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Ethics in Architecture: The Application of an Ethic of Care in the Design of a Cancer Treatment Center

Emily Lynn Hardin
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To the Graduate Council:

I am submitting herewith a thesis written by Emily Lynn Hardin entitled "Ethics in Architecture: The Application of an Ethic of Care in the Design of a Cancer Treatment Center." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Architecture, with a major in Architecture.

John Mcrae, Major Professor

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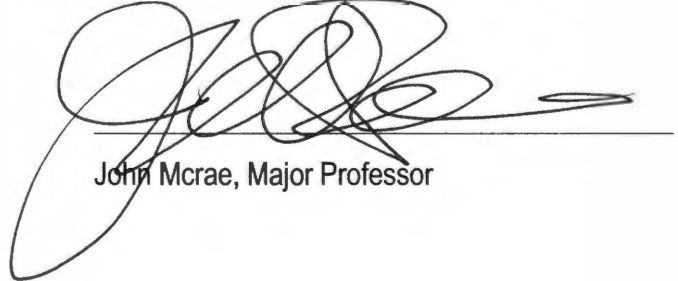
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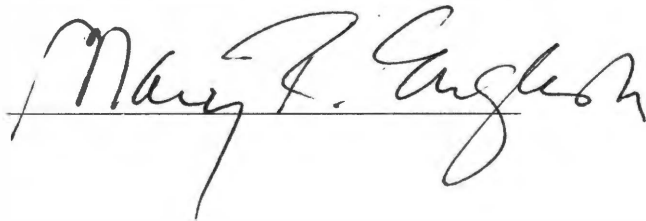(Original signatures are on file with official student records.)
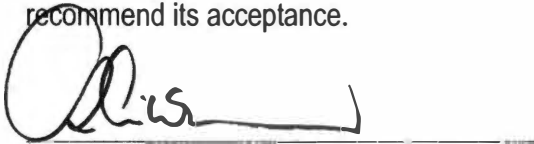
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Acceptance for the Council:

Vice Chancellor and Dean of Graduate Studies

Ethics in Architecture:
The Application of an Ethic of Care in the Design of a Cancer Treatment Center

A Thesis Presented for the Master of Architecture Degree
The University of Tennessee, Knoxville

Emily Lynn Hardin
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ABSTRACT

The project chosen for this thesis is a healthcare facility, specifically a Cancer Treatment Center, as it is a paradigmatic project for application of an ethic of care. Moreover, healthcare facilities are not given due attention in architectural discourse and education despite the importance of their role in society. While healthcare specific organizations have begun to recognize and research the effects of built environment on health, this newfound concern seems to be generally limited to those organizations. Broader discourse involving other related professions, i.e. architecture, philosophy, psychology, sociology, etc., could benefit research as healthcare entails not only the treatment of illness, but the promotion of health.

The aim of this thesis concerns the application of an ethic of care in the design of healthcare facilities, specifically, a cancer treatment center, with the intent of creating a place that emphasizes patient experience and an atmosphere or environment that is conducive to healing.

It is my contention that an ethic of care may be employed as a directive in the development of design concepts, as a means to organize and create spaces in way that is better suited to the circumstance and experience of the building's users.

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"Philosophical ethicists have not yet fully explored, or even mapped out, the problems posed by architectural practice. While some have attempted such explorations, their accounts suffer assorted philosophical deficits, and generally miss the aim of reasoned moral analysis."

-Saul Fisher

The principal intent of this thesis pertains to the application of an ethic of care in the design of healthcare facilities, namely a Cancer Treatment Center. As precedent assertions of 'ethics' in architecture have proven insufficient, this principal intent is tempered by an analysis of some of these precedents to elucidate a means to more purposive and comprehensive application. Succeeding chapters demonstrate such application through analysis in the development of the final project.

Academic and philosophical discourse of ethics in architecture is not new. It may be traced back to ancient philosophy; to concepts of value and virtue in beauty and art and theories pertaining to the origins of architecture. While these metaphysical theories, from ancient to contemporary, may give sanction to value assertions and certain epistemological concerns in architecture, their influence has not extended to an applied ethical theory. Further, debate of such theory is not the concern of this document, though some assumptions of the nature of architecture and human experience will be made. The application of ethical theory, in architectural practice and creation of product, is the topic in question. The contention is not that metaphysical theory is negligible in terms of application; rather, that metaphysical and applied theory may inform one another via a sort of translational study. Thus, this analysis and exemplification may dually serve as an investigation of the assumptions made and a substantiation of applied ethical theory in architecture.

Such an analysis and application requires definition of both architecture and the ethical concerns entailed by its field. Architecture embodies a number of ethical concerns due to the nature of its practice and resultant product, and may be defined in terms of each. As a practice, ethical debate pertains to the codes/regulations and design process, and both concern appropriate behavior and conduct for those in the profession. Further, codes and regulations provide guidelines for safely and accessibility to protect the rights of the inhabitants and define the liability of the architect. The design process includes methods of research and analysis, as well as the concepts employed in a design.

While the practice of architecture, that which concerns appropriate conduct, is directly related to ethical theory, the relationship between ethics and the architectural product is less definitive. As a product, architecture is both shelter and art. Shelter pertains to both function and structure, and art pertains to the quality of human experience relating to the built object. Stated by Saul Fisher, an object in itself cannot contain ethical value or be deemed immoral as such assertions would be "a form of mysticism" (172). The relationship between object and creator, that is, the degree of responsibility assumed by the creator to produce objects of prospective social and experiential influence, does, however, pertain to ethical theory. The product of architecture is thus judged in

terms of the extent to which its designer fullfilled his/ her ethical responsibilities. Further, these ethical responsibilities are defined by the extent to which research and theory show architecture to be an influence on its inhabitants, as well as the ethical theory surrounding the type of activity to be performed within a certain functional building type. Applied ethical theory then requires analysis of the circumstances of human experience and analysis of the impact of the environment on human experience This explication of ethical concerns implied by definition of architecture foreshadows the challenge of an application of ethics in architecture. It also becomes apparent that the specialized knowledge of an architect is essential for such application. Therefore, ethics is an issue for the architect, not only as regards client-professional relationships, but also as regards principles employed in the creation of space, ie., how an ethic may be translated into the architectural aspects of form, organization, and qualities of space in terms of producing the effects implied by an ethical theory.

Ethics, however, have not been utilized in this sense; as a means to create space that is conducive to the experiential function of a work of architecture. 1.) Practice and product are categorically separated in application, 2.) Ethical theory from other professional fields are superimposed on the field of architecture, and 3.) Application of ethical theory is reduced to abstract expression.

Superimposition of Ethical Theory
As stated by Saul Fisher, "There is no other discipline with just this mix of commitments, or consequently, problematic ethical choices. Addressing how one makes such choices, then, is unlike that which ethicists have done before" (171). This being the case, past attempts to incorporate ethics into the field of architecture have generally failed in bringing about a practice or product of architecture that may be deemed ethical.

As well as the insufficiency of past applications of ethics in architecture to comprehensively guide both practice and product, it has also falliciously drawn from sources of applied ethical theory specific to other professions. That this is an inept method of application is generally stated and evidenced by example by Saul Fisher.

> We cannot expect to directly import ethical solutions for architectural practice from the applied ethics canon that addresses other, distinct disciplines. These problems are hybrids, reflective of preferences and meta-preferences distinctive to architecture and so requiring specially designed solutions for architecture. One might think that a natural model for professional moral guidance is buisness ethics, but there is no profession of business that is quite like architecture, which alone generates products of great utility *and* artistic value. In business ethics, one does not quite get at these issues becuase of the focus on traditional financial relationships, without the addtional factors of aesthetic value, intellectual property, or the status of shelter as a human need. (171).

There are social, functional, and experiential implications in the design of built environment and there is, further, no other field that entails this exact conglomerate of professional responsibilites.

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The previous example made reference to example in the practice of architecture, yet there is one other example that also shows this same deficiency in product: that of environmental ethics.

Environmental or ecological ethics have gained much attention in recent history and are maintained in almost dogmatic fashion in present architectural discourse. That the environment requires our care and attention in building concerns is given. However, it has presented us with an either/ or situation that seems almost irreconcilable as regards Nature and Beauty. Christopher Day explains this situation by asserting: The pursuit of beauty in our surroundings has (apparently) nothing to do with our ecological responsibilities. The concept of 'Nature' usually involves all but one level of creation, humanity. So we have human needs and Nature's needs and these are often in conflict" (Ethical Building in the Everday Environment, 128). Thus, this ethic lacks and sometimes opposes the needs and concerns of the inhabitants in the built environment. In essence, it sets up a false dichotomy between Nature and Human, as it assumes a position of separateness between these two subjects.Though there are many forms of environmental ethics, all give priority to environment as the morally relevant subject. An anthrocentric stance, while arguing for care of the environment in terms of a human need for its existence, still neglects the human need for aesthetic considerations of the *built* enviroment or assumes aesthetic value of building with care for the environment as justification. Care of the environment is only one aspect or ethical consideration in the field of architecture. Therefore, an environmental ethic cannot inform the many other ethical considerations implied by a definition of architecture that recognizes the importance of human experience of built environment.

Reduction of Applied Ethics to Abstract Expression
Though the field of architecture requires specialized application of ethical theory in terms of its unique characteristics, it does not follow that these unique characteristics require distinct ethical theory or rules for application. An application of ethics in architecture necessitates the same rigor of logic and is susceptible to the same fallacies as in application to other professional fields. Further, it could be argued that the complexities presented by architecture necessitate a scruntiity of logic even more so, as consistency becomes more difficult to maintain with increasing variables.

Thus, the purpose of the following is to illustrate this point, propound the relationship between architecture and branches of ethical study, and to elucidate prior fallicious applications of 'ethics' in architecture and the consequences of these fallacies. The philosophical study of ethics may be divided into four separate, but interrelated branches, all of which have correlations to precedent application in architecture. These branches may be refered to as descriptive, normative, meta, and applied ethics.

These divisions, created by a catagorization of philosophical approaches to study, do not directly parallel possible approaches in architecture. A description of each, in terms of examples of precedent application of ethics in architecture, does, however, provide a better basis for ethical terminology in the field of architecture, and illustrates the insufficiencies of direct translation of philosophical ethical theory to that of architecture without considerations of the field as such.

The 'New Brutalism' of the mid-twentieth century is one of these precedents, and it asserted the needs of mass culture as the primary concern of architecture. New Brutalism, as championed by Allison and Peter Smithson, was a reaction to the needs of a post-war culture and described "a programme or an attitude to architecture" (Banham, 10). It asserted an architecture without style, rhetoric, or an aesthetic and claimed the purpose of architecture to be in the service of the practical needs of society. Further, architecture should be related to context, unlike its precedent and contemporary architecture of the International Style. The 'New Brutalist' architecture was highly criticized and fleeting in popularity. Its assertion of a normative ethic (the morality of unitarianism) was not enough to create enduring meaning for its architecture. The reason for this is, in part, due to the fact that the New Brutalists were unable to produce an architecture specific to its ideas and asserted an architecture anachronistically incompatible to these ideas as examples of them. However, this inability is also related to illogical and fallicious ethical reasoning that foreshadows its failures in application.

The New Brutalists assert the moral relevancy of an ambiguous persons with suggested differing interests and no basis for further reasoning as conflicts of interest arise; an inevitable side-affect of an ends towards universability. The practical need for shelter shared by all may imply an architecture that provides this shelter in a cost effective way, but lacks a basis for how we are to do this as concerns specific building functions. That it lacks meaning for its inhabitants in its neglect of contending a 'how' pertaining to the asserted ethic led to the arbitrary assertion of an architecture of a specific style.

Another precedent of ethics in architecture is the hygiene movement asserted by champions of Modern Architecture, such as Le Corbusier and Adolf Loos (Figures 1 and 2). Hygiene was asserted as a moral concept towards moral progress in a false analogy of the cleansing of the environment to the cleansing of the mind and soul. The new technology of plumbing and associations of architecture to the machine in terms of a lack of ornament, white walls, and
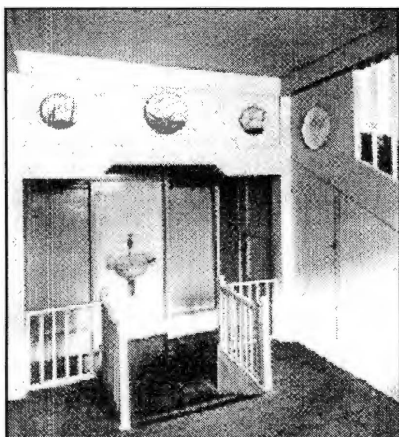

Figure 1. Rufer House; Vienna

Figure 2. Villa Savoye; Poissey

geometric forms were all asserted as morally progressive. Hygiene refered not only to the external ablution of the environment, but also to the moral cleansing of its inhabitants. However, "the recognition that new technology did not guarentee human moral progress would prove to be one of the major disillusionments of the twentieth century" (Kunstler, 25).

That ethical reasoning in architecture requires the rigor of logic for meaningful application is evidenced by this example. The modem movement asserted hygiene as a means to moral progress through a falliciously deducted metaphor. Consistency in terminology or aesthetic elements is in no way equivalent to logic and provides nothing more than what it is: consistency. Meaning is attained through the assertion of a pertinent ethic and a logically derived application. Contextual relationships must be defined before aesthetic relationships of composition. Logic pertains to the derivation of concepts and an implied focus that may be applied by principles of empirical study of experience. Further, that universalizable principles, derived from concepts of justice, are not sufficient conditions for the creation of meaningful architecture is also evidenced in this example. Speaking of the use of proportions in the architecture of Le Corbusier, James Kunstler asserts, "It didn't make his buildings any more livable. His atrocious Unite d' Habitation apartment block in Marseilles was based on thirteen modular dimensions. Its failures had at least as much to do with Corb's apparent ignorance about ordinary domestic concerns such as the desire for privacy, or the spatial needs of cooks" (105). While Kunstler's contention seems a bit overstated in his dislike of the Unite d' Habitation, this statement illustrates a fundamental distinction and application of an ethic of care and ethic of justice. An ethic of justice would search for universal principles, such as a modular system, and ethic of care, while it may also utilize a modular system, would look to the concerns of the inhabitants for further guidance in design.

Separation of Practice and Product
The first of these examples concerns both the insufficiencies of a descriptive ethic and a general understatement of the use of ethics in architecture. The Professional Code of Ethics, outlined by architectural organizations such as the Royal Institute of British Architects (RIBA) and the American Institute of Architects (AIA) pertain to a code of conduct in the practice of architecture. While such a code may be necessary in order to establish guidelines for behavior and protect the client, these codes are not sufficient, as ethical reasoning does not apply to the challenges and issues of the product. As architecture entails both practice and product, a Professional Code of Ethics is insufficient as regards the field of architecture as a whole. These codes serve primarily to "express the considered opinion of the profession and guard against liability problems" (Fisher, 172).

The codes are also asserted through "moral claims deemed worthy by the professional association at a particular stage" and "have been pronounced as codified with allowance for change by decision of the organization" (173). This type of moral approach is not grounded in the rigor of reason, but in popular opinion, and further neglects the opinion of others that should rightfully be given priority as an involved party. Moreover, there are certain ambiguities asserted in this type of code that cause resultant ambiguities in proper ethical application. For example, the RIBA code "contains a principle that requires members to mind the interests of those using their product *and* remain loyal to the client and employer. Yet this represents three plausibly distinct

interests, with no suggestion as to how one should behave or prioritze them. (173)" Morality derived from popular opinion lacks proper basis or premises for ethical reasoning in such matters.

This third and last example pertains to the consequences of fallicious reasoning in architectural discourse. The Continental ethics of Karsten Harries has many faults, but I also contend that it may retain value if certain terminology is redefined and reasserted in terms of an appropriate normative ethic. In other words, this ethic suggests a more applicable approach to ethics in architecture, but fails in terms of reasoned concepts for application.

Warwick Fox summarizes Harries argument as follows:
>   1 Architecture lacks certain features that would make it 'authentic'.
>   2 With authenticity comes ethos: the values of living in a community.
>   Thus
>   3 If we restore those features, then architecture will reflect the prized values of
>   community life (174).

Further, Harries attributes this lack of authenticity to the advent of technology, as "Technology threatens to transform us into increasingly lonely, rootless, displaced persons" (12).

The fallacies in this argument are derived from Harries' treatment of architecture as separate from its practice (the inverse of a Professional Code of Ethics, but with similar fallacies). Thus, this continental ethic attributes morality to the product itself. Authenticity is further baselessly equated to values of living in a community. Authenticity and what Harries calls the creation of place in a Heideggarian sense, become abstract principles, conceptually disassociated from application and context, though his intent is to reconnect context and the human experience of this context as place. As context/ place and authenticity are defined as abstract universals, they lose meaning in application, as well as, imply ungrounded and unnecessary rules for application. Through fallicious reasoning and contrived terminology, Harries arrives at a return to the primitive at odds with technology. If, however, these terms are redefined and reconnected to subjective experience, as most common uses of the terms denote, they may retain value for application.
Further, place does not necessitate a divorce from technology, but rather asserts it in its proper usage. Technology is part of place in modern society, and I would argue that a place without technology would seem more disorienting than one with it by means of socialization of the modern built environment.

In conjunction with the two general deficiencies of ethics in architecture, separation of practice and product, and superimposition of ethical theory from other professional practice, two further essential problems of ethics in architecture are evidenced by precedent examples. First, the reduction of ethical application to means of expression fails to consider the complexities of human experience of space by assuming universal principles, thus neglecting the individual. Expression, is not of itself a problem, and it relates to some aspects of human experience. It is not, however, sufficient in terms of potential application of ethical theory. Second, there is generally a lack of rigor in logic in application of ethical theory that has led to fallicious and arbitrary assertions of what constitutes ethics in architecture.

Thus, in an attempt to apply ethical theory to architecture, one should search for an ethical system that may comprehensively guide both the practice and product of architecture, one that embodies premises that aptly suit the needs of inhabitants, and that may be applied with logical consistency in terms of both definition of architecture and ethical theory.

CHAPTER 2: Principles for Application of an Ethic of Care

"If the idea that one's environment contributes to healing and healing is a major objective of a caring institution, it follows that architectural design as a feature of environment contributes to healing and caring."

-John Lincourt

With the primary faults or inconsistencies of prior assertions of ethics in architecture outlined in the previous chapter, I will now describe an ethic of care and how it may be utilized in the design process. I will use its counterpart in ideal form, an ethic of justice, as an aid in description as a contrasting example. Further, the examples used in the previous chapter will be referenced to elucidate the differences between an ethic of care and its application and that of those examples to emphasize its proper influence.

Before delving into this description, it is important to emphasize that the debate between an ethic of care and an ethic of justice concerns their implications in ideal form. The two are not necessarily mutually exclusive concepts and may maintain many similarities in practical form. The use of an ethic of justice as a contrasting example is merely a descriptive tool and should not be taken as an argument for relevancy of one or the other for architecture as a whole. Further, I do not contend that these are the only viable ethical systems for consideration in application to architecture. Rather, I find them to be an informative starting point for research into how ethics may be more aptly utilized in architecture. As stated by Grace Clement,

> The ethic of care and the ethic of justice are especially worthy of our attention because they are not merely two among many different approaches to ethics. They are more fundamental than other possible ethics because they thematize two basic dimensions of human relationships, dimensions that might be called vertical and horizontal. The ethic of justice focuses on questions of equality and inequality, while the ethic of care focuses on questions of attachment and detachment, and both sets of questions can arise in any context (1).

This excerpt also begins to describe the differences between these two ethics in their ideal form. Clement furthers this distinction with the following summary:

> (1) the ethic of justice takes an abstract approach, while an ethic of care takes a contextual approach; (2) the ethic of justice begins with an assumption of human separateness, while an ethic of care begins with an assumption of human connect- edness; and (3) the ethic of justice has some form of equality as a priority, while the ethic of care has the maintenance of relationships [attachment versus detach- ment] as a priority (11).

One further distinction should be mentioned between an ethic of care and an ethic of justice

that stems from the implications of the above premises concerning the concept of autonomy. In maintaining an ethic of justice, the concept of autonomy may also be maintained without incongruity. In asserting an ethic of care, however, some questions may arise as to how one can maintain the autonomy of individuals while asserting such a high degree of connectedness with and influence of others and their surroundings. Proponents of an ethic of care have answered with the idea of critical perspective; that individuals are capable of knowledge and reflection of the influence of these circumstances, and with this knowledge we are then free to make choices or decisions independent of this influence. Thus, adherence to an ethic of care would support knowledge and reflection of these complex relationships to maintain the autonomy of individuals.

From this initial description of the two ethics, I will now elaborate upon these principles by categorizing the premises of an ethic of care under the headings of subjective experience, attachment/ maintanence of relationships, contextual approach, and autonomy of critical perspective. It is these premises that begin to inform architecture as directive in the development of design concepts. Further, the architectural examples given under each heading are not direct inferences of each ethic, but are descriptive examples to help show how the focus of each premise might influence design.

Subjective Experience
An ethic of care emphasizes and asserts the relevancy of individual experience and perception as a basis for making decisions. Conclusions of morality is then influenced by considerations of the individual. In contrast, an ethic of justice may assert a level of universality concerning what is right or wrong. In other words, morality is independent of individual perception and should apply to humanity as a whole.

For instance, many assertions of an appropriate style in architecture may be viewed as a universalization of human experience, while those that maintain the necessity of use/ site specific analysis in determination of a builidng's form, language, or atmosphere begin to consider subjective experience, though possibly in a more superficial manner. Another example of a lack of priority of subjective experience is evidenced in the design of the University Hospital in Aachen, Germany (Figure 3). This hospital was claimed to have been designed with an ethical motive, that of honesty of construction and purpose. While it may convey construction and purpose through its
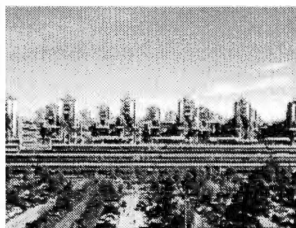

Figure 3. University Hospital of
Aachen; Aachen, Germany

very unique design, it seems to neglect considerations of the type of individual that would be using a hospital. It emphasizes the foriegn nature of the facility, rather than becoming a facility for the person.

As a directive for design concepts, this premise would imply that the morally relevant persons be defined prior to the development of design concepts. In the case of the cancer treatment center, the morally relevant person becomes the cancer patient, as the primary objective of this facility is to heal and promote health, and it is the patients' health that is in straits (Figure 4). Therefore, one should research the experience of the cancer patient and their primary concerns, as a basis for design decisions.

Attachment/ Maintanence of Relationships
This premise assumes the nature of human beings to be one that is attached, rather than isolated from other human beings. Our relationships and interactions with others may alter or influence our perception. Therefore, how these relationships are maintained becomes an important question in morality. For example, an assumption of isolation may suggest compartmentalization of space, while connectedness may, on the other hand, suggest openness. As subjective experienceis given priority, however, it is important to determine the nature of the relationships given the defined morally relevant person before concluding the nature of the space. The cancer patient may be accompanied by family members or friends who maintain varying degrees of closeness to the patient. The patient will also encounter the medical staff as their caregivers throughout the treatment process (Figure 5). It is these relationships that should be considered in determining the quality of space (open/ closed/ public/ private).

Contextual Approach
The contextual approach furthers the idea of human connectedness to include the relevancy of context and circumstance as influential factors of experience and morality. It is not only the individual and their relationships with others, but the circumstance and context surrounding them. For instance, the previous chapter described the idea of morality proposed by Le Corbusier and others in the cleansing of the environment through the use of whitewashed walls. This became a
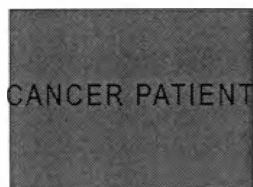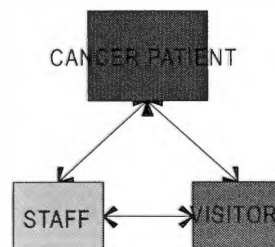

Figure 4. Subjective Experience

Figure 5. Attachment/ Maintanence of Relationships

feature of the International Style, which in itself neglects the relevancy of context, but also assumed morality in the use of whitewash for all uses and cultures.

In maintaining this premise, one should strive to understand the experience of the circumstance prescribed by the function of the building. In this case, patients have come to a foriegn environment, with foriegn equipment to receive treatment from strangers. They are in a healthcare facitlity, specifically a cancer treatment center (Figure 6). How one is to design to promote health under these circumstances also becomes a driving force in the development of design concepts.

Autonomy of Critical Perspective
As previously mentioned, autonomy of critical perspective would suggest value in promoting knowledge and reflection of the aforementioned influencea (Figure 7). For instance, it would not be hard to conclude that as people are uncomfortable being ill and in a foriegn environment, one should help to ease this discomfort by designing healthcare facilities that look like residences, as people generally feel more comfortable in a home. The patient, however, is not at home, does have an illness, and is in a healthcare facility. In terms of critical perspective, this method of design seems to hide or obscure the persons circumstance and suggests that their may be another method of design that may at once promote knowledge and maintain a comfortable atmosphere unique to its purpose.

The idea of autonomy of critical perspective seems to be the balancing factor in considerations for design concepts. How we promote knowledge and reflection serves as a check against immobilizing care. Caring includes not only caring for another and caring for the caregivers in order to care for another, but also promotion of caring for oneself.

Application of an ethic of care in architecture alludes to the complexities of human experience, often insufficiently considered in architectural principles, and challenges the architect as a morally viable participant in society. An ethic of care, in its contextual approach to human and nonhuman connectivity may bring architecture to enhance the possibilties of ethics in architecture. Architecture is no longer an object surrounding human experience, but one of experience, with effects derived from the perceptive nature of human beings.

Finally, it should become apparent that the role of an ethic of care is not one of abstraction, ie., an aesthetic of care or caring architecture, but serves as a directive or filter for design concepts that emphasize human experience. Thus, an ethic of care influences architecture throughout its design process and manifests itself through architectural gestures towards this experience. An ethic of care is not a design concept in itself. To universalize a concept that asserts subjectivity and circumstance would be a contraction. The design concepts developed for this facility may be entirely different than what woulld be beneficial to other healthcare facilities, facilities with different uses, or similar facilities in other cultures. Rather, given the moral direction provided in these premises, application of ethics in architecture may come to have more pertinence or relevancy to human experience as it would become more specific to the needs of its users and their circumstance.
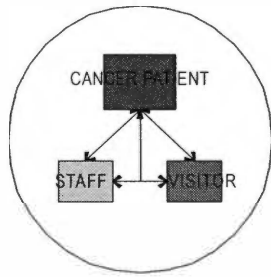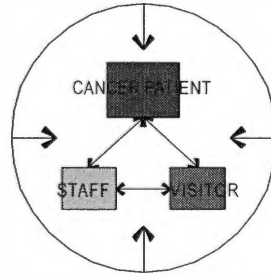
Figure 6. Contextual Approach

Figure 7. Autonomy of Critical Perspective

CHAPTER 3. Research Summary

"Only by starting out from each individual element and by making it contribute in its own right to the whole can an ordering be achieved in which each component, large or small, heavy or light, has its rightful place in accordance with the specific part is plays with in the whole."

-Herman Hertzberger

With the premises of an ethic of care set out as a directive, the task becomes gathering information that furthers knowledge of the cancer patient's experience, their relationships within this type of facility, and the effects of this overall environment on healing or promoting health. This type of information includes both empirical data and experiential research. Thus, this chapter will outline pertinent data gathered from the field of psychoneuroimmunology (PNI) and primary aspects of cancer patient experience, including accounts of how it effects the daily life of these individuals, the treatment process, and side effects. As it is also important to consider the experience of the medical staff, in its own right as well as to 'care for the caregiver,' patient considerations will be followed by those of the staff. Finally, in order to condense this information into concepts that will aid in the design process, I will outline four concepts, temporality, inhabitation, interaction, and sense of control, as a derivation of the aforementioned research, focused by the premises of an ethic of care.

PNI Research

In recent history, PNI research has made some headway in evidencing correlations between healing and the experience of our environment. PNI is "the art and science of creating environments that prevent illness, speed healing, and promote well-being". This emerging science "concerns itself with the correlation between stress and healing." Further, "a large body of replicable experimental and clinical data has proven the connection between biological responses to sensory stimuli. The data clearly demonstrates that the mind, brain, and nervous system can be directly influenced, either positively or negatively, by sensual elements in the environment" (Gappell, 115). The built environment, next to issues concerning illness, can be a major source of stress for the patient, as "there is increasing scientific evidence that poor design works against the well-being of patients and in certain instances can have negative effects on physiological indicators of wellness. Research has linked poor design to such negative consequences for patients as, for instance, anxiety, delirium, elevated blood pressure, and increased intake of pain drugs" (Ulrich, 88). Such consequential influences of the built environment denote not only the gravity of design, but a social responsibilty for the architect.

While PNI research has covered a wide array of environments and circumstances, there were quite a few that seemed especially pertinent to this type of facility. The most widely mentioned topic concerns the effects of stress caused by factors in the environment. Research has shown that "many...attributes of illness may be carried over to the hospital situation and perhaps even exaggerated by some features of the hospital," and stress may be caused by a variety of elements (Milller and Swennson, 20). "In the first place, the hospital is a strange environment for most people. It has different sounds and smells than the environment to which most of us are accustomed" (20). Further, stress is also related to a "lack of a sense of control, access to social support, and positive distractions in

physical surroundings" (Ulrich, 91). A lack of a sense of control and access to social support was also correlated with more specific aspects of design, as Ulrich explained in the following quotation. "Patients' sense of control can be markedly reduced by healthcare facilities that are, for instance, often noisy or confusing from the standpoint of wayfinding (Carpman et al, 1986) or that invade privacy or prevent personal control over lighting and temperature (Winkel and Holahan, 1985)" (92). Further, "individuals require added privacy and an assurance of ample space of their own at moments of tension and social change. Therefore, it is essential to have a space that is private, even if it is just a drawer that locks" (Gappell, 119). These studies show that a reduction of stress may be achieved through design that allows patients to have control over their environment, have space for themselves, allows them to find their way with ease, and has some familiar elements or spaces that they may relate to themselves. The idea of positive distraction or stimulation is also an important consideration in reducing stress and, inversly, reducing depression.

> Research in environmental psychology suggests that human well-being is usually fostered when physical surroundings provide a moderate degree of positive stimu-lation- that is, levels of stimulation that are neither too high nor too low (Wohlwill, 1968; Berlyne, 1971). If stimulation levels are high due to sounds, intense light-ing, bright colors, and other environmental elements, the culminative impact on patients will most likely be stressful. At the other extreme, prolonged exposure to low levels of environmental stimulation produces boredom and often such negative feelings as depression (Ulrich, 94).

Therefore, it is not only important to include elements that are familiar to patients, but to consider the effects of the building's details; lighting, color, rhythm, , etc., as part of an overall environment that can be stressful, depressing, calming, or stimulating. While it seems apparent that creating an environment that is stressful or depressing should not be an aim in this type of facility, one should consider the activity, relationships, and possible states of mind specific to each space to determine the desired effect. In both cases, the above research indicates that more subtle gestures produce more beneficial results than ones that may be more extreme attempts to stimulate or calm, ie., a bright red room or a 'clean slate,' respectively.

The next related topic of PNI research deals with the effects of interaction and privacy. The previous research indicated that patients respond well to the choice of privacy and feeling like they have a place for themselves and their belongings. This concept operates in the reverse, as well, as "many studies in the fields of behavioral medicine and clinical psychology have found across a wide variety of health and nonhealth situation that individuals with high social support, compared to those with low support, experience less stress and have higher levels of wellness (Cohen and Syme, 1985; Sarason and Sarason, 1985) (Ulrich 93)." While, a few studies have linked increased social interaction with such positve indicators of patient well-being such as alertness, (Knight, et al., 1978) "there is a lack of scientific research concerning the extent to which patient's social interaction with visitors in hospitals actually promotes wellness. In this regard, it seems concievable that in some situations visitors may increase rather than reduce patient stress" (Ulrich, 93). It appears that, similar to privacy, the degree of interaction required to promote well-being in a patient

depends moreso on their being able to chose whether or not to be in a social situation than the provision social settings themselves. Thus, it seems more useful to consider and provide spaces in terms of territory, how a patient perceives a space in relation to their place in it, rather than in strict terms of public and private, ie., together or alone. Furthermore, patients have reported that private spaces with views to activity and others provided a sense of control, "as if they were in charge of supervising something."

Views to natural settings also proved to have significant benefits that relate to positive stimulation, reduction of stress, and an overall calming effect. Moreover, the effect of these views have a direct correlation with rates of healing, as evidenced in the following report.

> Patients with the natural window view had shorter postoperative hospital stays, had far fewer negative evaluation comments in nurses' notes (e.g., "patient is upset," "needs much encouragement"), and tended to have lower scores for minor postsurgical complications such as persistent headache or nausea. Further, the wall-view patients needed more doses of strong narcotic pain drugs, whereas the nature view patients more frequently recieved weak analgesics such as acetaminophen (Ulrich, 97).

Exposure to natural settings not only effects longer-term recovery, but has also been shown to produce "significant recovery from stress within only five minutes or less, as indicated by positive changes in physiological measures such as blood pressure and muscle tension" (Ulrich, 96). The use of glazing to provide these views also allows light to filter into the building, which has also proven to be beneficial for recovery, stress reduction, and maintaining a physiological connection to natural changes.

> Light coming into the pineal gland through the retina of the eye, influences endo-crine control, timing of our biological clocks, entrainment of circadian (sleep/ wake) cycles, sexual growth and development, regulation of stress and fatigue, and sup-pression of melatonin- a central nervous system deppressant used for treatment of Seasonal Affective Disorder (SAD)" (Gappell, 116).

These studies evidence the importance of fenestration in the design of healthcare facilities. Their orientation and location should be carefully considered and organized in a way that best utilizes their healing qualities. An organization strategy that orients patient spaces toward green areas and the softer northern light may be one method of achieving this goal. Some patient spaces, however, may have functional requirements that do not allow views or natural light. For instance, the rooms housing the linear accelerator in a cancer treatment center require a radiation barrier made of thick lead walls. Further studies have shown that some of this calming quality provided by views to nature may be retained through the use of artwork depicting natural scences.

> Findings from this heart patient study suggested that the individuals exposed to the nature with water picture experienced less postoperative anxiety than

the control groups and the groups with exposed to the other types of pictures. Designers should note that the rectilinear abstract pictures were assciated with higher anxiety than were the control or no picture conditions. Also, four days after surgery, patients who had been exposed to any type of picture (either nature or abstract) were able to complete a visual/ perceptual functioning test faster than individuals in the control groups" (Ulrich, 97).

This report also reinforces the benefit of providing positive distraction, as well as the importance of careful consideration when choosing the objects of this distraction. Other sources have noted that in providing these artworks with natural scenes, one should avoid fall or winter scenes as it may lead to more depressing thoughts, a metaphor to the idea of life winding down.

Finally, other studies concluded that "from the patients standpoint, a sense of security is the most important thing a hospital can offer" (Goldin, 272). While the aforementioned strategies contribute to this sense of security, one of the primary factors included a patient's perception of the medical staff. Staff that was hurried, tense, or short tended to cause anxiety in patients who witnessed this behavior. Therefore, in designing for the patient, one must be equally concerned with designing for the medical staff. The experience of the staff is thus connected to the experience of the patient and will be condsidered further later in this document.

Cancer Patient Experience
Research related to the experience of the cancer patient may enhance the potential for utilizing PNI data, giving direction and emphasis for some data versus another. It may also enhance our ability to design for this patient, as PNI data is a new and, by no means, all-inclusive study. This research coupled with the knowledge of an architect concerning such things as the effect of scale, rhythm, proportion, massing, use of materials, etc., can further the possibilities of designing places that reduce stress, provide choice in interaction or privacy, provide a sense of security, and so on. Further, in researching the experience of the cancer patient and using this experience as an impetus for design concepts, design becomes specific to this subjective user and the circumstances of their experience.

From this research, three essential themes emerged, connecting the reports from various cancer patients: 1.) fear of the unknown, foriegn environments, and equipment 2.) high stress due to a sense of a loss of control 3.) reflection and a reassessing of goals and priorities became an important aspect of coping with their disease. The following is an account, both from a medical perspective and that of cancer patients, that will elaborate upon these themes.

Fear is one of the most common responses to the diagnosis and treatment of cancer. Brennan summarizes some of the factors contributing to this fear in the following:

> For most people cancer remains a very frightening disease, one that is still equated with death. There is nothing pleasant about modern cancer treatments, and everyone knows it. Patients must quickly enter the foriegn, often surreal world of high-tech medicine and the immediate start of aggressive treatments (1-2).

Diagnosis of cancer generally changes the way people view the remainder of their lives and forces them into considering questions of mortality. This, in and of itself, is frightening enough, but is also exacerbated as it becomes combined with the introduction of foriegn places, terminology, people, and equipment. Patients must leave the comfort of their homes to endure uncomfortable treatments in strange environments, and there is rarely much time between diagnosis and the onset of treatment for patients to begin to process this information.

> The rapid start of treatment represents a comprehensive break with the normal routines of everyday life. Ordinary expectations of daily life are replaced with anxious uncertainty, and trying not to worry about the unthinkable. All that the patient knows is that months of notoriously demanding cancer treatment are about to begin, but without any certainty of cure. (60).

With cancer treatment stability and security become important factors, as was just mentioned, there is no certainty of a cure and the routines of life are generally uprooted and replaced with much more unpleasant ones. While design cannot change the circumstance, the disease, the break in routine, the need for medical equipment, etc., one can strive to create a more comfortable and familiar environment; an environment that may help to reduce anxiety and fear of a foriegn environment or allow patients to feel more comfortable given this state of mind.

With this fear also comes stress, as "the individual is required to cope with a surreally terrifying and horrific event beyond their control and that occurs entirely without warning." (16). This feeling of a loss of control is characteristic of the primary cause of stress during cancer treatment; care must be entrusted to the hands of strangers, side effects of treatment cause a rapid loss of control of one's own body, some are unable to participate in routine activities, and even medical staff cannot be certain as to the outcome of treatment. One such patient describes the experience:

> It felt like a bad dream. One minute life was chuntering on. The next- well, someone switched the reels, the road forked and I didn't notice. Somewhere, in some parallel universe, life was continuing to chunter on; here, in this one- or was it in the other one?- where I was unaccountably stuck after some through- the- looking glass moment...mammograms, ultrasound, core biopsies, sitting in a square at Bart's weeping, apologising, on my partner's shoulder in the soft rain, the world suddenly upside down, guilty, I or my body had let us down (1).

Given this high degree of stress caused by a loss of control, the PNI data relating to strategies that reduce stresses in the environment and give patients some choice and control within their enviroment become especially significant. Any design strategy that may increase mobility, give patients control over temperature or social interaction, or promote relaxation could be highly beneficial to a patient's experience of treatment. Control over social interaction or providing an adequate variety of spaces that would allow patients to be with or without their family members and friends seems to be of primary importance as Brennan explains,

Although friends and family are often a vitally important source of support, they can also be a source of stress in themselves. For one thing, friends and family are frequently as distressed and shocked as the patient themselves. Consequently, patients can find themselves providing as much support as they receive (66).

Further, for most cancer patients, this time apart from family and friends is characterized by reflection. "People with cancer do not merely cope with their treatment and return to their unaltered lives. Frequently both they and the contours of their lives change irrevocably" (Brennan, 3). This sudden and drastic change, coupled with the many unknowns that come with cancer treatment, often causes one to reconsider or reassess values, goals, and priorities. This time of reflection and reassessment is apparently highly important to coping with the fear and stress associated with cancer. First, it allows patients to feel like they have regained some of that lost control over their lives. Second, many come to view the disease and the disruption it caused as a benefit to their lives.

Along with all the personal distress and social disruption caused by cancer, some people seem to value what having the disease has taught them. They describe their illness as a time of personal transformation in the way they look at their lives, a transition that they are somehow grateful for (3).

Thus, spaces for patients to be alone should be designed with this in mind. Though positive distraction is one method for reducing stress, promoting reflection by offering a safe, calm atmosphere may provide further benefit to these cancer patients. Moreover, promoting knowledge of and productive thought of their disease and others who have been through similiar experiences may also promote this type of reflection. Cancer Treatment Facilities may then have a basis for including in their program such spaces as an auditorium, library, or couseling center, as well as common areas for patients to speak with one another.

Though research concerning the experience of a cancer patient gives less concrete direction for design than does PNI research, it does give a basis for designers to begin to empathize with the experience of the patient and more thoughtfully considered the effects of their design. Further, it helps to filter empirical data, relating it to the patient as a person rather than as a subject, and helps to determine where emphasis should placed concerning that data.

Staff Considerations
Caring for the caregiver in order to care for the patient is an important concept in terms of patient centered design, but the staff and their spaces should also be given due attention in their own right as they spend a great deal of time in these facilities and would also experience considerable stress due to the nature of their jobs. Though the morally relevant person has been defined as the cancer patient for primary analysis, the experience of the members of the medical staff should also be considered an essential element in the development of design concepts.

First, there are many types of users with many divergent needs in any given healthcare facility. These facilities, however, function to provide services to those in need of healthcare; thus, those in need of care, by definition of building and professional function, retain the status of morally relevant persons. Second, this is not to exclude the experience of those other persons, such as medical staff and visitors, but to inform the nature of their experience in terms of their own context: the care of a patient. As "the design of healthcare facilities traditionally has emphasized the functional delivery of healthcare," the needs of these caregivers are more widely understood and less in need of attention at present (Ulrich, 88). Much research has been conducted concerning organizational patterns for efficient treatment in healthcare facilities, and there are also many resources concerning conducive work environments. While these work environments are also specific to the type of work, namely to the treatment of the ill, much can be learned about the nature of the work, and thus the design implications for this type of work, by examining the experience of those receiving treatment. The experience of those providing care is influenced by the circumstances of those receiving care. The experience of visitors parallels that of the medical professional and is viewed similarly in terms of analysis. Though the type of care a visitor, such as familily or friend, provides is typologically different than that of a medical professional, the experience is similar in terms of its translational impact, i.e., the experience of the patient is influenced by the ability of family and friends to provide care and this ability to provide care is influenced by the nature of the care the patient requires. Lastly, It has been argued that the differing needs entailed by function conflict with one another.

Williams alludes to the primacy of patient centered concerns but contends that concerns of other persons are in opposition to the needs of the patients. Further definition of these conflicts are illustrated by Richard Miller and Earl Swensson. They explain that "techno-medical needs conflict with the patients' 'human' needs," and that there is a "conflict between the efficiency needs of care providers and the social pyschological needs of patients" (21).

CHAPTER 4. Design Concepts and Application to the Project

Like the arts, our environment works on us at all levels. A constant healing or poisoning influence. Unlike the arts, we live every moment of our life within our surroundings.

-Christopher Day

Application of an ethic of care began as it gave direction to relevant research in definition of morally relevant persons, assertion of their subjective experience, relationships, and circumstance, and the promotion of knowledge of these experiential factors. This research then provided a basis for design as it further informed these categories of patient experience. In order to cohesively apply an ethic of care and the research directed by it, it is necessary to develop design concepts that summarize this information so that it can be more readily translated into architectural design. This summarization should not be an abstraction of points, but rather concepts that capture the essence of this research so that it may be applied in both practical and aesthetic terms. These concepts, though interrelated, will be discussed separately for the sake of description under the headings of temporality, inhabitation, interaction, and sense of control. These concepts deal primarily with considerations of the patient, so this discussion will be followed by one concerning staff concepts. Each concept is then supplemented with examples of how they were applied in the final project, a cancer treatment center for Charlotte, N.C.

Temporality
Temporality is the design concept that deals with research concerning the benefits of natural elements, including views of natural settings, light, and exposure to changes within nature, to a patient's recovery. Its translation into the architectural project was in the following strategies.

1.) The Use of Materials: Though the structure of the building is primarily concrete and steel (See A.C.16-17), material finishes for both the interior and exterior of the building consist of those found in nature; a combination of wood and natural stones with some stucco on the exterior of the building (Figure 8). They were chosen as they at once create a warm environment and blend with the natural setting created by the existing greenway (See Appendices A and B for site and program descriptions). These materials also weather well, allowing natural change to occur without compromising the aesthetic quality of the building.

2.) Environmental System: As the southern facade contains much glazing to provide both staff and patient views, it was necessary to develop an environmental system that would reduce heat gain and glare. This system consists of two panels of glazing separated by an air pocket that is circulated via stack effect from a fresh air intake to a release in the roof, both of which are controlled by a dampered to regulate the flow of air. The external panel of glazing is double-paned with wooden horizontal blinds that are controlled, in public spaces, by a photo-eye and a thermostat (See A.C.16). The building itself then begins to respond to natural conditions and change within while providing thermal comfort.

3.) Organization Around Greenspace: A greenspace or courtyard was designed to extend the existing greenway to the rear of the facility for use to more parts of the building (See A.C.1). Patient
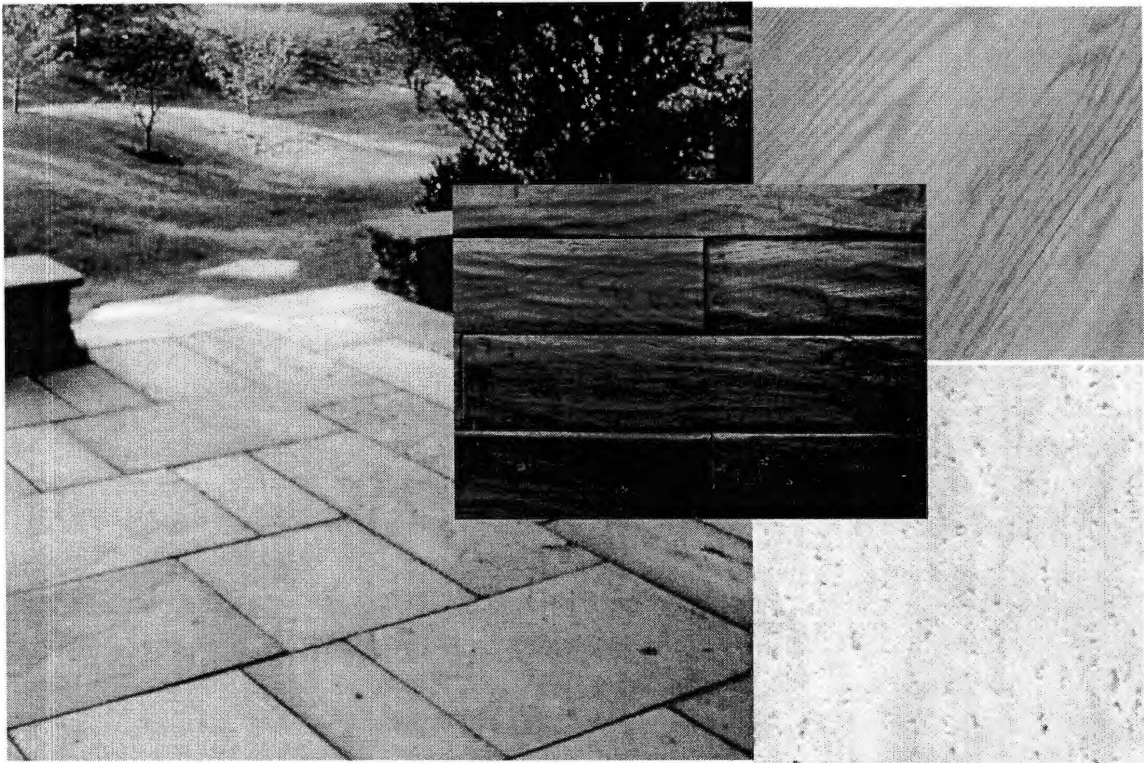
Figure 8. Finish Materials

circulation and communal spaces were then organized around this courtyard, providing views and natural light as patients transition from communal spaces to treatment spaces (See A.C.2-A.C.3). Transition to more common areas along this path also become open to the second floor, giving double height views to natural settings. This occurs as patients enter the waiting area, library, and common spaces adjacent to treatment areas, that are all organized as nodes around the courtyard (See A.C.8- A.C.15). Further, patient spaces that do not have any restrictions concerning light or views in or out are oriented and projected into the existing greenway. As can be seen in the plans and sections, infusion rooms and the reading areas of the library stretch horizontally along the rear of the building, maximizing exposure to northern light and views to the greenway.

4.) Interior Greenspace: The courtyard and existing greenway are further extended into the building as denser programmatic requirements are penetrated by large skylit areas (See A.C.1 and A.C.3). The exam rooms surround one of these areas that serves as secondary waiting and includes an oversized planter with bench seating. These planters are also used in more intimate waiting recesses along the circulation path to bring more of this green element into the building.

5.) Light Tubes: Where skylights seemed a bit costly in terms space to be lit, light tubes were incorporated to bring natural light into dense ground floor spaces (See A.C.11). As both the rooms housing the linear accelators and simulators must have radiation barriers, these spaces can become dark and intimidating. Therefore, these spaces were equipped with double-height, private

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waiting/ dressing rooms that receive light through light tubes, so that the patients have a more calming, intimate space to wait until treatment begins.

Inhabitation
The concept of inhabitation is a response to the research concerning high levels of stress and fear that can become a detriment to patient recovery. PNI research showed that patients responded well to having their own space and cancer patient research evidenced a need for emphasis in dealing with patient fear of foriegn environments. The overall intent of 'inhabitation' concerns creating an environment that patients may relate to and feel comfortable in, as well as feel as if they have a place within this medical community. 'Inhabitation' further provides the basis for the architectural language employed throughout the design. The following are design strategies that were utilized as part of this concept.

1.) Uniqueness with Relationship to Surroundings/ Building Mass Strategies: As mentioned earlier in this document, designing a medical facility that looks like a residence may not be the only strategy in creating a familiar environment for the patient. The scale, massing, materials, and facades were chosen to create a building that at once relates to and is unique within its surroundings. The site faces the commercial/ business district of downtown Charlotte, which consists primarily of high-rises that decrease in size as its center extends to its perimeter, where the site is located (See Appendix A). On either side, the site is flanked by residential zones, consisting of both single and multi- family housing. This variation in surrounding building scale allowed for the design of a facility that could relate to both these public and privately used districts in its own massing. Its massing relates to the residential by tapering down towards both Tryon and Fifth Street, while the main patient entry faces downtown with a higher, glazed mass, centered over this entry (See A.C. 4- A.C.7 and A.C.38- A.C.43). Thus, the facility maintains a unique massing that relates to its surroundings, and the mass of the building is brought to a more human scale by tapering down on either side and towards the rear. The use of material further softens the building, as it blends into the landscape, diminishing the starkness and monumentality often conveyed in medical facilities, while preserving its presence through the entry mass and in stretching the building across the site.

2.) Horizontality: The previous statement hints at this strategy of horizontality. This design concept also deals with creating a comfortable, relatible environment and, coupled with the next strategy to be mentioned, serves as part of the architectural language that provides for the coherency in the aesthetic quality of the building. Horizontality refers to the overall nature of the building, to the details of the bay system and other architectural elements, and to relating the size of the building to human scale. First, the building stretches across its rectangular site, 412 feet by 164 feet. As mentioned in previous sections, this helps to relate the building scale to its surroundings, as well as contirbutes to its uniqueness, and maximizes use of the existing greenspace. Second the bay system consists of windows that emphasize a horizontal orientation, 10 feet by 2.5 feet, and finish materials are oriented similiarly. Third, this horizontal emphasis not only brings the scale of the whole to human dimension by breaking down its surface, but is also based on the average standing and seating heights of a person, so as not to obstruct views, and the height required to hang railing

for ADA purposes and increased mobility.

3.) Solidity/ Stability: This strategy makes up the other part of the overall architectural language and was used in determining the structure and how the structure would be expressed throughout the building. As security and comfort were shown to be of importance through research, a building that conveyed a sort of solidity, mass, and stability seems to be more effective than one whose skin lends a sense of transparency and lightness. The large amounts of glazing, combined with a solid, massive expression of natural materials, provides visibility and, thus, security in being able to see into upcoming spaces and a connection to the outside, as well as, a sense of security in a separation from the elements and others. Windows and walls combine to provide both a connection to and protection from natural elements and adjacent spaces. The structure chosen for the building is a 1 foot by 1 foot concrete column grid with metal stud walls and cellular composite concrete decking floor system. The dimension of the columns is then given a horizontal emphasis as they appear in the bay system and interior by increasing their expressed size to 1 foot by 2 foot. The metal stud walls are filled with rigid insulation and the cellular decking is insulated acoustically to decrease sound transfer from floor to floor (See A.C.16-A.C.17).

4.) Rhythm: The structure of the building follows a 24 by 24 foot grid. The structure is mimiced, however, throughout the building, creating a 12 foot rhythm as one transitions through and around the building, bringing the vertical, as well as the horizontal scale to a more human dimension. Solid walls also convey this rhythm, as slight rectangular recesses are built into the walls, again mimicking the rhythm of the bay system. Changes in floor materials, a pattern of sconces and other light fixtures, the location of returns, etc., are aligned to further emphasize this rhythm and the strategy of horizontality (See A.C.18- A.C.38). This rhythm also helps to break down the scale of larger spaces, while maintaining openness. In other words, its helps to create intimacy within open spaces and these subtle gestures may also provide a sort of positive distraction that is built into the architecture.

Interaction
The concept of interaction deals not only with the provision of public and private areas, but with providing the patient and their visitors a choice as to which setting they would prefer, as well as, a consideration of the specific circumstances of experience of each space. As many of the more private/ intimate spaces also deal with patient comfort, territory, and security, this concept is closely related to that of inhabitation. It also has many ties to the following concept, as it deals with the provision of choice. The following, however, are design strategies and building details that most closely relate to this explication of interaction in this final project.

1.) Grouping of Program by Similar Circumstance or Experience: This and the following strategy are organizational principles that better enable the design of the more specific spatial provisions outlined in the last strategy under this heading of 'Interaction.' Grouping program by similiar circumstance or experience refers a consideration of patient experience when organizing and compiling the programmatic parts of patient used spaces. For instance, the library, couseling center, and auditorium are spaces that would be most commonly used by those seeking knowledge

of the disease; those who have come to some sort of terms with the initial shock of diagnosis and treatment and are seeking to regain control over their situation. These spaces are grouped towards the Tryon Street wing of the building and are equipped with ample space for interaction and thus the potential for support from others in a similiar position (See A.C.2- A.C.3). Further, treatment areas are grouped towards Fifth Street and are assimilated in a different style as program requirements indicate a need for more dense space.

2.) Programmatic Layering: This organizational principle concerns the division of both public and private spaces, and patient and staff spaces

3.) Choice in Social Circumstance: Explication of choice in social interaction requires a more detailed account of how space is used by the patient throughout the facility, as one space may contain multiple attributes and possiblilities for interaction. From research, this aspect was of particular importance as it reduced stress and helped to regain a sense of control and comfort within a place. It is, however, one of the more complex aspects of the design, as it deals with a wide variety of relationships and circumstances. The following is an account of how the spaces within this facility were designed to compensate for these complexities. First, before entering the ground floor waiting area, patients encounter a coverd patio designed for informal gathering before entering or upon leaving, as when waiting for a ride. The patient transitions from outdoors, to covered outdoors, to a single height, interior space that opens up in sections in the near distance, bringing the eye towards a view of the courtyard. The reception area is clearly marked by a change in material and drop in ceiling height to the right, though offset in this manner so as not to bombard the patient upon entry. The waiting area consists of communal seating, open to the second floor waiting area with skylights further above and a planter-bench central to the entry doors for those waiting for their ride/visitor or one who wishes to be seated away from the communal area. This waiting area is open to the courtyard, where patients and their visitors have further choice of interaction. There are benches nestled within the plantings, group tables in more open, paved areas, and these types of spaces further vary in degree of interaction as the courtyard meanders down the slope of the sight. To the left of the waiting area is a recess that includes another planter-bench for more private waiting. This waiting may serve those who wish to be apart from the communal space waiting for treatment, the auditorium, or those visitors waiting on patients coming from the adjacent restrooms.

The library also contains a variety of social and nonsocial areas. There is a common space oriented with a diagonal view towards the greenway and courtyard, small tables for private or intimate reseach/ discussion, more private computer terminals, a common outdoor patio connecting to the courtyard, and a view to the counseling lounge via the double height space over the stacks and entry.

Procession towards treatment on the ground floor is through a hallway, open, but separated from the waiting area by the lowered ceiling of the reception area, and that continues the views of the courtyard. The patient, then guided by a nurse, is presented with two recessed areas, one to the right and one ahead connected to the hallway running perpendicular to the current one. The one to

the right marks the restrooms connected to the nurses station for patient specimens and the one ahead marks the vitals stations. These recesses mark more private activaties, but remain open enough for visitors to wait without being in the way of medical staff, and also, in the case of the vitals station, provide another recessed planter-bench for visitors to wait if the patient does not feel comfortable having them in the room.

Sense of Control
From this routine portion of medical visits, the patient and their visitor/s are presented with a common area, similar to that of the library, with a diagonal orientation to the outside, preceeded by a double height space looiking up to the common area adjacent to chemotherapy treatment. Visitors and patients may remain in this common area, or if they maintain a closer relationship, may proceed together to the space allocated for radiation therapy. Veiwing is spatially separated by a partion wall to provide privacy and prevent glare. Visitors may remain along this common hall that is also accesses an outdoor porch connecting to the courtyard or participate in viewing. Patients are brought into the treatment room, to an adjacent dressing room for preparation for treatment. The dressing rooms are double- height and lit by light tubes as mentioned in one of the strategies under the headings of temporality. This space is intended to be one conducive to relaxation and reflection; a transition into treatment. The double-height space is subdivided by a horizontal band of uplit planters and is designed to accomodate furnishings of a couch, a dresser on or in which to store there things, and a side table carrying a lamp and magazines for those in need of distraction.

Access to the second floor is through a set of elevators and stairs adjacent to the ground floor waiting area. The second floor waiting area includes views to the courtyard, the park designed around the parking structure, and the first floor waiting area via three opennings in the floor. One prominent feature of the waiting room design that also infiltrates the rest of the building is walkways. Patients and visitors alike often feel the need to pace when waiting for some unknown. Agian, there are common areas flanking the front orientation of the waitng room and smaller, more intimate seating overlooking the first floor and the courtyard. The eye is brought towards the openness of the courtyard from entry as there are skylights mimicking the opennings in the floor.

The counseling center to the left includes an oversized hallway for informal gathering after group meeting and a lounge that overlooks both the greenway and the library below for those who wish to gather longer. This lounge space, though common to the couseling center, is intimate enough due to its linear organization, sectional separation from the library below, and its views to nature, to also serve as a place of individual reflection, a place for informal counselor-patient meeting, or a place for visitors to wait. Those who are more anxious about counseling or social interaction may also chose to wait on the recessed bench, flanked by small planters, near the entry/ exit of the counseling center.

Procession to treatment again povides views to the natural settings and gives way to recesses for more private waiting and areas of consultation. The first of these is encountered to the right of the treatment entry hallway. A recess indicates four doctor-patient consulation rooms. These types of spaces are often neglected within treatment facilities and diagnosis is given in spaces not

conducive to patient/ visitor reactions; information concerning treatment, diagnosis, progress, etc., is often given in hallways, waiting rooms, or confined offices, as patients are generally moved from exam rooms for treatment efficiency while waiting for results. Here, the patient is allowed to meet with medical staff in private and is offered a place of retreat or a place for a visitor to wait on an adjacent porch overlooking the parking park and exterior entry sequence.

As the path of circulation opens to that of the fiirst floor below, the patient encounters a secondary waiting space, enclosed by glass walls and filled with plantings and light from a large skyight above   .This secondary waiting is enclosed as it is surrounded by and serves the exam rooms. These spaces house more anxiety than do other spaces as they imply a question of diagnosis or report of progress; in other words, something unknown and uncertain. Exam rooms are glazed with internal blinds for privacy and view towards the courtyard. While the blinds would be cllosed upon patient entry, they are open to those waiting while vacant, allowing patients and visitors to access and process the upcoming space. Exam rooms are designed so that the beds are not the first thing seen upon entry, giving this space some barrier/ privacy from abrupt entry and are given enough space furnish close visitors.

Continuation along the corridor leading to exam waiting brings one to another common room, overlooking the first floor, courtyard, and greenway, that serves the adjacent infusion rooms. The infusion rooms administer chemotherapy treatment, that may last anywhere from thirty minutes to two and a half hours depending upon the severity of treatment. This common room may accomodate a variety of users from visitors with children to patients requiring some down time. The infusion rooms are stretched across the greenway on the second floor and provide ample space for visitors, entertainment furnishings, and include movable walls to allow patients to open their rooms to other patients during treatment.

Staff Concepts
Staff concepts concern the idea of retreat, as it is their place and they are not restricted from most areas. Also most know each other because they work together so it is not as important to provide such a choice in interaction for one space. Staff members would know and are able to go to common spaces versus private spaces depending on their need.

LIST OF REFERENCES

List of References

Armstrong-Coster, Angela. Living and Dying with Cancer. Cambridge: Cambridge University Press, 2004.

Banham, Reyner. The New Brutalist: Ethic or Aesthetic. New York: Reinhold Publishing Corporation, 1966.

Barraclough, Jennifer. Cancer and Emotion: A Practical Guide to Psycho-Oncology, Third Ed. New York: John Wiley and Sons, 1999.

Brennan, James. Cancer in Context: A Practical Guide to Supportive Care. Oxford: Oxford University Press, 2004.

Bush-Brown, Albert and Diane Davis. Hospital Design for Healthcare and Senior Communities. New York: Van Nostrand Reinhold, 1992.

Carpman, Janet R., and Myron A. Grant. Design That Cares: Planning Health Facilities for Patients and Visitors. United States: American Hospital Publishing, Inc., 1993.

Clement, Grace. Care, Autonomy, and Justice. Boulder: Westview Press, 1996.

Crisp, Barbara. Human Spaces: Life Enhancing Designs for Healing, Working, and Living. Glouceter: Rockport Publishers, Inc., 1998.

Day, Christopher. Places of the Soul: Architecture and Environmental Design as a Healing Art. London: HarperCollins Publishers, Inc., 1990.
---Spirit and Place: Healing Our Environment, Healing Environment. Oxford: Architectural Press, 2002.

Dunster, David. Alvar Aalto. New York: Rizzoli Publications, 1979.

Fox, Warwick., Ed. Ethics and the Built Environment. New York: Routledge, 2000.
Harries, Karsten. The Ethical Function of Architecture. Cambridge: MIT Press, 1997.

Harries, Karsten. The Ethical Function of Architecture. Cambridge: MIT Press, 1998.

James, Paul and Tony Noakes. Hospital Architecture. England: Longman Group, 1994.

Kunstler, James Howard. Home From Nowhere: Remaking Our Everyday World for the Twenty-First Century. New York: Touchstone Books, 1996.
---The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscape. New York: Touchstone Books, 1993.

Kupfer, Joseph H. Experience As Art: Aesthetics in Everyday Life. Albany: State University of New York Press, 1983.

Lahiji, Nadir and D.S.Friedman. Plumbing: The Sounding of Modern Architecture.New York: Princeton Architectural Press, 1997.

Lebovich, William L. Design for Dignity: Studies in Accessibility. New York: John Wiley and Sons, Inc., 1993.

Leibrock, Cynthia A. Design Details for Health: Making the Most of Interior Design's Healing Potential. New York: John Wiley and Sons, Inc., 2000.

Lincourt, John. A Place for Empathy: Ethics Involving Architectural Designs in Healthcare. Netherlands: Kluwer Academic Publications, 2002.

Marberry, Sarah O. Healthcare Design. New York: John Wiley and Sons, Inc., 1997.
    ---Innovations in Healthcare Design. New York: John Wiley and Sons, Inc., 1995.

Martin, Mike W. Everyday Ethics: An Introduction to Applied Ethics. Third Edition. Wadsworth: Thompson Learning, 2001.

Miller, Richard L. and Earl S. Swensson. New Directions in Hospital and Healthcare Facility Design New York: McGraw-Hill, Inc., 1995.

Nesmith, Eleanor Lynn. Healthcare Architecture: Design For the Future. Washington, D.C., AIA Press, 1995.

Pence, Gregory E. Classic Cases in Medical Ethics: Accounts of Cases that Have Shaped Medical Ethics, with Philosophical, Legal, and Historical Backgrounds. Third Edition. Boston: McGraw-Hill Co. Inc., 2000.

Stewart- Pollack, Julie, and Rosemary Menconi. Designing for Privacy and Related Needs. New York: Fairchild Publications, Inc., 2005.

Thompson, John D., and Grace Goldin. The Hospital: A Social and Architectural History. New Haven: Yale University Press, 1975.

Wigley, Mark. White Walls, Designer Dresses: The Fashioning of Modern Architecture. Cambridge: MIT Press, 2001.

APPENDIX A
SITE ANALYSIS

The City: Charlotte, NC

Charlotte, North Carolina is a newer southern city experiencing a high volume of new construction. The city developed as a large town, evidenced by the large amount of suburban sprawl, and is now trying to reclaim the downtown area (Center City) as the heart of the city. Downtown Charlotte has a strong corporate presence, with many Fortune 500 corporations housed in its highrise structures .

Center City is bound by I-77 to the west, and surrounded by I-277. The major transportation arteries are Trade Street (E-W), College Street (N-S), and Tryon (N-S). The site is located on West Tryon Street, near I-77. Thus, it has the potential to serve as a threshold for the city (Figure A.A.1).

The downtown area houses a variety of uses, including the residential, commercial, industrial, educational, and recreational (Figure A.A.2)). Just beyond the interstate boundaries of downtown are a number of historic and otherwise prominent single family neighborhoods. Within downtown, it is estimated that 6,000 residences will be added by 2010.

Due to the high rate of new construction proposed for this area, the Planning Commision, in conjunction with residents, government staff, developers, landowners, and other public officials, created the 2010 Vision Plan for the Center City to guide the process.

The Plan: 2010 Vision

The goal of the 2010 Vision Plan is to create a city center that is at once livable, viable, and memorable: Livable in that it provides urban residences for all income brackets, Viable in that it provides sustains activities to draw people into the downtown area, and Memorable in that the presence of the city is one of permanence

Figure A.A.1. Interstate Boundaries
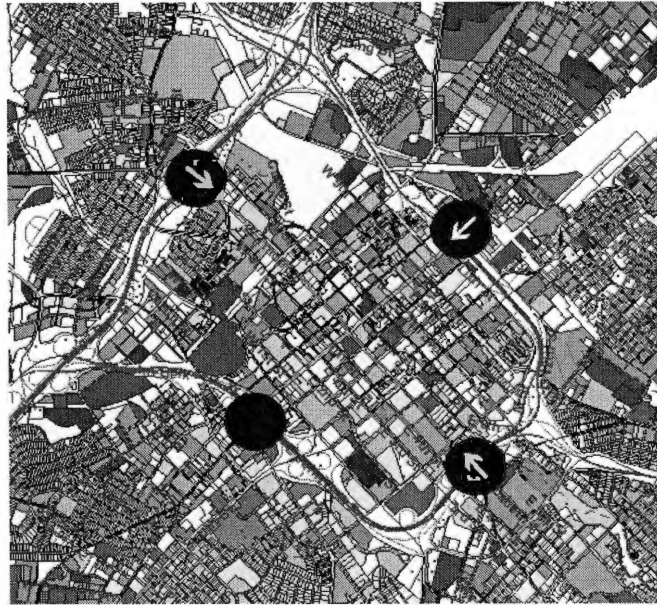
Figure A.A.2. Land Use and Entry

Downtown Charlotte is an area made up of many mixed use neighborhoods that are loosing their individuality with new construction. The plan maintains keeping the individuality of these neighborhoods by zoning and adding uses, in hopes of preventing a lose of a sense of place (Figure A.A.3).

To provide connections between the neighborhoods, the plan proposes a greenway system that surrounds the interstate, with a chain of parks placed intermittently througout the system and ones that penetrate the city center (Figure A.A.4). The parks, along with the additon of "Freeway Caps," will also link the downtown to bordering historic neighborhoods. The idea of a Green City is a dominant one in the plan, as it also implements 'Parkways' or tree lined sidewalks that separate vehicular and pedestrian traffic.

In addition to these elements, the plan emphasizes the creation of an architecture specific to the region, expanding higer education, providing more urban residences, keeping the community feel of the area, and adding public transportation unique to its history.

The 2010 Vision Plan creates many opportunities for the specific site chosen for the Cancer Treatment Center and will be analyzed in the following pages.

The Site: General Analysis
The site, 1100 West Trade Street- 107 Sycamore Street, is bound by Frazier Park (W), Trade Street (S), Fifth Street (N), and Sycamore Street (E).

Figure A.A.3. Neighborhood Zoning
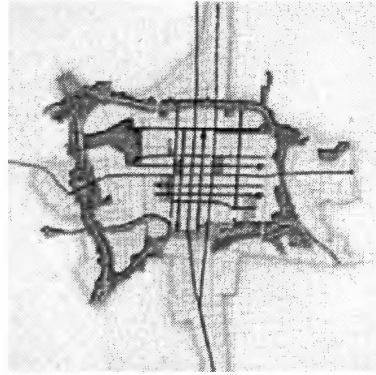
Figure A.A.4. Greenway System

The neighborhood contains many uses, including single family housing, commercial, and education. One of the main entries to the city, from West Trade and I-77, affronts the site creating the potential for threshold (Figure A.A.5-A.A.6).

The site is zoned for Urban Mixed Use (UMUD) and sits between two residential districts. Within this UMUD is Johnson C. Smith University to the North- East of the site.

Figure A.A.5. Site and Major Roads

Figure A.A.6. Zoning

APPENDIX B
PROGRAM

Program/ Treatment Terminology

Due to the specialization entailed in the design of a Cancer Treatment Center, the terminology corresponding to program and treatment requires definition. These definitions clarify the type of space and the nature of the treatment which takes place within these spaces.

1.)Linear Accelerator: Refers to the apparatus housed in this room (Figure A.B.1). This machine administers External Beam Radiation Therapy, or EBRT. The procedure lasts, on average, 5-10 minutes and patients spend a total of 20-30 minutes in this space per day for five days a week, over the course of six to eight weeks. The procedure is painless, but requires that the patient lie still for the duration of the procedure. Prior to the procedure, patients come to this room for 'set-up,' at which time the linear accelerator is set for the specifics of individual radiation treatment. This space requires a radiation barrier to prevent emission to other spaces.

2.)Simulator: Also refers to the apparatus housed in the room (Figure A.B.2). The machine is designed to mimic the movements and settings on the actual treatment machine (the Linear Accelerator) that will be used to administer the radiation therapy to the patient. X-ray films are taken throughout the process, and the entire simulation takes approximately an hour, though time may vary given the complexity of a given cancer treatment. The procedure is painless, but patients have to lie still on a hard table for most of the time.

3.)Oncology: The study of diseases that cause cancer. In terms of a healthcare program, it is the department responsible for the administration and provision of diagnostic and therapeutic services for the cancer patient. Exam and laboratory rooms necessary for diagnosis and treatment are part of this program.

4.)Infusion: The therapeutic introduction of a fluid, other than blood, such as a saline solution into a vein. Chemotherapy is administered by infusion or orally. Some cancer centers have separate areas for infusion that are more open (Figure A.B.3). Patients may experience some discomfort from the injection and some require a short stay in a healthcare facility, dependent upon the dosage.

Figure A.B.1. Linear Accelerator

Figure A.B.2. Simulator

Figure A.B.3 Infusion Area

Quantitative Program

Table 1. Office/ Support

NO.	TYPE	AREA (SF)	SPECIAL REQUIREMENTS/ MINIMUM STANDARDS
1	Dosimetry	300	Houses special computers for calculations
1	Record Storage	600	Requires some security for confidentiality, though there is precedent for patient/ family access. Proper design could provide for more autonomy in patient treatment.
1	Physicist Office	225	
1	Administration Office	225	
1	Staff Lounge	500	
1	Meeting Room	375	
1	Business Office	500	
2	Restrooms	50	
	TOTAL AREA	3275	
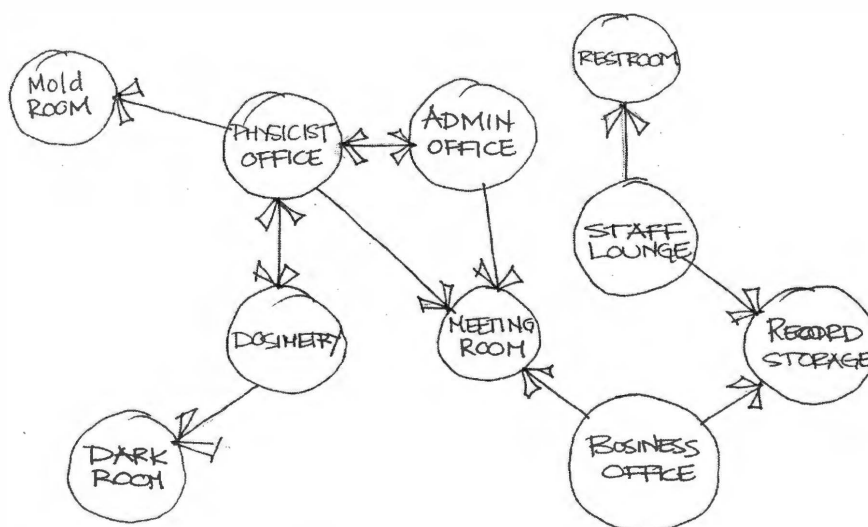
Figure A.B.4. Office/ Support Room Connections

Table 2. Consulting/ Exam

NO.	TYPE	AREA (SF)	SPECIAL REQUIREMENTS/ MINIMUM STANDARDS
5	Exam Rooms	225	See Figure x for minimum standard exam room
2	Oncology Office	150	
2	Private Waiting/ Dress	300	
3	Restrooms	50	Should provide specimen pass- through. See Figure x for minimum standard unisex restroom
1	Nurse Station	225	
1	Janitor Closet	50	
1	Soiled Utility	50	
1	Clean Utility	100	
	TOTAL AREA	2600	
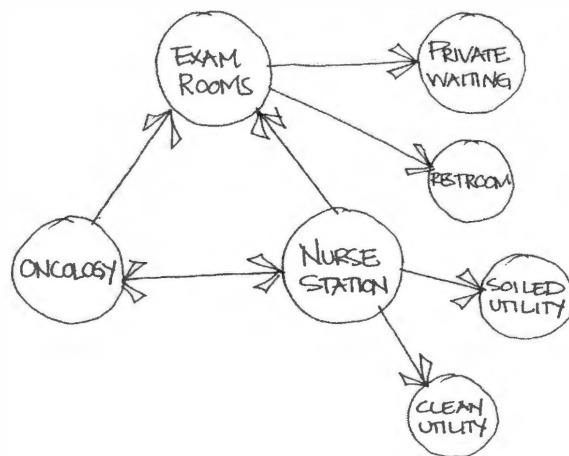
Figure A.B. 5. Consulting/ Exam Room Connections

Table 3. Treatment Technology

NO.	TYPE	AREA (SF)	SPECIAL REQUIREMENTS/ MINIMUM STANDARDS
2	Linear Accelerator	1200	Room must be separated by lead shielding radiation barrier, designed by certifiied medical personel. Typical weight of such barriers is 400,000 lbs., so basement location is necessary. Therefore, special considerations should be made for design of this space and patient experience.
1	Simulator	625	Houses large apparatus that requires a dark setting
1	Infusion	800	
1	Viewing	300	Should connect to both simulator and linear acelerator rooms
TOTAL AREA		4125	
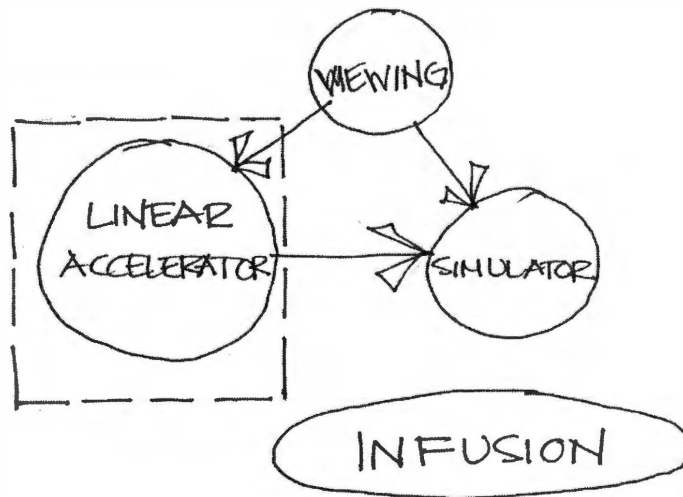
Figure A.B.6. Treatment Technology Room Connections

Table 4. Miscellaneous

NO.	TYPE	AREA (SF)	SPECIAL REQUIREMENTS/ MINIMUM STANDARDS
1	Mechanical	1200	
1	Waiting Room	1750	
1	Library/ Education	400	Precedent- gives control in patient knowledge
1	Auditorium	1000	Precedent- to hold lectures on cancer and its treatment
1	Counseling	400	Precedent- to help patients and family to deal with the disease
1	Recovery Room	1000	Precedent- extra space designed particularly for recovery
	Circulation	2362	Assumed 15% of Total SF
TOTAL AREA		8112	

APPENDIX C
ARCHITECTURAL DRAWINGS
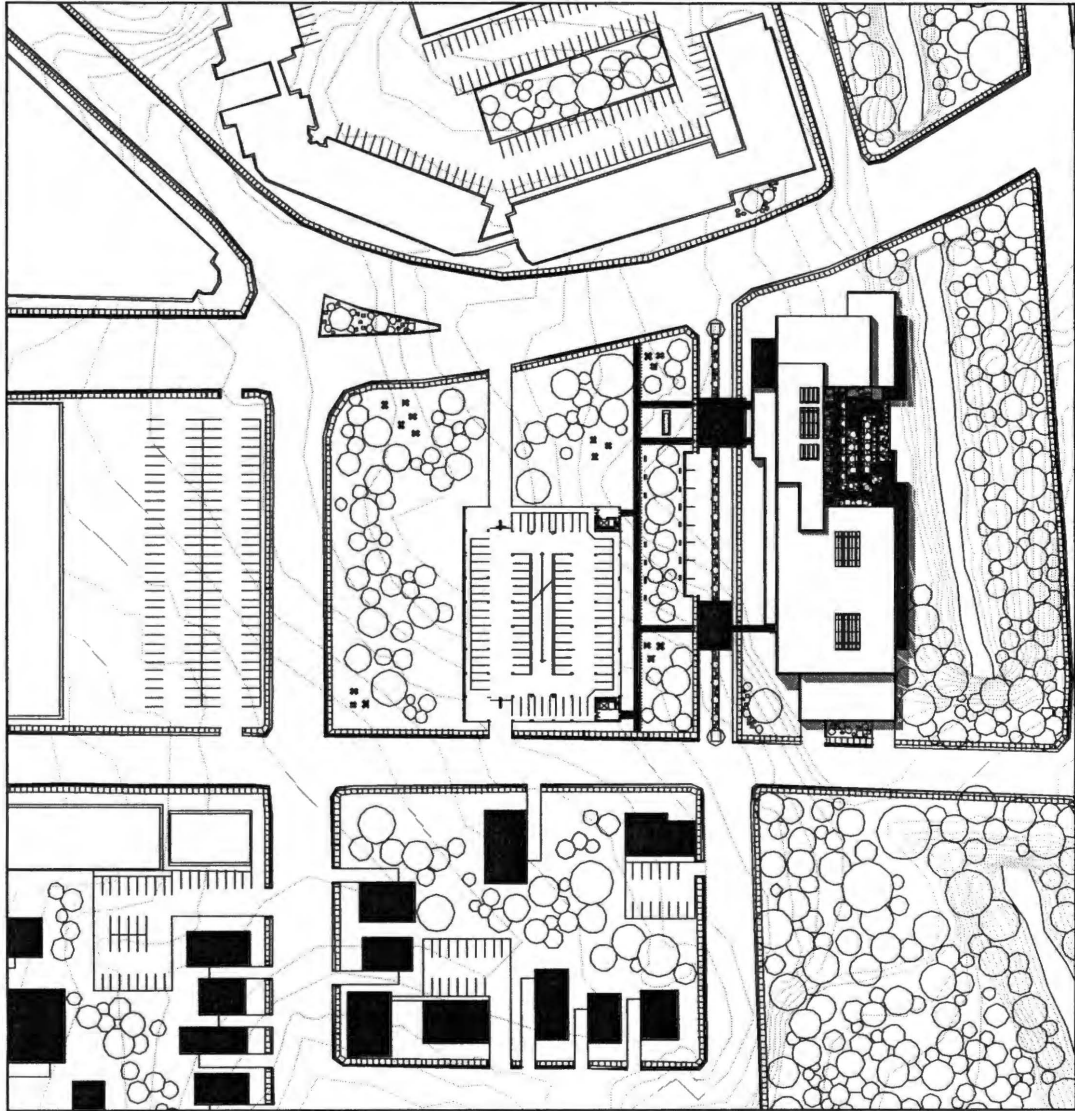
Figure A.C.1: Site Plan with Parking Deck Plan
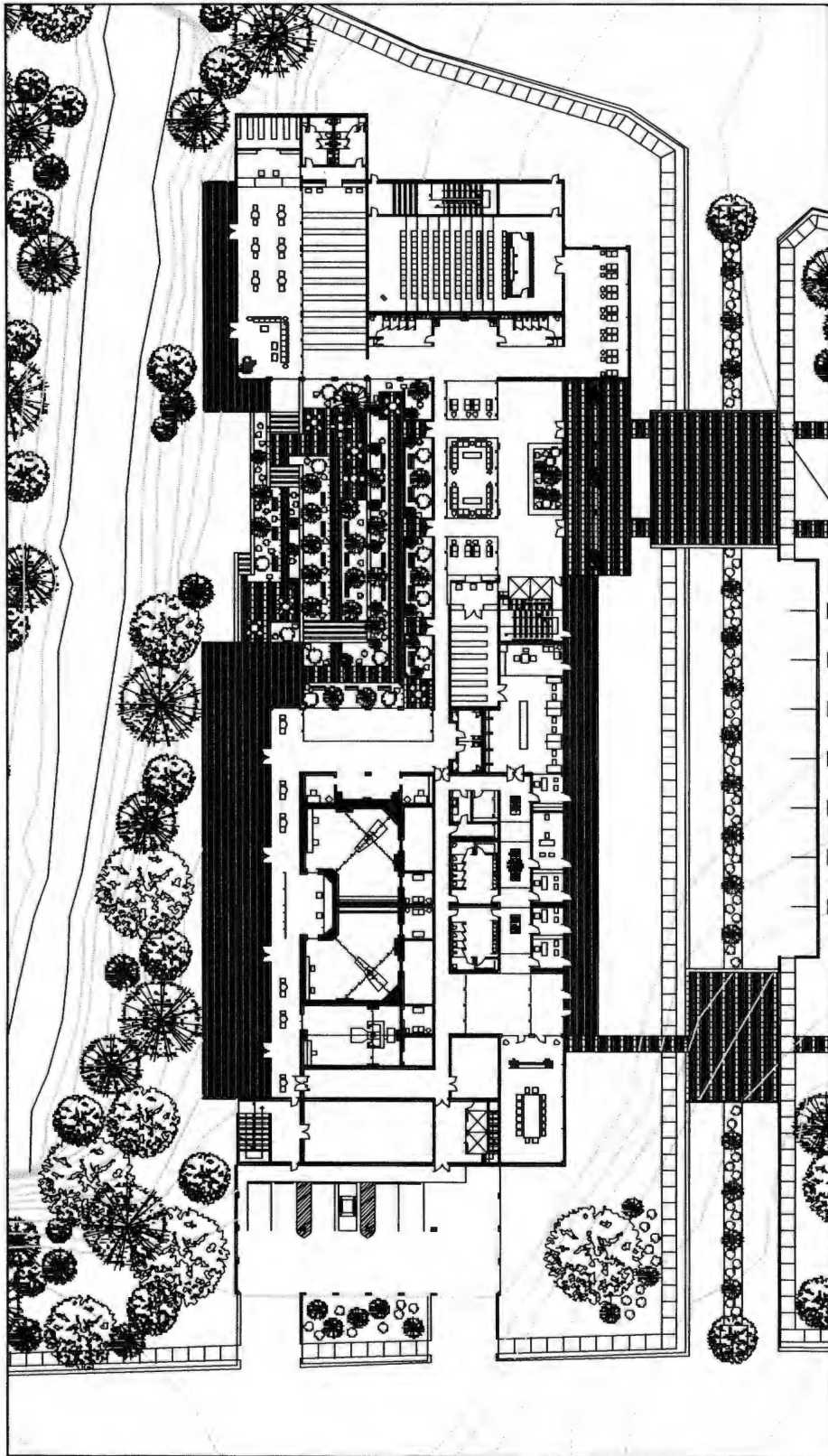
Figure A.C.2: Ground Floor Plan
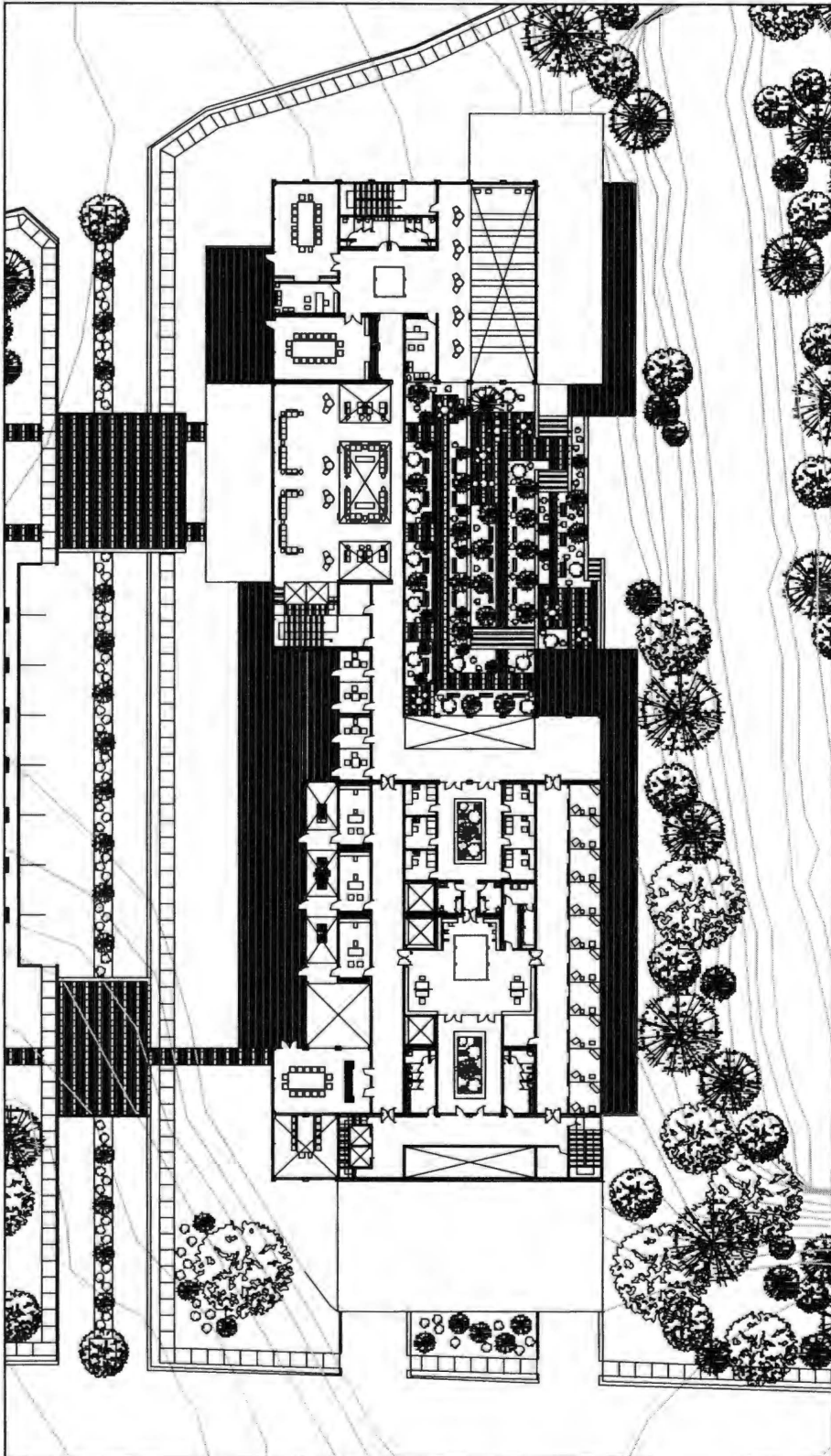
Figure A.C.3: Second Floor Plan

Figure A.C.4: Front Elevation
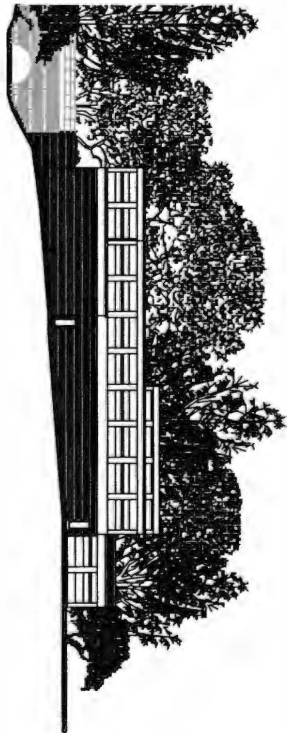
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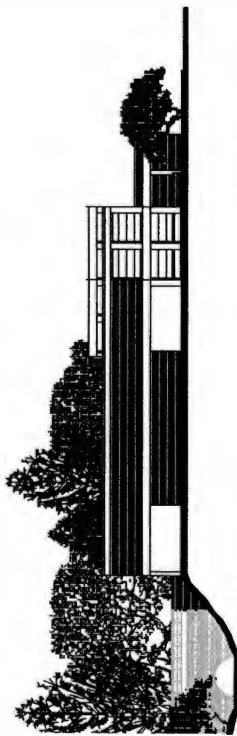
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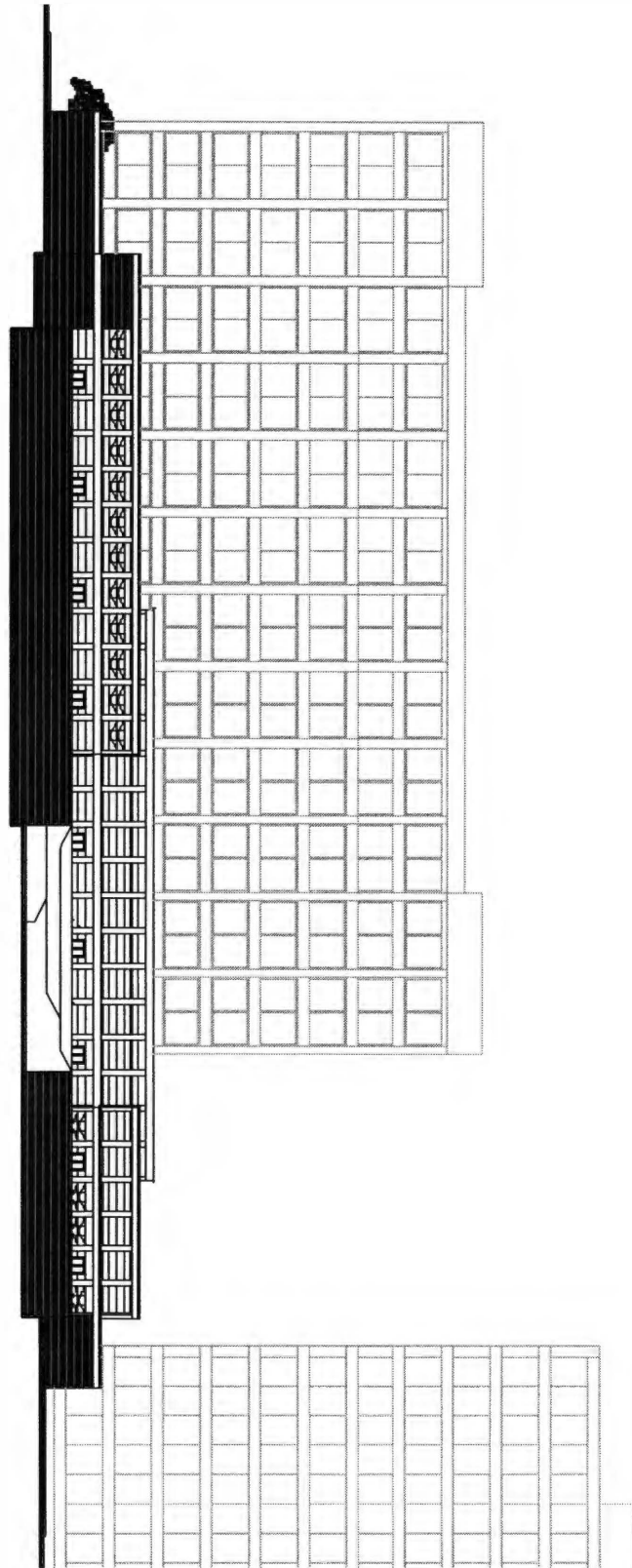
Figure A.C.7: Rear Elevation

Figure A.C.8: Section A
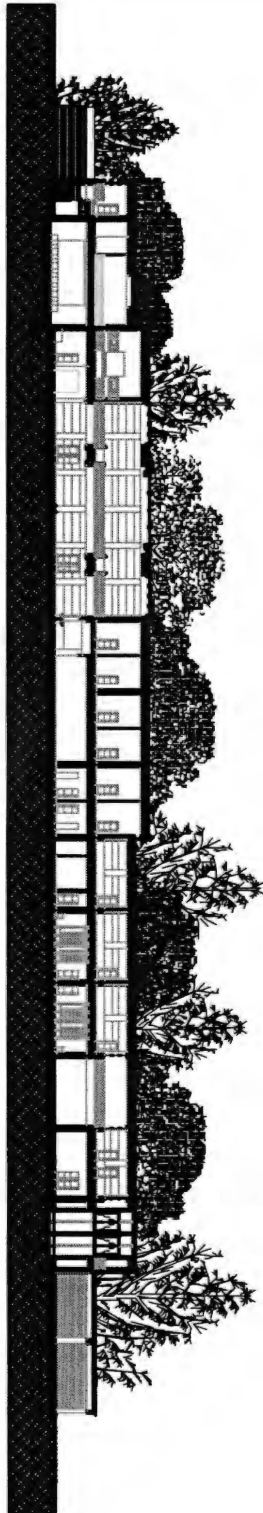
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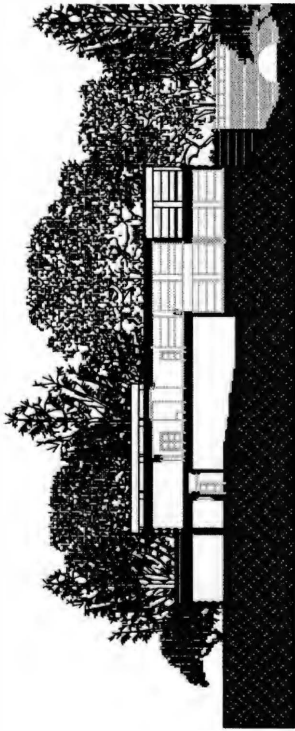
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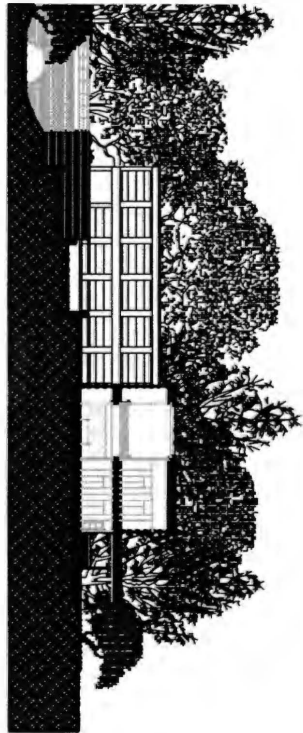
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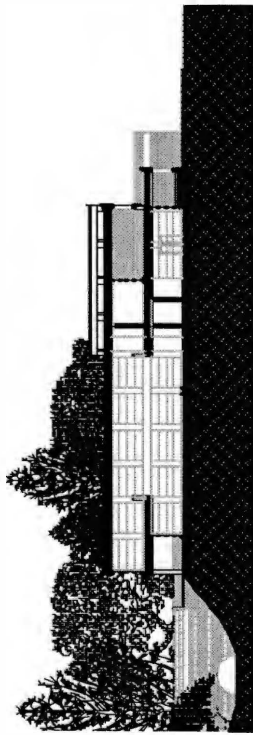
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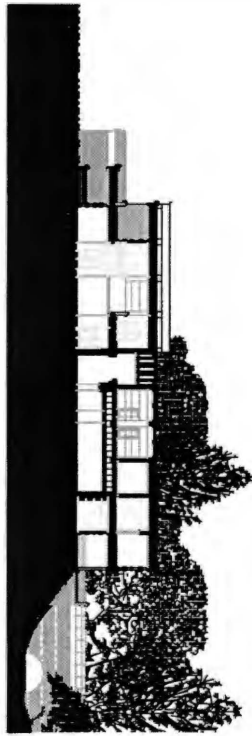
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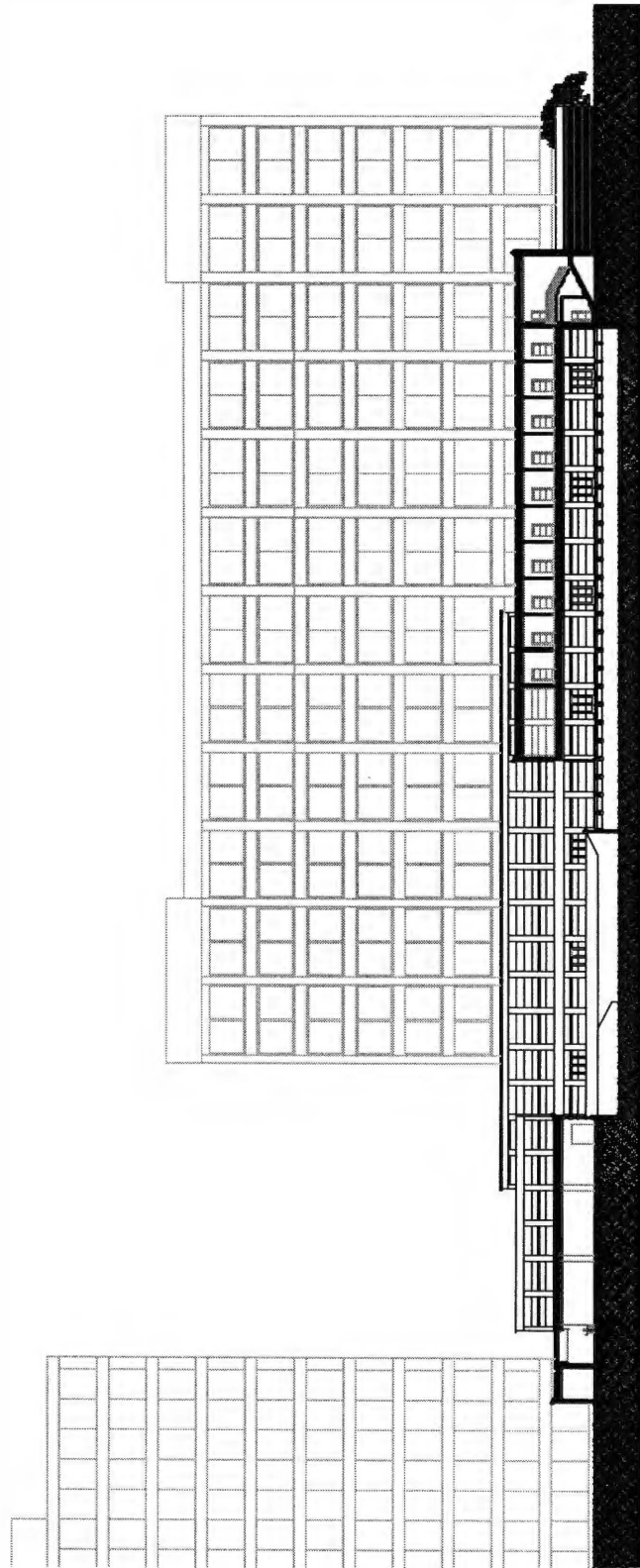
Figure A.C.14: Section G

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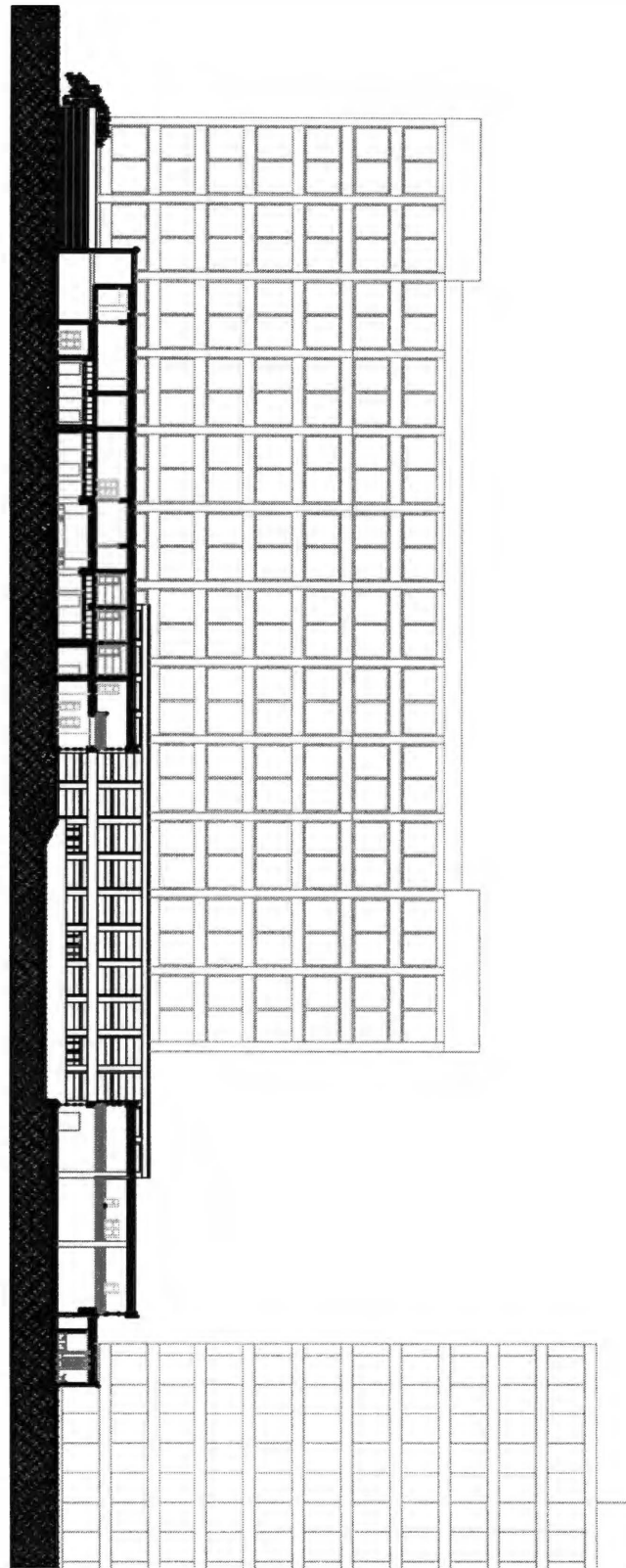
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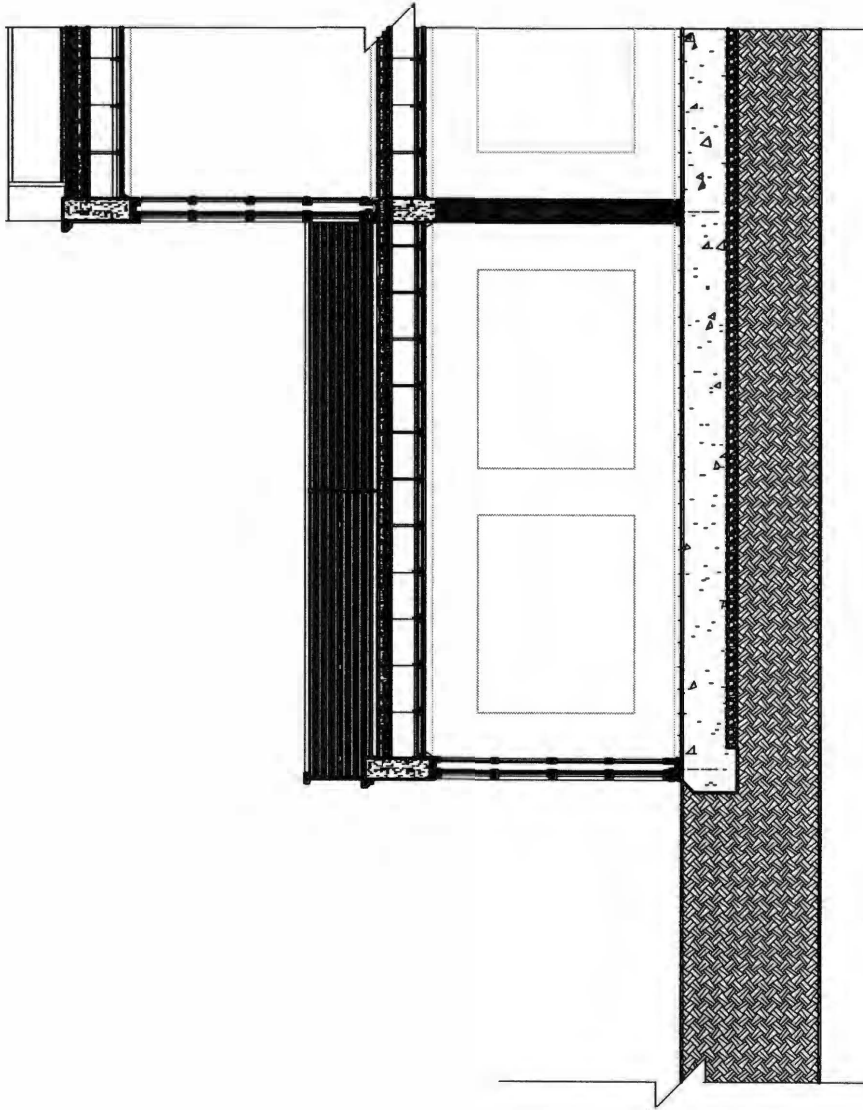
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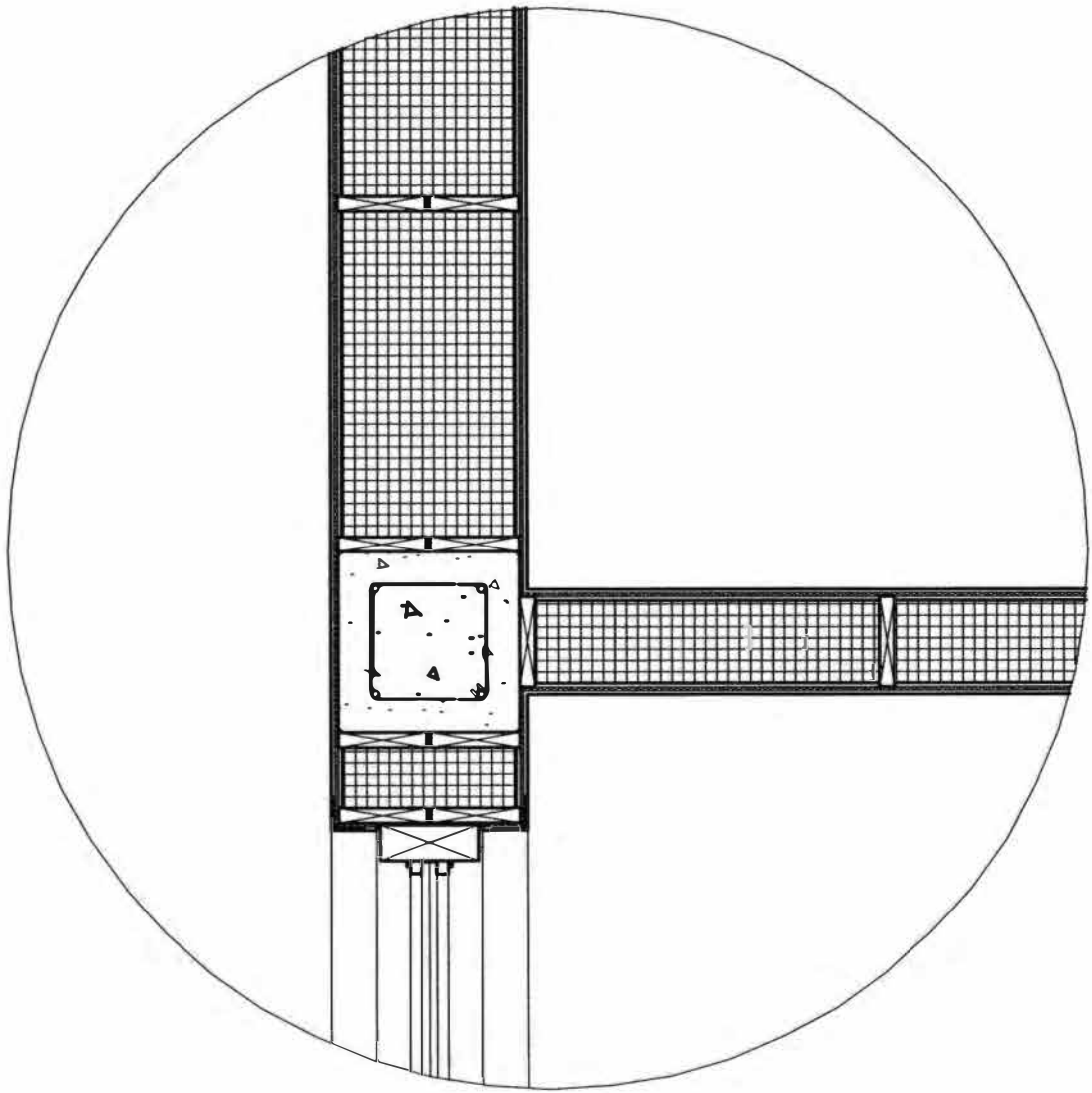
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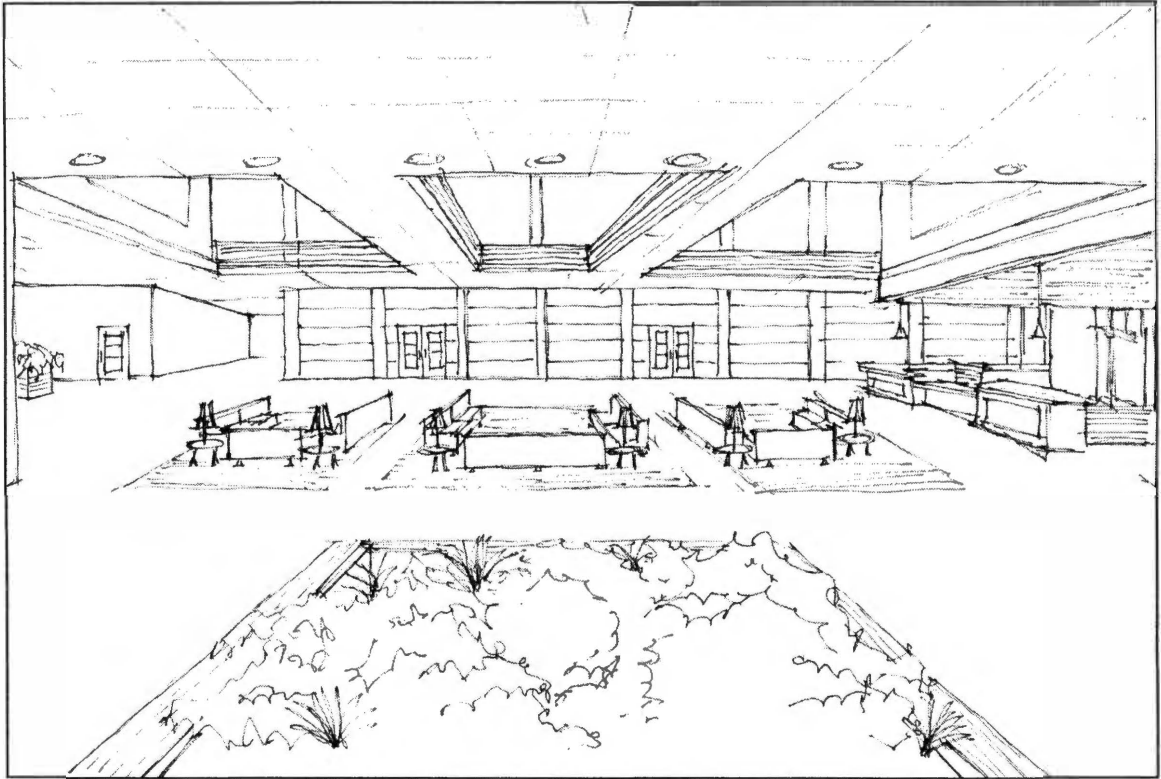
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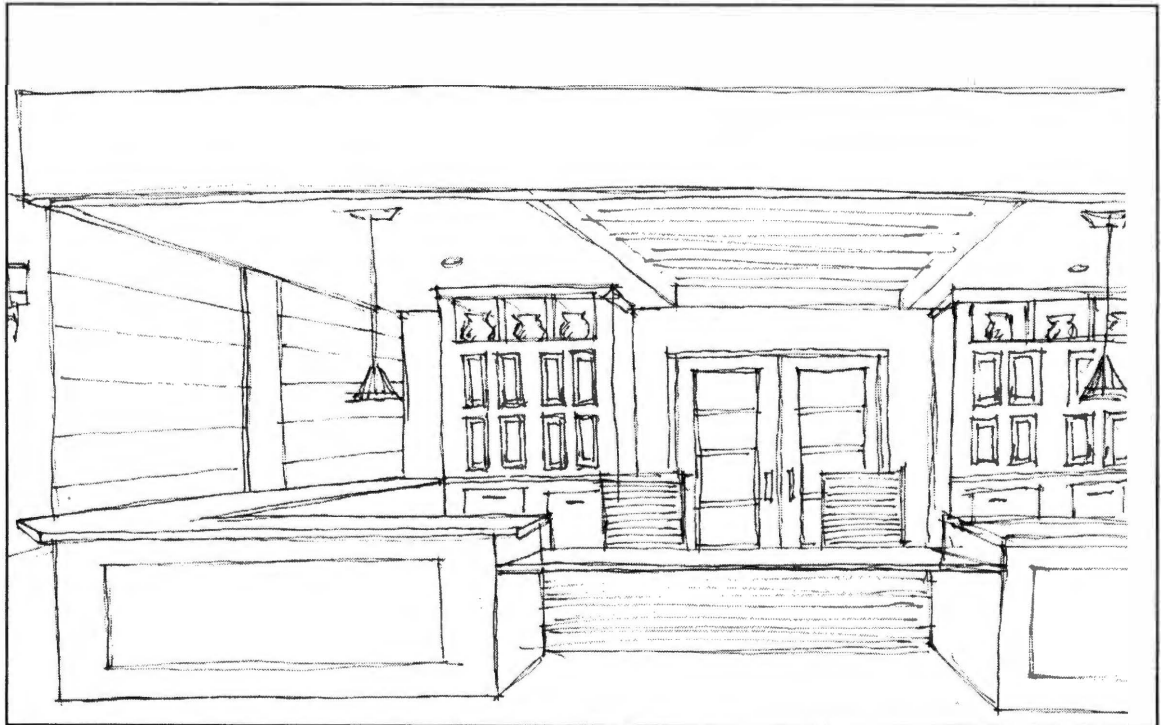
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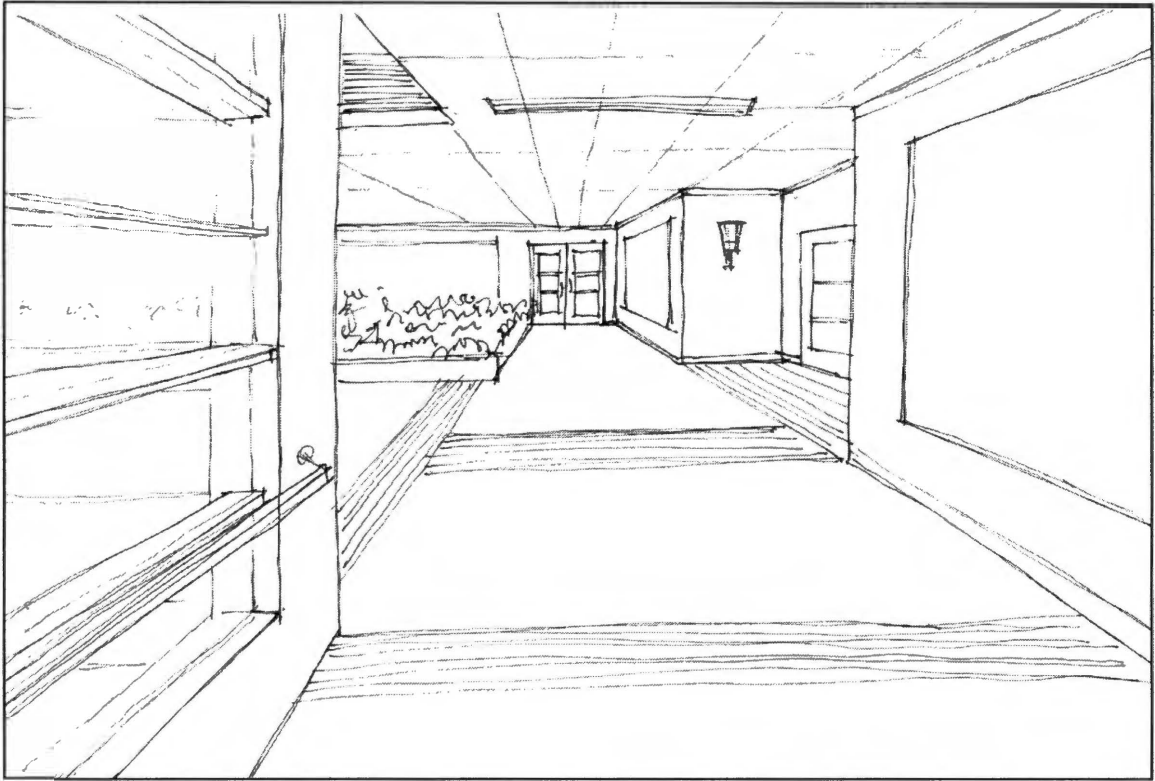
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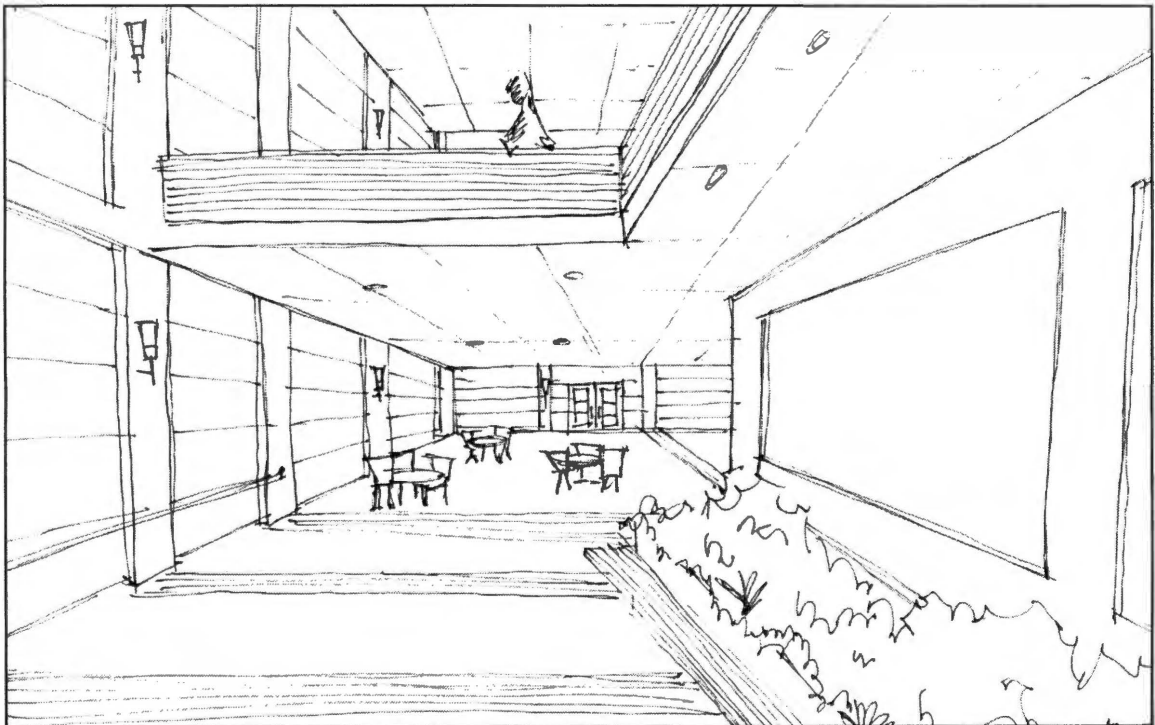
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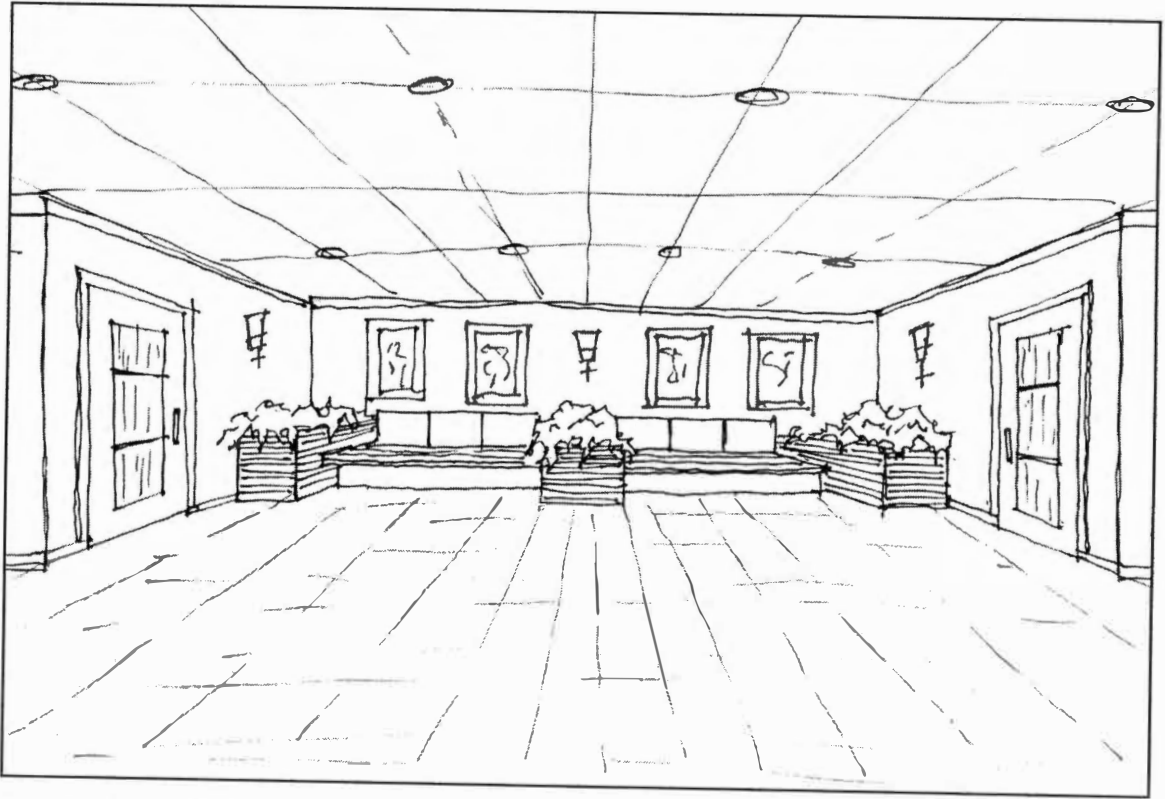
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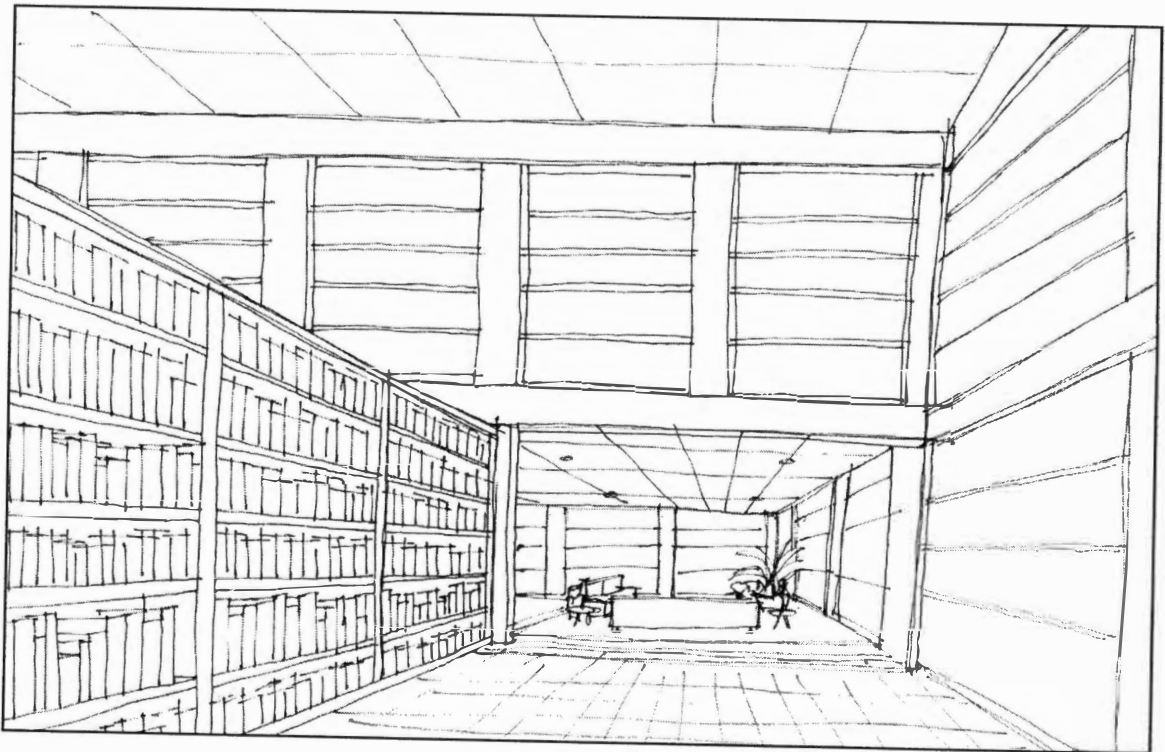
Figure A.C.23. Library Entry

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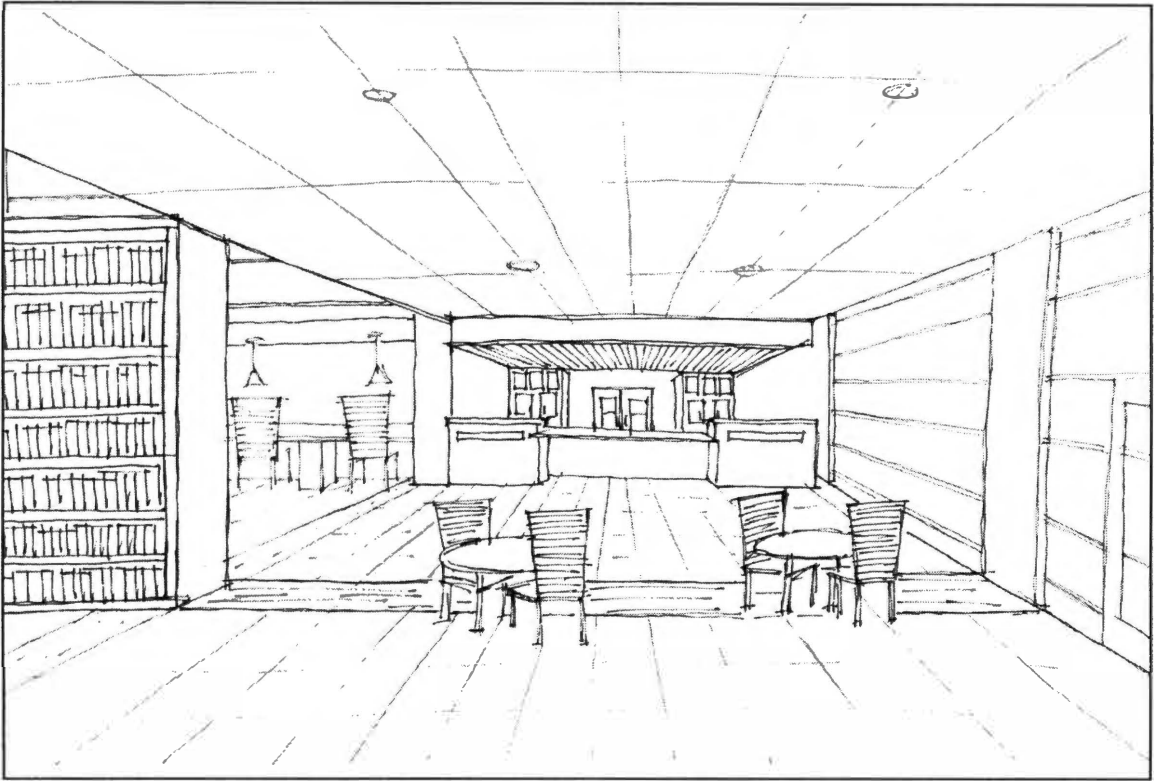
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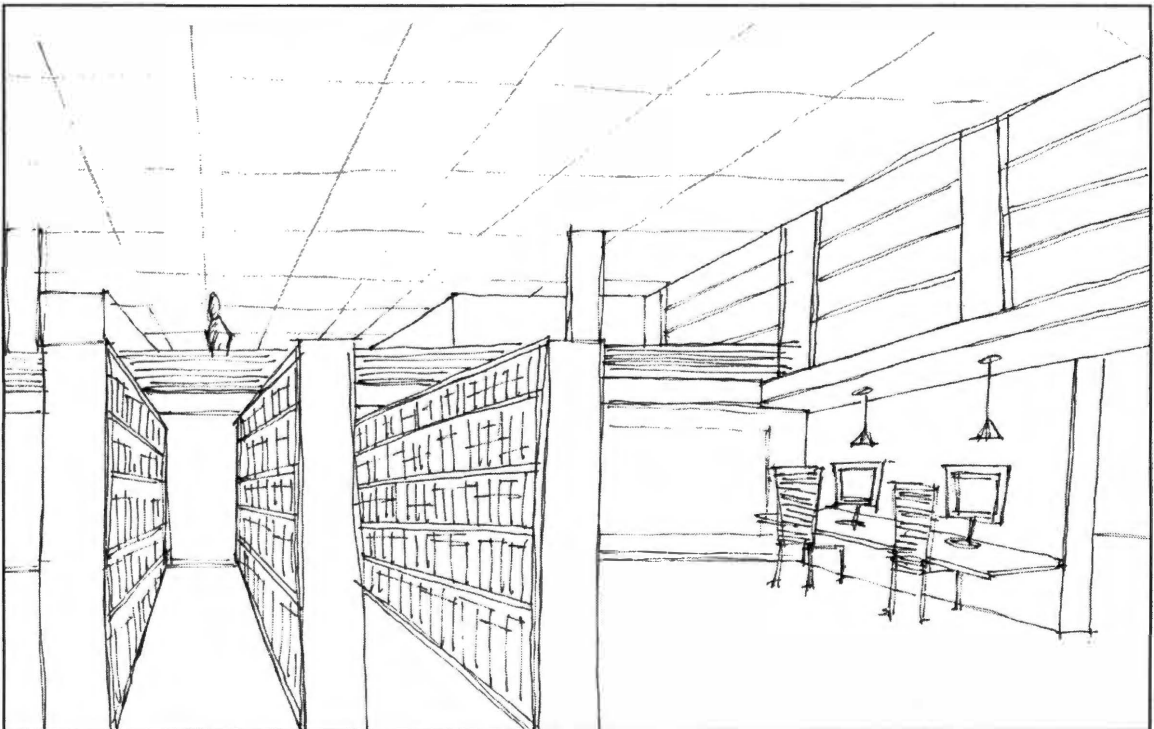
Figure A.C.25. Library Looking Towards Counseling Lounge
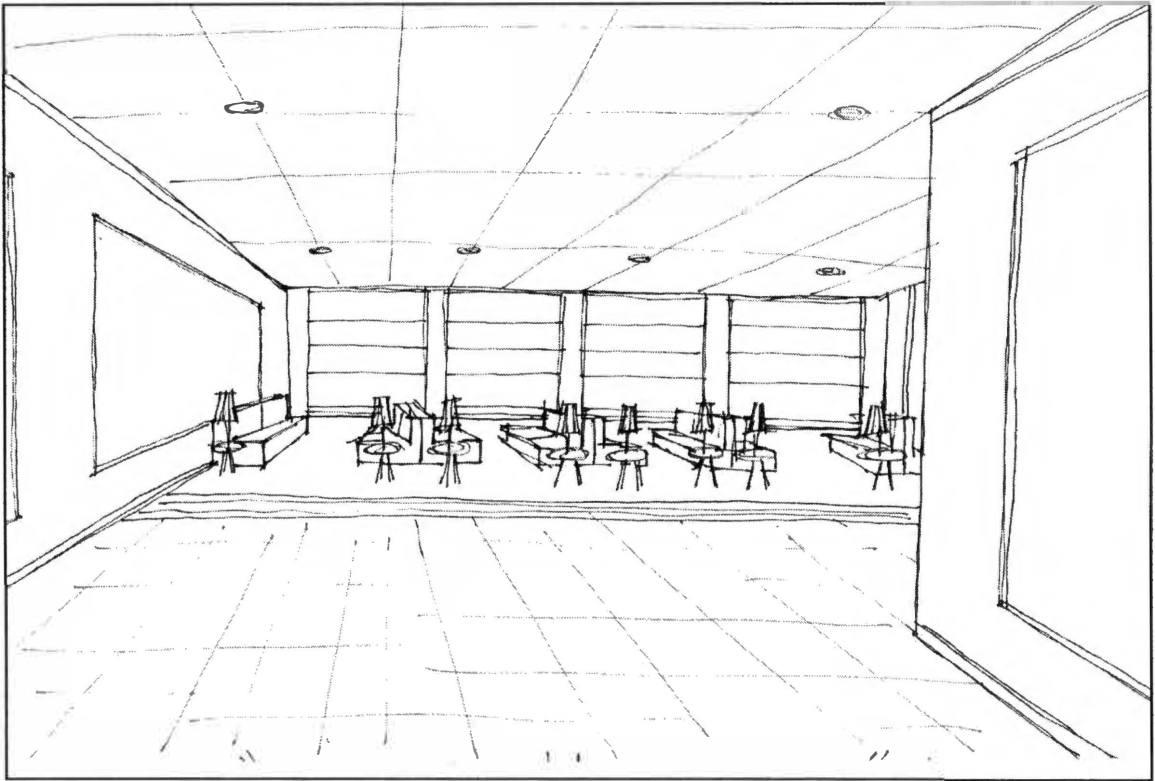
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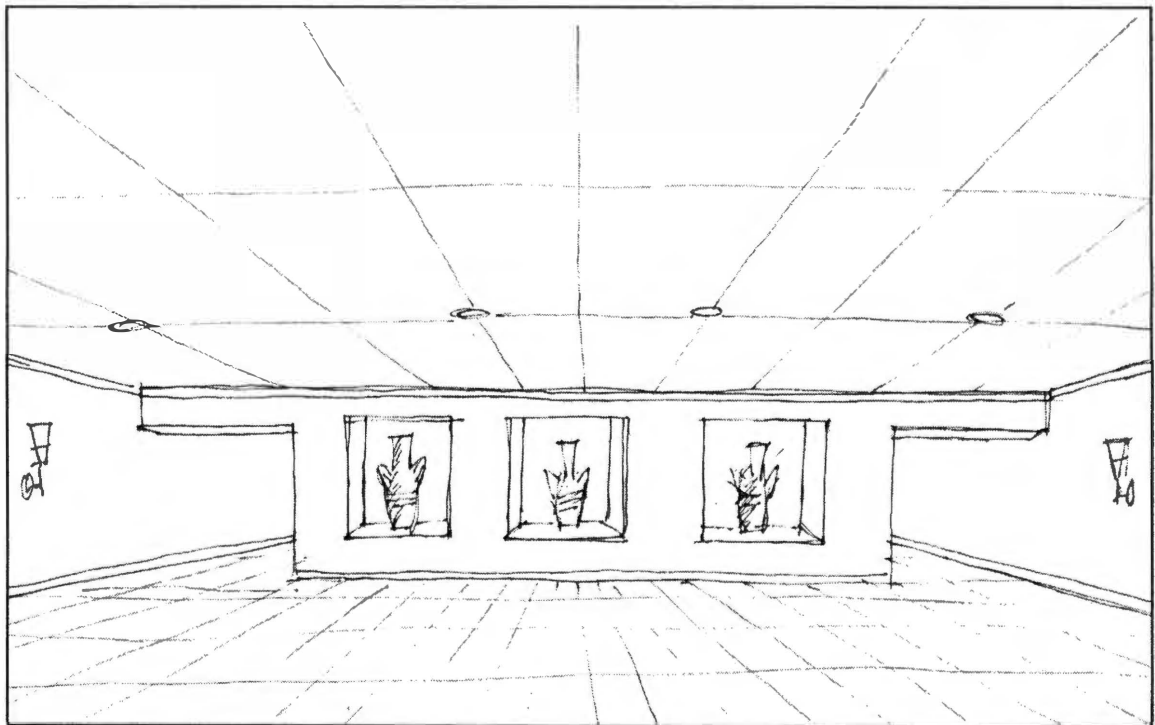
Figure A.C.27. Auditorium Entry

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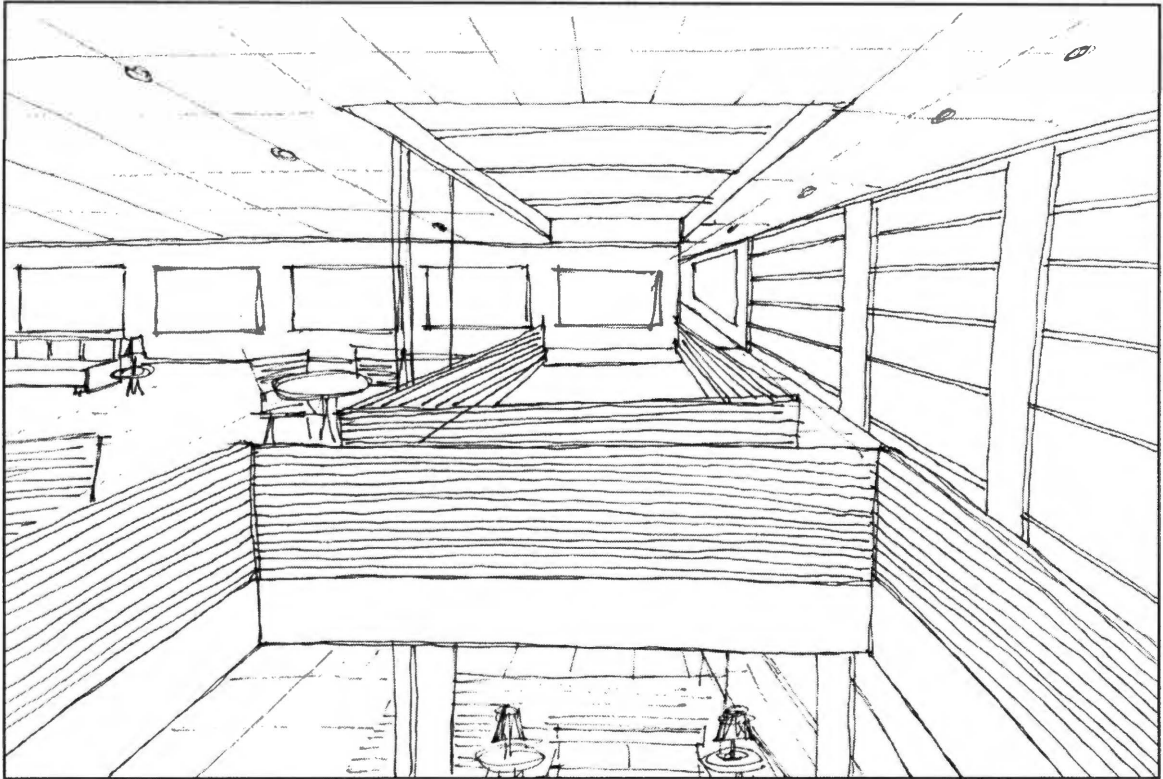
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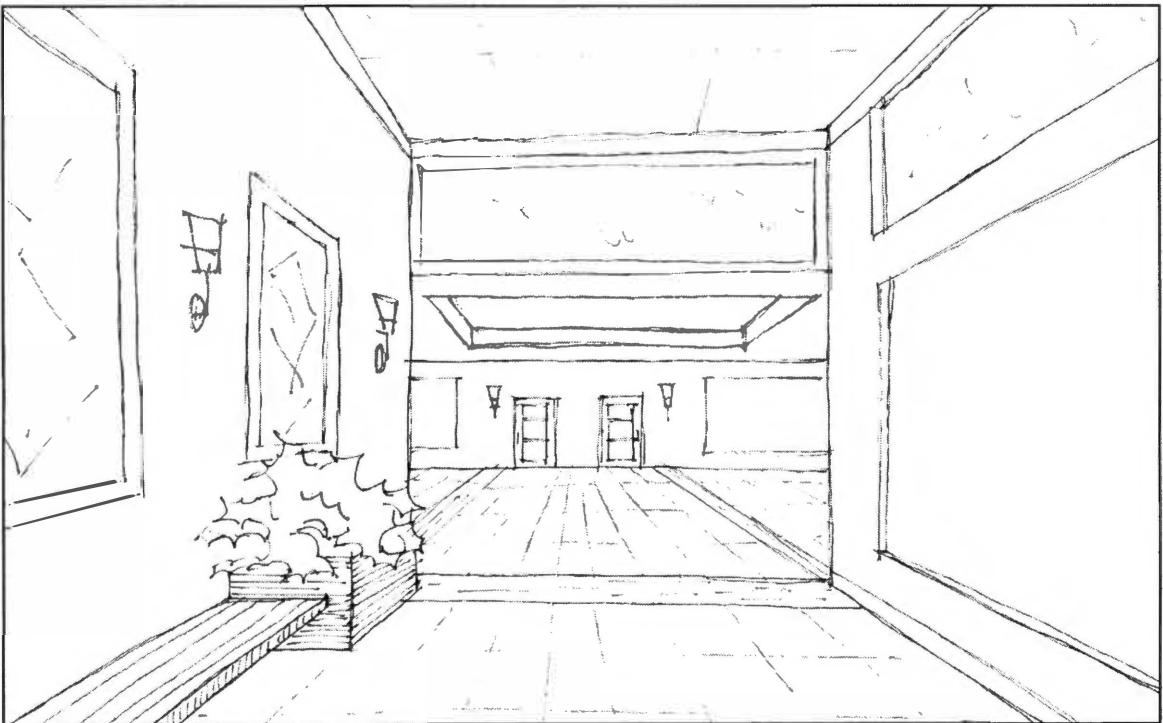
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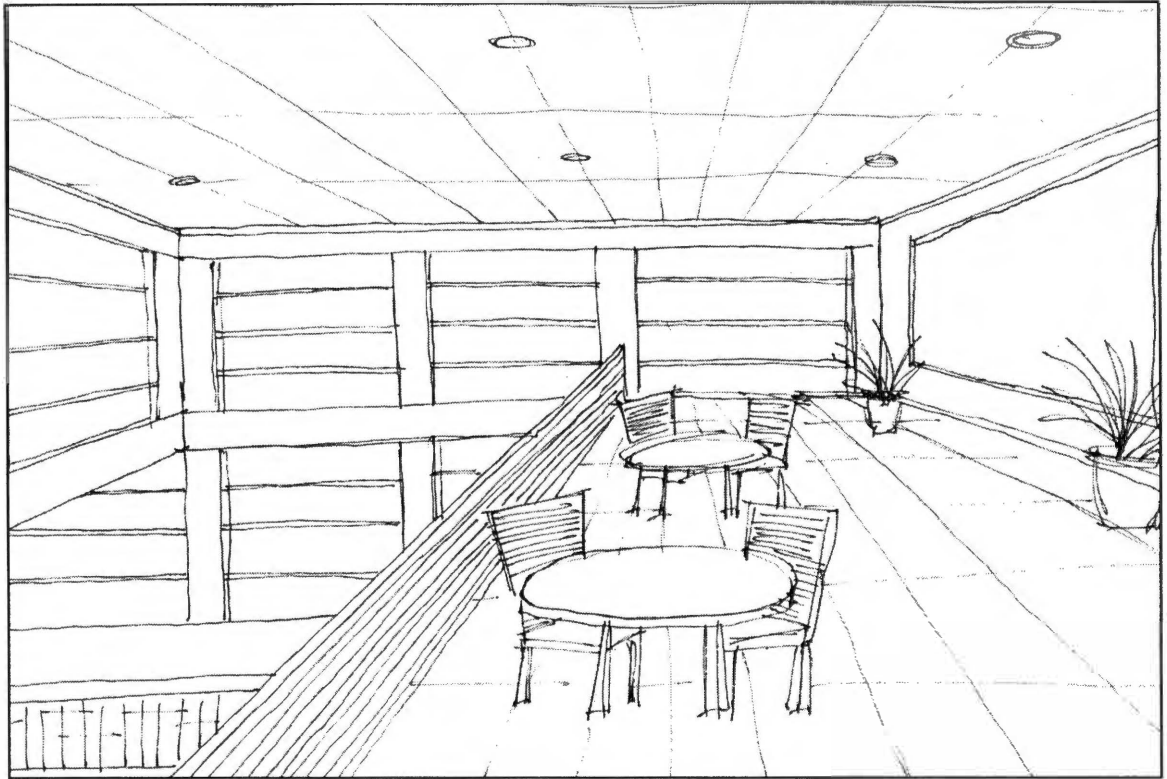
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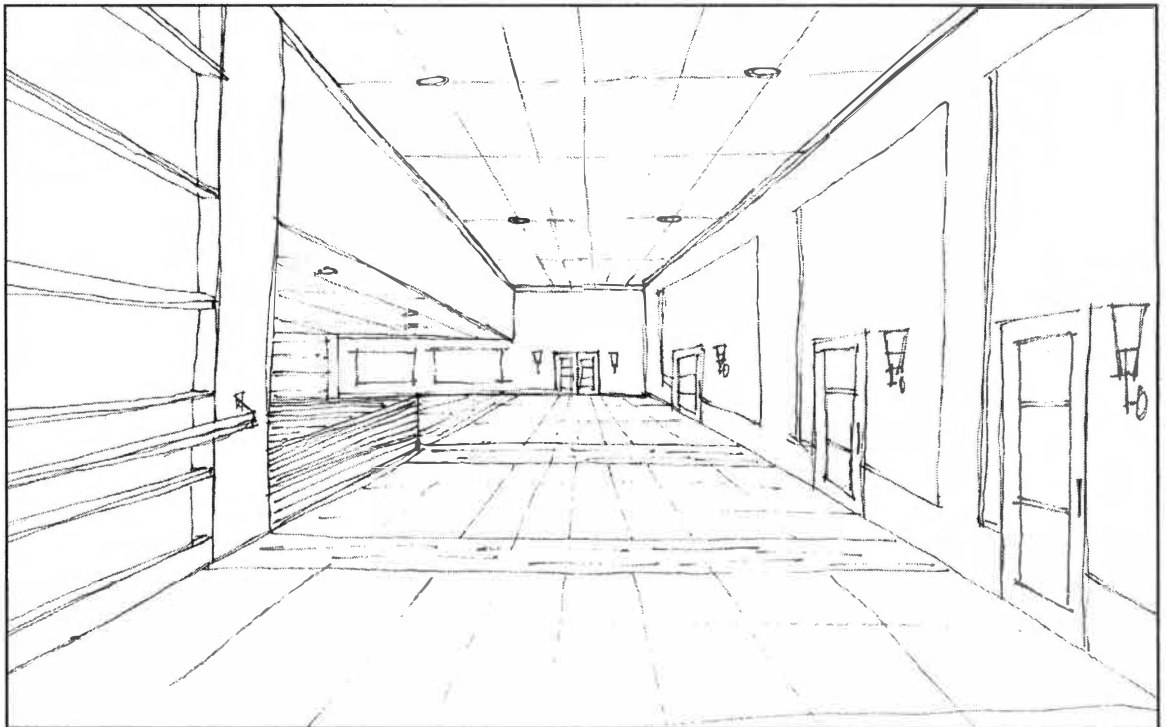
Figure A.C.31. Towards Exam Rooms

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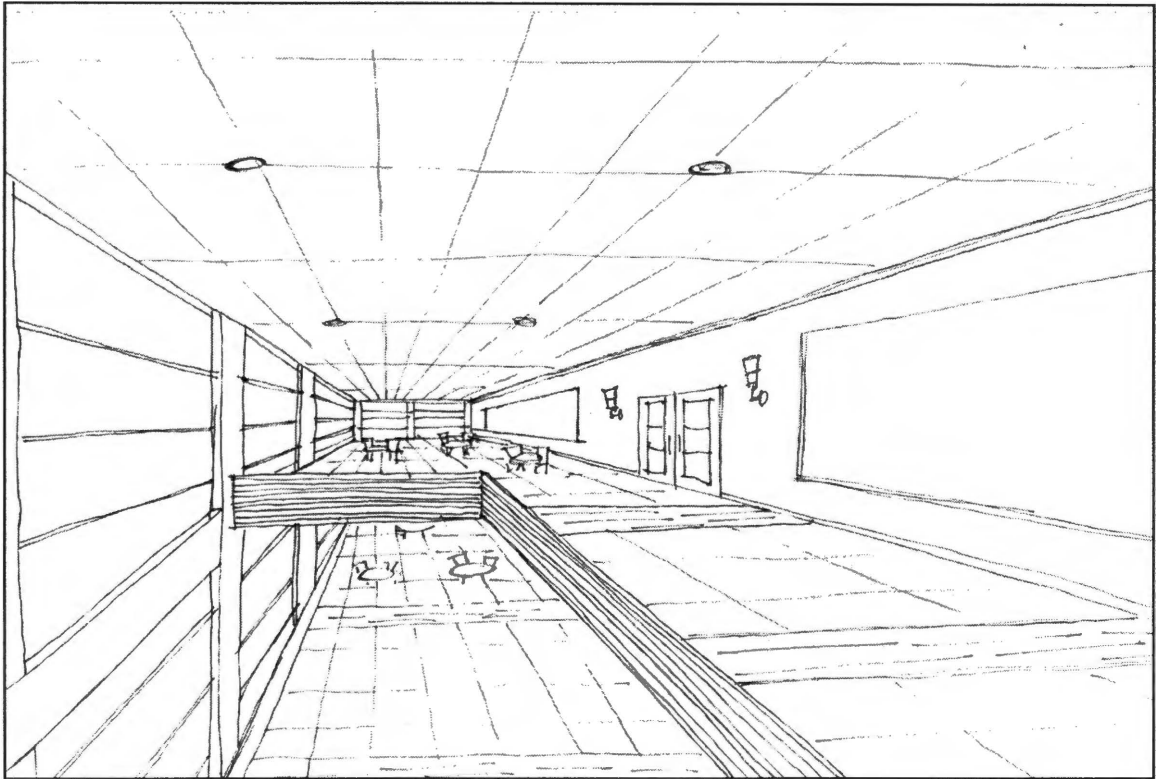
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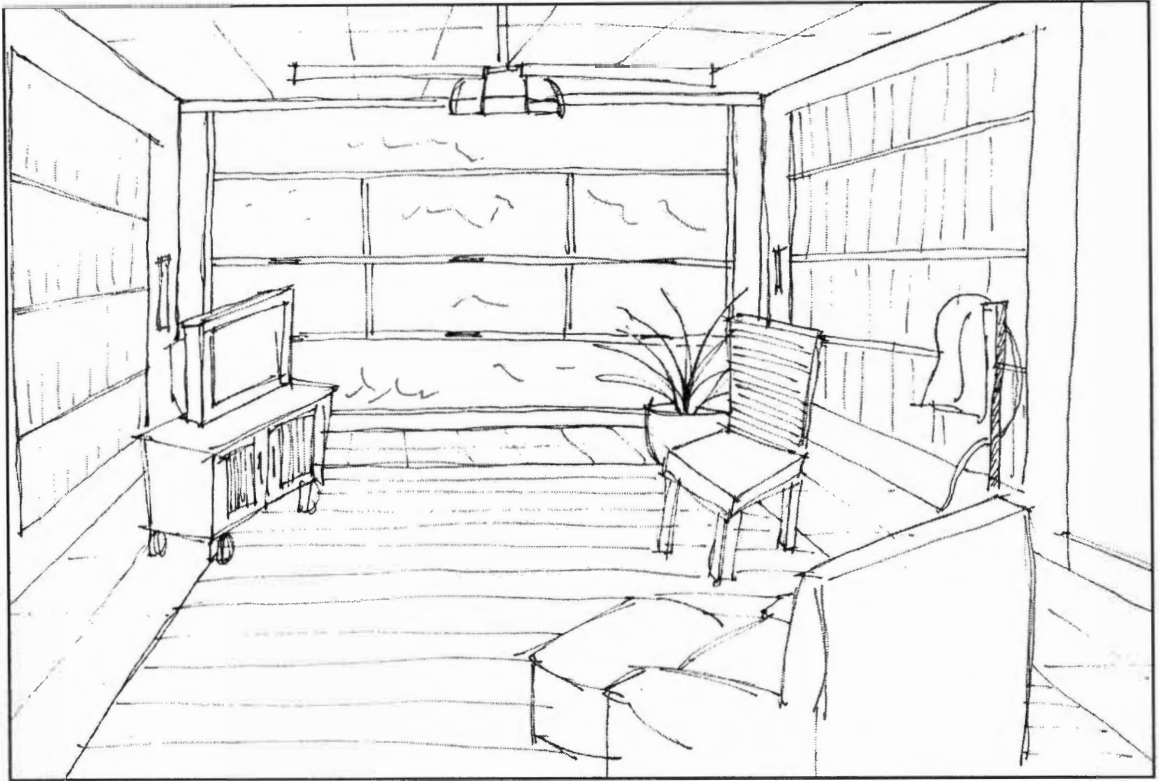
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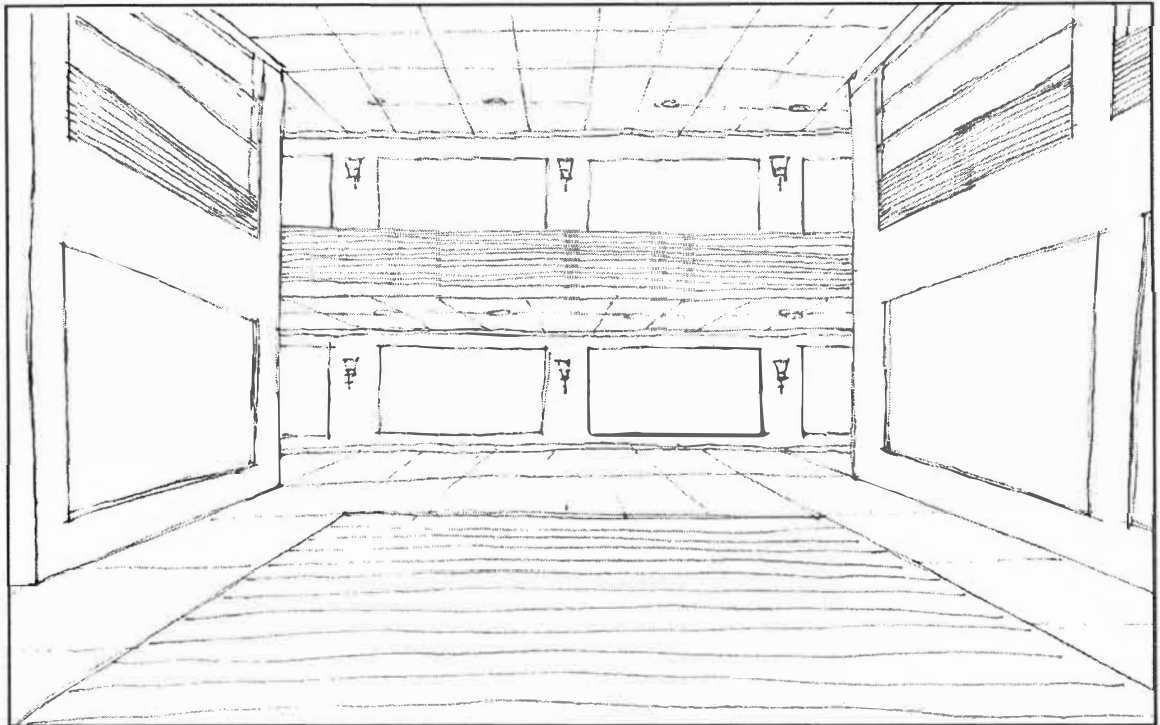
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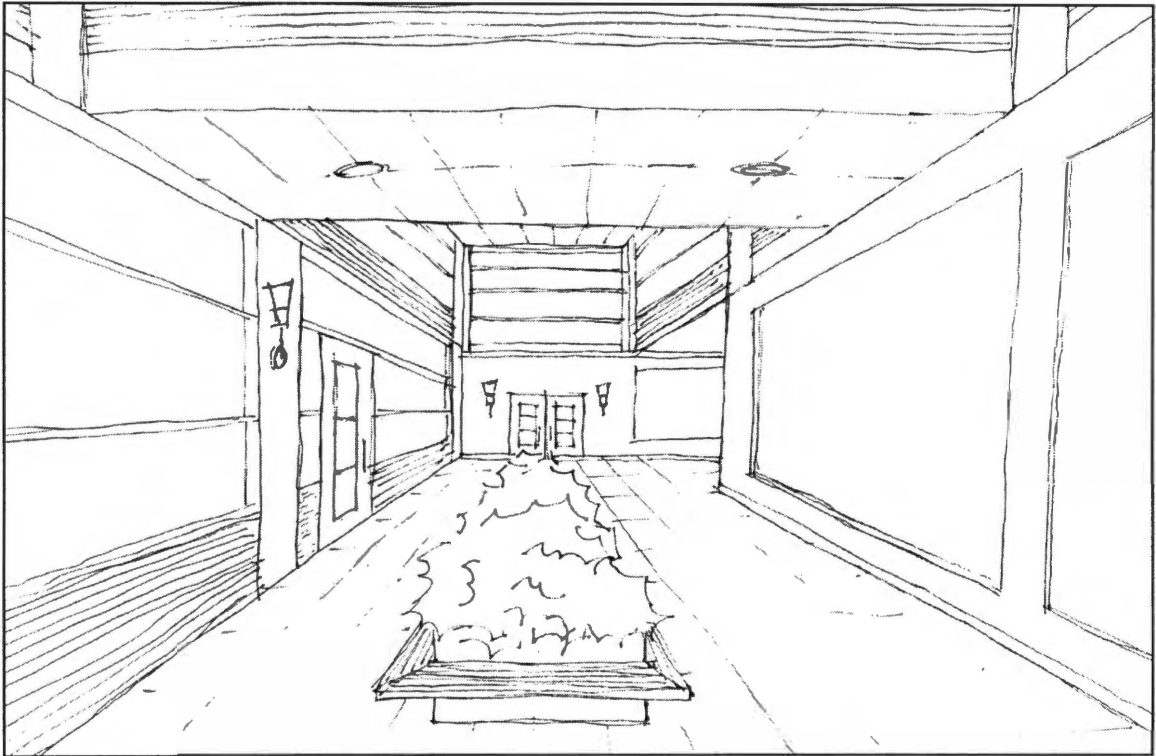
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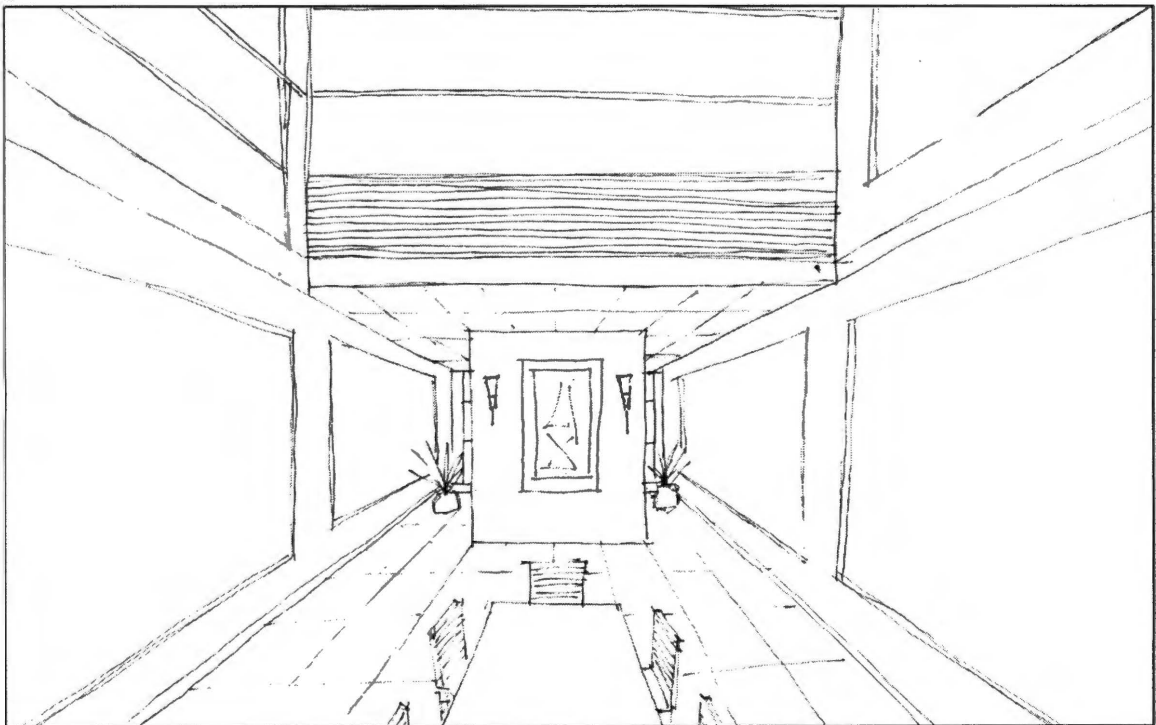
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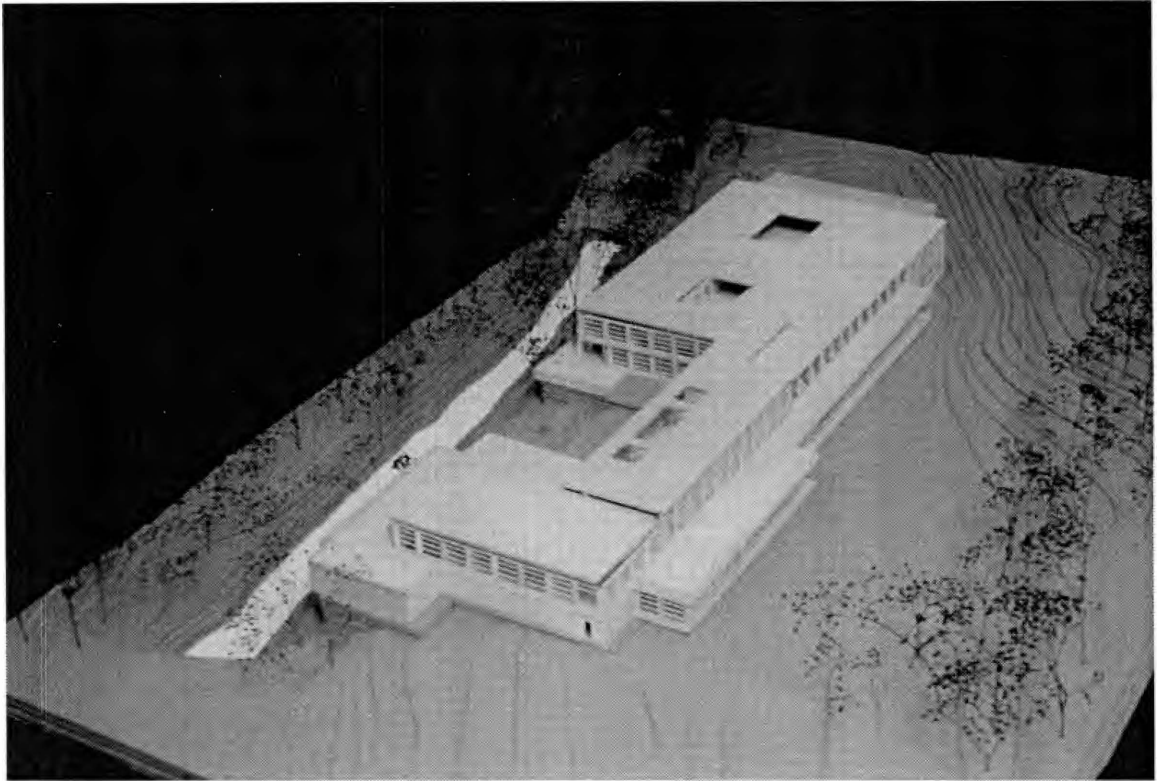
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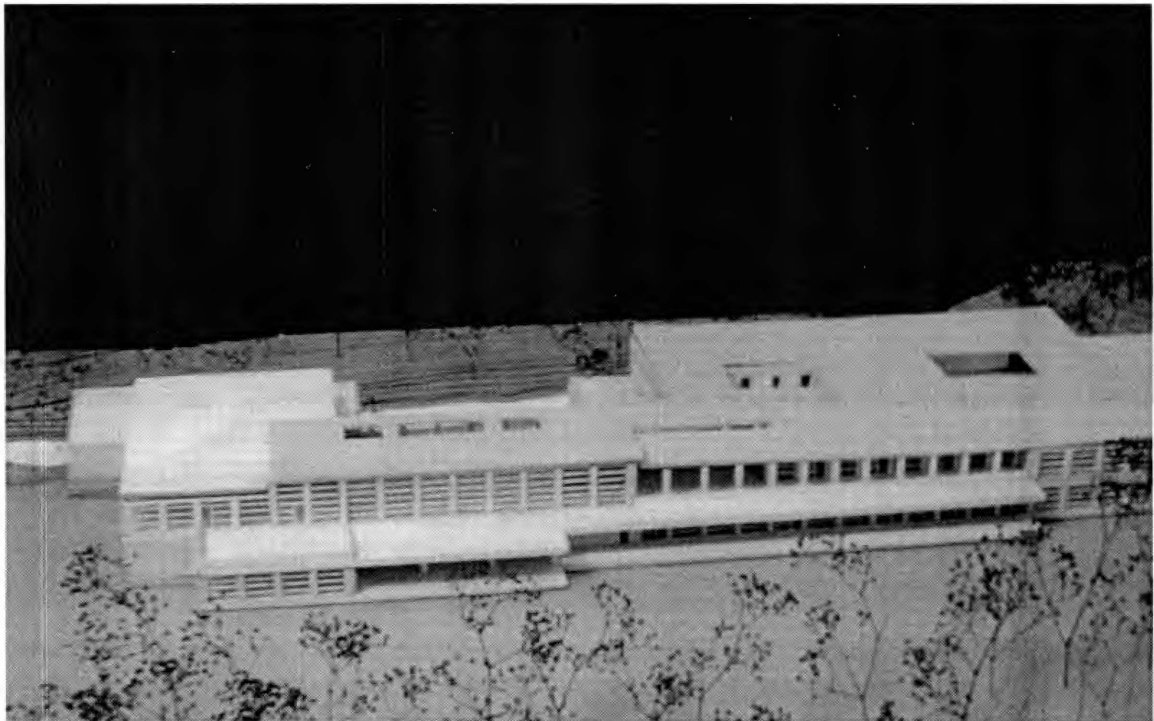
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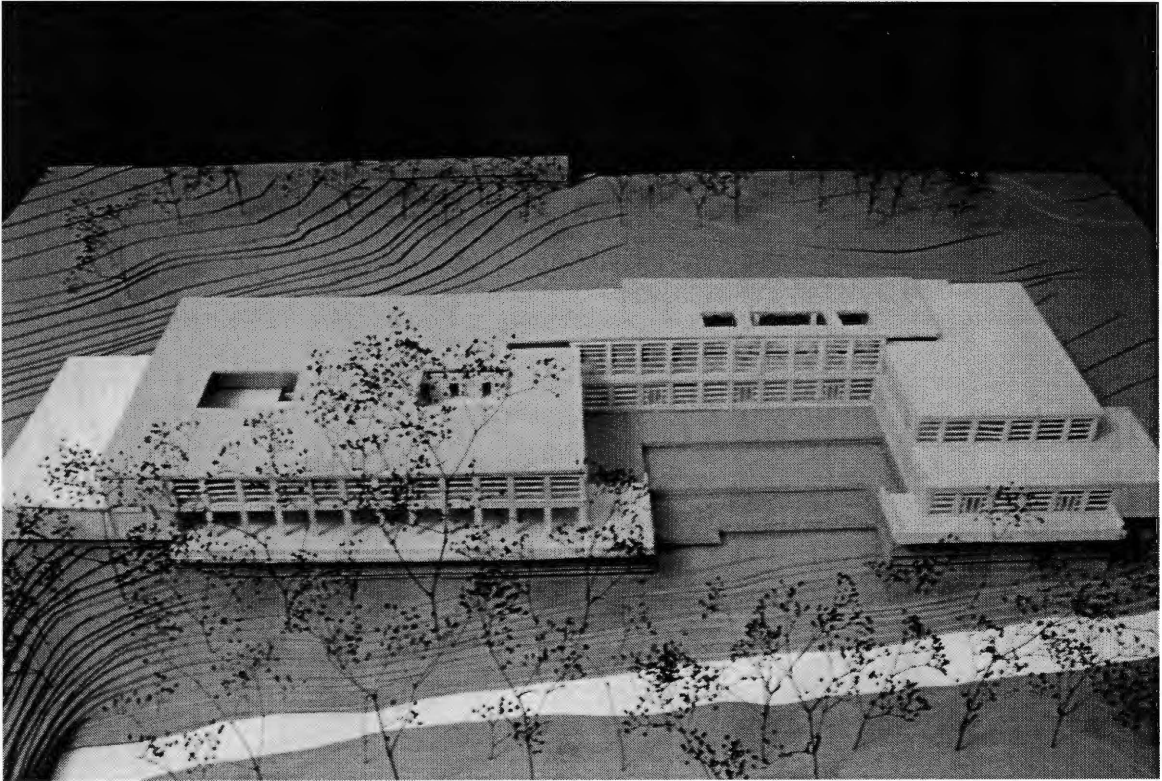
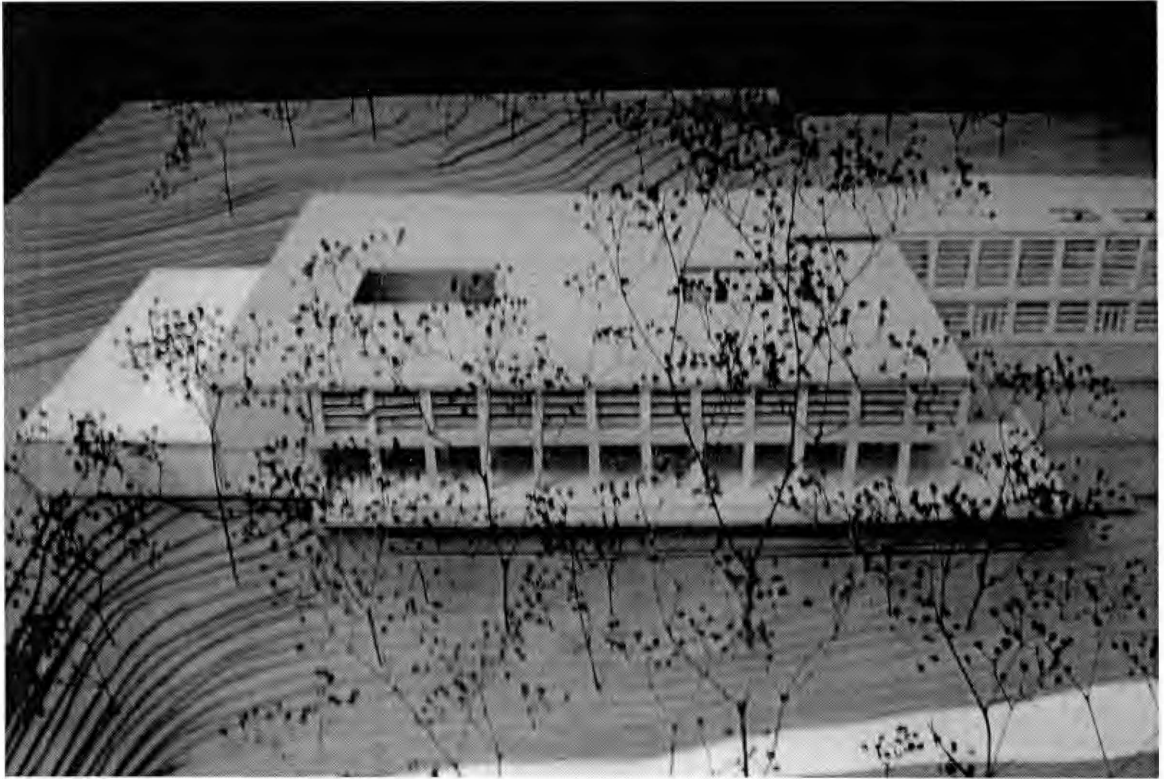Figure A.C.40. Model 3

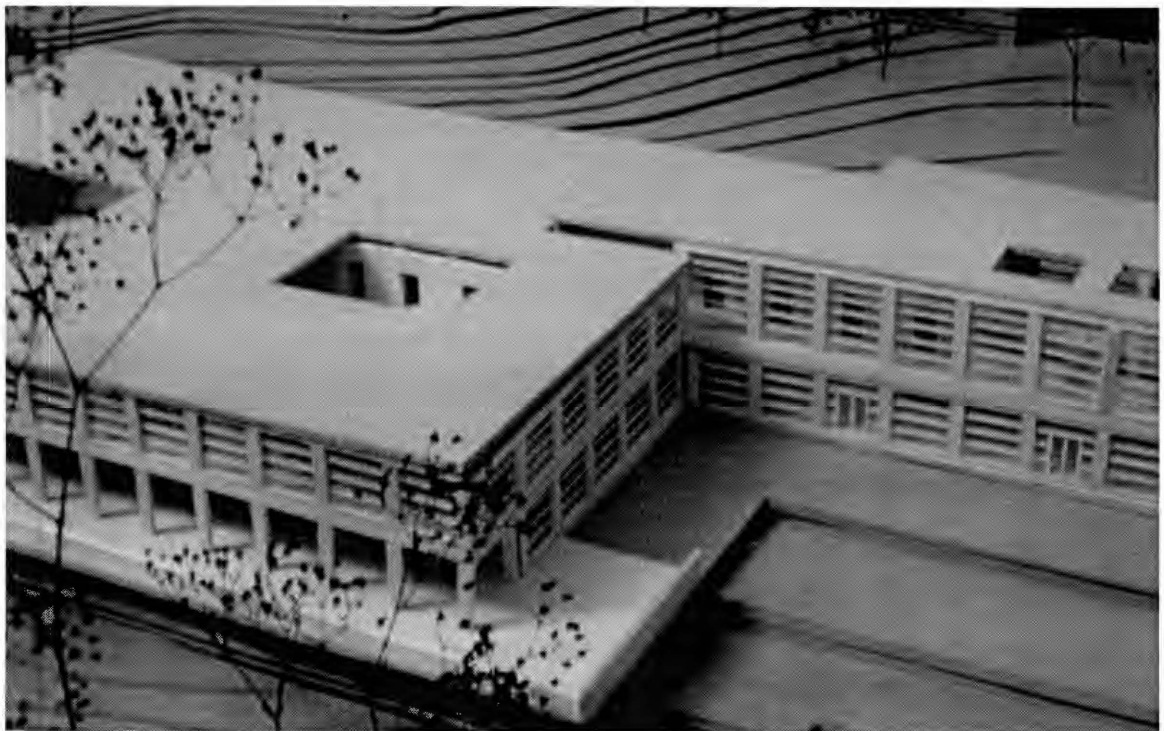Figure A.C.41. Model 4

Figure A.C.42. Model 5

Figure A.C.43. Model 6

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VITA

Emily Hardin is from Charlotte, North Carolina, were she received her undergraduate degree in Philosophy and Mathematics from the University of North Carolina, Charlotte in 2003. She relocated to Knoxville, Tennessee in the same year and received her Masters in Architecture from the University of Tennessee in 2006.