoints on the topic of “home”. Israel (2003) argues that home is an environment for people to have experiences and create memories generating attachment and meaning. However, Marcus suggests that as our society changes our home needs to as well. Both perspectives make it clear that home has great impact on the human occupants. It is where we feel most comfortable to express ourselves, and affects our behaviour. As many critics of 20th century urbanism suggest we are no longer creating houses that create homes, they are instead reactionary structures.

Many North American homes are lacking the uniqueness and opportunity for personalization that foster a greater sense of belonging. This practicum strives to create housing for a diverse population by providing an environment that allows each individual resident to create a unique sense of home in the greater community.

Adaptable Living

In *The Adaptable House*, Friedman defines adaptability as “providing occupants with forms and means that facilitate a fit between their space needs and the constraints of their homes either before or after occupancy” (2002, p. 1). With constantly changing lifestyles adaptable housing has become the future of housing design. I believe homes can no longer be built in a generalized fashion; rather design needs to be created for rapidly evolving situations and needs. This argument is supported by authors Friedman, John Habraken, and Stuart Brand, each providing unique methods or rationale for establishing adaptable living environments.

Adaptable Housing

Adaptability is not a new design idea. The early modern architect Le Corbusier created flexible buildings to lengthen the life of building as well as facilitating multiple functions. Maison Domino, built in 1914, was created with concrete slabs and pillars which allowed for a large floor plate to accommodate diversity (Beisi, 1995). Friedman, a practicing architect and professor at McGill University, studies the need for adaptability in architecture. He states:

In the twenty-first century, society, it seems, has become accustomed to the fact that constant changes are inevitable. These changes necessitate a new design paradigm in which future dwellings need to be more adaptable to the dynamic nature of societal trends and, as a result, their occupants' lives. (2003, p.3-4).

Friedman asserts that flexibility is necessary to a public with changing lifestyle.

Friedman breaks down adaptability into two ways. “Add-on” and “Add-ins” are the strategies that he develops in both *The Grow Home* and *The Adaptable House*. The Add-on method is the construction of additional space onto the existing structure as the need arises. Add-in requires overcompensation, creating space that can be finished at a later date and used by the occupant when the need arises. With both methods there are disadvantages and advantages. The Add-on method does not require as much upfront costs, but it does require the space for additions. The Add-in method requires more upfront cost, but less cost and work when the expansion is needed. Friedman makes an important statement, “Expansion must also be considered in the wider realm of the urban context,” (2001, p.19) sensitivity to the surrounding context is vital in creating community. Friedman’s has tested his ideas with the Grow Home project, see the precedent review section. The Grow Home uses the methods of ‘add-in’ within a single family dwelling, providing the opportunity for a family to expand into additional space. In contrast, my practicum is a community based exchanging of space, working on a supply and demand manner. In effect, Friedman’s theories have been instrumental to this practicum because they have established parameters for creating an adaptable community.

Habraken theorizes about the built environment in his text *The Structure of the Ordinary* (1998). Habraken believes that built and living environment exists through change and adaptation. By learning to see the environment as expressions of change, we also learn how we, as agents of change reflect, upon it. According to Habraken built environments are organized by the “orders of form, place, and understanding”. The Order of Form pertains to how we operate in the different levels of physical space; the

Order of Place looks at control of space that creates territorial hierarchies; finally, the Order of Understanding is the meaning and social understanding that affect the environment. Not unlike J. Macgregor Wise, Habraken believes that society creates territory by asserting control over space. As I have suggested many houses provided limited opportunity for interaction, and designing flexibility will facilitate people forming a sense of connection and ownership of space. Habraken supports this argument; he believes that people need the ability to interact with their environment to establish territory and in turn security. Habraken explains that the disconnection between the built environment and its users has occurred because architects have lost touch with the need for territorial expression, creating boundaries whether physical or symbolic, as a form of control in which the user establishes a sense of belonging or ownership. I believe that Habraken makes an important discovery: the designers and the users of the building are equally intrinsic to its making. Adaptability gives back some control to its users.

Stewart Brand in his book *How Buildings Learn* (1994) provides unique thoughts on architecture and a building's ability to adapt. Brand's theories build on those of Habraken with compelling arguments and studies for the built environment to be treated as an organism rather than an artefact. Brand states, "Homes are the domain of slowly shifting fantasies and rapidly shifting needs," (1994, p.10). This is difficult to realize because buildings have not been designed to change and continue to not allow for change to occur. Brand refers to layers of change, from site that is eternal to furniture that can be constantly moved or changed. Each layer affects the others, and they change at varying rates. Interior spaces change at a much more frequent rate than the structure or façade of

buildings. I believe that the interface between the interior and the exterior is important to the life of the building.

Interior Adaptability

Interior adaptability or flexibility can support dynamic use of space, which is essential when housing diverse users. Using various elements, such as movable partitions, multi-functional space, or modular furniture, allows the user to break the fabricated conventions of the rigid domestic floor plan. Adaptability can support the following outcomes: change in room relationships, change in room number and size, and change of elements within a space (Beisi, 1995, p. 148). A common criticism of interior adaptability is that occupants often do not take advantage of its flexibility. A review of four adaptable housing projects in Switzerland discovered that users needed to be educated in the benefits of the flexible system in order to use it to their advantage (Beisi, 1995). This is useful information to bring forward in the design process of this project. Most likely the users' needs of this housing typology will evolve, and for this reason it is important that the interior adaptability coincides with the changes they may want to make and that they understand the full potential of their space.

Conclusion

Adaptability should be considered by designers to allow users to further individualize their space. As illustrated by the literature, it is important that changes be achieved simply and affordably. This practicum builds on the work of scholars such as Friedman and Brand to develop unique interior environments that appeal to a diverse demographic. Using specific techniques outlined in Friedman's work such as the add-on and add-in methods, this project will develop designs for homes with interior and exterior

flexibility. There is a point where the interior cannot accommodate the needs of all the residents, and this is where the exterior growth will become beneficial. This adaptability coincides with Brand's thought on the evolution of building. Different "layers" of the building require different points of change. For example, the furniture changes at more frequent pace than the exterior does. Designers need to become creative about how we might reuse or adapt buildings that no longer fit with the needs of our society. If we take time and care to design a building that is sufficiently robust to allow for continual change, the life of the building will be prolonged.

Affordable Living

As the cost of housing continues to grow at a faster rate than most Canadians' incomes, the need for affordable housing becomes more urgent. The home is not only a necessity of life but, to many, it is the cornerstone to financial security (Moorhouse, 2003). With the knowledge the 'diverse demographic' are a population with lower income levels than the two-income families of the past, it is important to incorporate affordable design methods to allow all potential homeowners the benefits of owning a home. Using the work of Roberta Feldman and Tasneem Chowdhury, together with Avi Friedman, such topics as economics, construction, space, density, energy, and durability are examined to inform this practicum.

Economics

The Canadian Mortgage and Housing Corporation (CMHC) states "adequate shelter should not exceed 30% of household income. Housing which costs less than this is considered affordable".

Affordable housing is a major concern in most large Canadian cities. This has forced many low-income earners to rent, because rented property is often the only achievable form of adequate shelter. Although renting can be beneficial for some people, most renters in Canada's urban core are barely living above the poverty line (Sarlo, 2004). Many Census Metropolitan Areas (CMAs) have limited affordable housing; therefore, many renters are paying over 30% of their monthly income on shelter. In addition, they are receiving no financial gain by continuing to put their money into rent. However, ownership has more benefits than gaining assets. Habitat for Humanity Canada (HFMC) believes strongly in ownership and lists many benefits to homeownership in their discussion paper *Affordable Homeownership*. They believe that home ownership creates a sense of pride, security with a sense of permanence, and wealth as they are building equity through mortgage amortization (October 2003).

The benefits listed by HFMC support the goals of this project. Providing low-income earners with the opportunity to own a home creates a better sense of home, equality, and community. The text *Livable and Affordable* (2002) by Feldman and Chowdhury provides guidelines applicable to housing the 'diverse demographic'. These guidelines will contribute to establishing the criteria for this project.

Construction Efficiencies

Construction efficiencies are the most important aspects in creating affordable design. Feldman and Chowdhury state "recycling an entire building to extend its useful life is environmentally sound and preserves cultural and historic structures" (2002, p.2). Therefore, the use of existing buildings significantly diminishes initial construction costs along with preserving important architectural landmarks. Feldman and Chowdhury

consider some disadvantages in using old construction to be, advances in building technology have significantly improved energy loss and durability; therefore changes will have to be made to the existing construction in order to make living more affordable. Design based on standard material sizes and local materials can significantly cut down on construction cost. Other construction techniques that facilitate in creating affordable housing are pre-manufactured components; for example, roof and floor trusses, and wall panels. The uses of pre-manufactured components are beneficial, firstly because they significantly reduce time and labour costs. Secondly, it allows for adaptability; if the walls are segmented they can be dismantled and their position can be changed. Finally, reducing the amount of material used in construction will create a more affordable space. An understanding of systems and materials can add to the affordability of housing as well as act as a catalyst for well-designed houses. The ability to use limited materials requires that the space be efficiently designed.

Space Efficiencies

The utilization of space needs to be re-evaluated based on new ways of living. Currently, North American society has the mentality that “bigger is better”. In *Room for Thought: Rethinking Home and Community Design* (2005), Friedman attempts to answer the need families feel to upgrade and buy even larger homes when the average household size is shrinking. He begins by explaining that our first settlers came to Canada from highly populated continents and viewed Canada as a land of opportunity. With little restriction in rural parts of Canada, many settlers built large homes, setting a precedent for the way we currently live.

Today, builders continue to create large homes with large foyers, massive kitchens, and bathrooms with spa tubs and two sinks. The media has also influenced public opinion by instilling that bigger is better. This progression can be seen in statistics. In 1943, an average home was 800 square feet, which jumped to 1,100 square feet in 1955, and again to 2,000 in the mid-1980s (Friedman, 2005; CMHC, 1993). North American society needs to down-size the amount of space we use, not only from a financial and population perspective, but more importantly because of the impact on the environment. Compact living is a more sustainable way of living, as it reduces the amount of heating, cooling, and maintenance costs. Other elements that foster a more affordable design project are greater housing density, energy-efficient designs, and durability. Feldman and Chowdhury reaffirm some of the fundamentals of affordable housing by stating “the cornerstone of affordable housing design is containing and even reducing construction costs and life-cycle costs – those associated with building operations, long-term maintenance, and refurbishment – while maintaining livability”(2002, p.1).

Density, Energy-Efficiency, and Durability

Sharing resources among residents is a more economical way of living. The site chosen for this practicum will be a series of multi-family dwellings. Dividing water, heat, and electricity among two or three families can have major effects on the cost of living. Shared walls create a transfer of heat between suites, and shared outdoor space reduces the amount of water used for watering plants and grass, with shared spaces and compact living significantly reducing energy costs. Again this is acknowledged in Feldman and Chowdhury writing, “stacking floors and combining dwellings in the form

of duplexes and row houses also provides significant energy savings through major reductions in exposed wall area”(2002,pg3). Other technologies such as solar panels, geothermal, or wind power have high initial cost but can be very beneficial to heating and cooling costs. When choosing a system or material it is important to evaluate life-cycles, because while the product may be economical, it may not have the same life span as another product. Designing with durable materials will cut down on future maintenance costs. For example, rubber flooring is more durable than sheet flooring. The extra initial cost will be more advantageous in the future when the product does not have to be replaced for a longer period of time.

Conclusion

The intention of the practicum is to create housing that is suitable to varying lifestyles and demographics. Through many readings, such as *Liveable and Affordable: Good Design in Affordable Housing* it became clear that establishing affordable and adaptable design is in essence responsible design. The guidelines established by Feldman and Chowdhury are simple but identify key areas that designer need to become more conscientious. For example, using standard size materials is beneficial to a flexible space but is also vital to sustainable design. Subsequently, Friedman discusses space efficiency by making readers aware of North Americans predisposition to requiring large living spaces. Smaller footprints contribute to energy efficiency because they use less energy. In summary, affordable housing is fundamental to creating sustainable and flexible environments.

Precedent Review

Hull House

Hull House established a community for the European immigrant community that had culminated in Chicago's nineteenth. The main focus of Hull House was to remediate the problem of alienation that many immigrants were experiencing in their new home. Hull House has been selected as a precedent based on its success as an urban community. It provides this practicum with important insight into creating community living from the interior to the exterior. Hull House has been analyzed by Sharon Haar (2001). Her analysis provides historical and architectural information about the Hull House, as well as insight into the design, function, and inhabitants of the community, all of which is both pertinent to, and useful for, the creation of this practicum project.

Hull House was ahead of the times in 1889 when Jane Addams, both Head Resident and President of the Hull House Association, created the Settlement, a 'community for women' and a place for reform. The Hull House was a reform institution that "grew over time from a home in the city to an example and way of being 'at home' in the city" (Haar, 2001, p.101). Addams was interested in the site because of the transitional quality of the neighbourhood, which included members of foreign tenants in an unfamiliar city. It presented an opportunity to the settlers, who themselves were new to the community, to address issues of the industrial city. The residents were mostly middle-class, college-educated women, who used Hull House as a site for collective living and to put their thoughts into action on the surrounding community. The goal was to respond to the neighbourhood and ultimately its connection to the city. "They created a place that did not yet exist-both physically, by building Hull House, and institutionally,

by creating an alternative to the separate spheres of gendered life in late nineteenth-century society” (Haar, 2001, p. 104). Addams refused to view Hull House as an institution, it was primarily a home.

Hull House created a sense of home for many by breaking down the barriers of classes and gender to create a united community. Addams and her colleagues accomplished this by investigating ‘the fabric of the city’, and understood that to create change they would have to re-form the city. The women of Hull House created a position of power within the neighbourhood, which changed relationships in the urban context. The people of Chicago’s nineteenth ward were no longer insignificant to the urban environment; they had become a part of the neighbourhood and, more importantly, the physical fabric of the city. The house was not just a place for the residents, but a place for the neighbours and community that embraced and layered upon the life of the greater city. It created the necessary connection of public and private space as highlighted in Jacobs’ theories.

Those living in the settlement were willing to lead a more ‘public’ life as many of the spaces were occupied by various members of the community at any given time. But most importantly “the architecture and urbanity of the Hull House shaped, or more specifically, reconfigures the relationship between the public and private spheres to coexist, yet protecting their distinction” (2001, pp. 111-112). The architecture of the

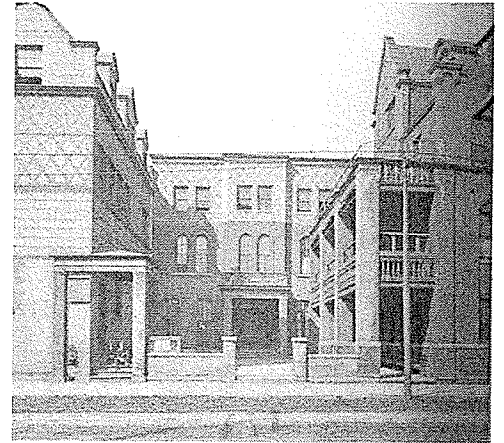


Figure 1



Figure 2

building allows the outside to filter in and over time adapts to the activities of the surrounding context. The house itself highlights the transitional quality of the neighbourhood. No objects or subjects were fixed; everything was flexible, whether it was the program or the physical nature of the space. Figure 1 illustrates the transitional quality from interior to exterior with courtyards and balconies; Figure 2 shows flexibility with movable tables and chairs that allowed for reconfiguration based on the activity. The design decisions allowed the occupants to move between spaces as their life changed, because “the architecture of the Hull House provided a space of protection from and infiltration of the developing modern American city” (Haar, 2001, p. 114). Over the 73 years that the Hull House was occupied, it grew from a single house to an entire square block and became a large presence in the community and city.

In Jane Jacobs, text *The Death and Life of the Great American Cities* (1961) she explains the need for non-commercial services in a community; this is what Hull House brought to its neighbours. This extension of domestic services within a city was non-familial, but paved the way for a women’s presence in the public realm. Haar confirms Jacobs’s assertions by saying, “urban society required a reformulation of private and public life, and with it the place of women in both” (2001, p. 113). The design of the building blurred the lines between public and private with courtyards, and balconies.

Hull House is a successful example of an urban community, and therefore, exemplifies one of the goals of this practicum project. Similar to the situation in Winnipeg’s urban centre, Hull House took advantage of a neglected neighbourhood by creating an important residential community, and also successfully demonstrates the connection between the private and public realm. The fluidity between public and private

space provided occupants with a sense of freedom and belonging, this is an aspect that will be present in this project. The diversification of Canadian society advocates for communities to address the wants of its population. Just as Hull House addressed the needs of the immigrant community, this practicum will concentrate on creating housing for those who are not being addressed in Canada current housing stock, such as people in atypical family configurations. Hull House does not provide much guidance on interior spaces flexibility; rather its focus is on the connection between the exterior and interior. Hull House is an important precedent because the residents were successful in making an urban environment come to life by adding domesticity to a neighbourhood that once encouraged alienation.

Wildwood Park

Wildwood Park in Winnipeg, Canada is an example of a community that demonstrates adaptability as a design strategy.

Wildwood was realized in 1946-47 by Hubert J. Bird of Bird Construction, and enlisted the help of the architecture firm

Green, Blankstein, and Russell (GBR). Known as one of the best designed communities in Canada it was based on Radburn, New Jersey designed by Clarence Stein and Henry Wright (Nelson, 1985). Wildwood Park has been studied by many for its planning

and community aspects. The original neighbourhood had five housing types: one-storey basementless bungalow, one-storey bungalow, one-and-a-half-storey and basement, and two storey and basement. These standards were used to cut costs with repetition. Over time most houses have been adapted into homes that tell stories of the families that have lived or currently live in the community (Nelson, 1985).

Carl Nelson published a study of Wildwood Park in 1985. This was a study of the architectural and territorial transformation that has occurred in Wildwood Park. Nelson revealed that many of the Wildwood residents have made changes to the original home and surroundings in order to territorialize their space. This included architectural and landscaping changes. Architectural changes had been made to 84.7% of the homes, showing the occupants need for change over time. As shown in the Figure 4, the original form has been alternated with an add-on. The homes have evolved into many different styles but have stayed connected to the central park.

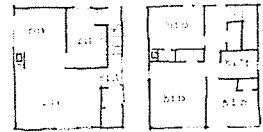
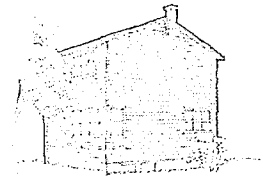


Figure 3

Wildwood Park is interesting because in many ways it has many of the characteristics that I have previously described in suburbia. Housing based on five housing models perpetuating conformism. Why is Wildwood Park different? The design of the neighbourhood is unique to other suburban development because it focuses on the landscape rather than the automobile. Unfortunately, Wildwood Park did not become precedent to future suburban development until just recently. Michael Martin associate chair and Landscape Architect at Iowa State University explains recent trends in of residential neighbourhood design or what is called “new urbanism”. Martin

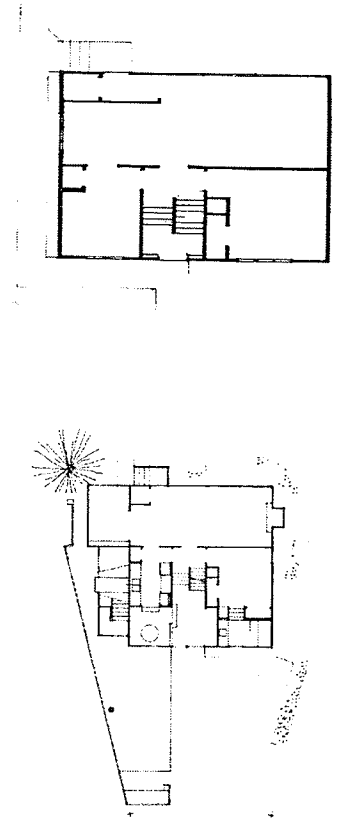


Figure 4

explains that this design movement borrows from the traditional 19th century walkable communities, by de-centralizing the car. Nevertheless, Martin believes that new urbanism does not achieve the same success as Wildwood Park because it is not “...grounded very well in behavioral study” (para. 24, Barron, 2004), in other words does not respond to the needs of the community.

Wildwood provides evidence of the evolving needs of residents over a period of time, based on changes made to homes in the area. Friedman’s concept of add-on adaptability has been successfully implemented in Wildwood and has added elements of history, character, and individuality. Although Wildwood differs in building typology and demographic to this practicum project it is a successful example of a constantly evolving community.

Schröder House

Schröder House in the Netherlands made a contribution to the modern movement; it demonstrates how interior space can respond to the needs of a growing family. Truus Schröder an interior designer began the design of her home with her husband in 1924. After her husband death Schröder, a single mother with three children, used her husband's wealth to create a space where they could have "...a variety of alternatives, from the privacy of the small rooms on the ground floor to the open communal space of the light-filled living area upstairs, and containing unique flexibility within itself..." (Friedman, A. 1998, pp. 80-81). The Schröder House recognizes the needs specific to the users, and does not conform to the typical styles or layouts of other homes in that time. With architect Gerrit Rietveld, Mrs. Schroder created a home that she believed could evolve with her ever changing life.

The article, *Movement and Myth: the Schröder House and Transformable Living* (2000) by Catherine Croft, explains that flexibility is often viewed as an egalitarian way of living, but in the case of the Schröder House it became dictatorial. The partition needed to be moved on a frequent basis, for example, when you wanted to take a bath. Historian Marijke Kuper argues the flexibility created a hyperawareness of one's surroundings; as designers we hope to create environments that stimulate its users, but in this case it was taken to an extreme level. Croft confirms this

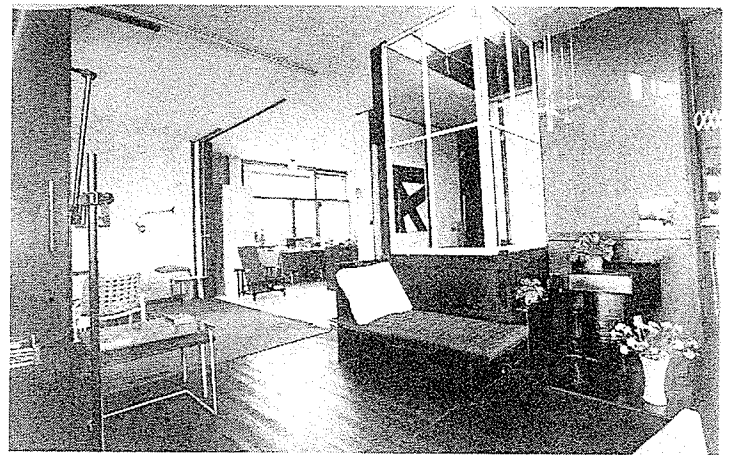


Figure 5

problem by stating “the partitions seem little more than a potentially disruptive, even traumatic, ritual at the heart of family” (2000, p. 13). Figure 5 shows the partition system open, at night when her three children sleep the partition would be closed. All partitions need to be open or closed at one time, giving little freedom or privacy, as private spaces at night becomes public during the day. I think that homeowners enjoy adding personal touches to their space, but if these unique elements require constant attention then they are no longer exciting or beneficial. Although this house was not successful in all regards, it has given designers a precedent to think differently about the way we live.

Interior flexibility can be controversial because often it is a design feature that is not appropriately used. This practicum will learn from precedents such as The Schröder House to develop a system of adaptability that best benefits its users and encourages use. Adaptability should be a carefully designed feature rather than a gimmick that does not function to its potential or becomes a disturbance to its user.

The Grow Home

The Grow Home is a project developed by Avi Friedman and Witold Rybczynski. It has been chosen as a precedent for this project, as it responds to the societal changes such as the decline of the nuclear family, women in the workforce, higher costs of having a family, and non-traditional households with a concentration on affordability (Friedman & Rybczynski, 2001). It aims to create

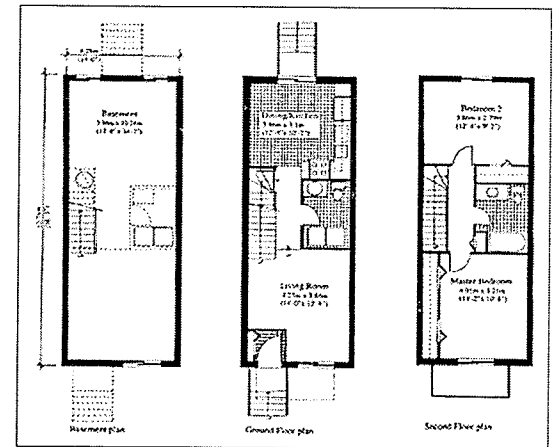


Figure 6

housing for an untapped market segment that is largely ignored by builders and existing housing: low-income renters who would like to be homeowners (Friedman & Rybczynski, 2001). The Grow Home prototype includes a combined kitchen-dining area, a full bathroom, and a living room on the main floor and an un-partitioned second floor that could later be converted to two bedrooms with a bathroom. They are built for \$40,000 (excluding land cost) and sold from \$65,000-\$95,000⁷. Architecturally the homes are long and narrow to limit the footprint, and diminish service and construction cost. Friedman re-invented row housing as an affordable option; he wanted to create the greatest amount of functional space with the lowest cost (2001, p. 18).

The Grow Home provides useful information to this practicum. Primarily, it demonstrates the benefits of smaller homes and greater density with lower land cost, infrastructure cost, labour and building costs, and energy cost. It has also provided some

⁷ The Affordable Homes Program (1999)

basic knowledge on adaptability by developing a 'finish-as-you-can attitude'; the upper floor is the responsibility of the homeowner to finish as funds become available.

Figure 6 shows the second floor finished with two bedrooms and a bath, but could have several configurations depending on the needs of the occupant. Each floor left unfinished takes \$5,000 off the price. Researchers at McGill have discovered that 75% of Grow Home owners finished their homes on their own, rather than using a builder.

The emphasis of the Grow Home is more affordability than adaptability. Leaving the floors unfinished allows the occupant some flexibility, while elements of the structure allow for limited changes. The townhouse typology has major cost benefits (listed above), but limits growth. The homes cannot be added onto because of limited land. Growth between units is prohibitive (no room for growth or expansion of living space). This practicum hopes to give homeowners many options for growth, whether it is adding on to their existing home, or an exchange of space between neighbours, with the belief that, if occupants can continue to have their homes meet their needs, a better sense of home and community will be created. The Grow Home has concentrated on the best type of housing for affordability rather than the implications that environments have on its occupants.

As discussed in the previous chapter, the current housing stock in Canada leaves little opportunity of self expression. Figure 7 shows a typical cluster of Grow Homes, and there is little evidence of who the homeowners are. There are some controlled options that

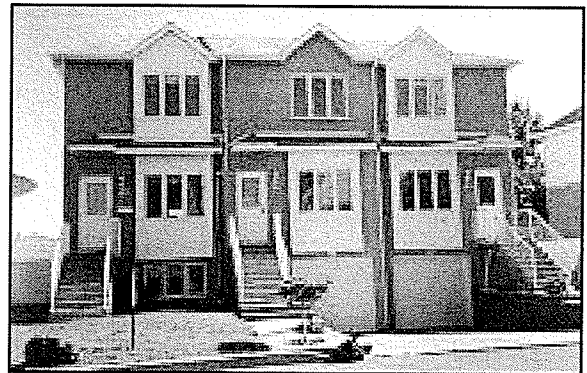


Figure 7

can be added to the building such as balconies and decks. This practicum hopes to give homeowners more freedom to personalize their home on the interior and exterior to gain a greater sense of belonging in their home.

Site

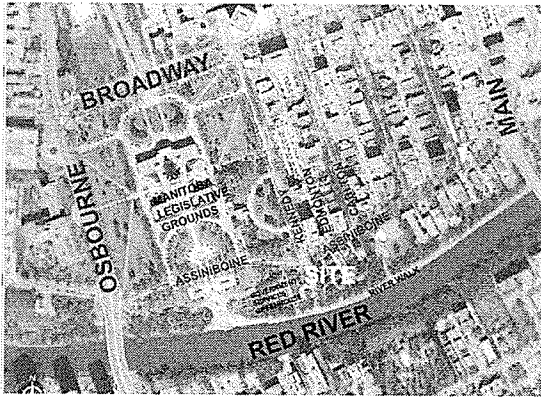


Figure 8

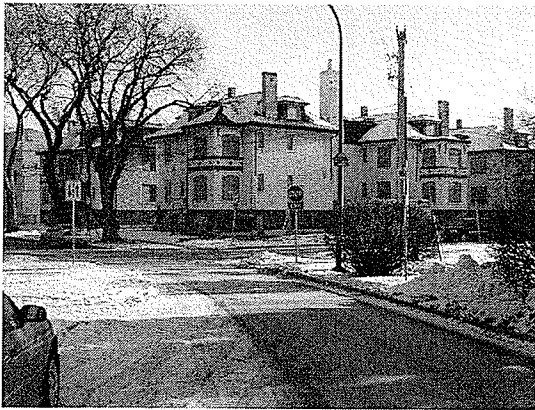


Figure 9

This site 440 Assiniboine Ave. Winnipeg, Manitoba is a cluster of eight residential buildings, which have been abandoned and boarded up. It is located on the corner of Kennedy Street and Assiniboine Avenue. The site is bound on the west by The Manitoba Legislative Grounds and Government Greenhouses, on the south by The River Walk, and the east and north by several residential structures. There is limited traffic, being mainly residential roads, but is in close proximity to Osborne, Broadway, and Main Street, all

main arteries in Winnipeg. The site is heavily influenced by pedestrian traffic on The River Walk. The vistas from the site are primarily of green space and vegetation.

Building History

The former Chelsea Court Apartments were built in 1914 by architect, contractor, and owner Paul C. Samwel. Samwel began practicing in 1910 and did many other projects in Winnipeg before moving to Florida in 1921 and later died in 1951 (MAA).

These apartment buildings are the only ones of their kind in Winnipeg. They are maisonette style, which were popularized in the United Kingdom along with other places in Europe. The maisonette is a large two-story building which contain two suites each

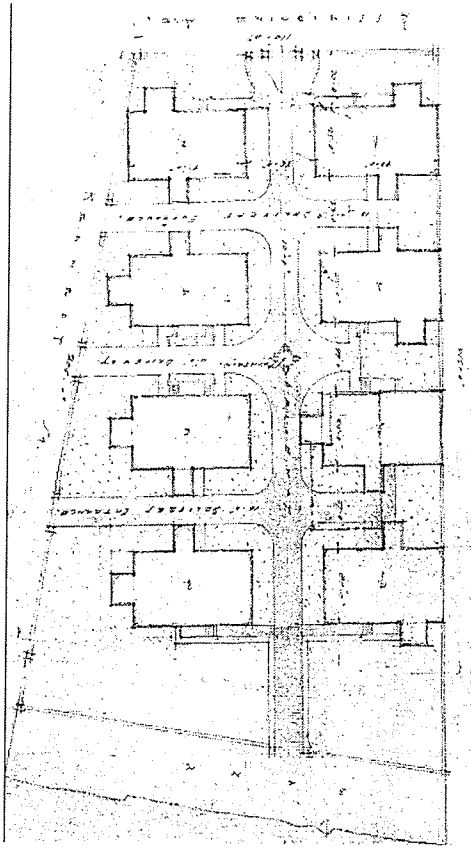


Figure 10

with its own entrance. The Chelsea Court Apartments were built as a result of the growth in population in the 1900. The complex was unique at the time because other developers were building apartment blocks that made use of the entire lot. Samwel was trying to appeal to a more exclusive clientele (Peterson, January 2005). An article in the Winnipeg Free Press (December 15, 1983) accounts that tenants of the Chelsea Court Apartments were middle-class residents but later became an attraction for musicians, writers, artists, and young architects.

The site consists of eight, two and a half storey buildings, each measuring 43x25x32 ½ feet. Each building rests on a concrete and brick foundation walls roughly twelve inches thick. The cladding is tapestry brick and stucco with stone accents. The cost of construction was \$80,000 exclusive of the lot⁸. In 1915 a City of Winnipeg Building Permit was taken out for the construction of an automobile garage, but the 1918 plans show two garages with room for five cars. In 1928 the owner converted one of the garages into a boiler room that heats the entire complex. The other garage was demolished at an unknown date but the boiler building still remains.

Originally each building was divided into two suites. The lower suit was comprised of most of the basement and the entire ground floor, while the other suite was

⁸ City of Winnipeg Building Permit, #2504/1914

the occupied the 2nd floor and the attic. The ground and 2nd floor are the same layout, a large living room with fireplace, dining room, bedroom and boudoir, kitchen with pantry, and a bathroom. The basement has an enclosed boiler/coal room and laundry room which can be accessed by all suites. In the past the remainder of the basement included a library, games room, bedroom and bathroom. The attic had two bedrooms and a maid's room with connecting bathroom. There are both an internal and external staircases that provide access to all suites. In the late 1930's interior changes were made to separate each floor into four separate suites. As a result most of the original doors and windows were changed and basement entrances were added along with extending the external stair case to the attic. In late 2004 the tenants were evicted as the owner has future plans for the site (Peterson, January 2005).

Opportunities and Constraints

This site provides many opportunities for this practicum project. The site has excellent views and connection to the Legislature and Riverwalk. On account of these landmarks, visitors are drawn to this area which heightens a sense of security. Security is crucial to a successful community, Jacobs attributes this to her "eyes on the street" philosophy. She explains that building should not turn their blank facades towards the street but rather be capable of handling all things that cross its path. Building are the natural proprietors of the street (1961, p.35), they are responsible to make our communities safe. The site is densely treed along the river to provide protection from the elements and also provides privacy. The courtyard's benefits have been examined in the above criteria; it provides opportunity for residents to have a place for interaction and also allows room for growth. One of the great advantages of this site is its proximity to

transit and services such as clinics and grocery stores. This building is also ideal for the goals of this practicum because it has been previously divided into suites, therefore limiting the amount of plumbing, electrical, mechanical, and circulation to be added.

Some of the opportunities could also be possible constraints of the site and building. For instance, the courtyard space has been previously viewed as an opportunity but in contrast it may create an introverted community. In addition, the connection to the river and Riverwalk could invite unwanted visitors, or create flood and erosion problems. Other constraints include dated construction and building systems that will require significant repair, large residential building to the North of the site which blocks view, and the site does not have parking for its residents.

Conclusion

In effect, the opportunities and constraints have been identified in order to determine whether the site will be appropriate to the goals of this practicum project. At the onset of this practicum process I expressed the importance of establishing a sense of community within the urban environment. The site is directly adjacent to the downtown core of Winnipeg, with many services within walking distance which is important when fostering a sustainable community. The site configuration promotes interaction between residents through proximity, integration, and shared spaces, and has potential for affordable housing solutions because the buildings interior layout allow for small units promoting a 'buy-as-you-can' philosophy. Additionally, the interior and exterior flexibly allows for change over time. Ultimately, I believe that this site will be suitable in providing a design solution for this project based on my literature, precedent, and programmatic investigations.

Design Criteria

Design criteria have been established in order to synthesize the above information into a tangible set of design guidelines. Each criteria is based on generalized design elements, such as circulation and views, composition, and scale and proportion. The criteria relate back to the Literature Review, Precedent Review, or Programming. During the process these design principles will be translated into design elements within the interior and exterior of the building.

I felt that it was important to establish parameters around the site because of the interface between the interior and exterior of the building. The site has a distinctive axial design that is important to maintain. Each axis establishes connection to a significant natural or historical landmark, such as the river or adjacent legislative grounds. The exterior courtyard is also important to preserve for many reason discussed previously. It has been suggested that green space can contribute to a healthier community, accordingly Jacobs's states that accessible public space for casual human contact is one of the two key factors in maintaining the social capital of any place (1961). Similarly, to the preponderance of exterior public space discussed by Jacobs, interior common space is crucial to building community. As a result, the design will strive to encourage interaction with shared interior circulation and overlapping space between residents. Common space also contributes to a more sustainable and affordable building as discussed by Feldman and Chowdhury.

As considered in the Adaptable Living section, flexible space is critical to this practicum because of the various and diverse users. To illustrate an adaptable design solution I have broken down the design criteria into several elements: composition,

division and union, opacity and transparency, scale and proportion, and colour and material.

The first design element, composition, requires a building that will accept various living conditions; from students whose space requirements are limited, to families that require a larger amount of space. Next, division and union of space, make reference to Friedman's add-on or add-in methods of adaptability. Demising walls should be flexible to allow for growth and reduction, and to reduce construction costs. Internal growth will be made possible by allowing apartment to expand internally to the side, above, or below. To allow for external growth apartments should have at least two exterior faces that can expand from original structure.

As alluded to in the analysis of Wildwood Park, homes have the ability to tell a story. The home is often used as a canvas to convey who we are, it may be idealist or hopeful versions, but nonetheless, it is an expression of identity. I believe that it becomes difficult to feel a part of a community if you do not identify with it. A level of transparency should be present within a community, not necessarily penetrations into each others homes, because privacy is important; but rather expressions through materiality, object, or colour. Levels of transparency and opacity are also important, as they maintain connection and security.

Criteria of scale and proportion are mostly derived from the existing structure. The practicum project will not add to the height of the building, because the current site has an intimate human scale. There will also be limitations on the amount of growth to preserve the courtyard. Colour and material of the units will be strongly influenced by the case studies, whereas the common areas will reflect the surroundings, for example the

Tindle stone of the legislature, or the brick details on the exterior of the building. These criteria are guiding ideas that will become elaborated through more specific and detailed design.

Design Solution

In order to test the design criteria a number of scenarios were put in place. Four user profiles were established, outlined in next section, and followed through a 15-20 year timeline. The case studies enabled me to demonstrate specific design elements as they apply to individuals and a community.

The building has two components of space, the private living space and the common areas. The living spaces have many repeated elements as a means of providing affordability and adaptability. They have been efficiently planned, whilst still providing the opportunity to personalize. Personalization occurs at the entrance of each unit, as well as throughout the space. Each resident has their own façade which they are able to design to suit their personality or needs. For example, Martin is an art collector therefore he has a display unit beside his doorway. Other points of personalization occur with modular and flexible furniture systems. Cabinetry is designed to standardized dimensions to allow the residents to add or subtract items as they see fit. Cabinet doors can also be added or removed, as well as shelving inside the module. I have devised a slat wall system onto which the cabinetry is hung. This allows maximum flexibility, heights of cabinet can be changed, more can be added, and other items such as utensils or shelves can also be hung from the system. The methods of personalization, modular cabinets, and the slat wall also speak to adaptability.

Adaptability is achieved with an open floor plan, and efficient use of space.

Besides the hard construction of the washroom, other spaces are created with furniture allowing residents to reconfigure the space as needed. In some cases a resident spans two floors. In these cases an access hatch with a ladder permits the occupants to move freely between floors without having to exit into the common space. If at any point the homeowner no longer wishes to occupy both floors, the hatch can be sealed and returned to two separate units.

Materials and lighting have been selected based on the user's needs and personalities, in addition to affordability and adaptability. The lighting system used in most apartments is track lighting on a cable. These systems allow the residents to adjust lighting levels by adding or removing spot lights. Wall mounted lights have also been used because they do not disturb the ceiling plane so that units remain flexible. In some cases lighting has been mounted on top of walls, providing indirect ambient light, and leaving the ceiling undisturbed.

Materials were selected based on their inherent flexibility or affordable properties. Modular flooring, such as carpet tile, interlock wood flooring, or cork tiles have been used to correspond with the residents specific needs. For example, the elderly homeowner Joan has cork floors in her home, because cork is warm and soft underfoot and has a gentle give under pressure. The cork has been applied throughout the majority of the space to avoid transitions where Joan could trip and fall. In other cases durability was important, Maria the single mom has rubber tile in her home. Rubber flooring is a durable product and the life-cycle cost is lower than other types of flooring because maintenance is minimal. Affordability has been an overriding requirement of the

materials used in the project. Feldman and Chowdhury explain that a products initial cost may be higher, but with lower maintenance cost or replacement cost they may become more cost effective choices. This holds true with many of the products chosen. For example, if something is spilled on floor that has carpet tile only one or two tiles would need to be replaced instead of the entire floor. The same approach to materials and lighting has been taken in the common spaces.

The common spaces became the central link for all the occupants, and allows for adaptation and personalization. Because the living spaces vary in size and form, the common spaces provide equity. The common areas have functions that would normally be included in many North American homes, for example a laundry, a computer connection space, a child's play space, a gym. These functions have to ability to evolve with the residents needs. The common spaces are located in the middle of each floor, with the exception of the commercial space on the main floor. These areas are made transparent with full height glazing, and almost resemble an interior street or sidewalk. This was the best solution to create interaction between residents. These spaces became the entrances to all living spaces, as explained above, providing occupants with a façade that can be personalized. The materials that have been chosen reflect the building character, but also are minimal and robust. Common areas receive a lot of abuse, therefore the flooring will be polished concrete. Some of the wall surfaces are brick, and the doors will have large steel kick plates. The colours reflect a prairie inspiration: blue, yellow, rust, and green.

The design solution creates a home and community to a group of diverse homeowners. The space planning of the building together with the millwork, lighting,

design criteria, but are also tailored to inspire meaning and a sense of home to every homeowner.

Users

Although the users of this complex are diverse they share the need for affordable and adaptable housing. Four different users groups have been created to demonstrate how different people would occupy one building on the site. In order to better understand patterns of occupancy, constraints and requirements, and collection and pastimes I have created diary entries for each resident. These users have been chosen based on demographic information presented in the introduction along with examining the demographic of the Broadway-Assiniboine 2001 Census data. This does not limit the users to the individuals listed below, but rather serves as a point of reference for this practicum.

Martin's Diary Entry



Figure 13

I had meetings with some potential clients today, all this networking must be paying off. I have been out to some sort of event every night this week, trying to get my name out there. Good thing that I am a night owl, because this business leads to many late nights. I'm glad that I can come down the back stairs so that I don't bother Joan when I come in late.

I added to my collection this week, while at the Label Gallery on Portage I discovered a very talented up-and coming sculptor. I really enjoy my glass display at my entry. I can rotate my

collection and it I think the other residents look forward to seeing my new pieces. If my business and collection continue to grow at this rate I am going to need more space sooner than later.

On Friday night I met someone, Charles, I invited him over for dinner this weekend. I want to try few new recipes, maybe I will do Mediterranean. My kitchen is so great for cooking. The stainless steel counters are modern and functional, and I can reconfigure the storage any way I want. I hope that I can impress him with my delicious cooking and extensive art collection, if not my wit and charm should win him over.

Looks like I have a very busy weekend planned, full of social activities. I also think that I will be spending some time at my desk, my website needs to be updated, and I need to contact some shipping companies, among many other things. I am also going to make an effort to clean my place, and get upstairs to use the gym.

Joan's Diary Entry



Figure 11

Today I woke up and opened my shutters to discover that it was a beautiful day. I quickly opened the window to hear the birds and the sounds of the city. I sat on my bed for several minutes watching the people outside biking and walking to work. I thought back to times when I wasn't married, wishing that days were as full of excitement as they use to be. After enjoying a cup of tea and cleaning up, I went about my errands. I decided to walk to Broadway to pick up a few groceries.

Everyday things become a little more challenging: walking stairs, carrying groceries and my sight seems to be worsening. I don't know how much longer I can do all of this on my own. Good thing that my unit is a manageable size, if it was as big as my old home I would be in trouble.

Thank goodness I took my cart with me because by the time I returned home I was exhausted. I took the lift, which I try not to do, but with a full cart it was a must, put my groceries away and sat down to have a rest. It is Tuesday, so I had a bite to eat before Dorothy and May came over for a game of cards. As usual we set up at the table just outside my unit; I quickly tended to the plants in my flower box before we started. Maria and Charlie came home around 3pm. Charlie asked nicely if he could have one of the cookies on the table, and the ladies enjoyed listening to him talking about his day of finger painting, and playing outside. I heated up some leftovers from yesterday and watched an old movie on television before going to bed.

Maria's Diary Entry



Figure 12

The dreaded sound of my alarm, I can never seem to get enough sleep lately. Late nights of studying doesn't make getting up at 6:30 very easy. After pressing snooze a couple of times I heard the pattering of Charlie's footsteps coming towards my room. He jumped into bed with me, but I told him to not get too comfortable.

Getting out of bed to walk to the kitchen I narrowly avoid the toys on the floor. Going to work has

truly become a mean of survival, making ends meet is nearly impossible. In the next week I am going to get my resume out, school is over in almost a month, I can't wait to start a career. We get out the door at 7:40 am late as per usual, we had to run to the bus stop, and luckily we made it.

Charlie made a huge fuss when I dropped him off a day care this morning. I feel so guilty leaving him there everyday. I made him the promise that we would play outside when we got home. When we got home we went down to the river.

Judy came down for a visit after dinner we sat in the lounge chairs while Charlie played on the jungle gym. I was able to get Charlie in bed for 8 so that I could finish my assignment. I wish that I could have more space for my work, when Charlie gets older we are going to need more space. Tomorrow is another busy day I am volunteering at a function at the community center.

Judy's Diary Entry



Figure 14

Eric and I have both completed our final exams for this semester, yah! We are going to celebrate by having a dinner party. I want to cook some traditional Chinese dishes. We haven't had time to do much shopping in the last few weeks so we are going to go to Chinatown together to get some groceries.

I am so happy that exams are finished so I can get back into the book I started about a month ago. Eric and I have both decided to not take summer courses and work full time so that we can save for our wedding. We want to bring our family over

from China. Eric has suggested that we think about renting out the upstairs space as extra income for our wedding saving. Although I will miss the extra space I think it's a great idea.

Maria from downstairs and I have been spending more time together. We have talked about Eric and I starting a family, so she asked if we would want to take care of Charlie for an evening. I am really excited. I hope that we can handle it; she is only across the hall if anything goes wrong.

Eric's Diary Entry

Today I suggested to Judy that we rent out the upstairs space, so we can save some money for our wedding. I know this will be an adjustment, but by renting it we can always reclaim the space when we want to have a family.

I am so happy to be done school; it gives me some more time to do the things I enjoy. Judy and I can both get back to our love for reading, and I can spend some more time looking for my collectibles on the internet.

Secondary Users

Secondary users of the site include the visitors of the residents who would require parking or a bike rack and a means of accessing the apartment they are visiting, an intercom system will be necessary. Other potential users would be movers, delivery people, mail person, and maintenance workers. Movers and delivery people would require permission to enter the building and would also require use of the driveway at west of site. The mail person requires access to main floor common area where mail boxes are located. Mechanical and electrical workers will require access to the mechanical room located in basement.

Conclusion

I now return to the opening quotation by Friedman and Krawitz stating that "...homes are no longer a product of pure design but a response to forces beyond the control of the designers" (2002, p.11). I do not oppose this statement; home will continue to change with or without designers. However, I believe that designers must take control of housing design and understand that homes must not remain stagnant. This practicum provides insight to how interior design can create flexible homes and build community.

The difficulties of this project became apparent through understanding that creating a diverse environment meant catering to a variety of needs, lifestyles, and aesthetics while achieving a common goal of meaningful space and strong community. I began to question: how do you program a common space for both children and young adults, all the while juggling the percentage of public versus private space? How do you create privacy but still engage homeowners in a community? This practicum separates itself from the typical multi-family or multi-occupant facility by making common or semi-public space a priority. The stacked common spaces or the vertical slice through the building creates a moment of pause rather than stagnant corridor leading to a doorway. Joan is able to have her regular group of woman over to play cards in the space adjacent to her unit while still enjoying the privacy of her own home. Maria can watch Charlie at the play structure outside while doing her homework inside. These opportunities result in homeowners feeling a greater sense of belonging towards the space.

Equally important to create meaning and belonging is freedom of expression. Earlier I argued that suburban homes instilled belonging through sameness rather than celebrating the uniqueness of the diverse members of a community. The practicum

responds to this by allowing homeowners to reveal their identity through personalization. I refer to Marcus; her ideas are best described with her book *House as Mirror of Self*. As designers we need to continue to consider larger societal changes and arrive at more inclusive environments. For example, Marcus explains that as a society we attach more meaning to objects rather than space because of our transient lifestyles. This statement was influential to this project. I believe that many homes have architectural elements that create memories or experience, for example a staircase, window nook, or attic. Because the practicum explores flexible space I was cautious to provide opportunities for the occupants to create meaning through objects or systems that can be relocated as the space evolves.

In essence, I have created compact living environments which challenges the way North Americans are currently choosing to live. The practicum does not attempt to miniaturize elements of the home. Instead it creates an efficient use of space, and uses common areas for activities that would normally take place in the home. This decision does two things: it makes accommodation more affordable, and establishes a greater sense of community.

As discussed in the Adaptable Living section, flexibility can be used unsuccessfully, leading to a design problem rather than a design solution. This project provides the user with control to establish a sense of belonging. There are no systems, such as movable partitions, but rather opportunities for the occupant to create personalized meaningful spaces. My design uses shifting ownership as a method of growing within the building, or what is described as 'add-in' by Friedman. I realize that this is dependant on change by residents, and may not always function as seamlessly as

portrayed in this study, but the 'add-on' method or exterior growth can be used as an alternative if more space is needed.

The adaptability of this project illustrated through the case study I devised, using a series of scenarios that may occur in a 15-20 year span with the identified occupants. For example, as Joan's health deteriorates she will need to move into a home. This frees up space in the building for Martin's growing business and for Charlie who wants his own private bedroom. Years down the road, Charlie moves out and Martin's partner moves in, therefore he purchases the space from Maria for his partner's studio. In another scenario, Judy and Eric decide to expand their space on one floor and rent out their attic space for financial reason. Later, Judy and Eric have a baby and re-acquire their attic space for a baby's room. The program of the common spaces also adapts with the residents' needs. For example, the commercial space begins as a convenience store but later becomes a coffee shop. In another building one family may end up acquiring the entire space, although unlikely, it is very dependant on the homeowners' lifestyles and rate of change. Because the spaces are initially small, homeowners may require more space before another tenant needs to downsize.

Some limitations of this practicum include consideration of: affordable materials, building methods. Currently in this project the housing is deemed affordable based on the size of the units, and modular elements. Further study into building systems, such as pre-fabrication, would be beneficial.

Some questions that have been brought forward are: If this type of housing was produced at a large scale does it have the same effect as suburbia? Suburban homes are no longer a viable housing solution based on the changing Canadian society, therefore

what will come of suburban communities? Can they be changed to become a more diverse, flexible, and affordable housing option? This practicum has used an urban building to deal with problems of urban decay, but I believe the future will see suburban decay. Our evolving demographics can not support suburbia. It would be interesting to create diverse living environments in the suburbs using the discoveries from this study.

My hope is that the ideas brought forward in this practicum produce a set of guidelines for affordable and adaptable housing. This study could be beneficial to individuals, and groups such as housing developers. Developers continue to build homes for a household configuration that is disappearing, and do not consider the importance of adaptable space.

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APPENDIX A PROGRAMMING

Functional Requirements

Joan

General Needs/Issues

- Accessibility to services
- Accessibility to exits
- Security
 - Monitoring- emergency button
- Thresholds- no large level change

Entry Area	Description
Furnishings	<ul style="list-style-type: none"> • Storage- for walker or wheelchair
Equipment	<ul style="list-style-type: none"> • Seat , Mirror
Lighting	<ul style="list-style-type: none"> • Ceiling mounted (overall lighting)
Materials	<ul style="list-style-type: none"> • Durable • Cleanable

Living Areas	Description
Furnishings	<ul style="list-style-type: none"> • Height of seating- ease of getting in and out • Storage system- accommodate the reach of elderly
Equipment	Media Equipment <ul style="list-style-type: none"> • T.V. • Audio • Support Equipment (DVD player, VCR, printer, etc)
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Floor/Surface lighting (activity based lighting) • Location of switch accessible from different point
Materials	<ul style="list-style-type: none"> • Soft (comfortable)
Colour	<ul style="list-style-type: none"> • Floral • Light colour-white/blue • Oak wood

Eating Area	Description
Furnishings	<ul style="list-style-type: none"> • Seating <ul style="list-style-type: none"> ◦ sturdy

	<ul style="list-style-type: none"> • Horizontal surfaces- <ul style="list-style-type: none"> ○ approachable by wheelchair/easy access ○ height of counters lower 2'6" • Storage system <ul style="list-style-type: none"> ○ Height and reaching distances • Hardware <ul style="list-style-type: none"> ○ For limited dexterity- levers on faucet/d-pull on cabinet
Equipment	Kitchen Equipment <ul style="list-style-type: none"> • Fridge • Stove • Sink • Other Small Appliances
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Task lighting (under cabinet lighting, wall mounted)
Materials	<ul style="list-style-type: none"> • Durable • Cleanable
Colour	Same as above

Sleeping Spaces	Description
Furnishings	<ul style="list-style-type: none"> • Bed <ul style="list-style-type: none"> ○ height 18" ○ accessible from 3 sides • Storage system <ul style="list-style-type: none"> ○ Reach/height
Equipment	<ul style="list-style-type: none"> • Alarm clock • T.V.
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Task lighting (bedside table lighting)
Materials	<ul style="list-style-type: none"> • Soft

Circulation	Description
Lighting	<ul style="list-style-type: none"> • Ceiling mounted (overall lighting)
Materials	<ul style="list-style-type: none"> • Durable

	<ul style="list-style-type: none"> • Cleanable
Personal Hygiene	Description
Furnishings	<ul style="list-style-type: none"> • Towel rack • Grab bars • Toilet paper holder • Hook • Waste receptacle • Storage
Equipment	<ul style="list-style-type: none"> • Bath/Shower <ul style="list-style-type: none"> ○ Hand held shower head ○ Grab rails • Sink • Toilet • Hardware- Lever handles • Mirror
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting)
Materials	<ul style="list-style-type: none"> • Durable • Non-slip surfaces • Cleanable • Hard (tile, counter top)

Maria and Charlie

General Needs/Issues

- Accessibility to services
- Visibility
- Cleanable
- Safety- sharp edges
- Storage

Entry Area	Description
Furnishings	<ul style="list-style-type: none"> • Storage <ul style="list-style-type: none"> ○ Coats, boots, hats, mitts, backpacks
Equipment	<ul style="list-style-type: none"> • Seat • Hooks at both adult and children height • Mirror
Lighting	<ul style="list-style-type: none"> • Ceiling mounted (overall lighting)
Materials	<ul style="list-style-type: none"> • Durable • Cleanable

Eating Area	Description
Furnishings	<ul style="list-style-type: none"> • Seating <ul style="list-style-type: none"> ○ Sturdy ○ Height for child • Horizontal surfaces- <ul style="list-style-type: none"> ○ Height for child • Storage system <ul style="list-style-type: none"> ○ Safety for children ○ Easily accessible for child
Equipment	Kitchen Equipment <ul style="list-style-type: none"> • Fridge • Stove • Sink • Other Small Appliances
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Task lighting (under cabinet lighting, wall mounted)
Materials	<ul style="list-style-type: none"> • Durable • Easily cleanable

Sleeping Spaces- Maria	Description
Furnishings	<ul style="list-style-type: none"> • Bed • Storage system • Horizontal Surface- for homework
Equipment	<ul style="list-style-type: none"> • Alarm clock • Lamp
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Task lighting (bedside table lighting) • Lighting for desk surface
Sleeping Spaces- Charlie	Description
Furnishings	<ul style="list-style-type: none"> • Bed- raised • Storage system- for toys • Horizontal Surface- for homework
Equipment	<ul style="list-style-type: none"> • Alarm clock
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Task lighting (bedside table lighting and desk)

Living Areas	Description
Floor Area	<ul style="list-style-type: none"> • Room for play space • Space for Maria <ul style="list-style-type: none"> ○ Read a book ○ Watch TV ○ Do school work
Furnishings	<ul style="list-style-type: none"> • Storage system- accommodate toys • Seating <ul style="list-style-type: none"> ○ Height conducive to both Maria and Charlie
Equipment	Media Equipment <ul style="list-style-type: none"> • T.V. • Audio, Speakers, Computer • Support Equipment (DVD player, VCR, printer, etc)
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Floor/Surface lighting (activity based lighting) • Location of switch accessible from 2 points
Materials	<ul style="list-style-type: none"> • Durable • Easily Cleanable
Colour	<ul style="list-style-type: none"> • Fun

	<ul style="list-style-type: none"> ○ Stimulating • Maple
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Personal Hygiene	Description
Furnishings	<ul style="list-style-type: none"> • Towel rack • Toilet paper holder • Hook • Waste receptacle • Storage • Step ladder for toilet and sink for Charlie • Mirror
Equipment	<ul style="list-style-type: none"> • Bath • Sink • Toilet • Hardware- Lever handles • Hairdryer safety switch
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting)
Materials	<ul style="list-style-type: none"> • Durable • Non-slip surfaces • Cleanable • Hard (tile, counter top)

Martin

General Needs/Issues

- Accessibility to services
- Secondary Entrance
- Large work space
- Display for art work
- Accommodate room for growth of business

Entry Area	Description
Furnishings	<ul style="list-style-type: none"> • Storage
Equipment	<ul style="list-style-type: none"> • Display for art
Lighting	<ul style="list-style-type: none"> • Ceiling mounted (overall lighting) • Spot lighting for art collection
Materials	<ul style="list-style-type: none"> • Durable • Cleanable

Living Areas	Description
Furnishings	<ul style="list-style-type: none"> • Storage system- accommodate art work and work items • Seating <ul style="list-style-type: none"> ◦ Reading • Work space- layout space
Equipment	Media Equipment <ul style="list-style-type: none"> • T.V. • Audio • Support Equipment (DVD player, VCR, printer, etc) • Computer
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Floor/Surface lighting (activity based lighting) • Location of switch accessible from 2 points
Materials	<ul style="list-style-type: none"> • Clean/Modern/elegant
Colour	<ul style="list-style-type: none"> • Trendy- black/white/red • Maple hardwood • Stainless steel

Eating Area	Description
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Furnishings	<ul style="list-style-type: none"> • Seating • Horizontal surfaces <ul style="list-style-type: none"> ○ Large counter space ○ Expandable to accommodate dinner party • Storage system for cookware • Hardware
Equipment	Kitchen Equipment <ul style="list-style-type: none"> • Fridge • Stove • Sink • Other Small Appliances
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Task lighting (under cabinet lighting, wall mounted)
Materials	<ul style="list-style-type: none"> • Durable • Cleanable • More sophisticated

Sleeping Spaces	Description
Furnishings	<ul style="list-style-type: none"> • Bed • Storage system
Equipment	<ul style="list-style-type: none"> • Alarm clock
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Task lighting (bedside table lighting)

Personal Hygiene	Description
Furnishings	<ul style="list-style-type: none"> • Towel rack • Toilet paper holder • Hook • Waste receptacle • Storage • Mirror
Equipment	<ul style="list-style-type: none"> • Shower • Sink • Toilet • Electric shaver • Hairdryer

Lighting	<ul style="list-style-type: none">• Daylighting• Mirror light• Ceiling mounted (overall lighting)
Materials	<ul style="list-style-type: none">• Durable• Cleanable• Hard (tile, counter top)

Judy and Eric

General Needs/Issues

- Accessibility to services
- Large work space
- Storage for books and collectibles (cultural artefacts, art)
- Room to accommodate guests for entertaining
- Expand and contract based on financial and family needs

Entry Area	Description
Furnishings	<ul style="list-style-type: none"> • Storage for coats, shoes, school bags etc.
Equipment	<ul style="list-style-type: none"> • Mirror
Lighting	<ul style="list-style-type: none"> • Ceiling mounted (overall lighting)
Materials	<ul style="list-style-type: none"> • Durable • Cleanable
Living Areas	Description
Furnishings	<ul style="list-style-type: none"> • Storage system <ul style="list-style-type: none"> ○ Cultural artefacts ○ books • Seating <ul style="list-style-type: none"> ○ Reading ○ Variety of seating • Large work surface
Equipment	Media Equipment <ul style="list-style-type: none"> • T.V. • Audio • Support Equipment (DVD player, VCR, printer, etc) • Computer
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Floor/Surface lighting (activity based lighting) • Location of switch accessible from different points
Materials	<ul style="list-style-type: none"> • Trendy/Culturally appropriate <ul style="list-style-type: none"> ○ Particle board ○ Stainless steel
Colour	<ul style="list-style-type: none"> • Warm

Eating Area	Description
Furnishings	<ul style="list-style-type: none"> • Seating • Horizontal surfaces <ul style="list-style-type: none"> ○ Large counter space ○ Expandable to accommodate company • Storage system for cookware and dinnerware • Hardware
Equipment	Kitchen Equipment <ul style="list-style-type: none"> • Fridge • Stove • Sink • Other Small Appliances
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Task lighting (under cabinet lighting, wall mounted) • Light for entertaining <ul style="list-style-type: none"> ○ Dimmer switch
Materials	<ul style="list-style-type: none"> • Durable • Cleanable

Sleeping Spaces	Description
Furnishings	<ul style="list-style-type: none"> • Bed • Storage system <ul style="list-style-type: none"> ○ For hanging and folded clothing • Ladder to access space from lower level
Equipment	<ul style="list-style-type: none"> • Alarm clock
Lighting	<ul style="list-style-type: none"> • Daylighting • Ceiling mounted (overall lighting) • Task lighting (bedside table lighting)

Personal Hygiene	Description
Furnishings	<ul style="list-style-type: none">• Towel rack• Toilet paper holder• Hook• Waste receptacle• Storage• Mirror
Equipment	<ul style="list-style-type: none">• Shower• Sink• Toilet
Lighting	<ul style="list-style-type: none">• Daylighting• Ceiling mounted (overall lighting)• Mirror lighting
Materials	<ul style="list-style-type: none">• Durable• Cleanable• Hard (tile, counter top)

Support Areas

Laundry	Description
Furnishings	<ul style="list-style-type: none"> • Horizontal Surface for folding clothing
Equipment	<ul style="list-style-type: none"> • 3 Washer/Dryer • Iron/ Ironing Board • Sink
Lighting	<ul style="list-style-type: none"> • Ceiling mounted (overall lighting)
Materials	<ul style="list-style-type: none"> • Durable • Cleanable • Hard (tile, counter top)

Mechanical/Electrical	Description
Furnishings	None
Equipment	<ul style="list-style-type: none"> • Water Softener • H/W tank • Electrical Panel • Heating/Cooling System
Lighting	<ul style="list-style-type: none"> • Ceiling mounted (overall lighting)
Materials	<ul style="list-style-type: none"> • Durable • Cleanable • Hard (tile, counter top)

Public	Description
Furnishings	<ul style="list-style-type: none"> • Seating
Equipment	<ul style="list-style-type: none"> • Security system • Intercom/Buzzer System • Mail Boxes • Bike rack • Mat
Lighting	<ul style="list-style-type: none"> • Ceiling mounted (overall lighting) • Daylighting
Materials	<ul style="list-style-type: none"> • Durable • Cleanable • Hard (tile, counter top)

Common Area: Interior	Description
Furnishings	<ul style="list-style-type: none"> • Variety of seating • Horizontal surfaces for computer work
Equipment	<ul style="list-style-type: none"> • Waste receptacle • Bike rack

	<ul style="list-style-type: none"> • Play structure • Computer connection point • Planters
Lighting	<ul style="list-style-type: none"> • Ceiling mounted/wall mounted (overall lighting) • Task lighting to facilitate <ul style="list-style-type: none"> ○ Card games ○ Computer use • Daylighting
Materials	<ul style="list-style-type: none"> • Durable/ Warm • Cleanable • Hard (tile, counter top)

Common Area: Exterior	Description
Furnishings	<ul style="list-style-type: none"> • Exterior seating
Equipment	<ul style="list-style-type: none"> • Play structure • Garden
Lighting	<ul style="list-style-type: none"> • Exterior Security lighting
Materials	<ul style="list-style-type: none"> • Durable

Code

According to the National Research Council (NRC) National Building Code of Canada, (1995).

Major Occupancy Classification

The site of 440 Assiniboine Ave is classified as Group C residential occupancy.

Doors Swing

1. A door that opens into a corridor providing access to exit from suite or room not located within a suite shall swing on vertical axis.
2. Every door that divides a corridor that is not wholly contained within a suite shall swing on vertical axis in the direction of travel to the exit.

Exits

1. Every floor area intended for occupancy shall be served by at least two exits.

Distance between Exits

1. The least distance between the 2 required exits shall be
 - a. one half the maximum diagonal dimension of the floor area, but need not to be more than 9m for a floor area having a public corridor, or
 - b. one half the maximum diagonal dimension of the floor area, but not less than 9m for all other floor areas.
2. The minimum distance between exits referred to in Sentence (1) shall be the shortest distance that smoke would have to travel between exits, assuming that the smoke will not penetrate an intervening fire separation.

Width and Height of Exits

1. The required width of an exit shall be not less than
 - a. 1100mm for corridors, passageways, stairs and ramps that serves more than three storeys above grade or more than one story below grade.

Headroom Clearance

1. Except as permitted by Sentence (2) and (4), every exit shall have a headroom clearance of not less than 2100mm.
2. The headroom clearance for stairways measured vertically above any landing or the nosing of any stair tread shall not be less than 2050mm.
3. The headroom clearance for doorways shall not be less than 2030mm.
4. No door closer or other device shall be installed so as to reduce the headroom clearance of a doorway to less than 1980 mm.

Fire Separation of Exits

1. Every exit shall be separated from the remainder of the building by a fire separation having fire-resistance rating not less than 45 min, for
 - a. The floor assembly above the storey, or
 - b. The floor assembly below the storey, if there is not floor assembly above.
2. The fire resistance rating of the fire separation referred to in Sentence (1) need not be more than 2hrs.

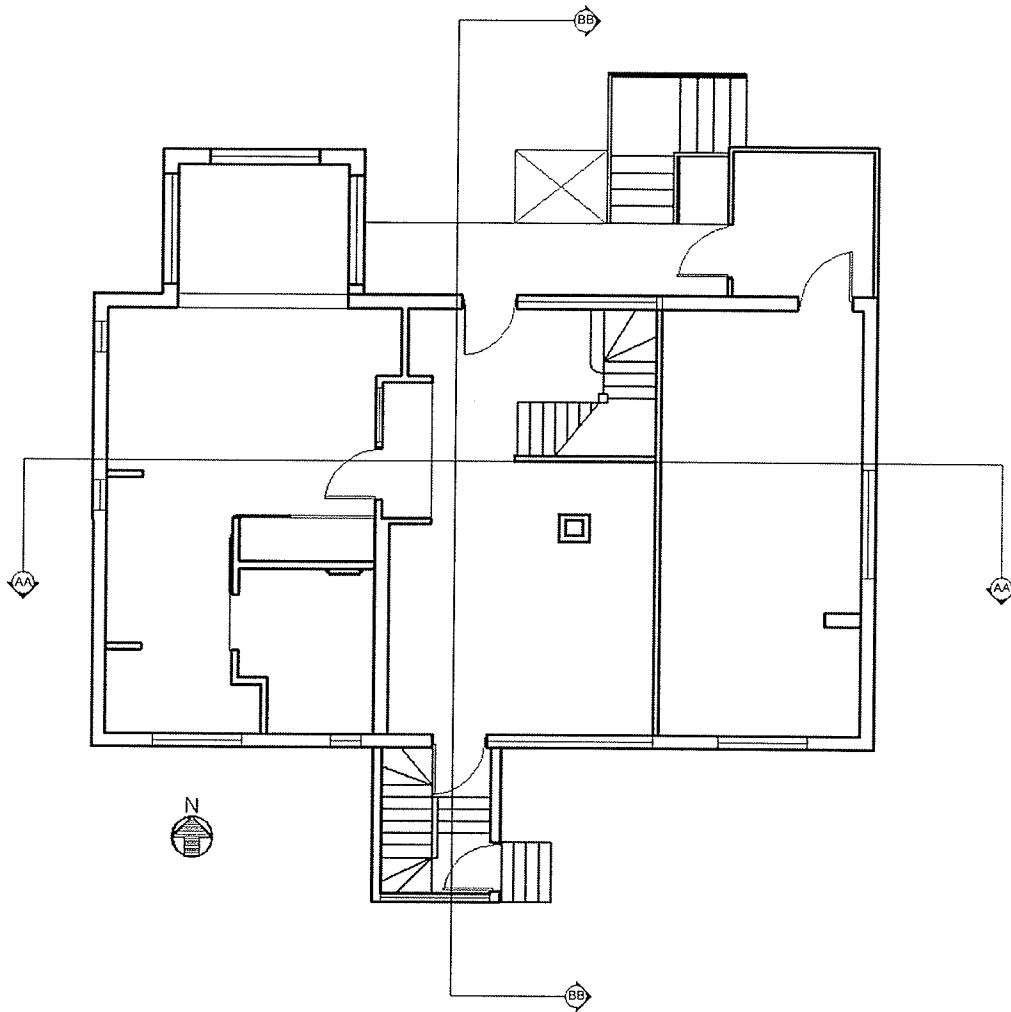
Exits through Lobbies

1. Except as permitted by Sentence (2), no exit from a floor area above or below the first storey shall lead through a lobby.
2. Not more than one exit from a floor area is permitted to lead through a lobby provided

- a. The lobby floor is not more than 4.5m above grade
- b. The path of travel through the lobby to the outdoors is not more than 15 m
- c. The adjacent rooms or premises having direct access to the lobby do not contain a residential occupancy of an industrial occupancy.
- d. The lobby conforms to the requirements for exits.

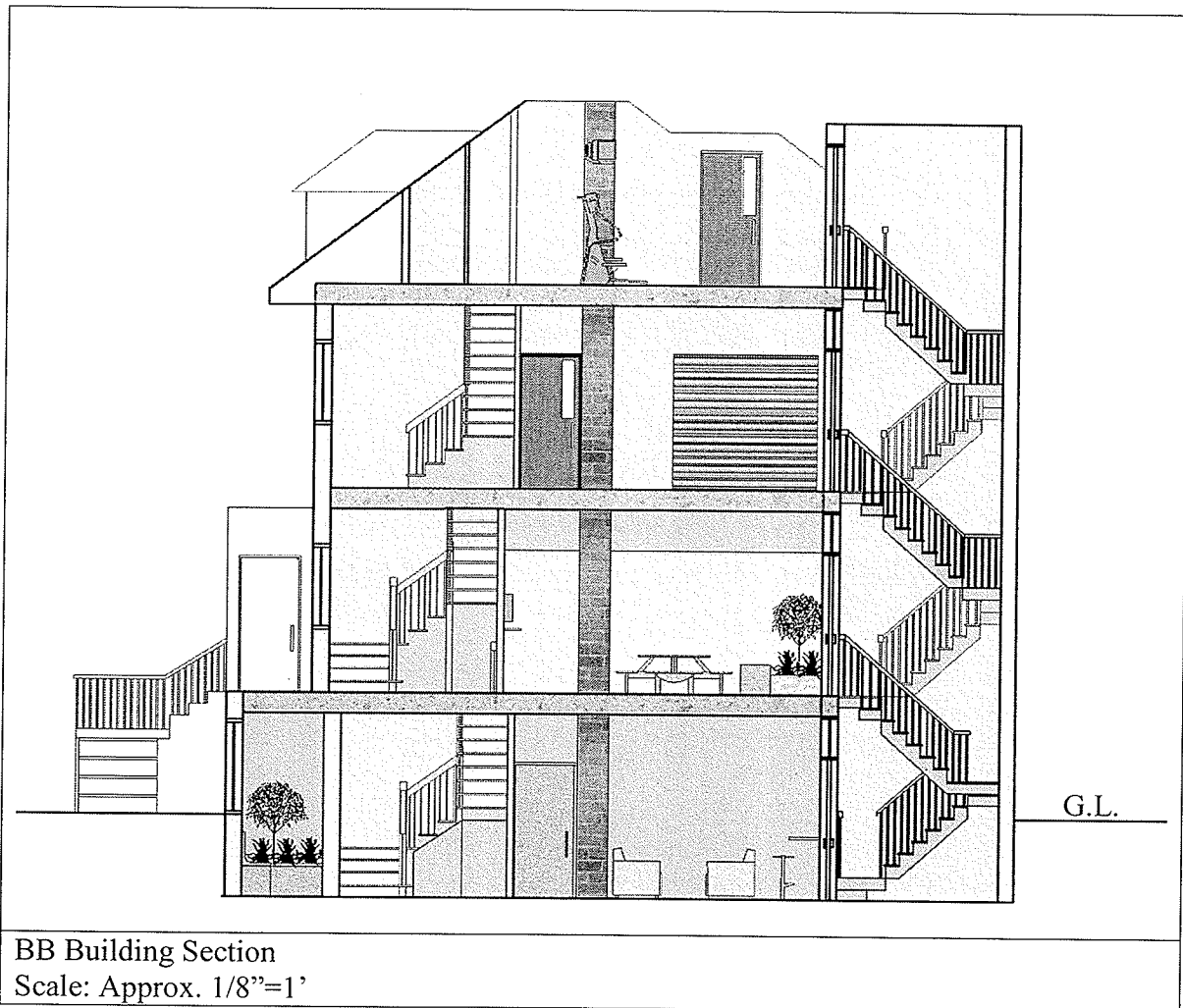
APPENDIX B DESIGN DRAWINGS

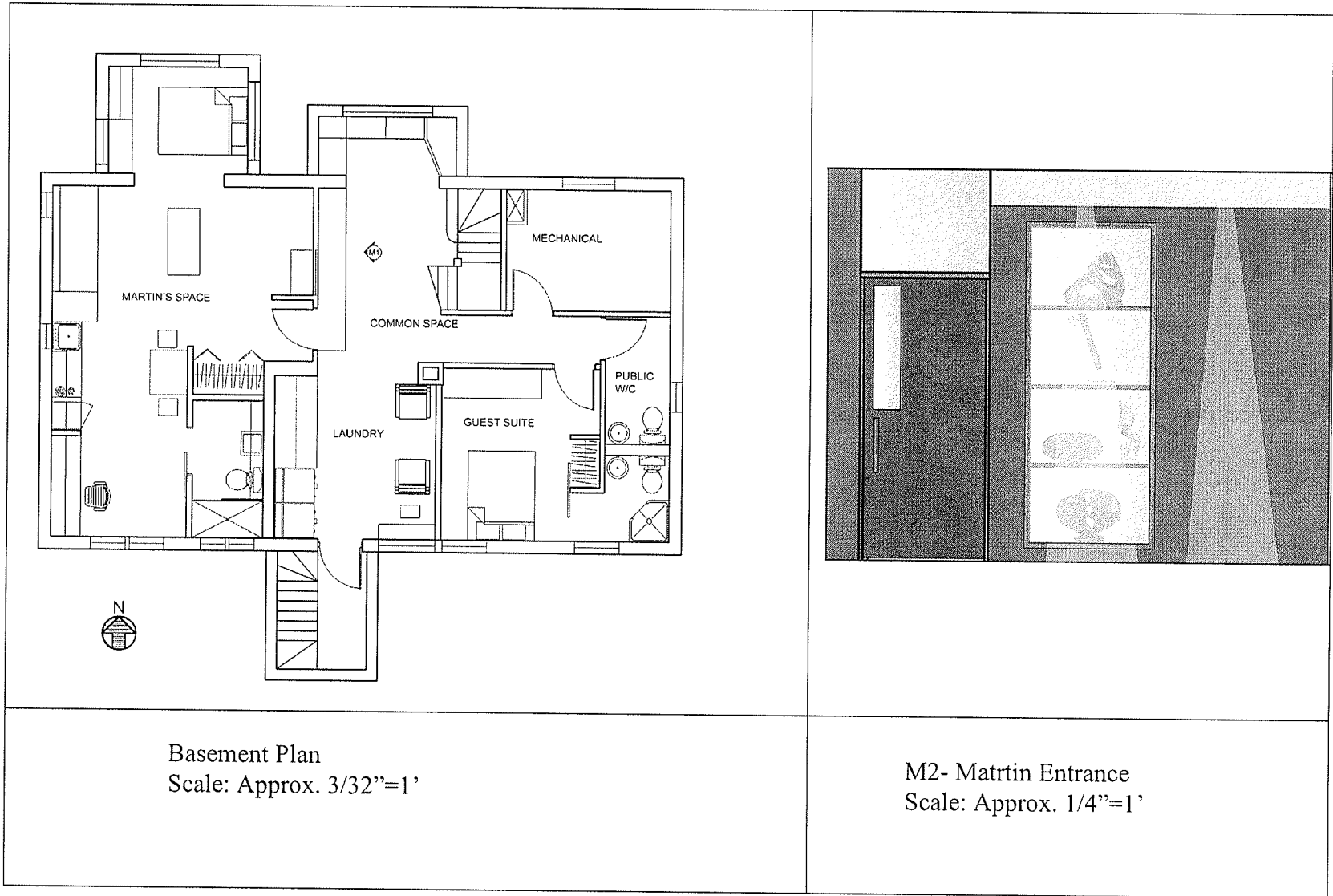
Community Spaces

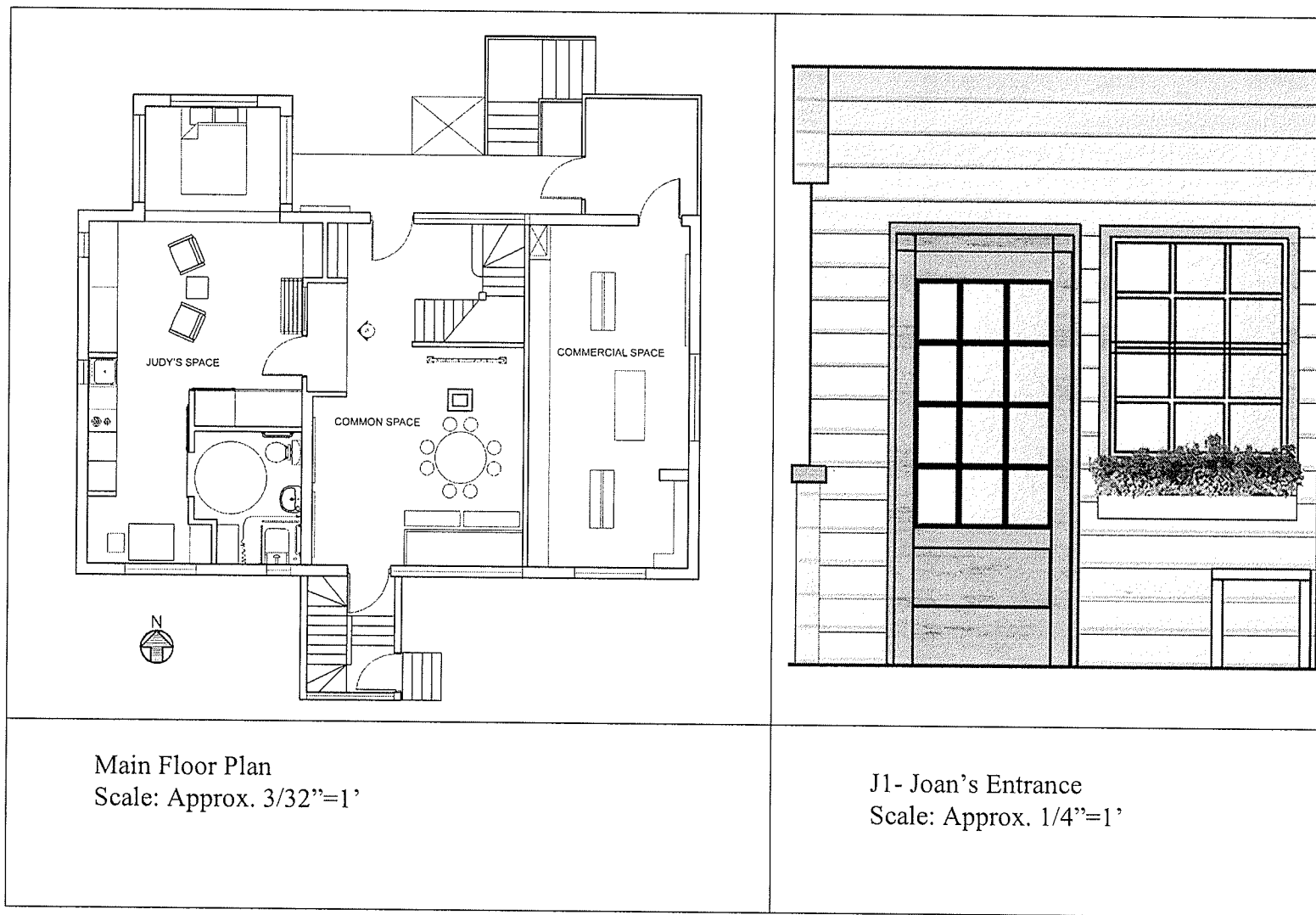


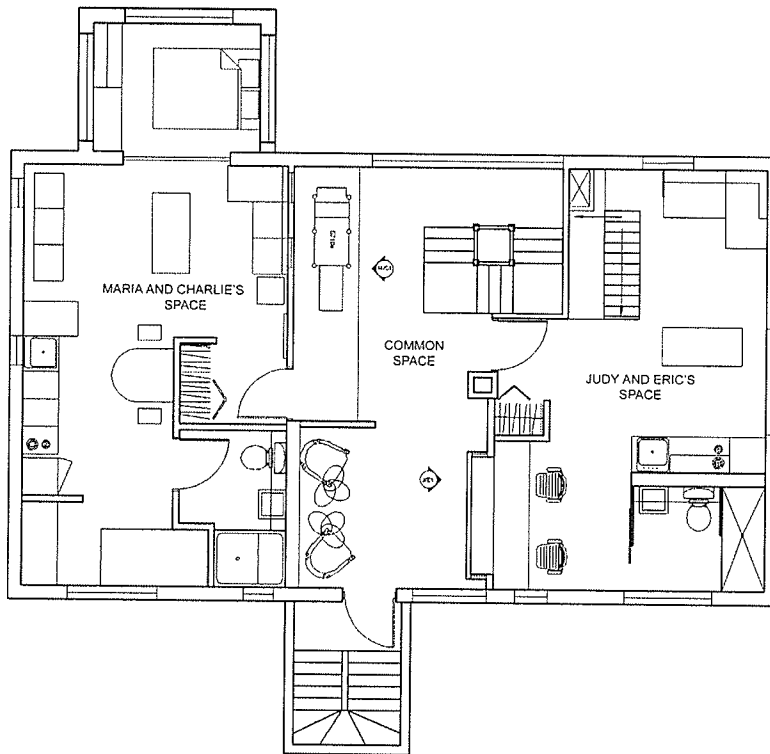
Key Plan- Main Level
Scale: Approx. 1/8"=1'



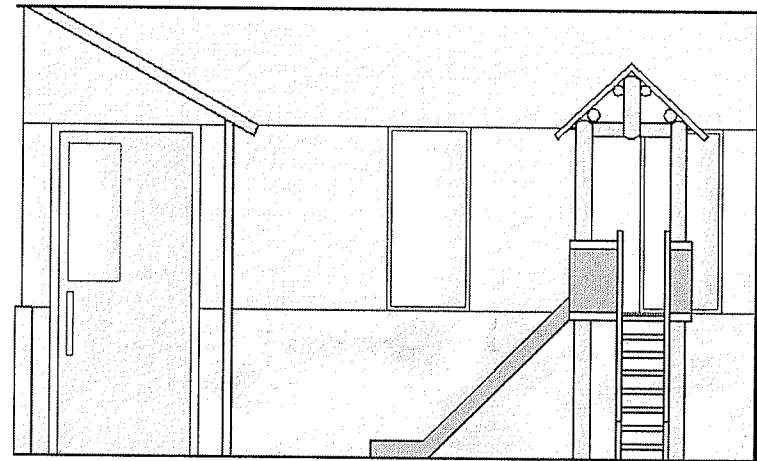




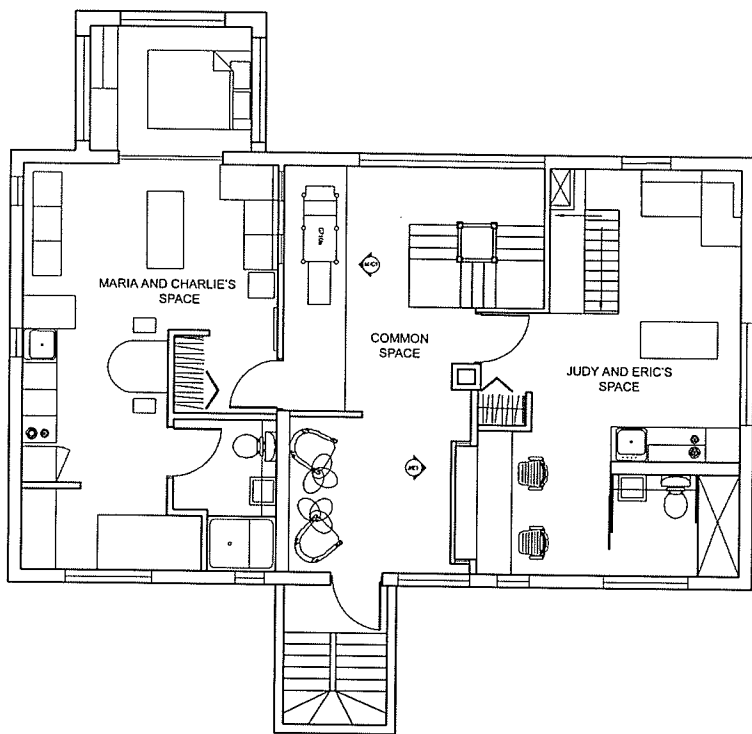




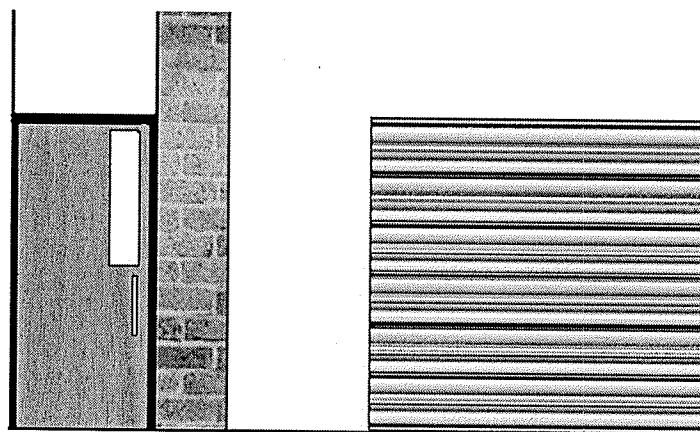
Second Floor Plan
Scale: Approx. $\frac{3}{32}"=1'$



M/C1- Maria and Charlie's Entrance
Scale: Approx. $\frac{1}{4}"=1'$

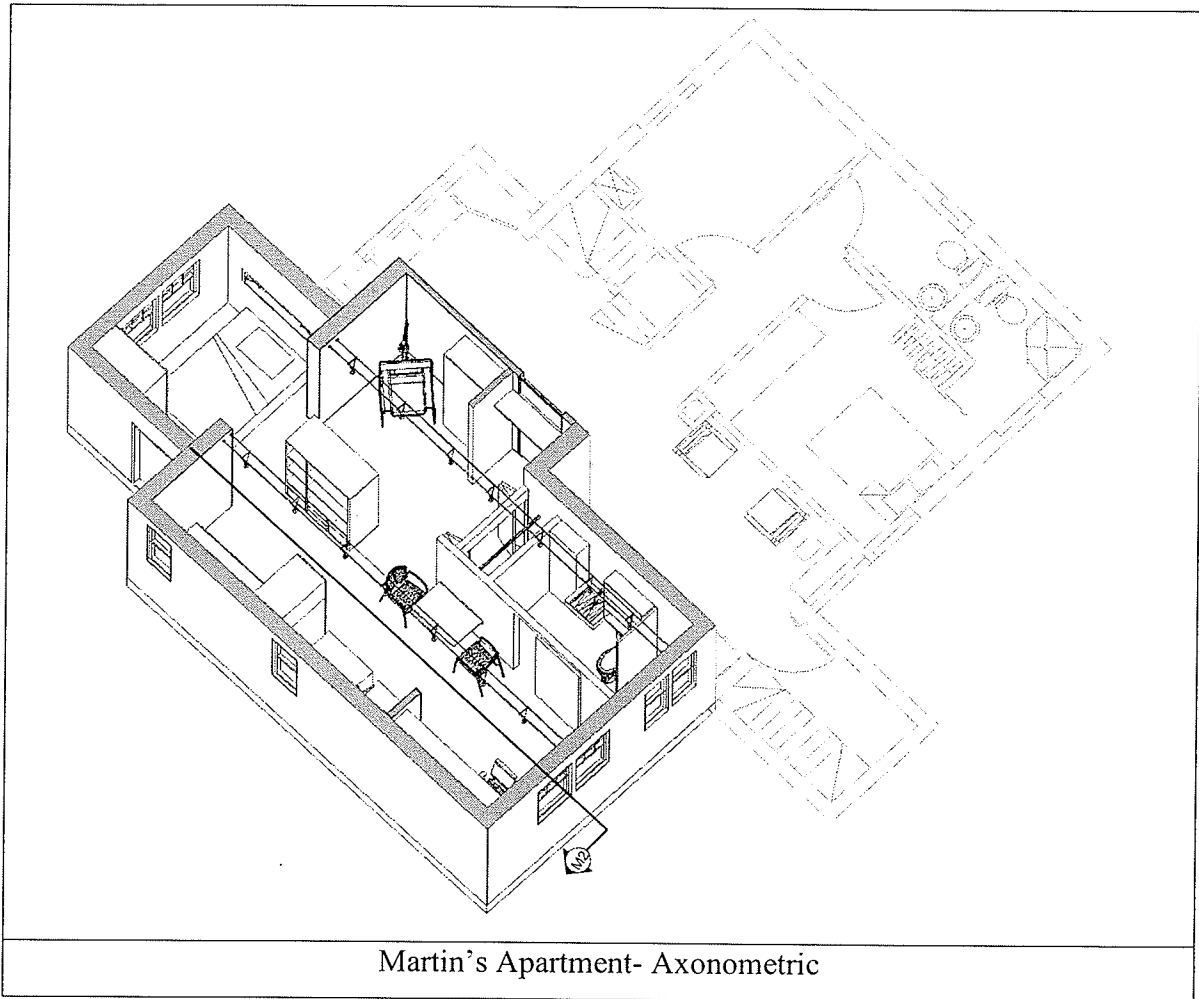


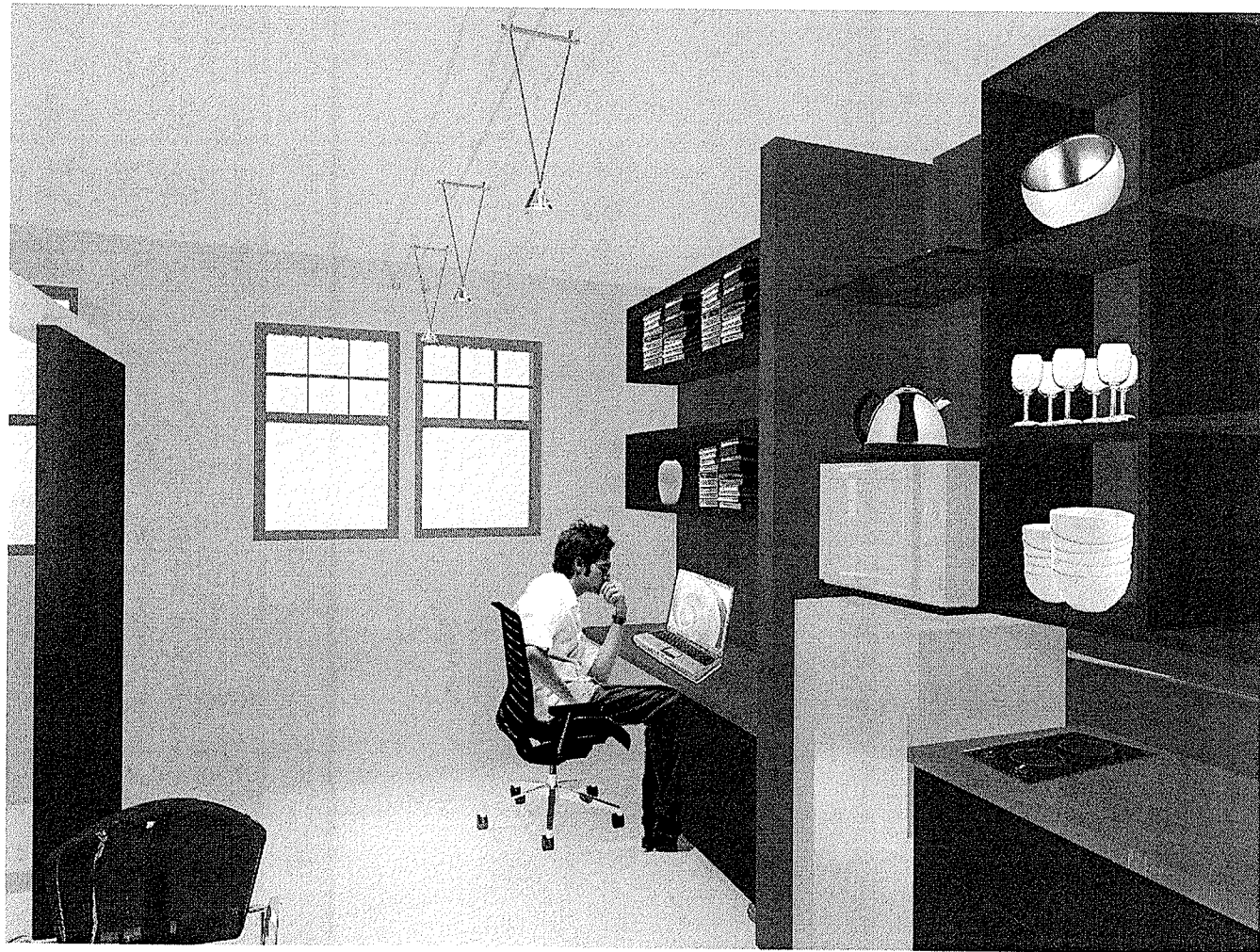
Second Floor Plan
Scale: Approx. 3/32"=1'



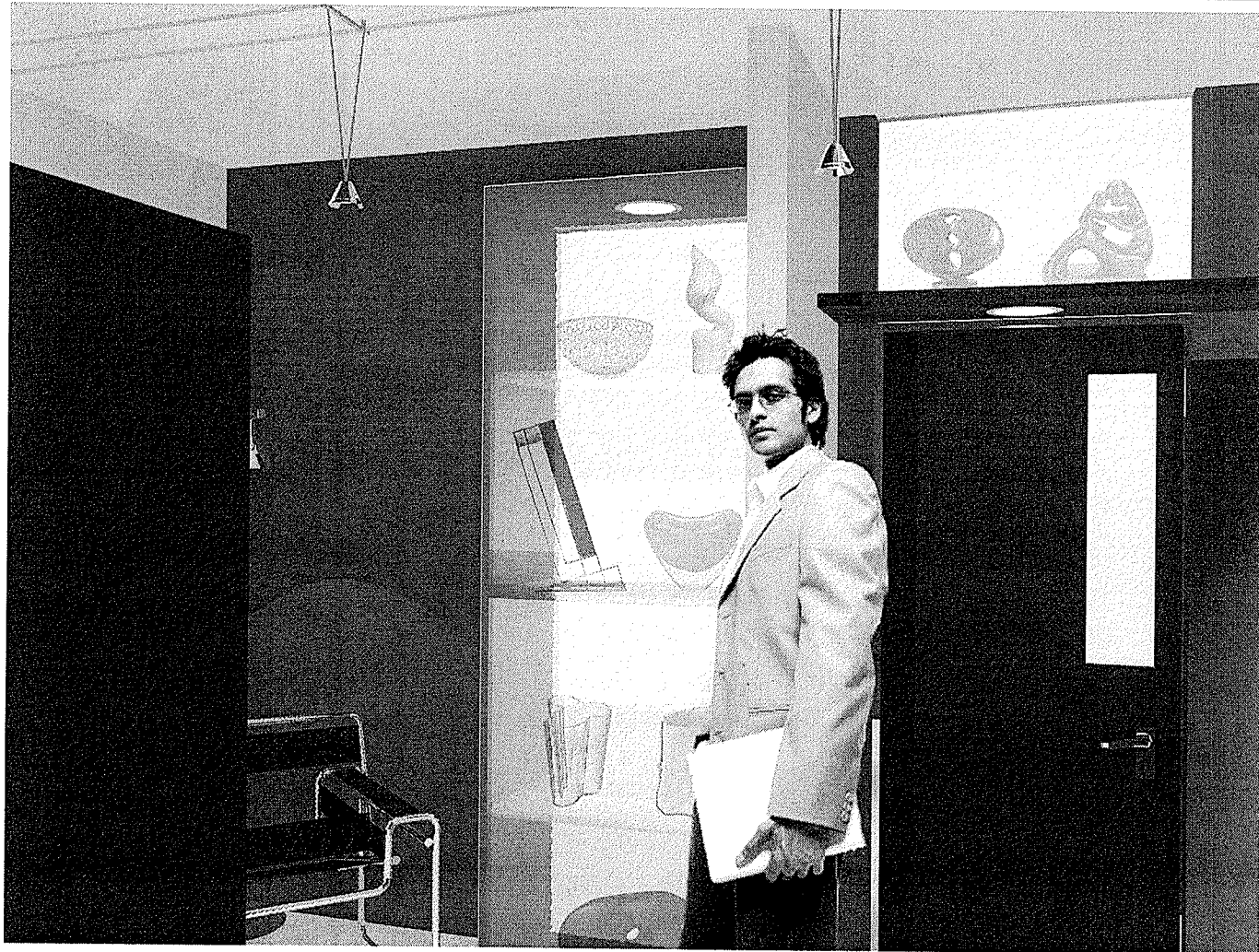
J/E1- Judy and Eric's Entrance
Scale: Approx. 1/4"=1'

Martin

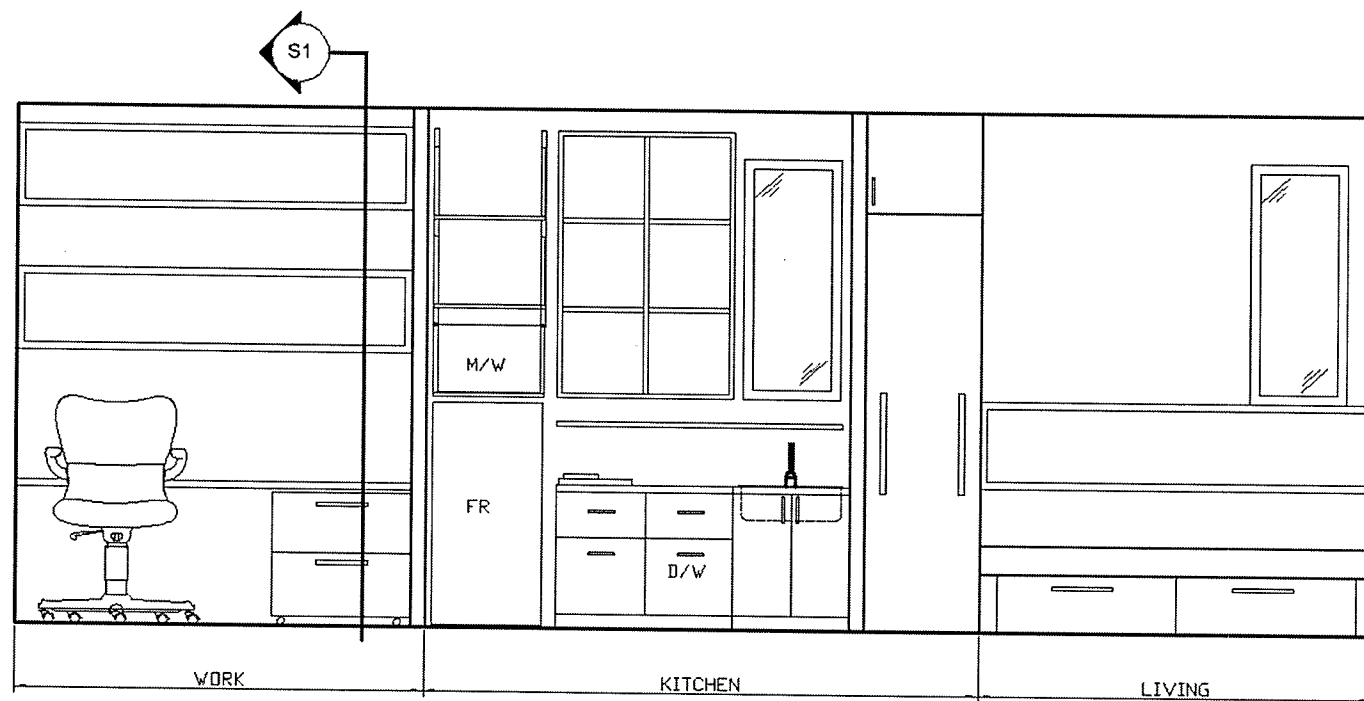




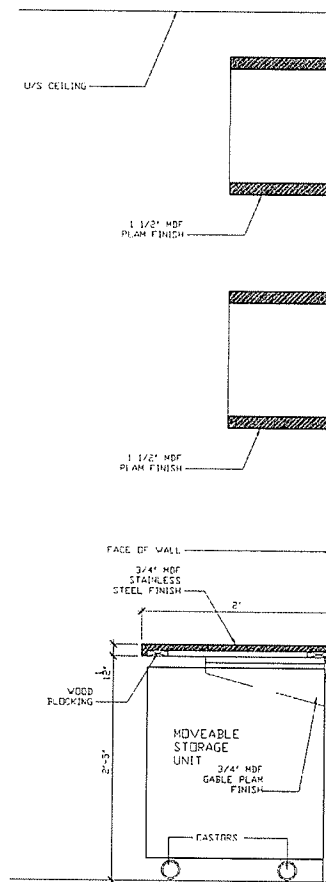
Perspective- Martin's Work Space



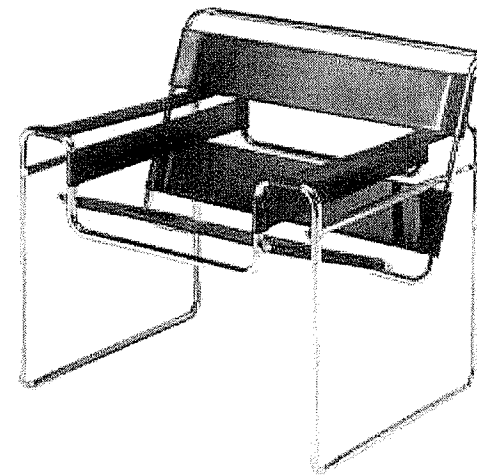
Perspective- Martin's Work Space



Elevation M2- Martin's Apartment
 Scale: Approx. 1/4"=1'

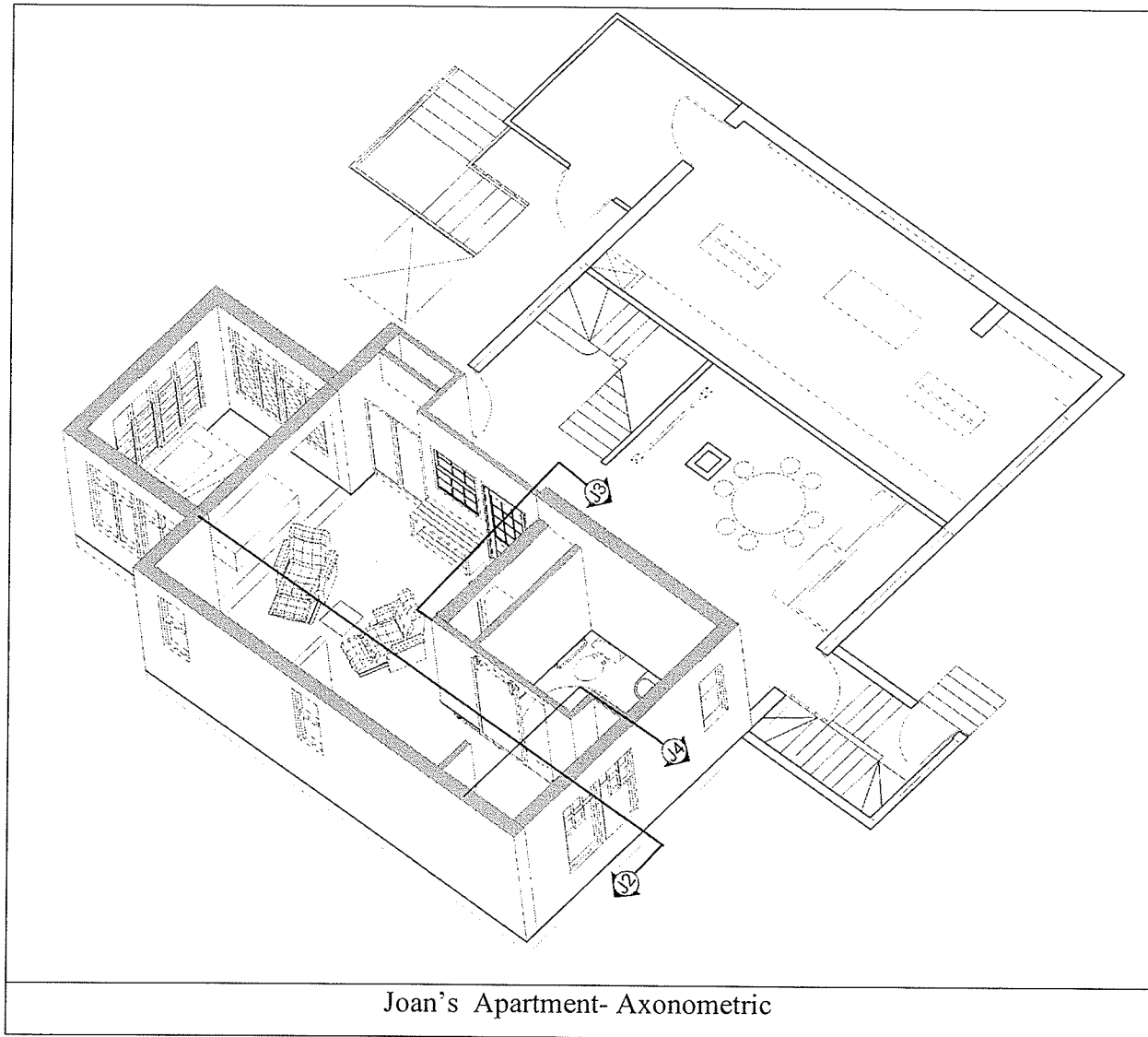


Section S1- Martin's Desk Unit
Scale: Approx. 1/2"=1'



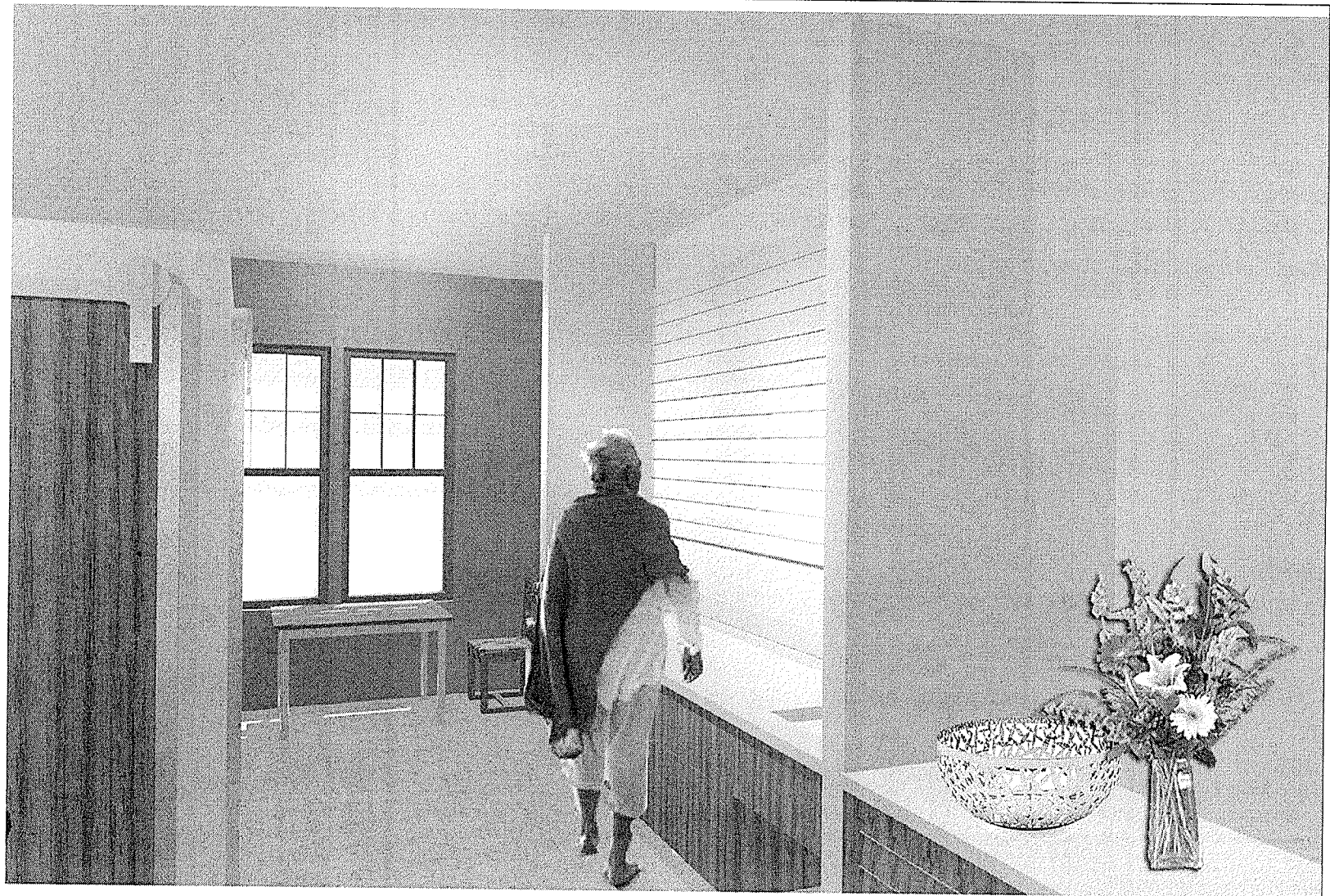
Wassily Chair- Knoll Furniture

Joan

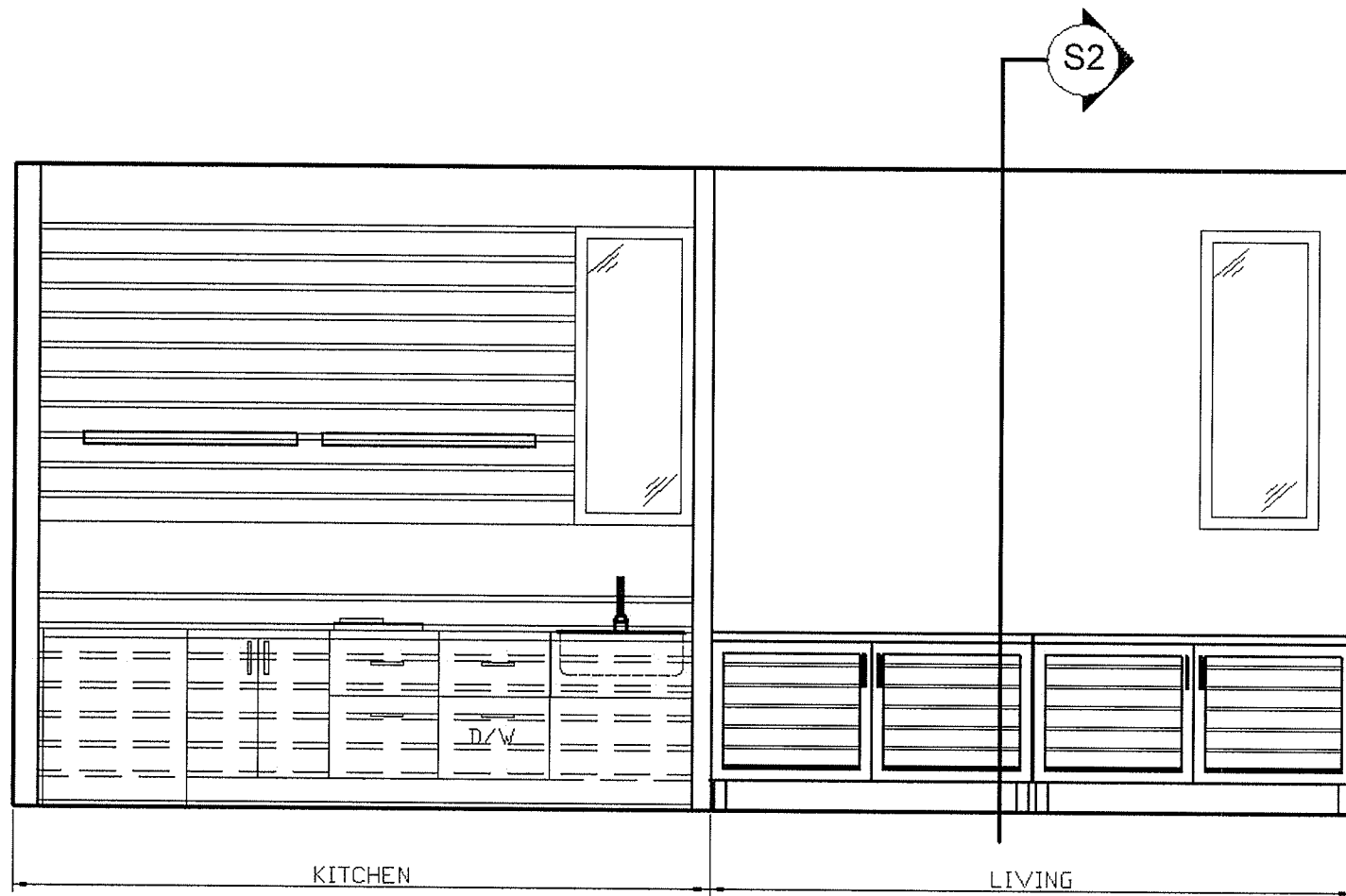




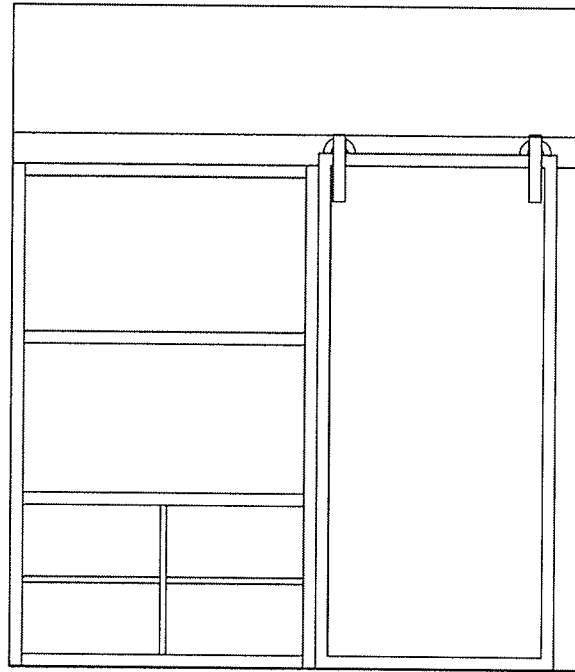
Perspective- Joan's Entry and Bedroom



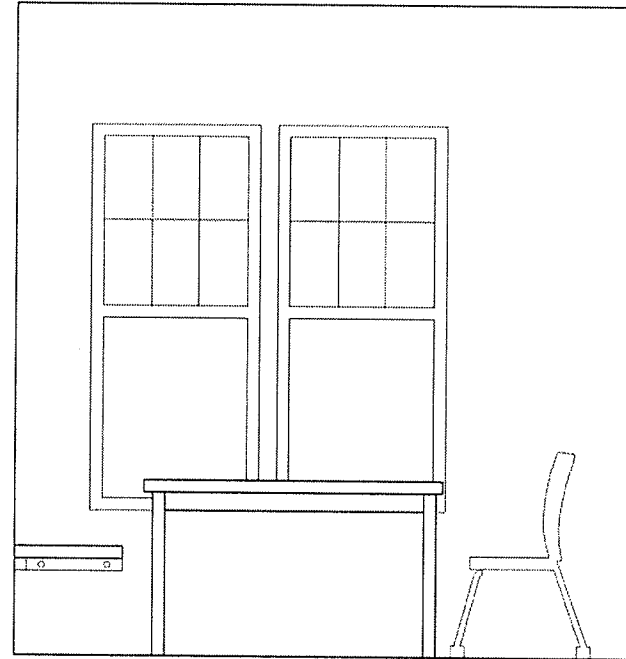
Perspective- Joan's Kitchen and Eating Space



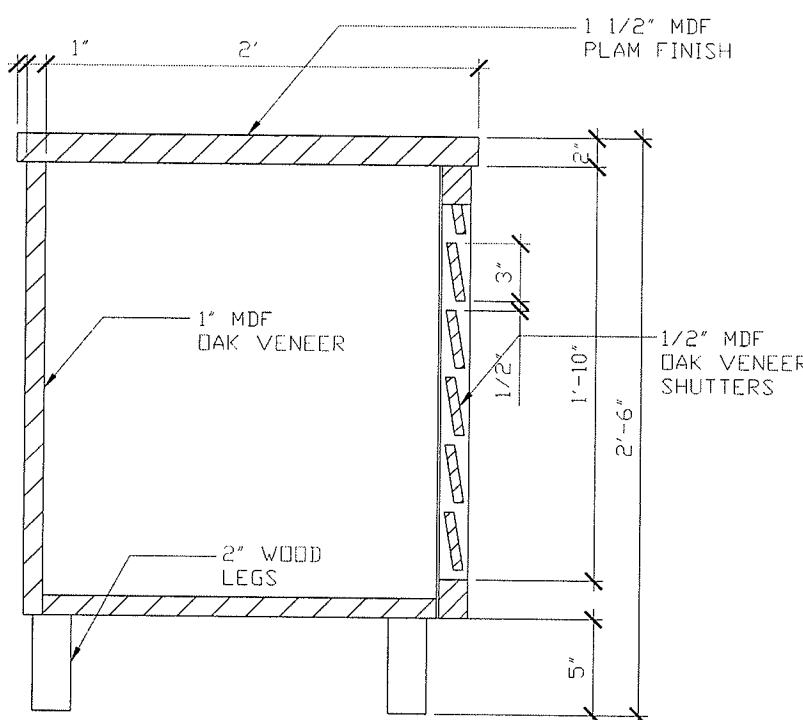

Elevation J2- Joan's Kitchen/Living Room
Scale: Approx. 1/4"=1'



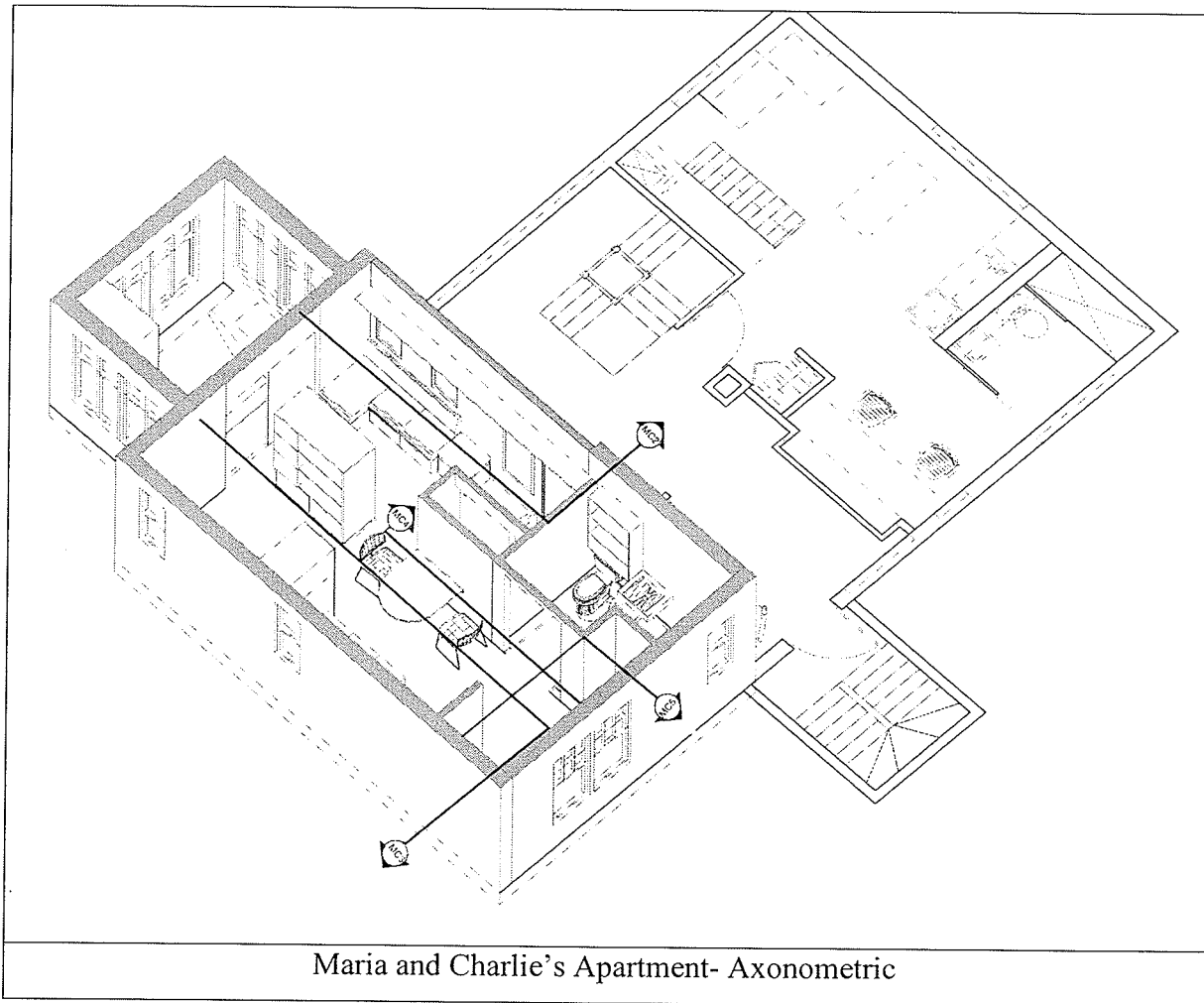
Elevation J3- Joan's Front Entry Storage
Scale: Approx. 1/4 " = 1'

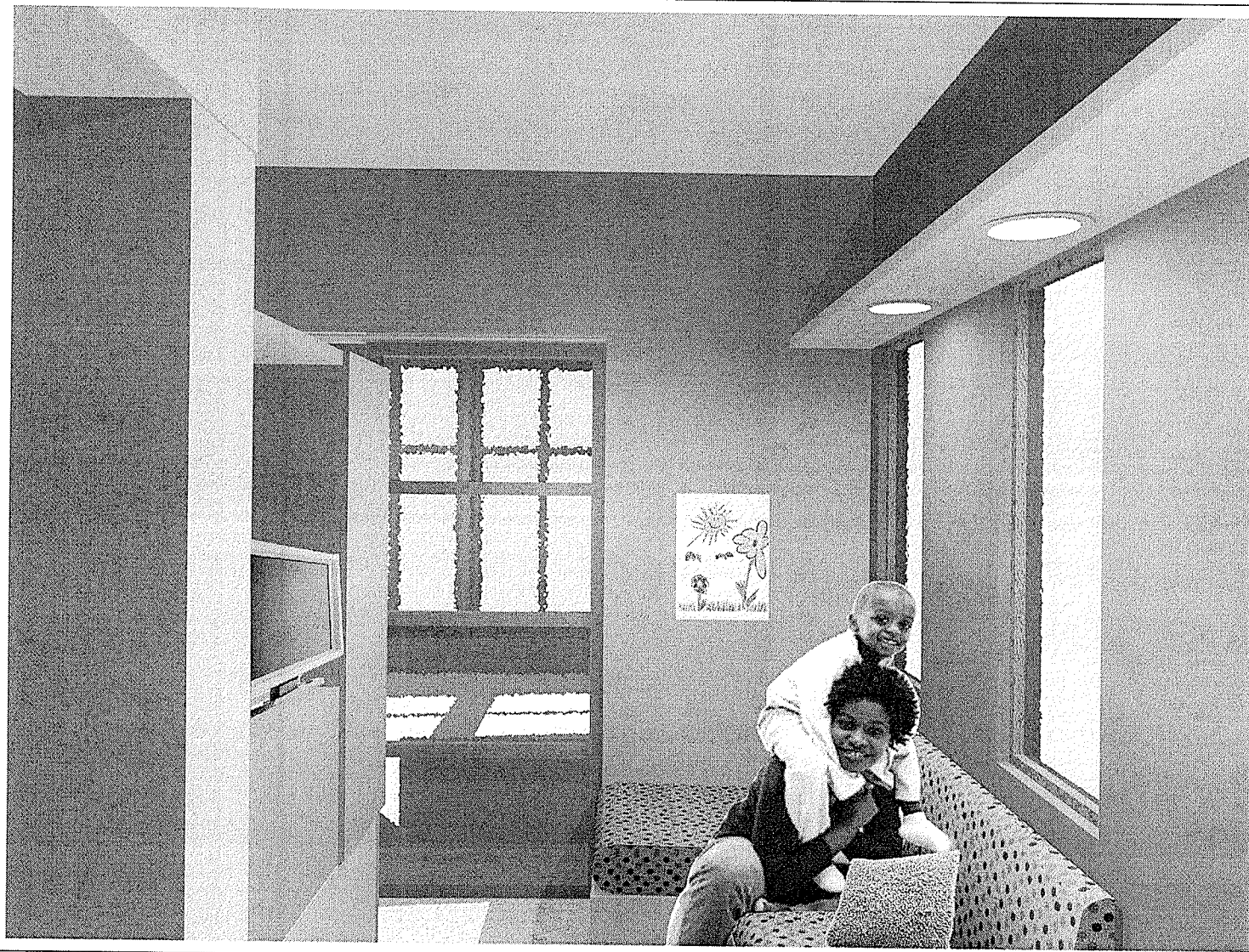


Elevation J4- Joan's Eating Area
Scale: Approx. 1/4 " = 1'

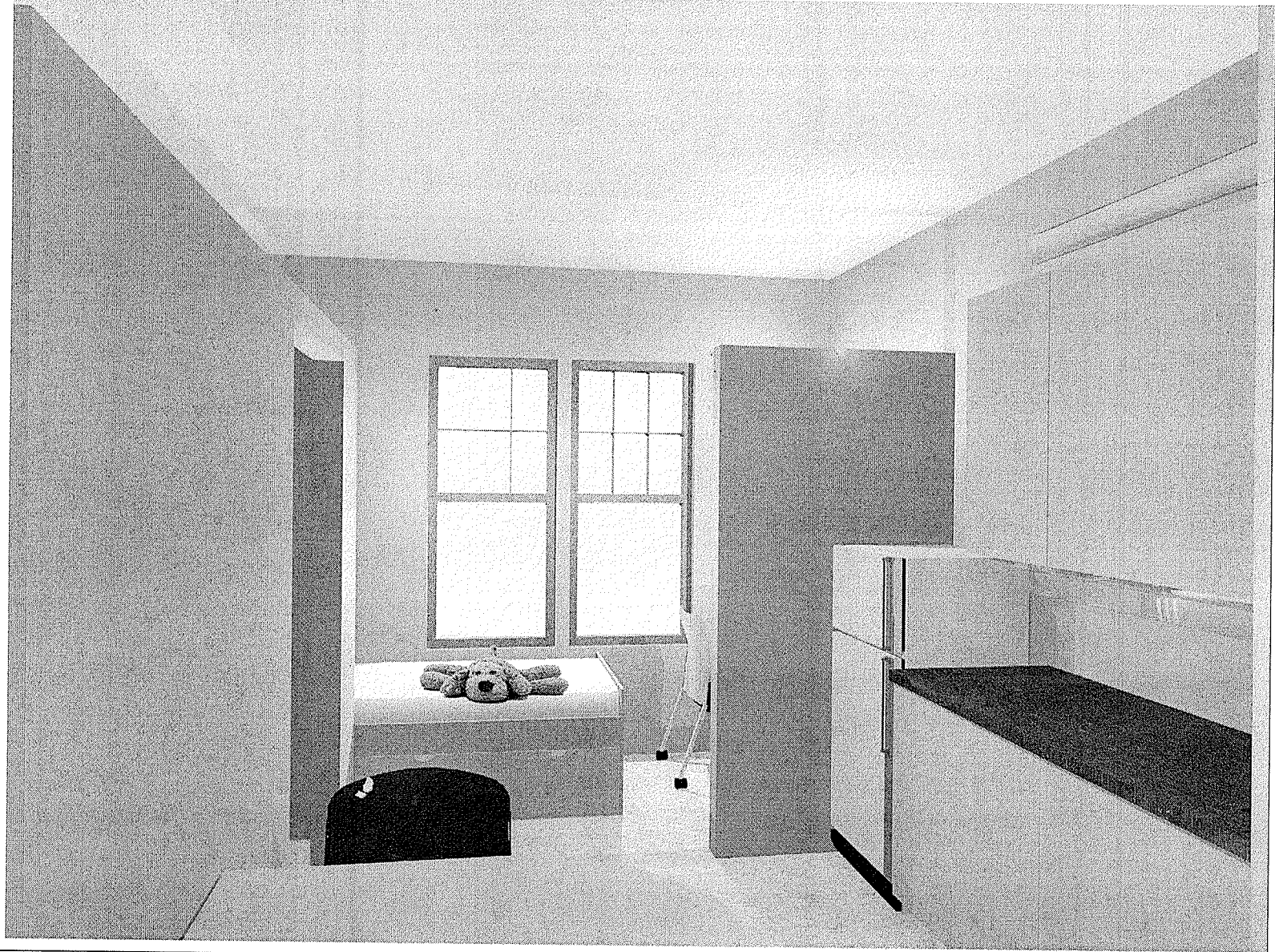
 <p>Technical drawing of a storage unit section (S2). The drawing shows a cross-section of a unit with a top shelf, a middle shelf, and a base. The top shelf is labeled '1 1/2" MDF PLAM FINISH' and has a width of '2' and a depth of '1"'. The middle shelf is labeled '1" MDF OAK VENEER' and has a width of '2' and a depth of '1"'. The base is labeled '2" WOOD LEGS' and has a width of '2' and a depth of '1"'. The unit is supported by two legs, each labeled '2" WOOD LEGS'. The total height of the unit is '2'-6"'. The distance between the shelves is '1'-10"'. The distance between the legs is '5"'. The unit is labeled '1/2" MDF OAK VENEER SHUTTERS' on the right side.</p>	 <p>A photograph of a folding chair. The chair is made of light-colored wood and has a simple, functional design. It features a curved backrest, a flat seat, and four legs. The chair is shown in its folded position, with the backrest and seat folded down towards the front legs.</p>
<p>Section S2- Joan's Storage Unit Scale: Approx. 1"=1'</p>	<p>Folding Chair- Band Internattional</p>

Maria and Charlie

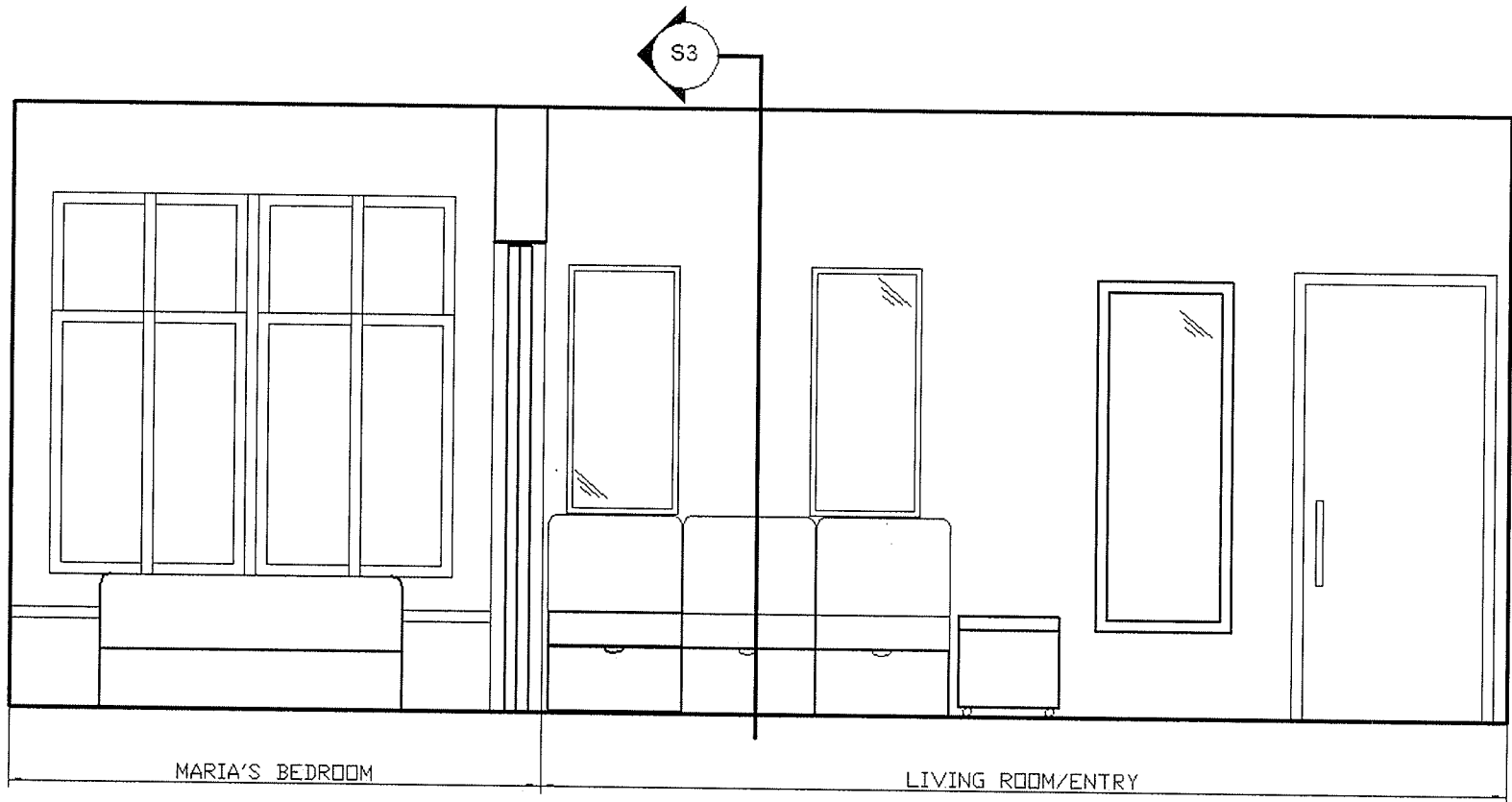




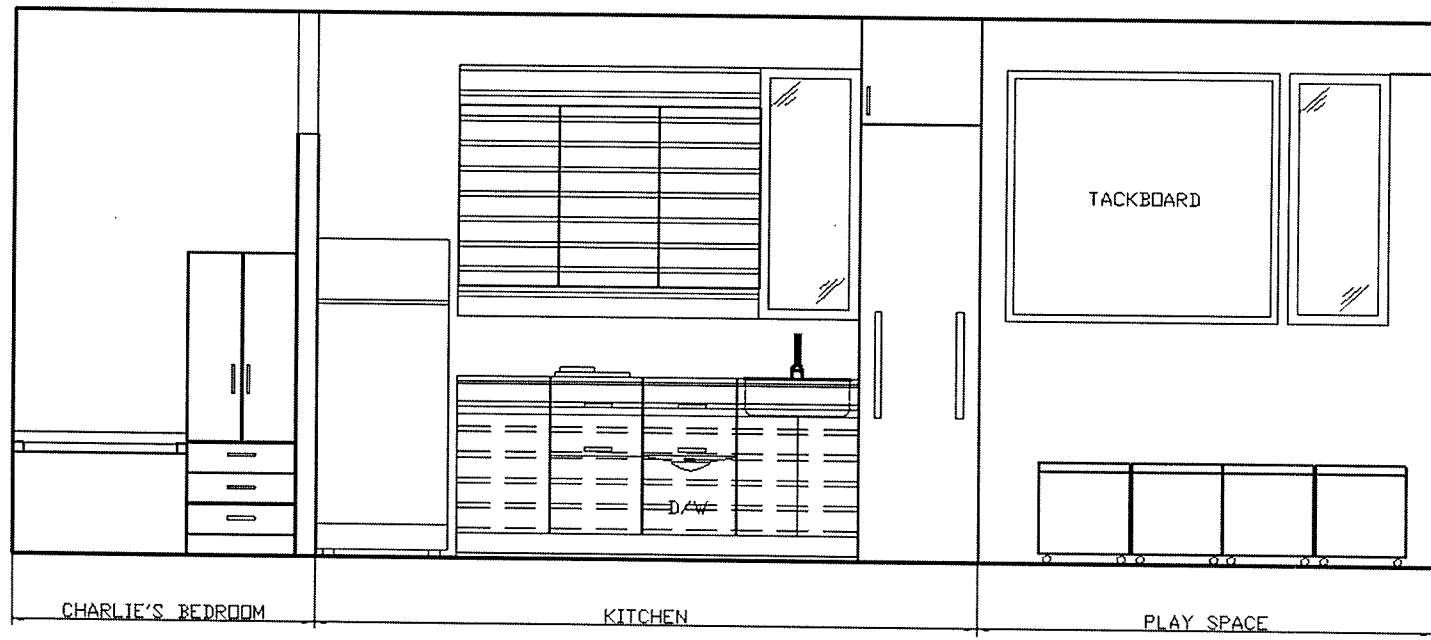
Maria and Charlie's Living Room- Perspective



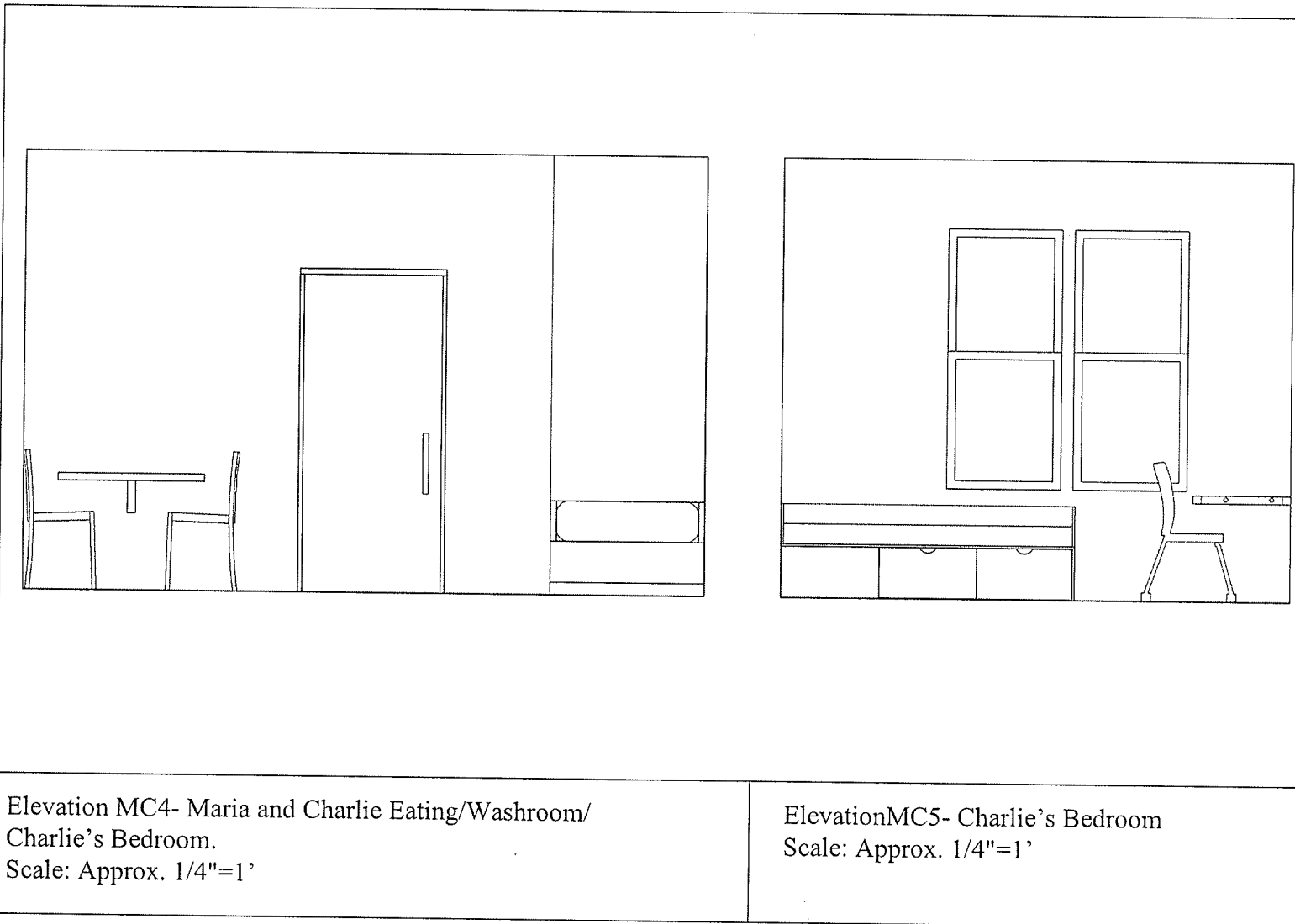
Maria and Charlie's Kitchen and Charlie's Bedroom- Perspective



Elevation MC2- Maria's Bedroom and Living Space
Scale: Approx. 1/4"=1'

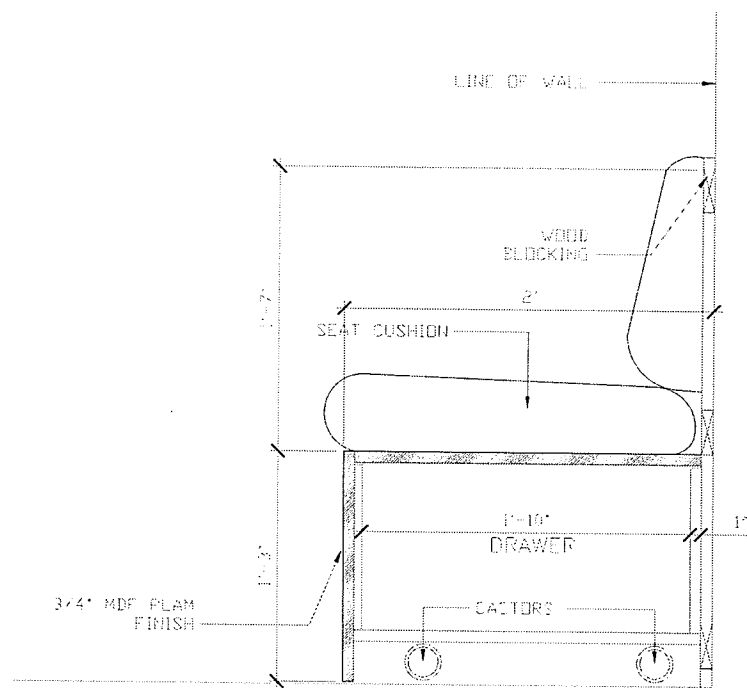


Elevation MC3- Charlie's Bedroom/Kitchen/Play Space
 Scale: Approx. 1/4"=1'

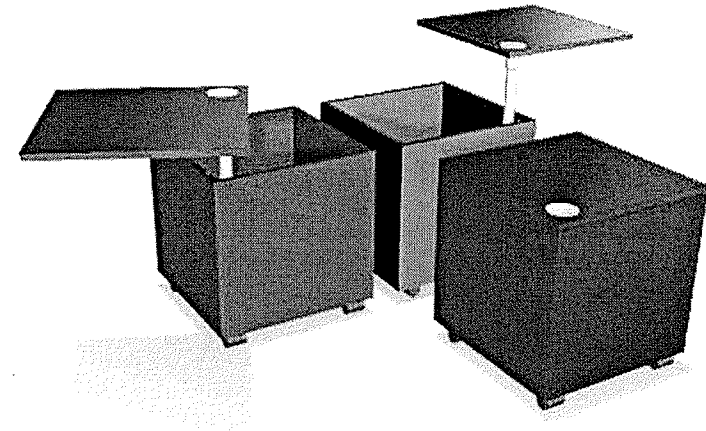


Elevation MC4- Maria and Charlie Eating/Washroom/
Charlie's Bedroom.
Scale: Approx. 1/4"=1'

Elevation MC5- Charlie's Bedroom
Scale: Approx. 1/4"=1'

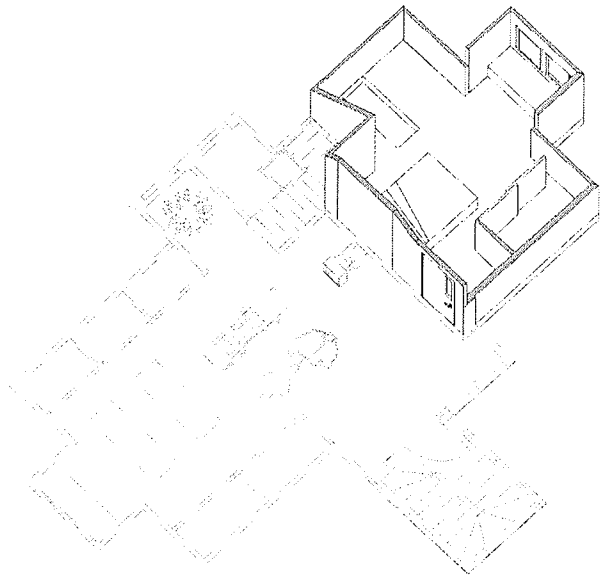


Section S3- Maria and Charlie's Seating Unit
Scale: Approx. 1"=1'

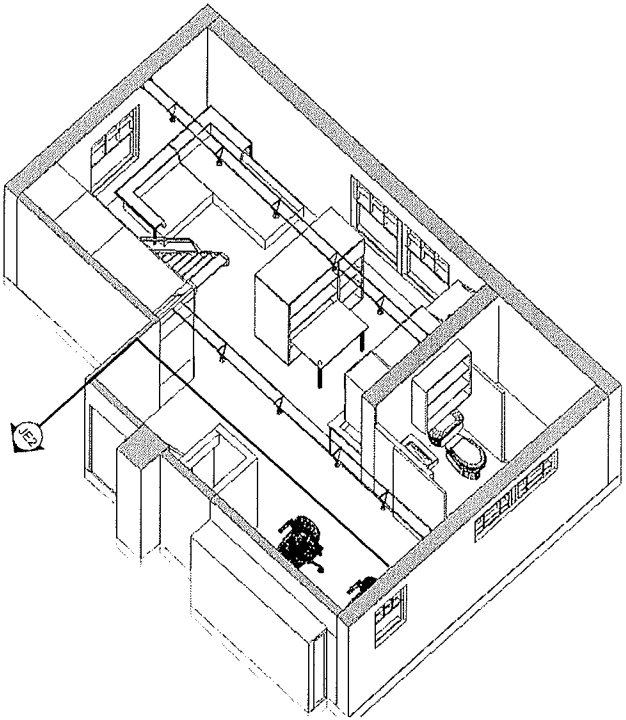


Mocco Locco Storage Box

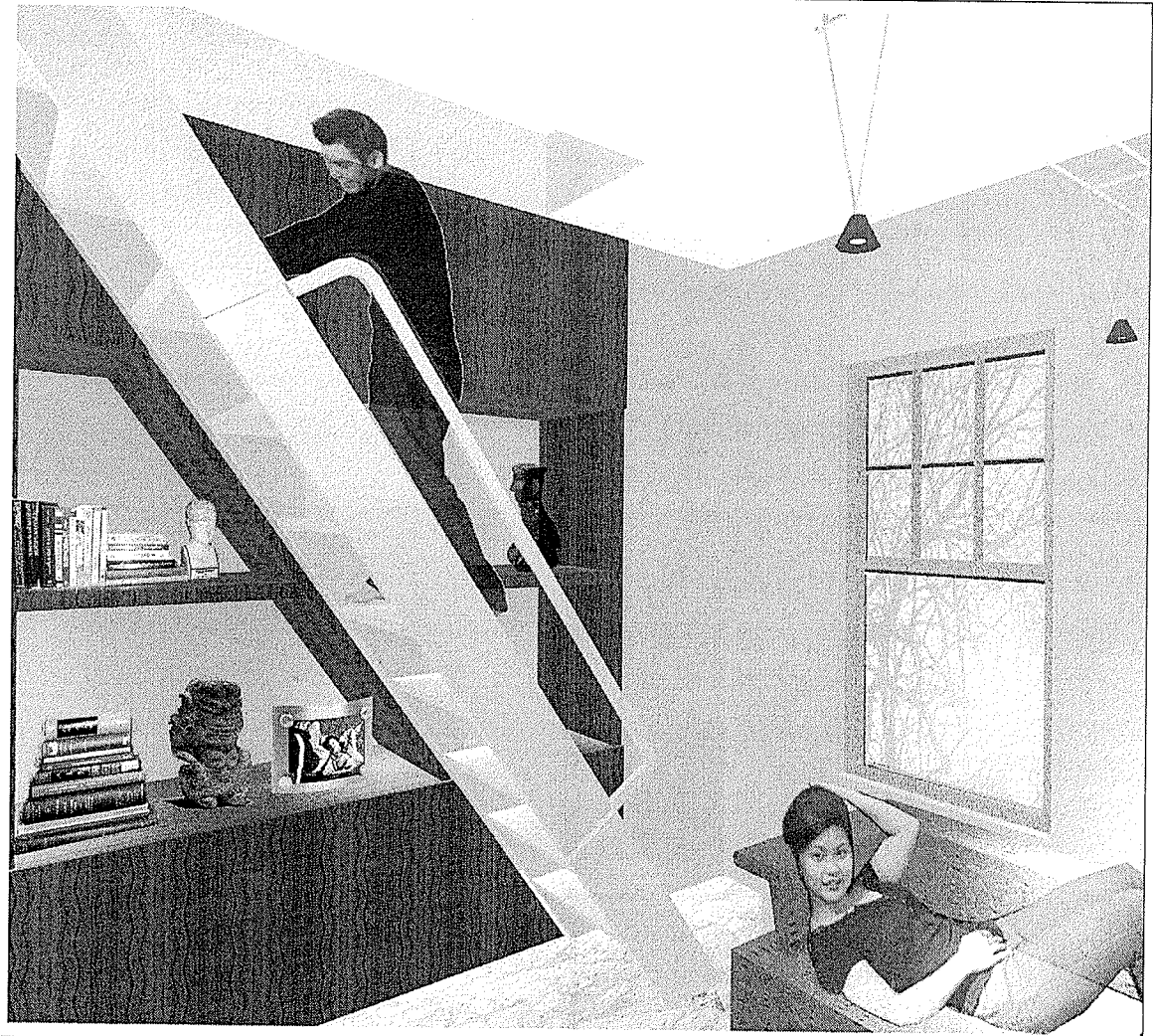
Judy and Eric



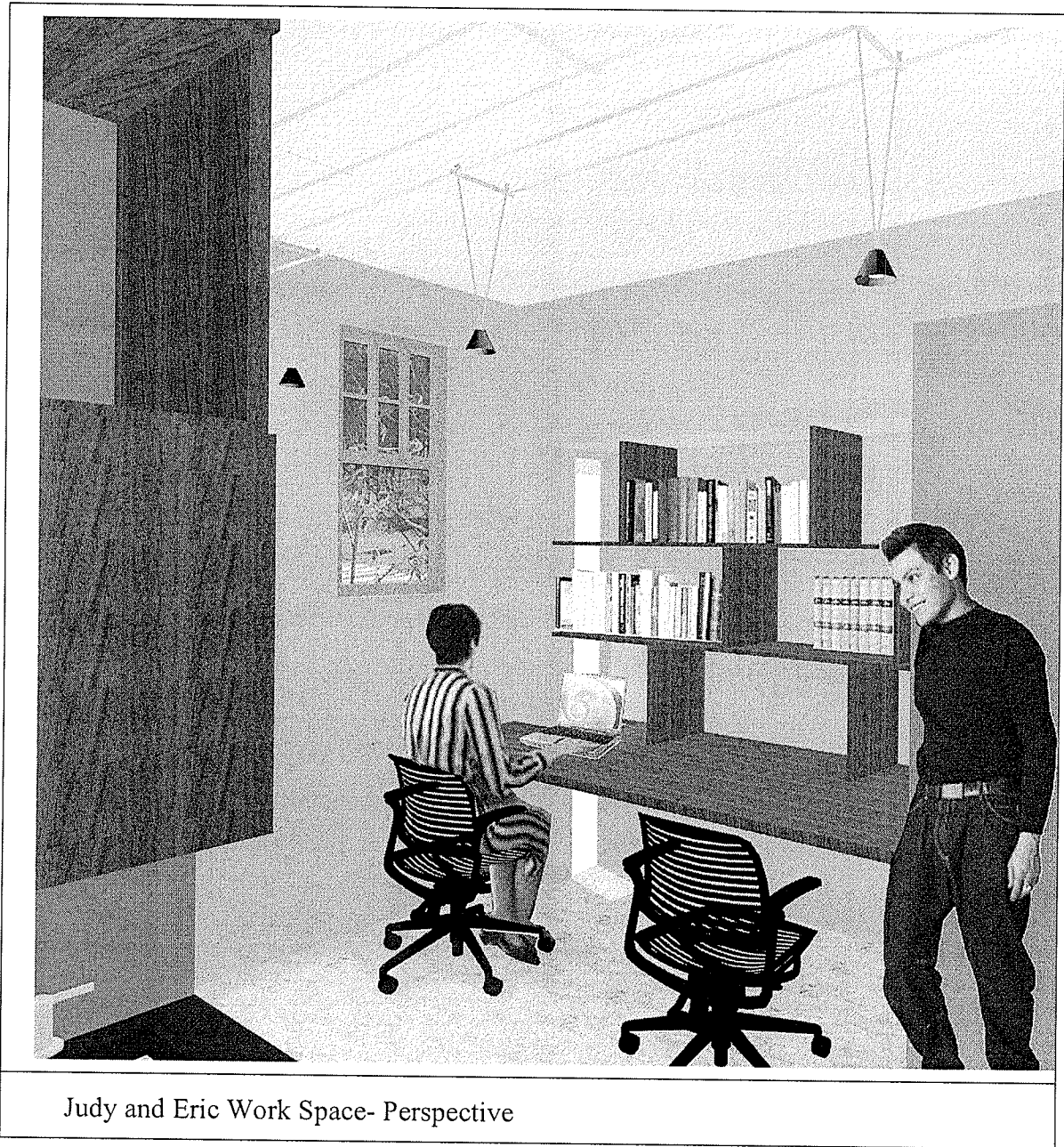
Judy and Eric's Apartment- Axonometric
Attic Level



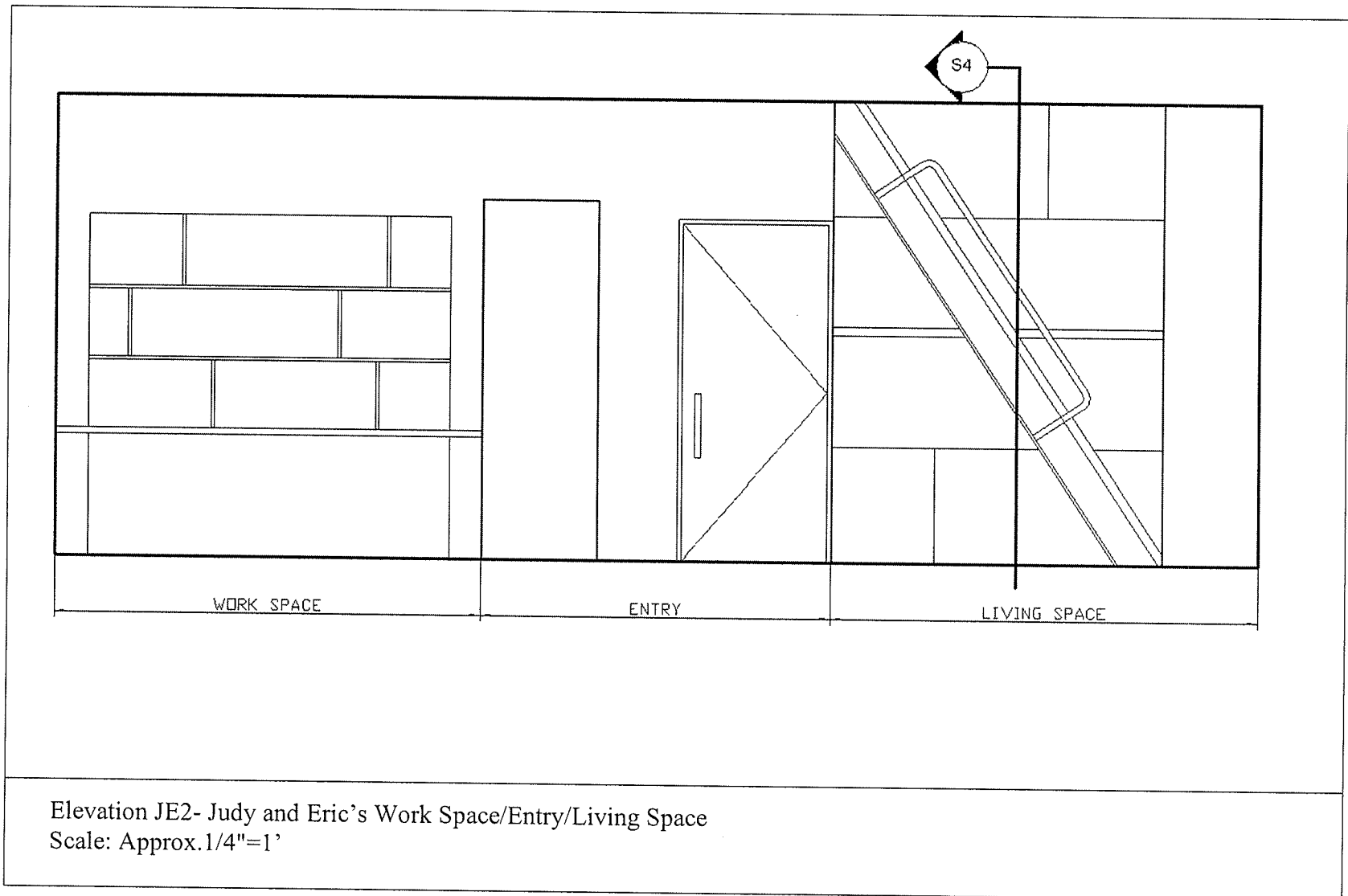
Judy and Eric's Apartment- Axonometric
Second Level

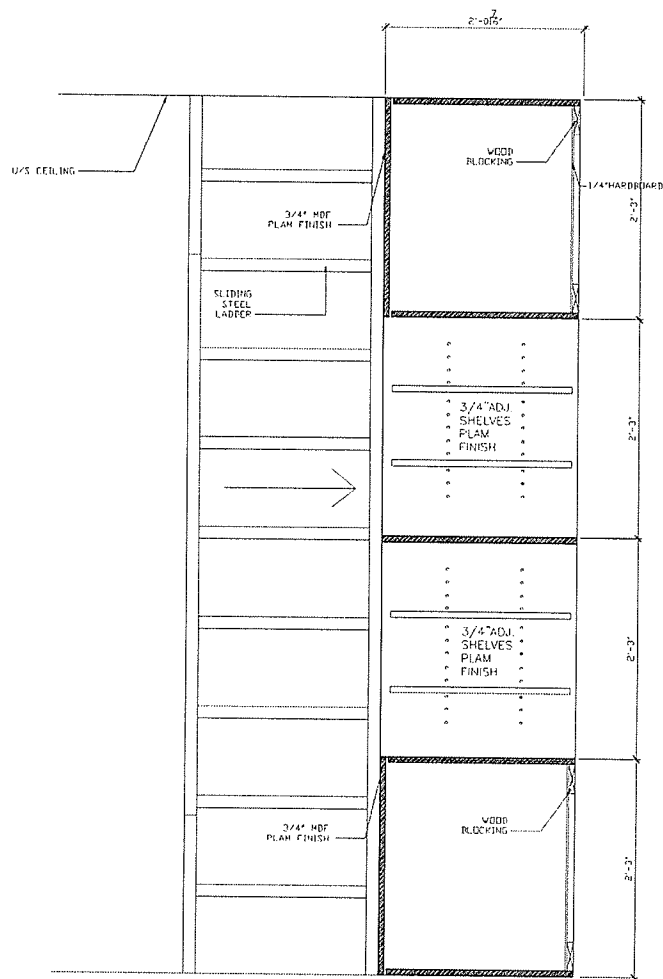


Judy and Eric's Living Space- Perspective



Judy and Eric Work Space- Perspective



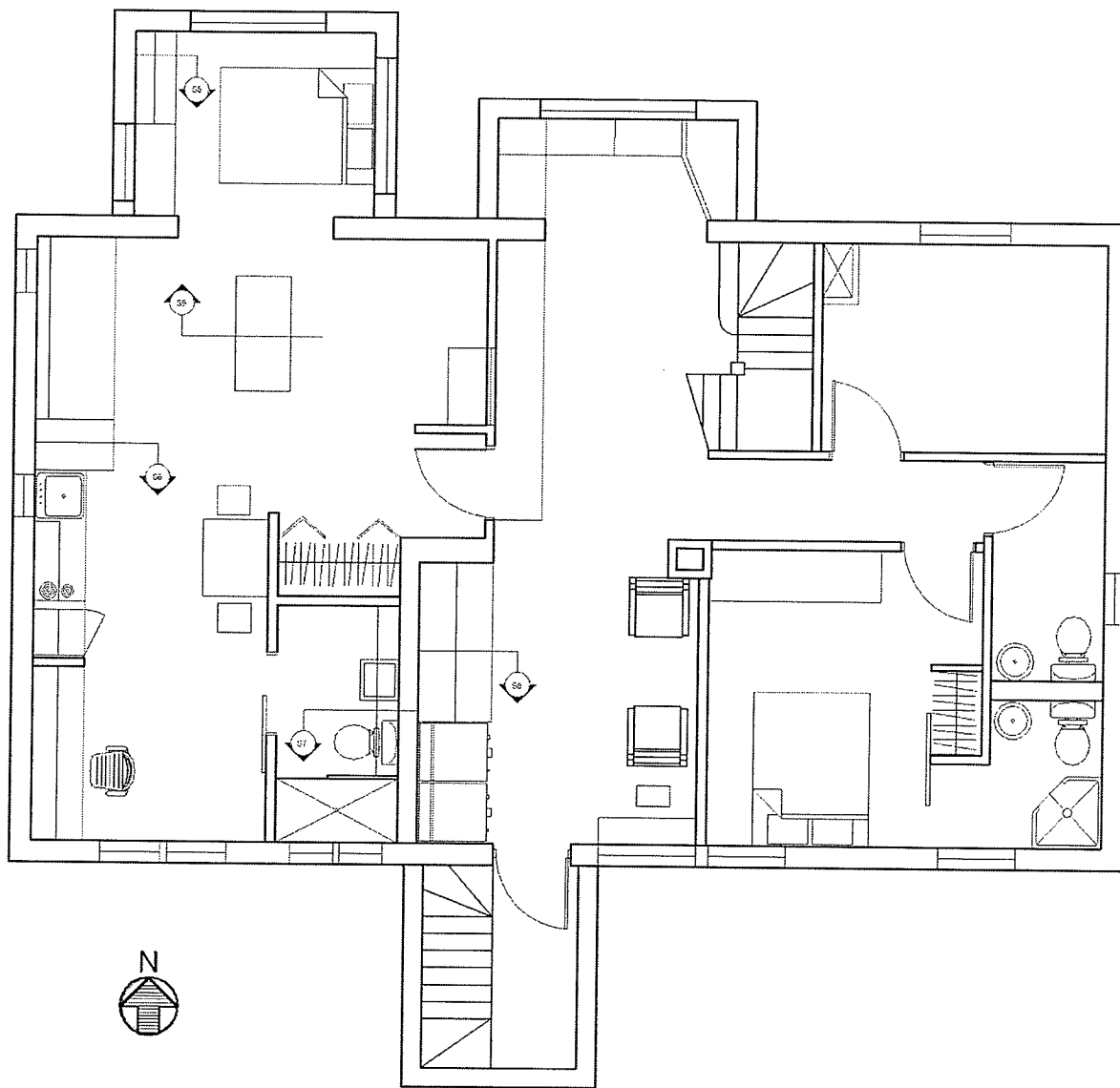


Section S4- Judy and Eric's Storage Unit and Ladder
Scale: Approx. 1"=1'



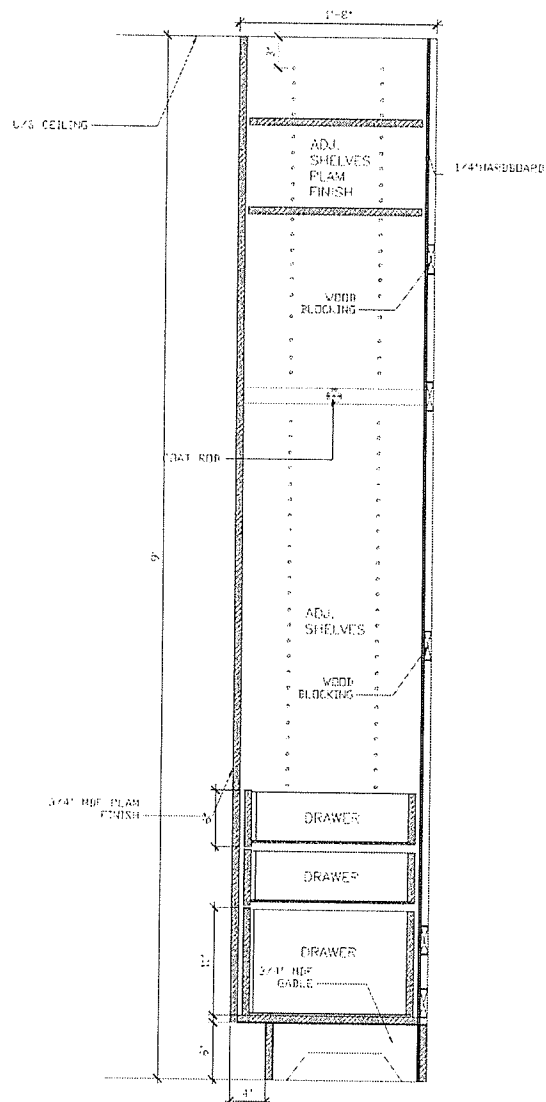
APT-One2

Millwork

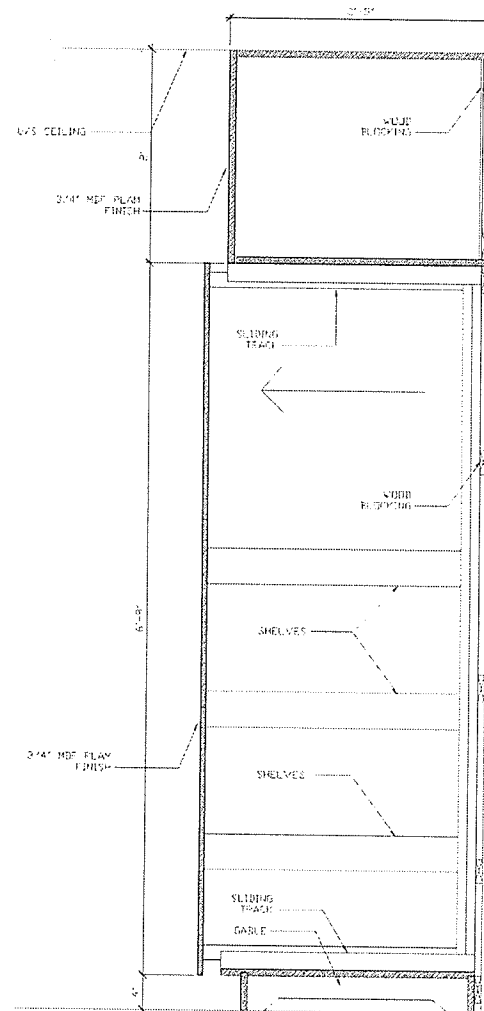


Key Plan Basement Level- Section Details 5-9

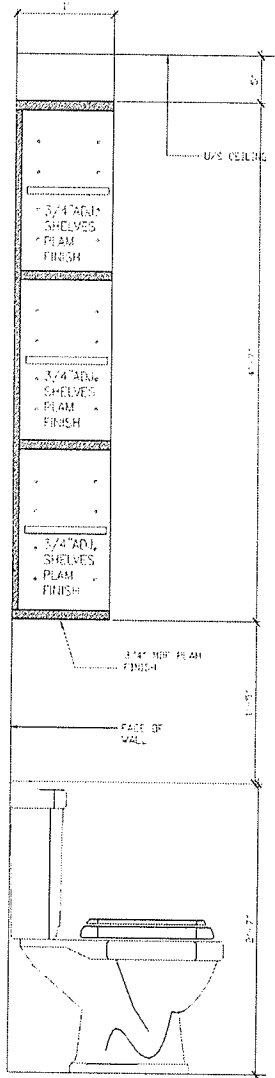
Scale: Approx. 1/8"=1'



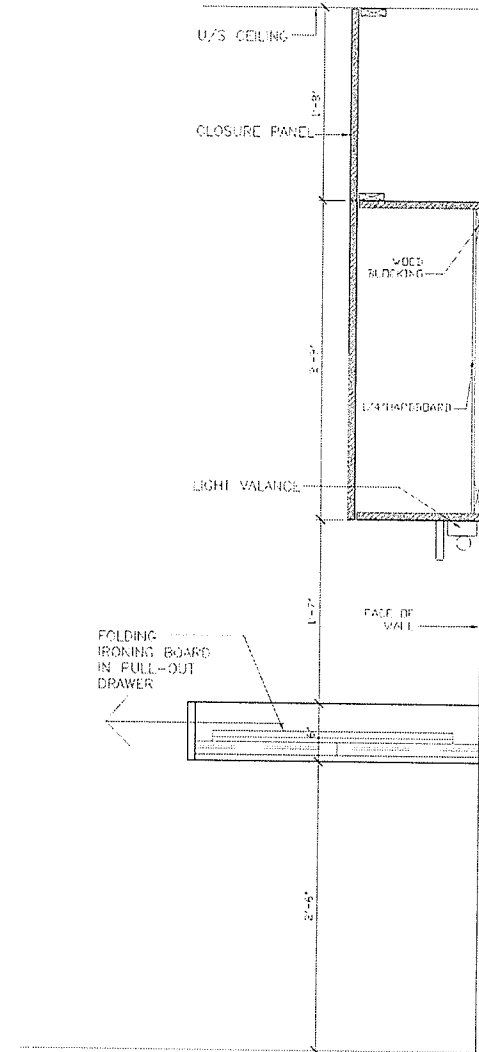
Section S5- Typical Closet
Scale: Approx. 1/2"=1'



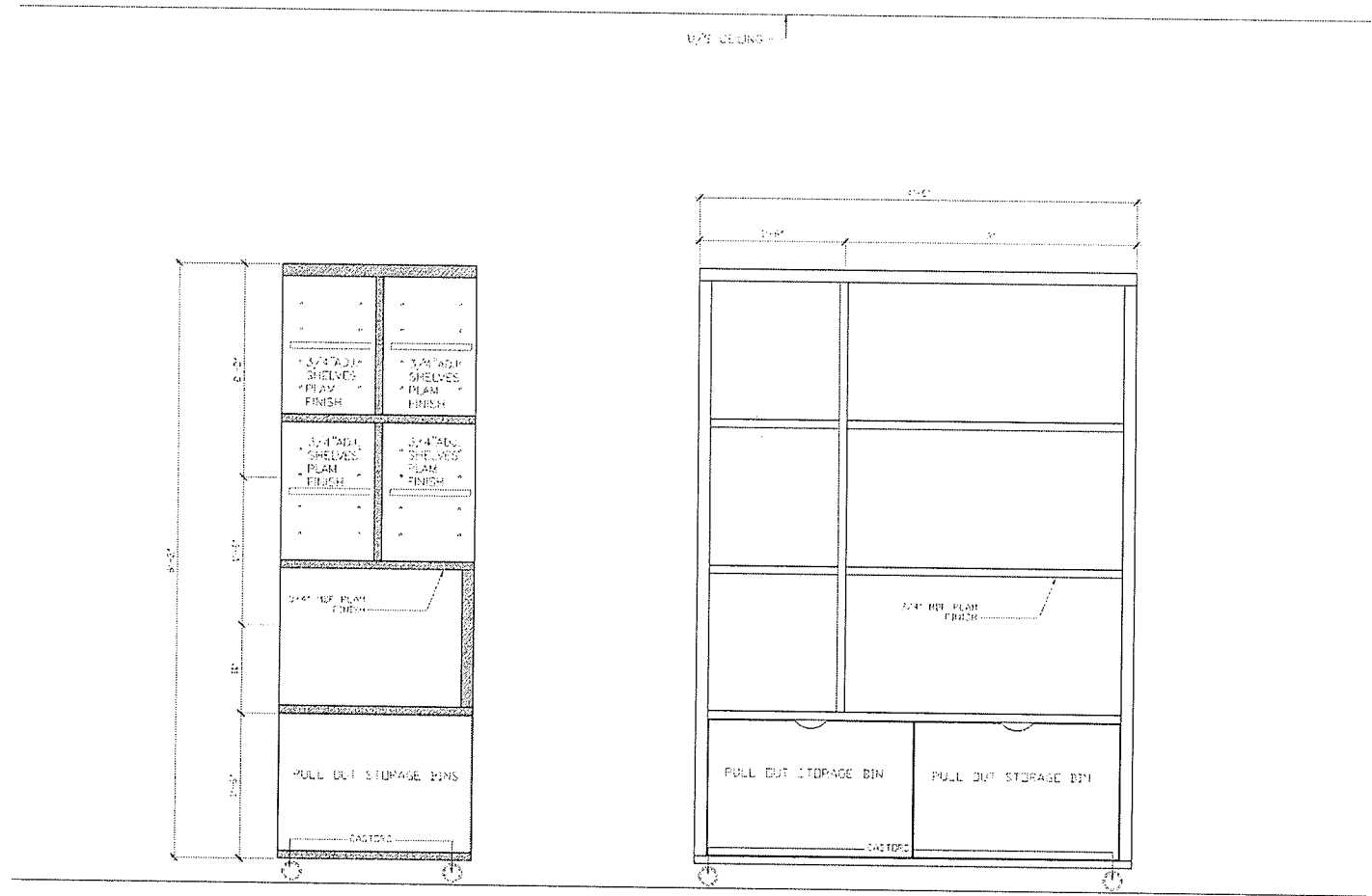
Section S6- Typical Pull-out Storage for Kitchen
Scale: Approx. 1/2"=1'



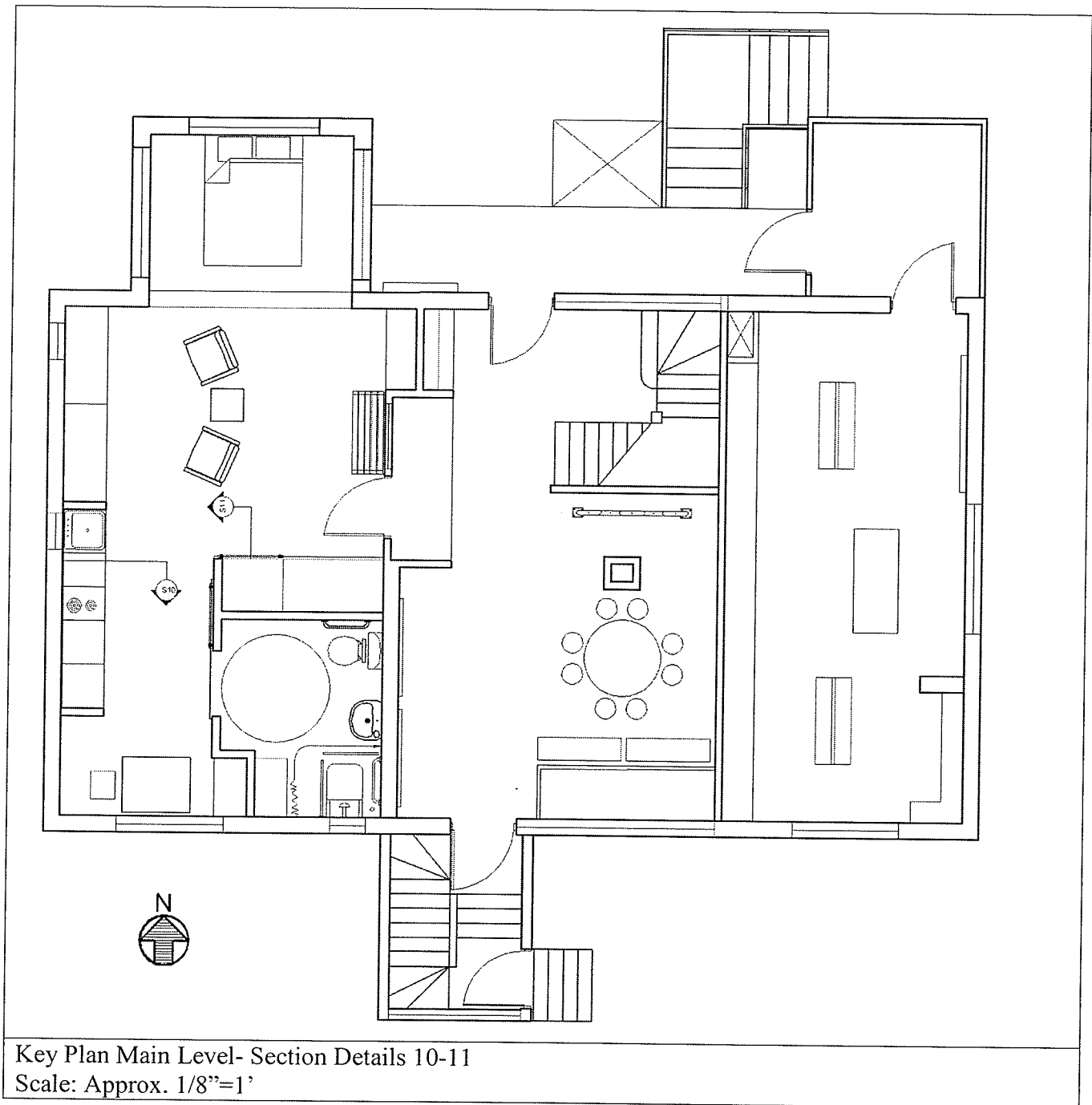
Section S7- Typical Washroom Storage Unit
Scale: Approx. 1/2"=1'

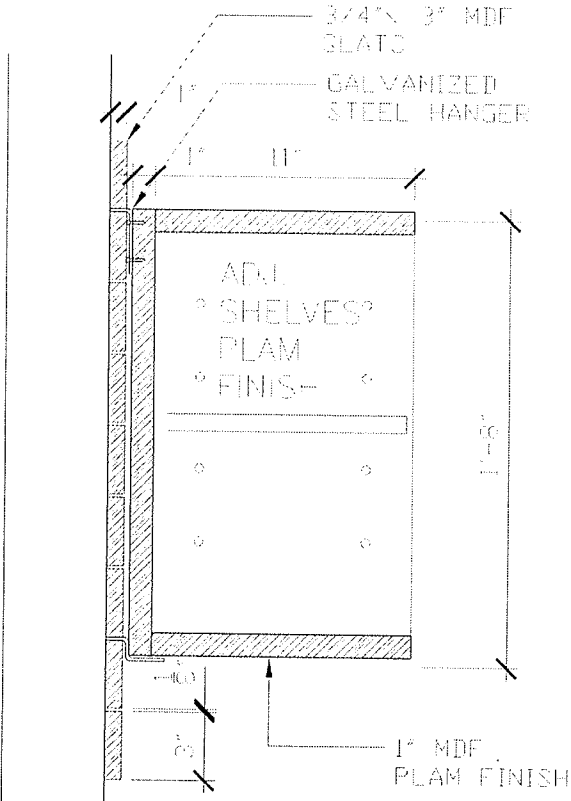
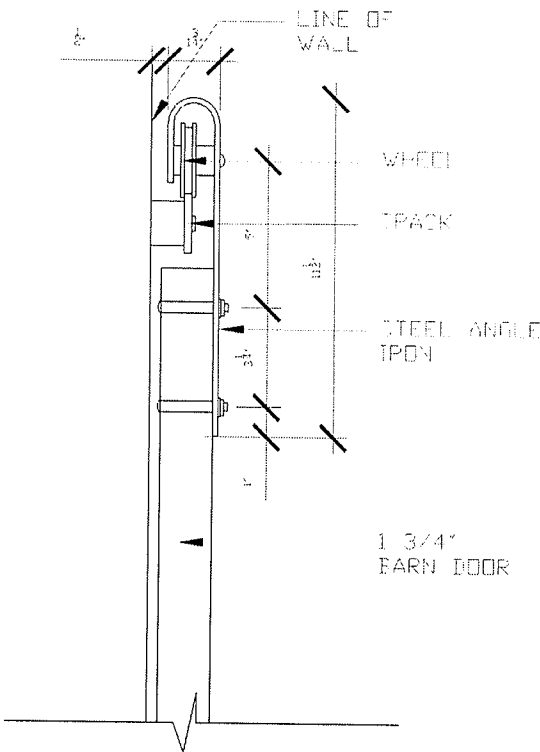


Section S8- Landry Storage and Folding Ironing Board
Scale: Approx. 1/2"=1'






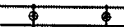

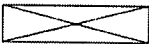


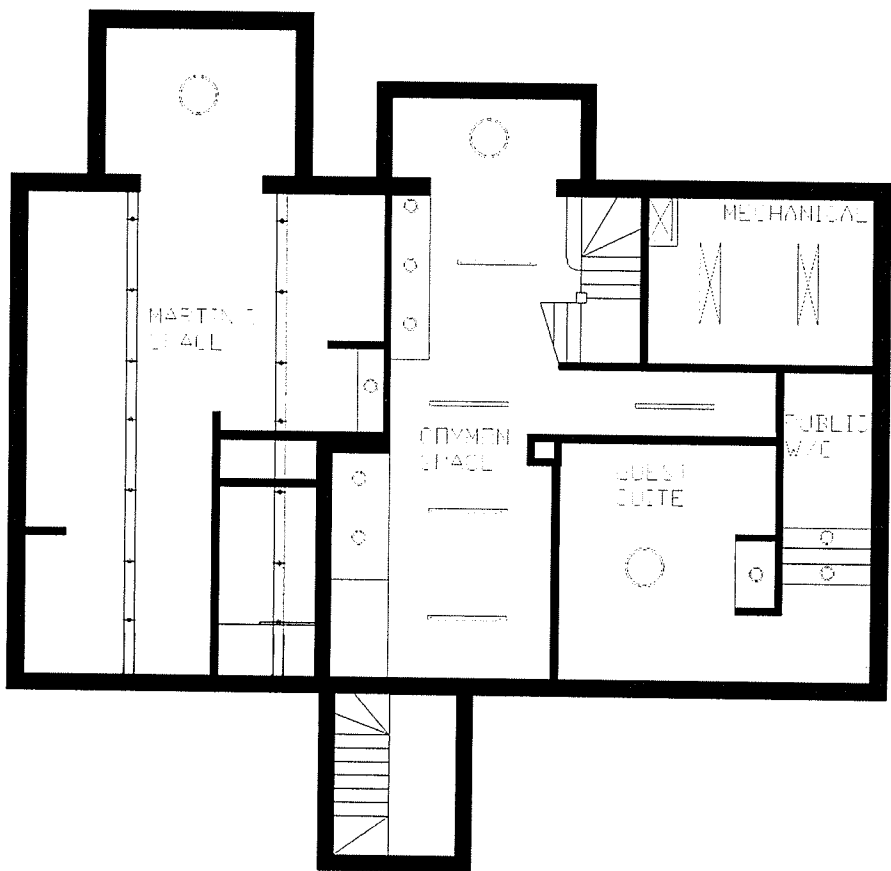
Section S9/Front Elevation- Typical Central Storage Unit
Scale: Approx. 1/2"=1'



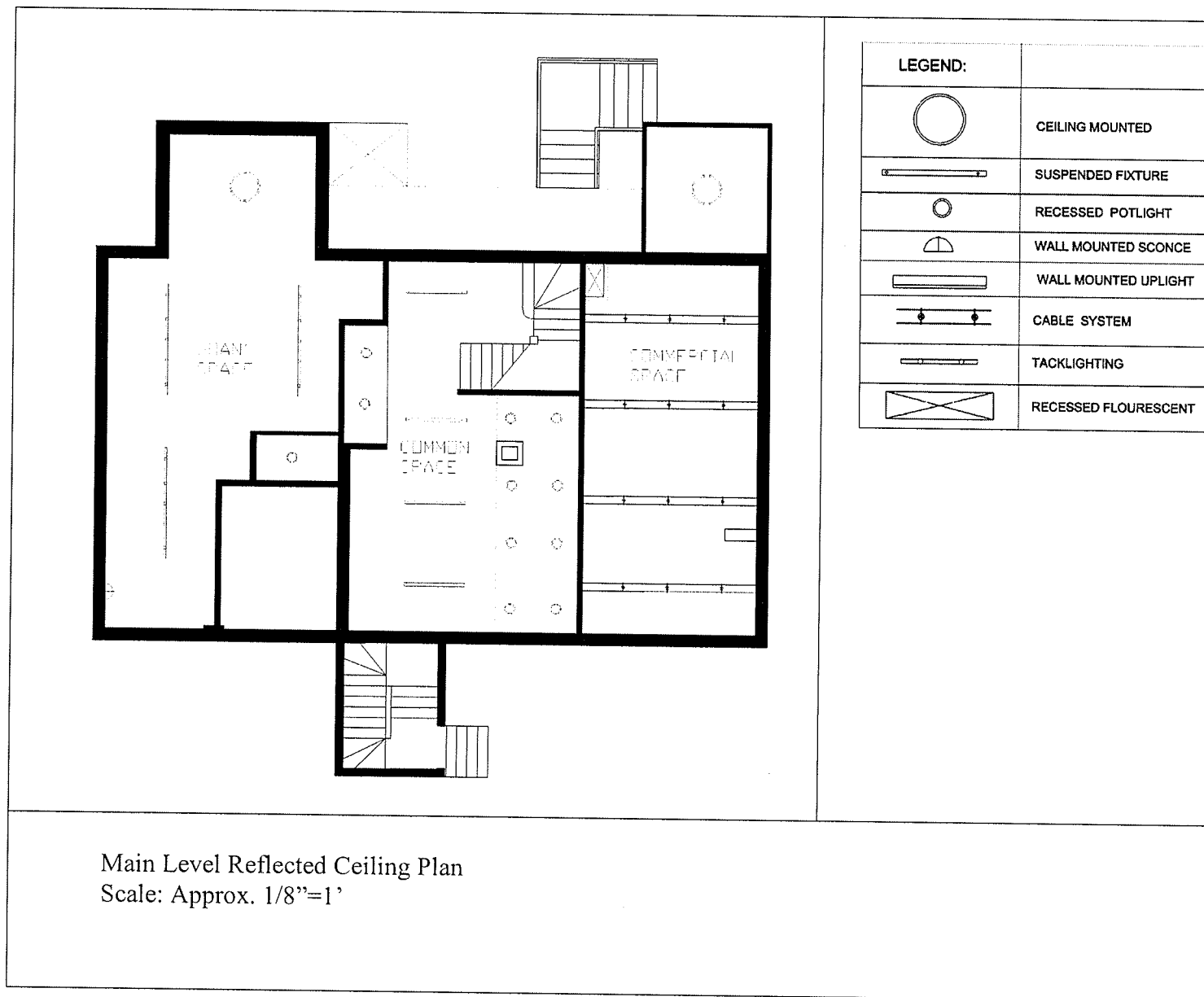
 <p>3/4" x 3" MDF SLATS</p> <p>1" GALVANIZED STEEL HANGER</p> <p>1" 11"</p> <p>ADJ. ° SHELVES° PLAM ° FINIS-</p> <p>1" MDF PLAM FINISH</p>	 <p>LINE OF WALL</p> <p>WHEEL</p> <p>TRACK</p> <p>STEEL ANGLE IRON</p> <p>1 3/4" BARN DOOR</p>
<p>Section S10 - Typical Slat Wall</p> <p>Scale: Approx. 1 1/2"=1'</p>	<p>Section S11- Typical Barn Door</p> <p>Scale: Approx. 1 1/2"=1'</p>

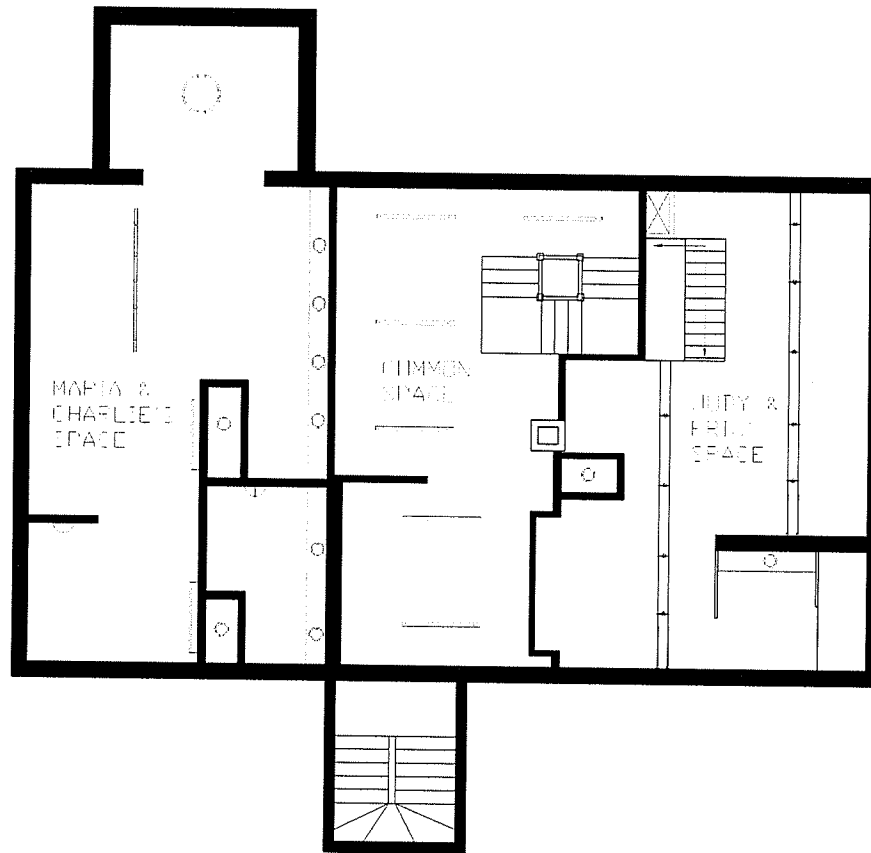
Lighting

LEGEND:	
	CEILING MOUNTED
	SUSPENDED FIXTURE
	RECESSED POTLIGHT
	WALL MOUNTED SCONCE
	WALL MOUNTED UPLIGHT
	CABLE SYSTEM
	TACKLIGHTING
	RECESSED FLOURESCENT



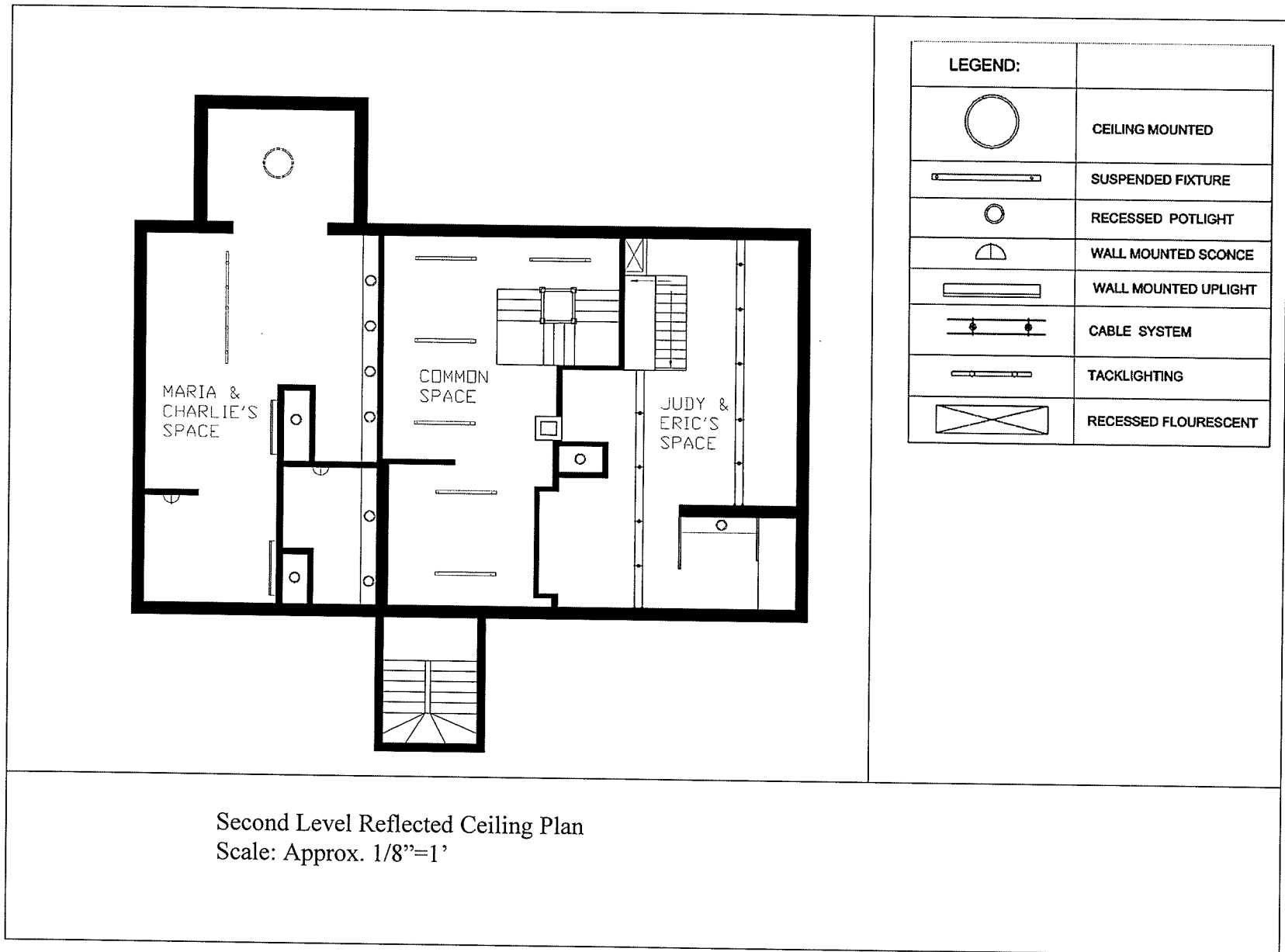
Basement Level Reflected Ceiling Plan
Scale: Approx. 1/8"=1'



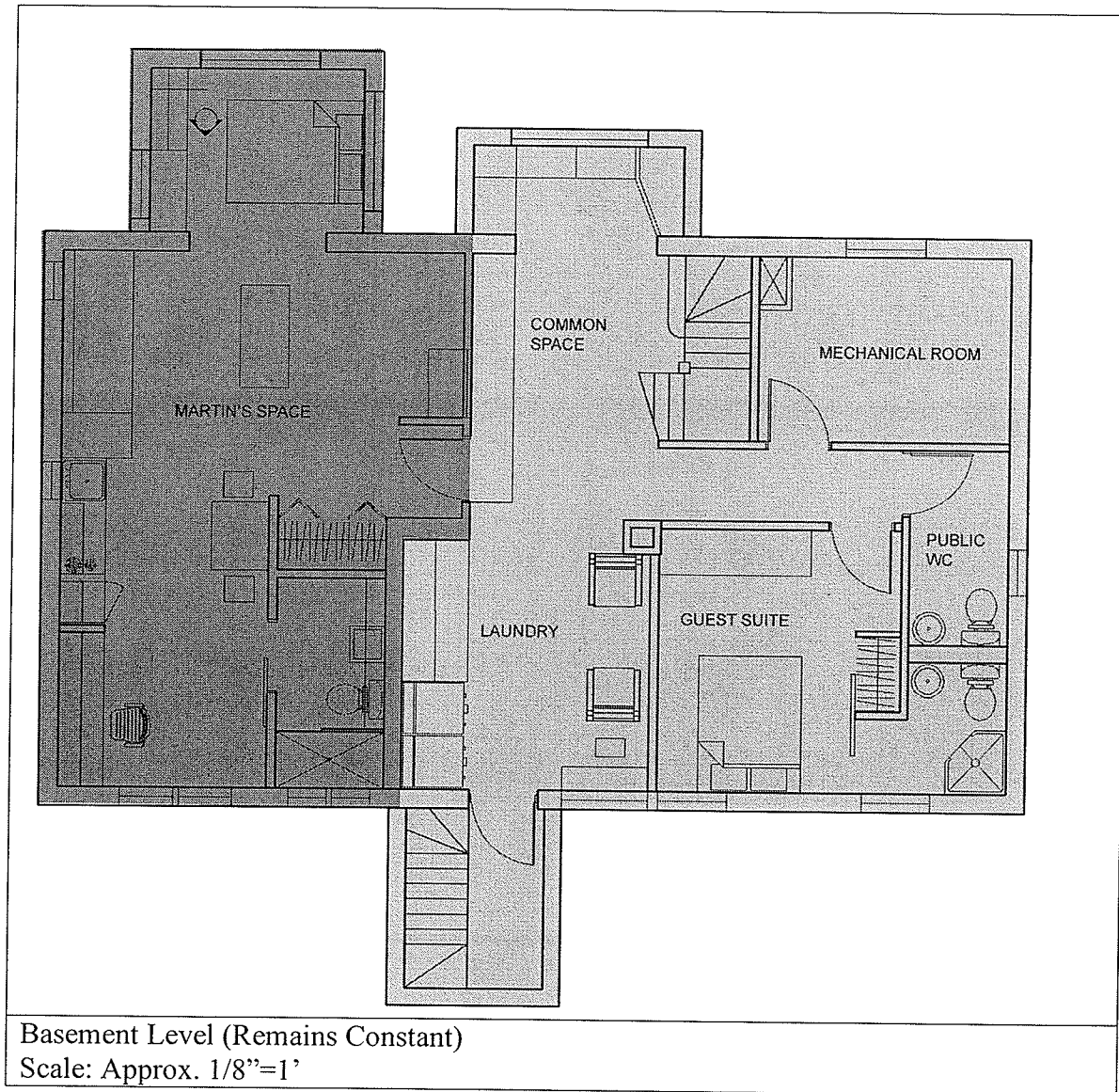


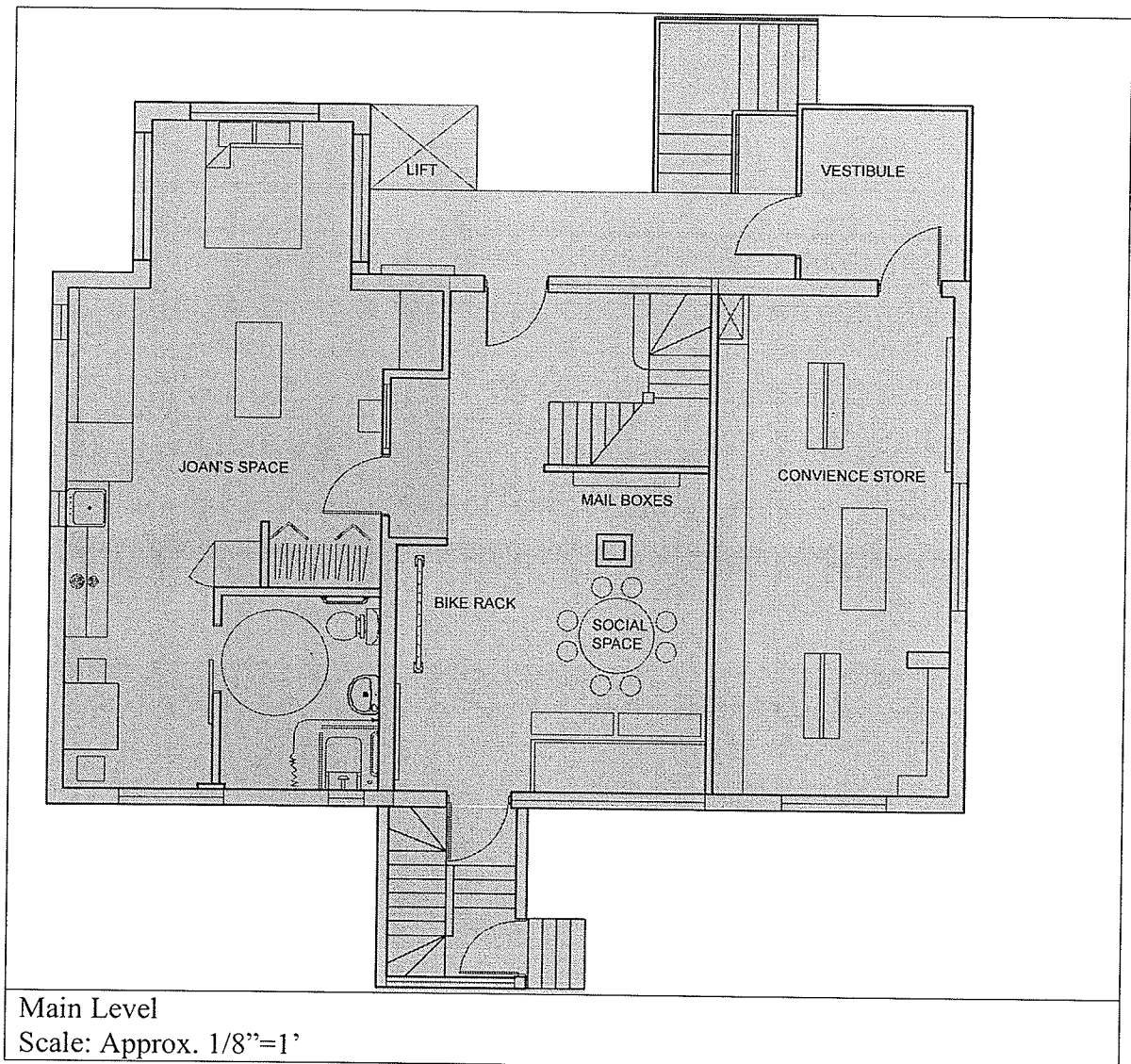
LEGEND:	
	CEILING MOUNTED
	SUSPENDED FIXTURE
	RECESSED POTLIGHT
	WALL MOUNTED SCONCE
	WALL MOUNTED UPLIGHT
	CABLE SYSTEM
	TACKLIGHTING
	RECESSED FLOURESCENT

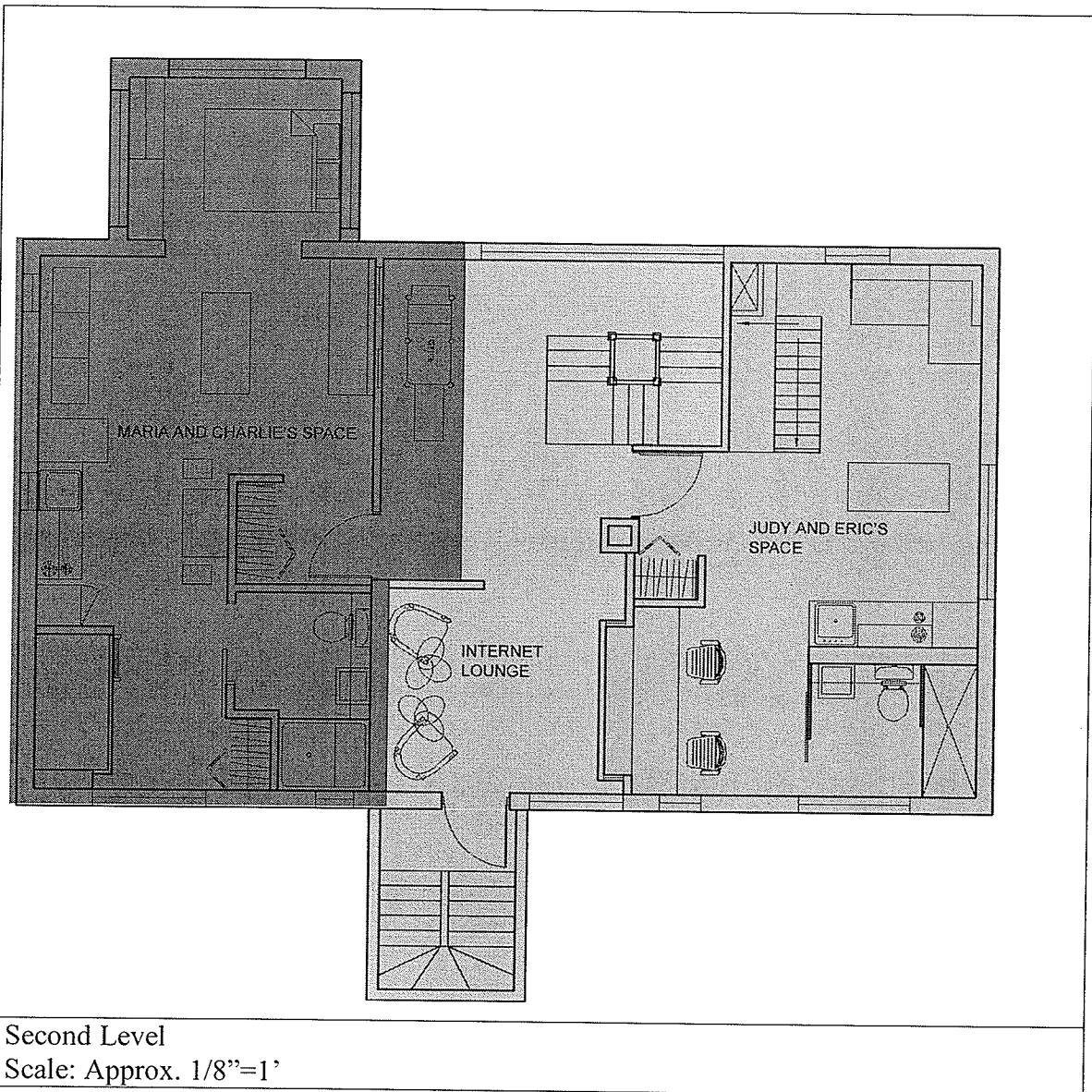
Second Level Reflected Ceiling Plan
Scale: Approx. 1/8"=1'

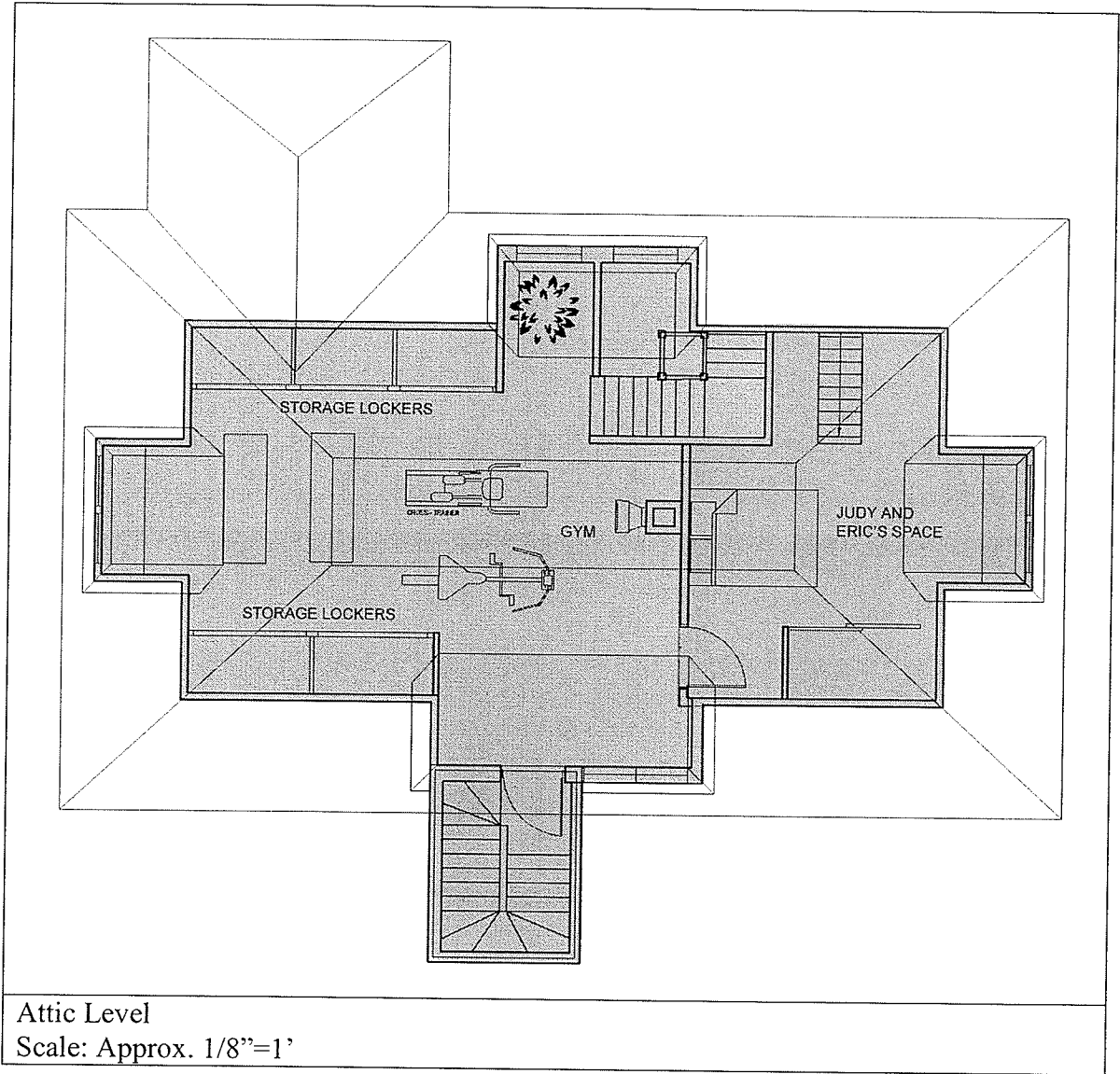


Timeline-Present

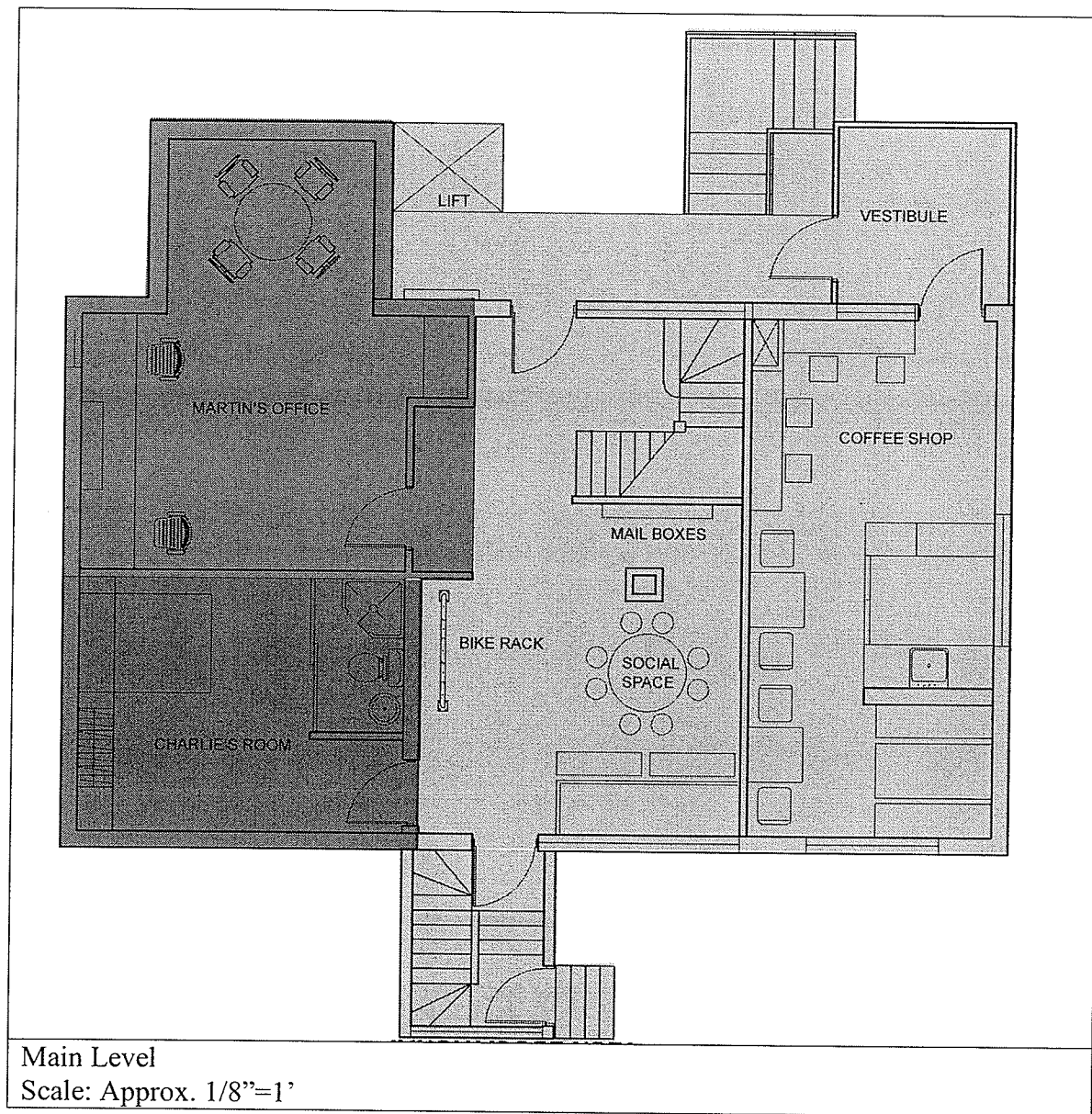


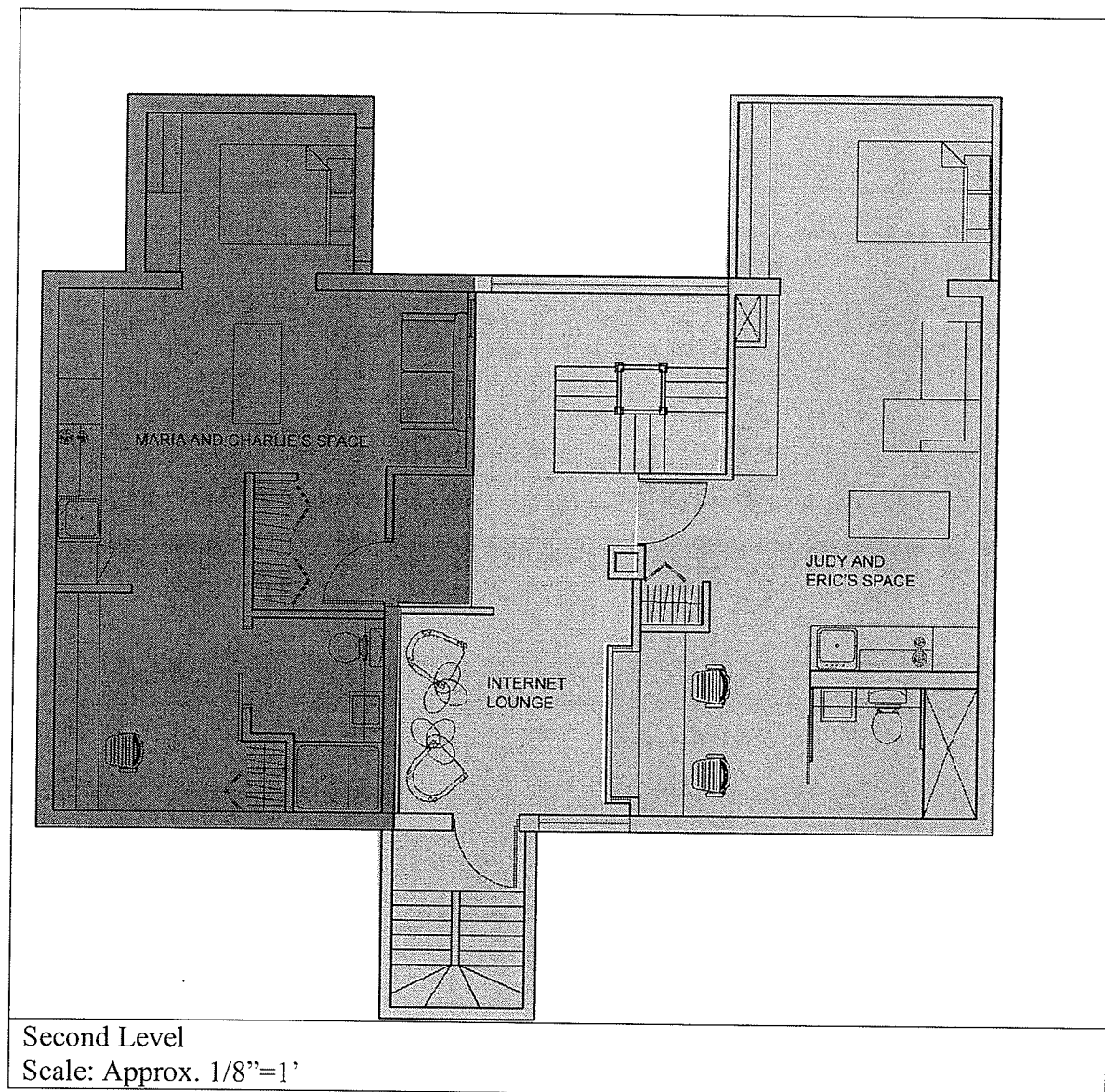


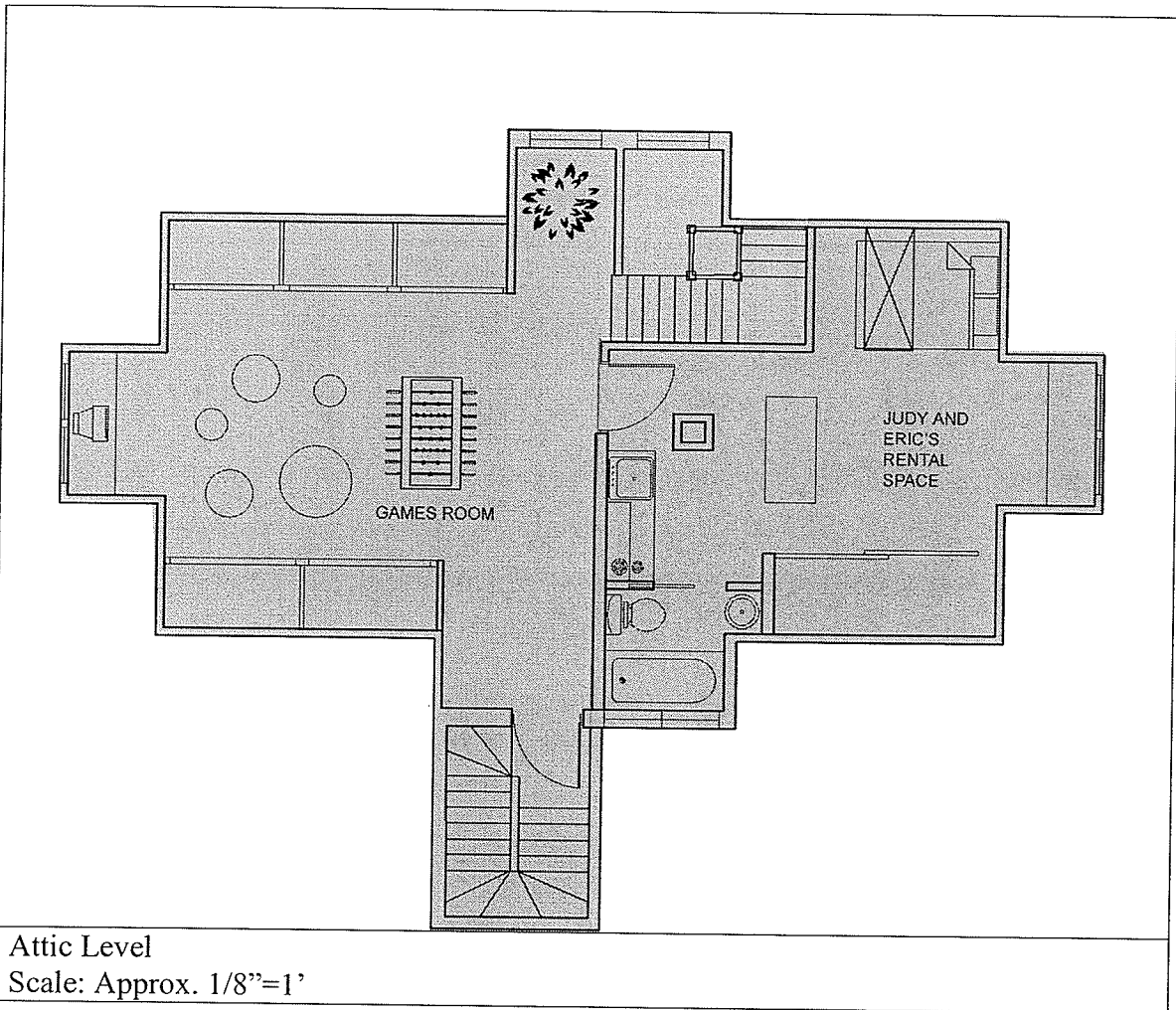




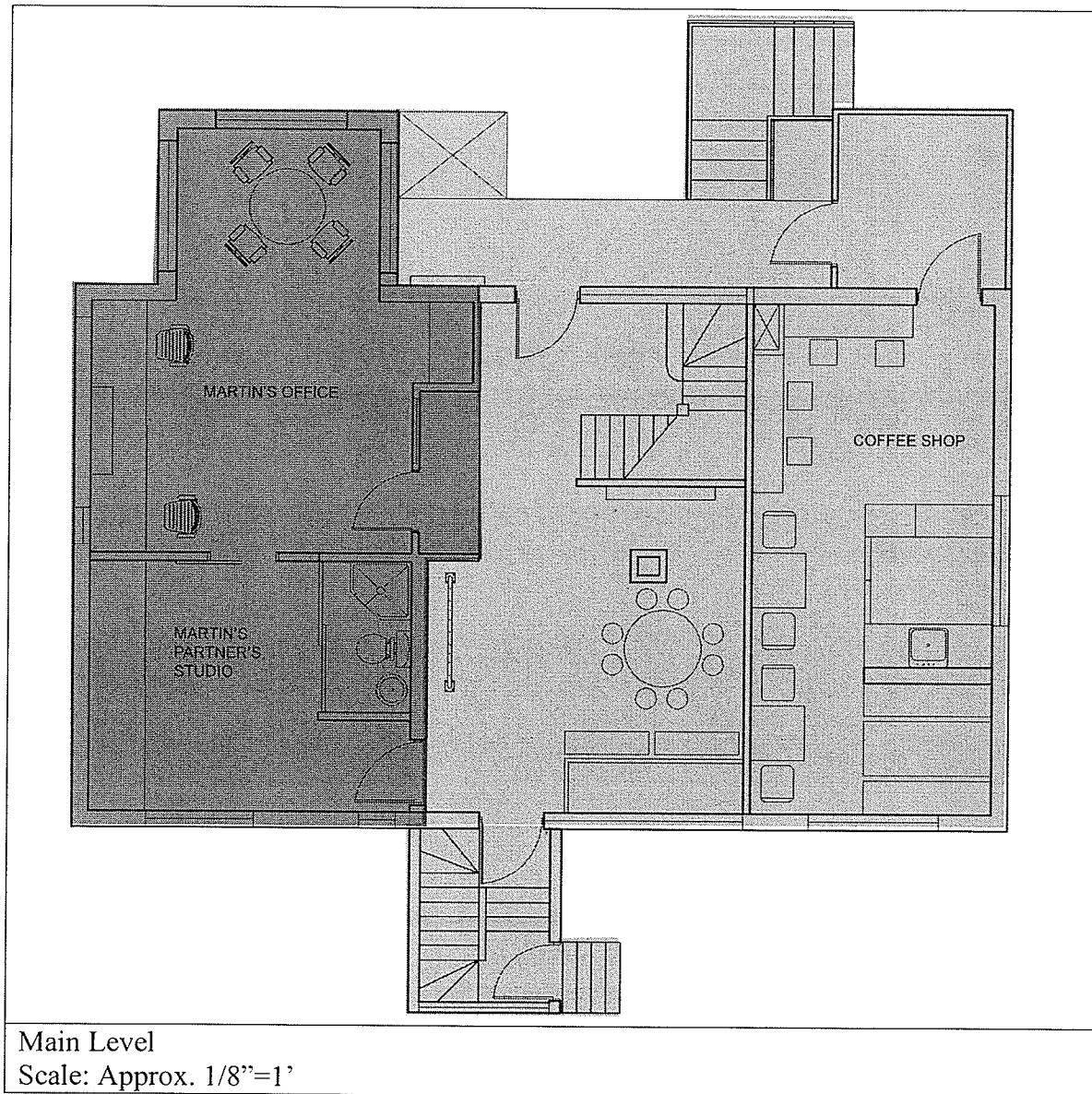
Timeline- 5-10 Years Later

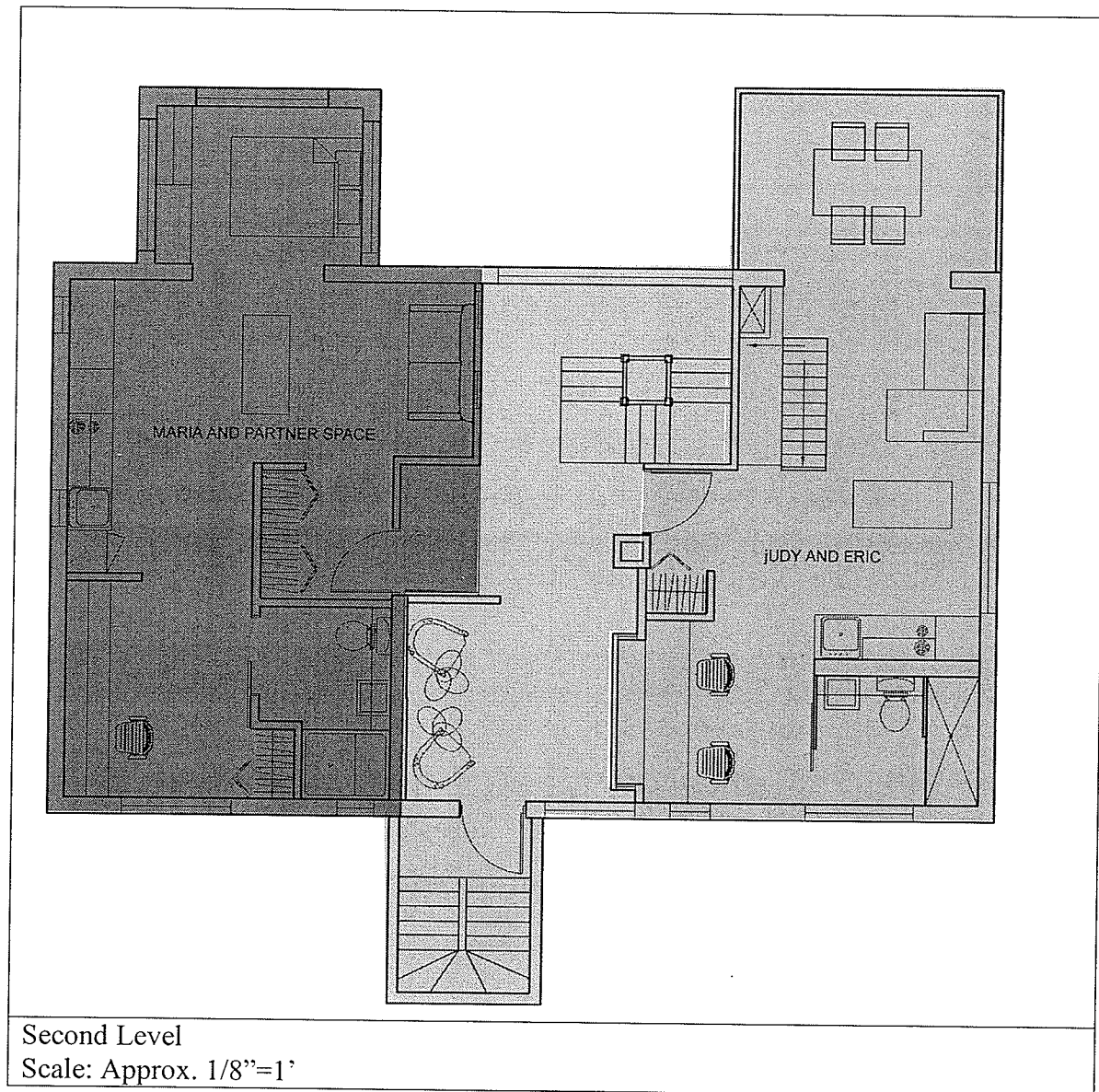


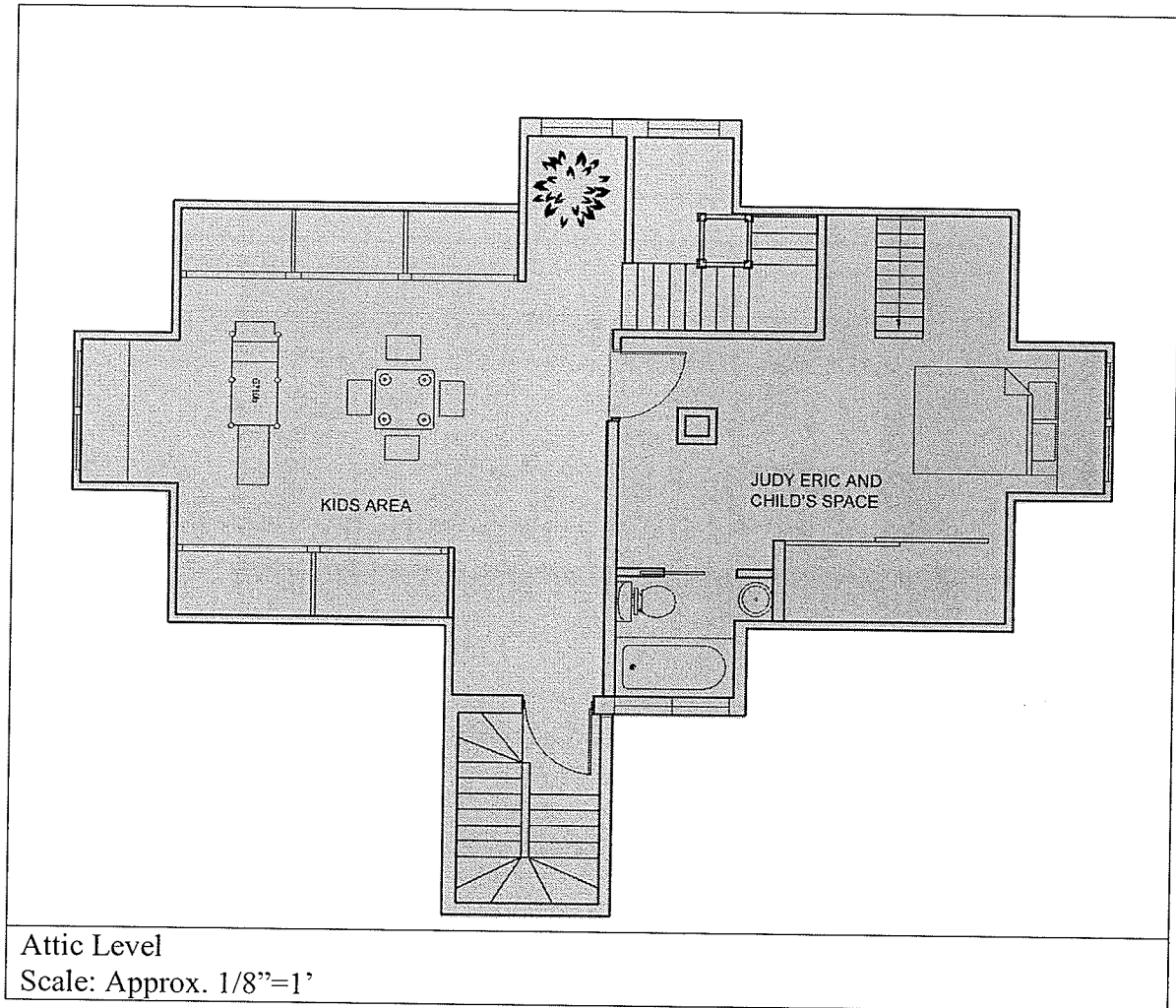




Timeline- 10-15 Years Later



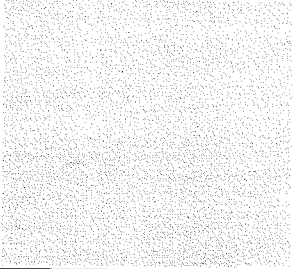
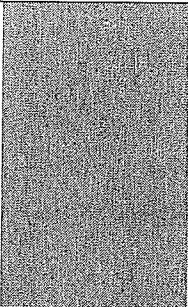
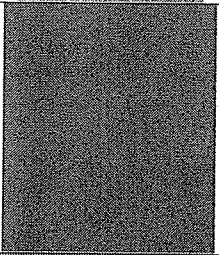
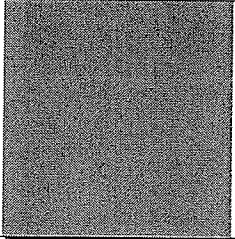
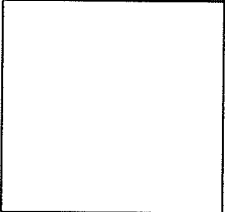
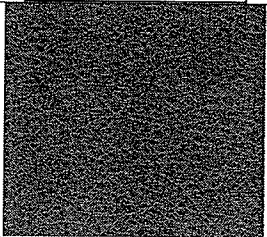



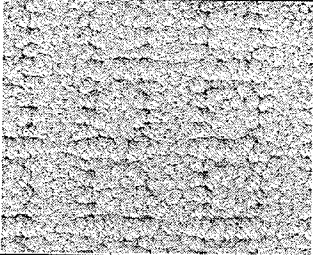
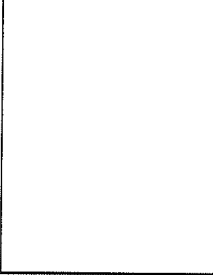
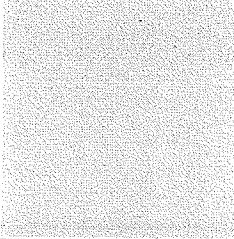
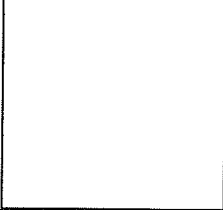



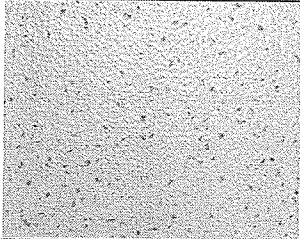
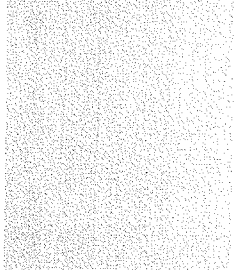
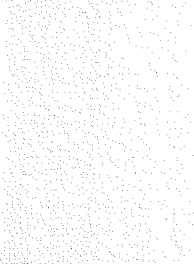
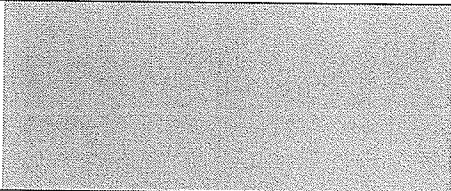
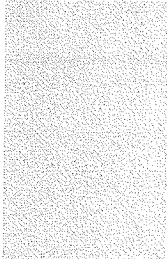
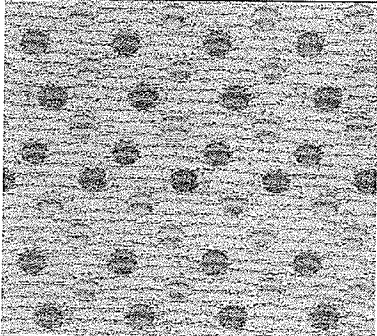
APPENDIX C

COLOUR AND MATERIALS


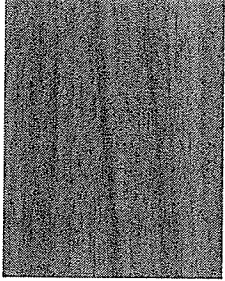
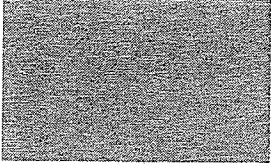
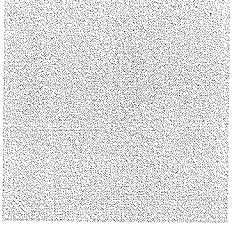
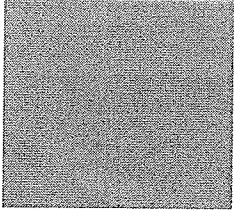
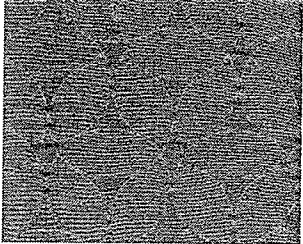
FURNITURE

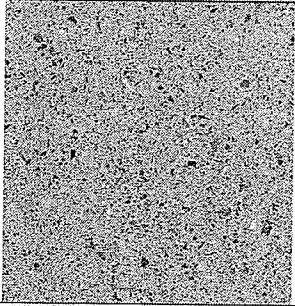
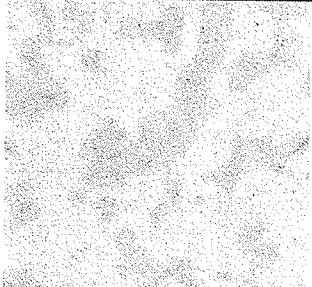
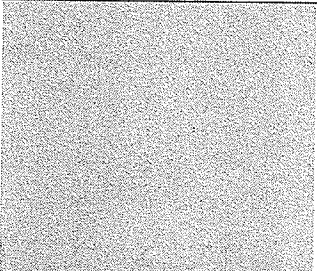
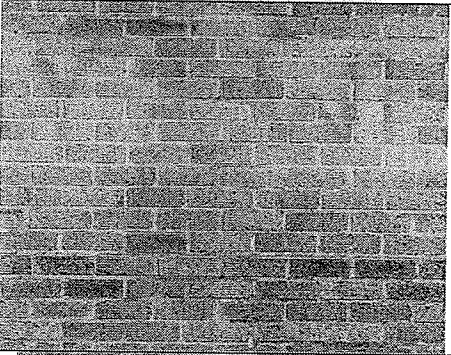
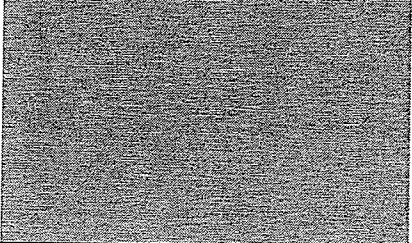
Martin		
Colour/Material		Description
		Flooring- Maple Hardwood
		Countertop- Stainless Steel
		Cabinets- Plastic Laminate Manufacturer- Formica Colour- Graphite
		Wall Paint Manufacturer- Benjamin Moore Colour- Deep Rose 2004-10
		Wall Paint Manufacturer- Benjamin Moore Colour- Cloud Nine OC-119
		Fabric- Black Leather

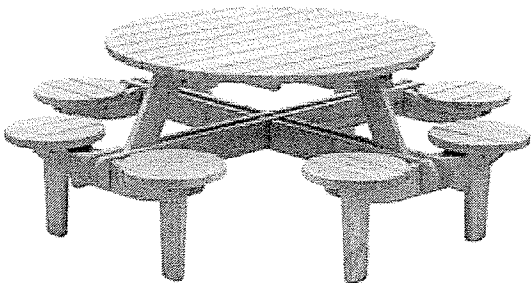
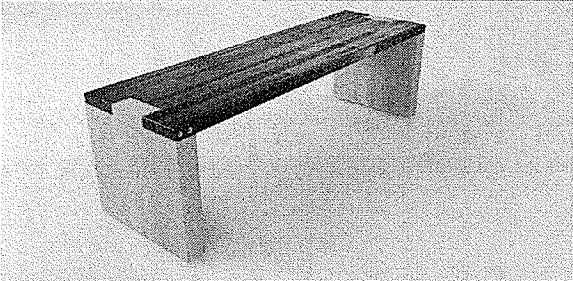
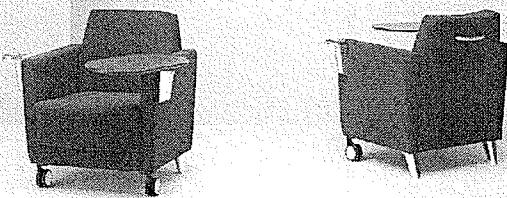

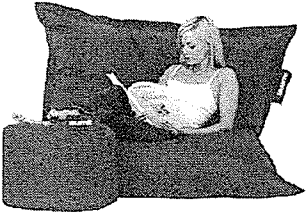
Joan		
Colour/Material		Description
		Flooring- Cork
		Flooring- Carpet Manufacturer- Shaw Colour- Beige
		Cabinets- Plastic Laminate Manufacturer- Arborite Colour- White Xabia P-311CA
		Wall Paint Manufacturer- Benjamin Moore Colour- Wedgewood Gray HC-146
		Wall Paint Manufacturer- Benjamin Moore Colour- Cloud Nine OC-119
		Fabric Manufacturer- JLynn Colour- Beach Cottage

Maria and Charlie	
Colour/Material	Description
	Flooring- Rubber Manufacturer- Johnsonite Colour-Custom
	Cabinet- Plastic Laminate Manufacturer- Wilsonart Colour- Maple
	Wall Paint Manufacturer- ICI Colour- 1270
	Wall Paint Manufacturer- General Paint Colour- Paprika
	Wall Paint Manufacturer- General Paint Colour- Herbivore
	Fabric Manufacturer- Design Tex Colour- Dodge Ball

Judy and Eric

Colour/Material	Description
	Flooring- Particle Board
	Cabinet- Plastic Laminate Manufacturer- Wilsonart Colour- Montana Walnut
	Countertop- Stainless Steel
	Wall Paint Manufacturer- Benjamin Moore Colour- Sandlot Gray
	Wall Paint Manufacturer- Benjamin Moore Colour- Amethyst Shadow
	Fabric Manufacturer- Knoll Colour- Gala Plum

Common Areas		
Colour/Material		Description
		Flooring- Polished Concrete
		Vertical Surfaces- Tindle Stone
		Details- MDF Board
		Columns- Brick
		Doors- Stainless Steel

Common Areas Furniture	
Product	Description
	<p>Main Level Manufacturer- Hayes</p>
	<p>Main Level Manufacturer- Acronym Designs</p>
	<p>Second Level- Computer Connection Manufacturer- Nienkamper</p>
	<p>Attic Level Manufacturer- Molo</p>
	<p>Attic Level Manufacturer- Sumo</p>